BRIDGING THE GAP: THE WORKFORCE-PATIENT DYNAMICS

Understanding system behaviour of the social-organisational mental health care system to increase health care sustainability:

a focus study on alcohol use disorders in the Netherlands

MASTER OF SCIENCE THESIS

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DEPARTMENT OF MULTI-ACTOR SYSTEMS SCIENCE

Bridging the gap: the workforce-patient dynamics

Understanding system behaviour of the social-organisational mental health care system to increase health care sustainability: a focus study on alcohol use disorders in the Netherlands

by

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Cover: Graphic of people drowning in wine depicted in stacked wine glasses, designed by graphic designer Marie van der Donk (@marievddonk_illustratie)

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Enjoy reading,

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Executive summary

Substance use disorders, especially alcohol use disorder (AUD), pose a significant global health concern, contributing to high morbidity and mortality rates. In the Netherlands, despite a slight decline in excessive alcohol consumption, it still affects around 20% of the population, with a significant treatment gap and the elderly being disproportionately affected. Although research into AUD treatments has increased, the number of affected individuals remains stable, placing immense strain on healthcare systems. The Dutch government anticipates a need to expand the healthcare workforce to 25% by 2040, but such growth seems challenging due to broader labour and financial constraints. Apart from that, current regulations and policies seems to be ineffective.
Evaluating healthcare systems requires distinguishing between effectively addressing healthcare needs and managing resource constraints to ensure sustainability. Recent studies highlight the complexity of assessing healthcare performance, with the shift towards simulation models and the importance of considering multi-layered perspectives, including local context and expert insights, to inform policy-making and interventions. Apart from that, current performance assessing frameworks often overlook socio-organisational relations, contributing to a growing treatment and capacity gap in mental healthcare.
Therefore this study seeks to explore the drivers influencing social and organisational aspects of mental health care, with a specific focus on their effects on care quality. On top of that, it examines how existing policies and regulations affect these drivers or contribute to their development, using a case study focused on the Netherlands and AUD's. Consequently, the primary research question and its associated sub-questions for this thesis are formulated as follows:

What are the effects of socio-organisational drivers and policies on the Dutch mental health care system to maintain long-term sustainable quality of health care in the context of alcohol use disorders?

1. *What are the main organisational drivers of mental health care services that affect the quality of care?*
2. *What are the expert perspectives on the Dutch mental health care system in the context of alcohol use disorders?*
3. *How do policies in the long term influence the dynamic behaviour in the mental health care system?*
4. *What is the relationship between capacity shortages and the quality of care?*

This study utilizes a mixed-method approach, starting with a literature review and exploratory interviews for the first sub-question. A Participatory System Dynamics Modeling (PSDM) workshop with experts addresses the second question. The combination of these methods and semi-structured interviews resolves the third sub-question. The study concludes with a comparative analysis and an effort to develop a quantifiable system dynamics (SD) model, integrating data from 12 mental health services (MHS).

Through a literature review and exploratory interviews, several influential drivers are identified. Notably, internal factors such as patient satisfaction, therapeutic alliance, and accessibility issues play a significant role. These challenges, manifesting in prolonged treatments and patient dropouts, lead to capacity shortages, especially as demand surges. The role of General Practitioners (GPs) is crucial from a process perspective, particularly in the referral and understanding of patient needs. However, barriers such as language differences and GPs' proficiency in disorder identification compound these challenges. The societal context and therefore external organisational drivers contains family environments, also shapes patients' willingness to seek treatment.
Another result was that both the exploratory interviews and literature revealed that differences in expert perspectives about the healthcare system stem from distinct focuses on care provision processes, patient pathways, efficiency metrics. A simplified framework was thus developed to analyze these diverse perspectives, particularly in the context of capacity shortages within the mental healthcare sector that serves as a foundation for a PSDM workshop approach used to answer sub-question two.

The diverse viewpoints resulting from the PSDM workshop highlighted the need for understanding the interconnected links in the healthcare system, connecting social context, organisational treatment processes, and the resources. Participants differed in their interpretations as some focusing solely on the organisational context by mentioning effects on costs of treatments, while another expert concentrated on social factors affecting treatment inflow, such as individualization of the society. A prominent theme in the workshop was the discussion on how current policy regulations exert pressure on healthcare entities, leading to risk-averse behaviours on taking up patients with a high severity and constraints on practitioners' autonomy.
Consequently, the application of System Dynamics (SD) conceptual modeling in this study showed that heightened regulatory pressure and the call for improved care quality necessitate expanded capacity. However, this increased capacity is subsequently absorbed by administrative duties and the limitations imposed by budget gaps, a situation recognized as the 'fixes that fail' archetype. Social dynamics, including multiple drivers such as the ageing population, decreased self-coping abilities, increased alcohol consumption, and a focus on individualization, contribute to a even more rising demand for severe patient care. This surge in demand, coupled with a lack of adequate response, leads to untreated patients, prolonged wait times, and a widening treatment gap. This situation reflects the 'growth and underinvestment' archetype, where unmet needs clash with the healthcare system's perceived capacity, exacerbating issues due to the budgetary limitations of health insurance companies.
The analysis of the Dutch mental health care system reveals several unintended consequences of current policies, stemming from differences in organisational tasks and policy targets across mental health services and government departments. This leads to disjointed preventive measures and initiatives. Additionally, the emphasis on capacity optimization can inadvertently reduce practitioners' autonomy in treatment, increasing their pressures. Risk aversion also plays a significant role, as complex patients require long-term investments that are challenging to justify within the existing framework, which is more focused on patient numbers and tariffs than on broad support for complex cases. These insights suggest a need for a more systemic approach to policy-making.
By analysing a relationship between the capacity shortages and quality of care in 12 mental health care instances the patient influx and practitioner numbers are stable. Waiting times are rising gradually, but patient behaviour is unchanged. This could suggest that the shortage might not be escalating significantly, though the treatment gap (the disparity between diagnosed and undiagnosed cases) might be expanding. Nevertheless, the challenge in assessing the impact of capacity shortages on care quality is compounded by the variability in waiting times, the diversity of measurement methods, and differing interpretations of "quality of care," or the effectiveness of treatment outcomes.
Given the repeated emphasis on the complexity of healthcare systems throughout this study, the following key observations were made in support of this assertion:

- Multiple aggregation levels and contexts throughout the (mental) health care systems exist.
- Identifying cause-and-effect within (mental) healthcare systems is challenging due to diverse perspectives and comorbidity of patients.
- The context of healthcare problems varies widely across regions, nations and patient types.
- The multi-disciplinary and collaborative nature of (mental) healthcare, involving diverse stakeholders from patients to government.

This study's main limitations include not addressing safety as a key aspect of health quality and challenges in integrating quantitative methods owing to data constraints, highlighting the need for future research into diagnosed versus undiagnosed patients and treatment barriers. Additionally, it only partially examines the link between work-related factors like burnout and job satisfaction, suggesting further exploration in these areas.

This thesis demonstrates the value of a holistic approach to healthcare, building on prior research across diverse aggregation levels and contexts, including social and organizational aspects related to treatment and resources. The study also identifies how current policies may lead to over-regulation or insufficient prevention awareness, affecting both society and mental health services. As such, adopting a holistic system approach can enhance understanding of indirect and direct policy impacts, crucial for preventing a growing treatment-capacity gap and ensuring a sustainable mental health care system for society's vulnerable members.

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Abbreviations

Abbreviation	Definition
ALoS	Average length of Stay
AUD	Alcohol Use Disorder
CBT	Cognitive Behavioural Therapy
CLD	Causal loop diagram
DBC	Diagnose Behandel Combinatie
DDU	Denken Delen Uitwisselen
DSM-5-TR	Diagnostic and Statistical Manual of mental disorders, Fifth edition, Text Revision
GMB	Group Model Building
GP	General Practitioner
GGZ	Geestelijke Gezondheidszorg
HREC	Humans Research Ethics Committee
IGJ	Inspectie voor de Gezondheidszorg en Jeugd
IZA	Integraal Zorg Akkoord
KPI	Key Performance Indicator
MHS	Mental Health Service
NGT	Nominal Group Technique
NRV	Nationaal Rapporteur Verslavingen
NZa	Nederlandse Zorg authoriteit
PROM	Patient Reported Outcome Measures
PREM	Patient Reported Experience Measures
PSDM	Participatory System Dynamics Modelling
RQ	Research Question
ROM	Routine Outcome Monitoring
SD	System Dynamics
SFD	Stock flow diagram
SQ	Sub Question
SUD	Substance Use Disorder
VWS	Volksgezondheid Welzijn en Sport
WHO	World Health Organisation
ZPM	Zorg prestatie Model

1 Introduction

1.1. Background and problem statement

To this day, substance use disorders (SUD) remain a significant global concern, contributing substantially to morbidity and mortality rates (WHO, 2016). Alcohol alone accounted for approximately 95 million disease and injury cases in 2010, ranking as the ninth primary risk factor for morbidity and premature death worldwide (OECD, 2010). In 2022, the WHO (2022) reported that harmful alcohol consumption results in 3 million deaths annually, constituting 5.3% of global deaths.
Studies highlight that Alcohol use disorder (AUD) not only elevates morbidity but also frequently co-occurs with other mental health conditions (Connery et al., 2020). Presently, 60 to 80% of AUD patients concurrently suffer from severe mental disorders like anxiety or schizophrenia (Zorginstituut, 2014). Moreover, the treatment gap for SUD is notably vast, surpassing other medical and mental health disorders globally (Connery et al., 2020; Kohn et al., 2004). This gap, influenced by regional factors such as infrastructure inadequacies and stigma, impedes effective intervention for individuals struggling with uncontrolled substance use, encompassing both illicit and licit drugs, medications, and alcohol (Kohn et al., 2004; NIH, 2014).

While there has been a slight decline in excessive (over 21 glasses weekly per person) and severe (over 6 glasses daily) alcohol consumption among adults (18 years and above), it still impacts around 20% of the population in the Netherlands (Trimbos, 2022). However, accurate estimation remains challenging due to reliance on data from those seeking help, neglecting the treatment gap (Kohn et al., 2004). An exploratory study by Trimbos suggests that 90% of individuals with AUD who should be receiving treatment are not (Trimbos, 2015), emphasizing the potential underestimation of the actual demand. Additionally, research indicates that the elderly (above 55 years) in the Netherlands are disproportionately represented in excessive drinking statistics (Trimbos, 2018). Given the phenomenon of double ageing, where the general population ages due to healthcare and lifestyle advancements, and the absolute number of older individuals increases, particularly from the post-World War II "baby-boom" generation, the demand for interventions is anticipated to grow in the forthcoming years (Actief65+, 2023).

Despite considerable research into treatments and preventive measures for alcohol use disorder (AUD), the proportion of affected individuals has remained relatively stable (Connery et al., 2020). Coupled with population growth, the absolute number of patients requiring treatment is escalating. This surge, combined with the increasing demand of patient needs, exerts added strain on the healthcare system, resulting in elevated treatment expenses and diminished healthcare quality and accessibility (Connery et al., 2020; Kohn et al., 2004). The Dutch government projects that to accommodate the rising demand, the workforce in the general healthcare sector, currently at 16.67%, would need to expand to 25% by 2040 (MinisterieVWS, 2022b; NRC, 2023). Yet, given the broader labour market shortages and financial constraints, such an expansion appears unattainable.

In the Netherlands, AUD treatment predominantly occurs within the mental health care system, termed "Geestelijke Gezondheidszorg" (GGZ), which includes mental health service (MHS) providers (Zorgwijzer, 2023). Presently, there are approximately 260 MHS providers specializing in addiction, including AUD, in the country. Their distribution is illustrated in figure 1.1.

Figure 1.1: Distribution of the different Mental health care services in the Netherlands treating AUD (Zorgkaartnederland, 2023)

The increasing demand for services is evident in the 85,000 patients who were on the waiting list for a specific treatment in 2021 within all the GGZ instances (MinisterieVWS, 2021). Despite the implementation of the "treeknorm" policy, which sets a maximum waiting time of 14 weeks for GGZ patients, approximately 40,000 patients exceeded this limit in 2021 (MinisterieVWS, 2021). This issue, beyond impacting the patient, also poses significant challenges for the government. Recent research by Prudon (2023) reveals that for each additional month of waiting, 2% of these patients lose their employment and struggle to re-enter the workforce (NRC, 2023). The associated annual costs for the national government are estimated at 300 million euros (Prudon, 2023).

Beyond the treeknorm, the Dutch government aims to enhance the healthcare system's accessibility, quality, and affordability. This is pursued through the "integraal zorg akkoord" (IZA), a collaborative agreement involving healthcare insurance stakeholders, GGZ entities, and the Ministry of Health, Welfare, and Sport (in Dutch: "volksgezondheid, wetenschap en sport: VWS") (MinisterieVWS, 2022b). A primary objective is to reduce administrative overhead, with the recent "Zorg Prestatie Model" (ZPM) aiming to simplify and standardize treatment agreements, thereby decreasing the estimated 70% of time dedicated to administrative tasks. This is intended to sustain and elevate the sector's quality and accessibility (Kregting, 2023). However, post-2022 policy introduction, the Dutch Health Care Institute (Nederlands zorg instituut (NZa)) highlighted major challenges in standardizing treatments for highly complex patients (NZa, 2022). Notably, these patients incur the highest costs, averaging nearly €60,000 annually within long-term GGZ (see figure 1.2) (NZa, 2021). Given these factors, the efficacy and sustainability of current policy implementations warrant scrutiny.

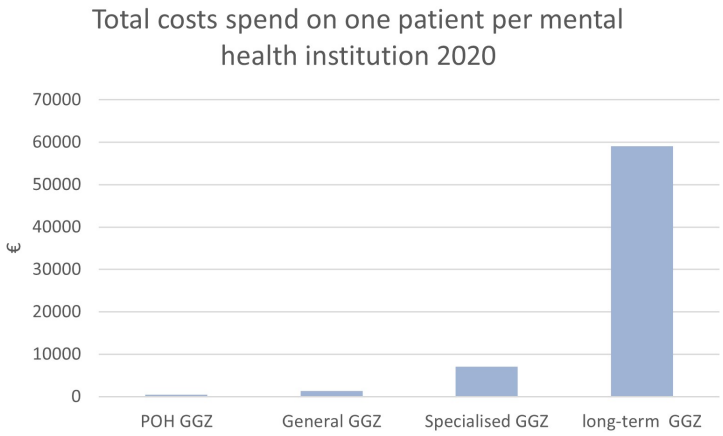

Figure 1.2: Costs per patient in 2020 per mental health care institution in the Netherlands (NZa, 2021)

Despite these problems, the general healthcare system has also to deal with the existing personnel shortage within healthcare services, which reached 49,000 in 2022, with projections indicating a rise to around 117,000 by 2030 to meet the growing demand (MinisterieVWS, 2021). Additionally, a significant number of employees in mental healthcare institutions in the Netherlands, even after the newly introduced policies, have announced their intention to leave the GGZ due to bureaucracy, high administrative pressure, and the continuously increasing workload (Dejongepsychiater, 2020).

The numbers highlight the urgent need for change in the mental health care sector. However, addressing these problems is highly complex due to their multiple underlying causes and interacting behaviour between stakeholders. In this thesis the term 'complexity in systems' refers therefore to the nature of complex systems. Complex systems are systems whose behaviour is inherently challenging to model due to various factors. According to Ladyman et al. (2013) these include dependencies, competitions, relationships, and other interactions among their components, as well as between the system itself and its environment.

1.2. Knowledge gap

When evaluating a healthcare system, distinguishing between various objectives is crucial. A primary concern is ensuring the sector's sustainability. The WHO (1998) described healthcare sustainability as "the ability to meet the needs of the present without compromising the ability to meet future needs." Within this definition, two contrasting elements are highlighted:

- *addressing needs:* effectively prioritizing and addressing the healthcare requirements of the afflicted;
- *resource constraints:* managing the inherent scarcities and limitations within the sector.

To develop a sustainable system for the future, it is essential to strike a balance between both mentioned aspects. While various challenges persist in the Dutch mental health care system, the predominant issues remain ambiguous. Recent studies indicate that assessing the performance of healthcare systems is intricate, with increasing reliance on simulation models (SM) (Larrain & Groene, 2021). Although established frameworks, like the triple aim objective—focusing on enhancing population health, patient experience, and cost reduction—exist and have effectively identified key performance indicators (KPIs) (Carter, 2022), research suggests that the interplay in healthcare systems, especially concerning measures and system objectives, heavily depends on assumptions. Factors such as context, causality, and non-linear dynamic behaviour are deeply embedded in these systems but often overlooked in such frameworks. Additionally, the recent inclusion of "joy in work" to form the new quadruple aim highlights evolving perspectives on system evaluation (Sunderji et al., 2017). In summary, current research shows that these frameworks are inadequate for representing the complexities inherent in healthcare systems.

In healthcare system simulation modelling, it is feasible to correlate various effects to uncover specific behaviours. A study by E. Wolstenholme (1999) in the UK showed that policy changes targeting

only the capacity in hospital emergency departments have considerably less influence compared to flow variables, such as ALoS (average length of stay). Expanding on this, Lane et al. (2000) argued that policies grounded in limited models could inadvertently promote shortsighted policy-making. A more recent study in Australia's mental health care services by Skinner et al. (2023) emphasized the importance of timely treatment. They found that addressing critical junctures in the progression of severe disorders while waiting for treatment could preemptively mitigate significant capacity shortages. However, they also highlighted the multifaceted nature of their findings, noting that individual factors like help-seeking behaviour, comorbidities, age, and gender could substantially influence these outcomes.

Furst et al. (2021) cautions against universally applying blueprint models to healthcare systems, advocating instead for an ecosystem approach. This method emphasizes areas pertinent to mental health, highlighting stressors at the macro-level (characteristics of the at-risk or affected population), meso-level (workforce and institutions catering to this demographic), and micro-level (interactions, such as clinician-patient engagements). Rosen et al. (2020) emphasizes the importance of this multi-layered perspective, suggesting a framework that encompasses the patient, community, and national levels (see figure 1.3). The distinction between a conventional healthcare system and the ecosystem approach, as outlined by Furst et al. (2021), is the shift from a reductionist strategy, which seeks singular solutions to intricate issues, to an approach that analyzes the mental health system's environment and context, offering decision-support tools for policymakers. International studies on assertive community treatment demonstrate that an intervention's impact is contingent on the local context's attributes (Sawatzky et al., 2021). This suggests that adhering strictly to an original model when locally implementing a intervention may be debatable unless the specific local context is taken into account (Raine et al., 2016).

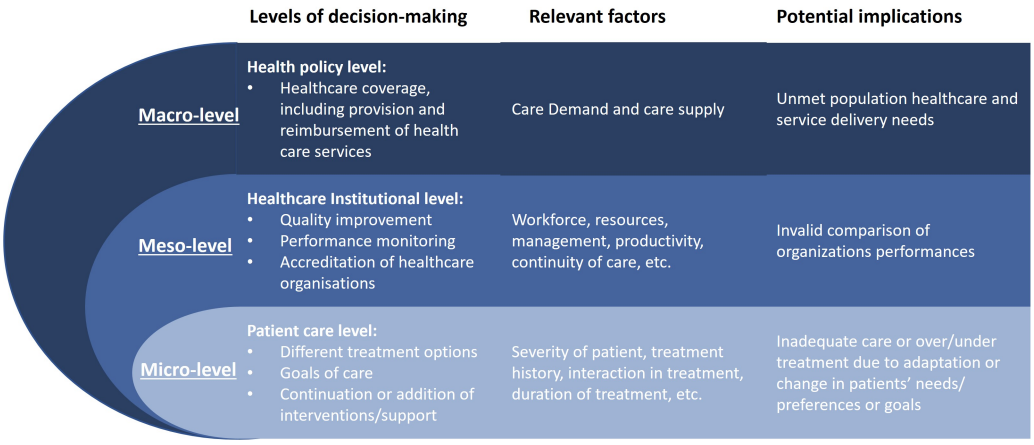

Figure 1.3: Multi-level perspective in health care (Rosen et al., 2020; Sawatzky et al., 2021)

One of the few simulation models examining feedback and interactions at the community level within the Dutch mental health care sector was conducted by Smits (2010). They assessed two design approaches: "matched" versus "stepped" care, comparing treatment alignment during intake versus gradually intensifying treatments. They evaluated these based on ten performance indicators, including clients in treatment, recovery rates, waitlists, and revenues. While this study provides insights, it is dated, and subsequent policy changes in the Netherlands have altered the context. The dynamics between staff shortages (without a set capacity) in an organisational context and fluctuating client demands in a social context, and their impact on outcomes, remain unexplored, even though they're known to significantly influence health performance (Brailsford, 2008).
Furthermore, most models underscore the value of expert involvement. The majority of relevant studies advocate for increased expert participation, emphasizing the significance of local context and the intricacies of the work to inform modeling (Brailsford, 2008; Mumba et al., 2017; Smits, 2010). Therefore, the knowledge gap that is addressed within this research is the lack of an integrated model, as suggested by Rosen et al. (2020), that simultaneously considers multiple aggregation levels. This model would specifically address how local mental health care services are impacted by capacity shortages due to external factors, and how these shortages relate to the quality of care in the alcohol treatment sector, while also incorporating insights from experts.

1.3. Research question

The preceding sections underscore the complexity inherent in enhancing the healthcare system. The outcomes of prior studies are intrinsically tied to their analytical approach, system scope, and chosen indicators. Notably, much of the existing research lacks a Dutch perspective, highlighting the imperative for a deeper exploration of the key drivers in social and organisational domains affecting the quality of care within the Dutch mental healthcare system.
Without a clear understanding of the dynamics within the mental health care system, there remains ambiguity regarding the optimization of policy effectiveness. Thus, this policy analysis study examines the long-term effects of potential policies on the system and its behaviour. Consequently, this study addresses the following research question:

What are the effects of socio-organisational drivers and policies on the Dutch mental health care system to maintain long-term sustainable quality of health care in the context of alcohol use disorders?

This question is divided into four sub-questions:

SQ1) What are the main organisational drivers of mental health care services that affect the quality of care?
The research question is addressed through an extensive literature review coupled with exploratory interviews centred on mental health care. The focus is on understanding the internal as well as external behaviours from an organisational standpoint that influence care quality. Additionally, the study delves into how care quality is characterized as a performance metric within the literature for such services. These insights will result in an initial conceptual system dynamics model and an overview of the synthesized literature.

SQ2) What are the expert perspectives on the Dutch mental health care system in the context of alcohol use disorders?
As noted in the introduction, there is a gap in the literature concerning the alcohol addiction sector and a distinct Dutch emphasis. Existing literature predominantly covers various other MHS areas. To address this secondary research question, a Participatory System Dynamics Modelling (PSDM) workshop is conducted. This session aims to understand how mental health care service providers interpret behaviours derived from the literature and exploratory and to gain insight into their system perspective, offering a more robust method to pinpoint the prevailing system behaviour.

SQ3) How do policies in the long term influence the dynamic behaviour in the mental health care system?
Given that existing policies are not yielding the intended outcomes, it is crucial to comprehend their impact on the system. This will foster a more profound grasp of the intricate interplay between societal behaviours and healthcare organisations to have a broader system understanding. To achieve this, both the outcome of the exploratory interviews, the PSDM workshop and additional semi-structured interviews are conducted with policymakers expected to possess a systemic viewpoint, facilitating reflection.

SQ4) What is the relationship between capacity shortages and the quality of care?
To investigate the impact of capacity shortages on the quality of care, a specialized System Dynamics (SD) model was developed, complemented by a data analysis using information obtained from multiple Mental Health Services. This approach not only elucidates the relationship between capacity shortages and care quality but also highlights the implications for quantitative relational understandings in this research field. It underscores therefore the complexity of the dynamics at play and critiques the limitations of a single-system approach.

1.4. Societal relevance

To understand the drivers influencing the care quality in the Netherlands' AUD sector within the mental health care system, multiple system dynamics models grounded in causal interlinkages were devised. These models seek to identify the variables and relationships that define current behaviours from the perspective of mental health care. They delineate the influence of existing policies on these entities and pinpoint the primary determinants that shape current practices. This is further corroborated by

quantitative data from a mental health care service. Specifically, the last specified system dynamics model combines qualitative data from a literature review and insights from exploratory expert interviews, establishing a causal understanding that captures the predominant factors and their behaviour affecting the quality of care. Further details on this approach are elaborated in Chapter 3.
This research enhances the field by integrating expert perspectives into models, fostering discussions that can guide decision-making. In an arena characterized by diverse stakeholders, inherent complexity, and policies that might inadvertently yield undesired outcomes, innovative strategies are imperative to discern the overarching consequences.

1.5. Research locus

This study aims to address the challenges in quality of care assessment in the mental health care system, initially focusing on the addiction sector, specifically alcohol addiction. This study is geographically centred on the Netherlands, which serves as the case study.
The Netherlands is experiencing significant population growth, compounded by a pronounced double ageing effect. These factors might contribute to the mounting pressures on the healthcare sector, particularly within mental health care. In this research, the emphasis is on the entire population without distinctions based on age or gender. However, it is noteworthy that alcohol use disorder (AUD) seems to be prevalent among the elderly.

1.6. Thesis structure

This thesis outline is divided into eleven chapters. The chapters, their description and in which order they will be presented are described in Table 3.3.
As this research adds towards system understanding in mental health care and health care in general using varied methods of literature research, exploratory interviews and a PSDM approach (including a group model-building workshop) the outcome of each step will be discussed in each chapter whereafter the process will be partly discussed. As these combined methods are hardly combined in this domain, this way of approach suits the contribution of this research.

Table 1.1: Overview of all chapters and their content, appendixes have been excluded

Chapter	Description
1. Introduction	Provide the problem, scope, research question and aim.
2. Background information	Overview of the AUD sector and background information on the AUD disorder.
3. Research approach	Overview of the sub-questions and the associated methods.
4. Organisational drivers: factors and their behaviour affecting care quality	Results of the literature study, exploratory interviews and conceptualization of the interpretation.
5. Understanding expert perspectives on the mental health care system: participatory approach	Synthesis of the outcome of the GMB and further conceptualization.
6. Fixes that fail: current policies and their system impact	Current regulations are presented and their impact is reflected upon as the outcome of interviews.
7. Critiquing of single-system approach	Presents an attempt and its difficulties to merge the qualitative understandings to quantification by incorporating a data-analysis of the current data applicable in this domain
9. Discussion	Discuss the results, implications and limitations.
10. Conclusion & Recommendations	A synthesis by answering all the sub-questions and research questions and providing recommendations for research and policy-makers.
11. Reflection	A reflection is performed on the research process, the SD method and the personal process.

2

Background information on the mental health care sector & alcohol use disorder treatment

This chapter firstly presents background information on Alcohol Use Disorder (AUD) and its treatment within the Dutch mental health care system, known as "GGZ instellingen" (MinisterieVWS, 2020). Secondly, the chapter also encompasses treatment outcomes for AUD patients in the Netherlands. Finally, it illuminates the Dutch context and evaluates its relevance to other mental health care systems. All sources cited here are extensively referenced in the report. The information is derived from literature, expert consultations, or firsthand interactions with the mental health care service and supported by desk research.

2.1. Condition of patients with an alcohol use disorder

In many countries worldwide, patient assessment in the mental health sector utilizes the "DSM-5-TR", an acronym for The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (Psychiatryonline, 2022). In the Netherlands, the GGZ and its practitioners employ this manual to determine treatments based on the severity of incoming patients (Zorgwijzer, 2023). The manual not only enumerates specific disorders, such as schizophrenia and bipolarity, but also classifies each disorder into various severity clusters.
The DSM-5-TR defines substance use disorder as a condition resulting from the regular use of substances like alcohol, cannabis, opiates, or stimulants. Instead of specifying quantities, the manual emphasizes the consequences of increased dependency on these substances (Psychiatryonline, 2022). Specifically, it outlines 11 criteria pertinent to an AUD. These criteria are (Psychiatryonline, 2022):

- using more frequently and in larger quantities than intended;
- failed attempts to reduce or stop use;
- use and recovery from use take a lot of time;
- strong desire to use;
- failure to meet obligations at work, school, or home due to usage;
- continued use despite it causing relational problems;
- giving up hobbies, social activities, or work due to usage;
- continuous use, even when it puts you in danger;
- continuous use despite knowing that it causes or exacerbates physical or mental health problems;
- needing larger amounts to feel the effect, i.e., tolerance;
- the occurrence of withdrawal symptoms, which become less intense by using more of the substance.

Based on the specified criteria, the DSM-5-TR categorizes substance use disorders into clusters. Meeting two or three criteria indicates a "mild" disorder, four or five criteria suggest a "moderate" disorder and six or more symptoms denote a "severe" disorder (Psychiatryonline, 2022). These criteria are employed in the GGZ referral system, as the subsequent section will detail.

2.2. Triage and treatment within a MHS

At the point of intake into a Mental Health Service (MHS), a triage process is initiated. Preliminary evaluations are often conducted during general practitioner visits or via their support system, termed in Dutch as "Praktijk Ondersteunend Huisarts" (POH). Upon entry to the mental health care service, the appropriate treatment setting, duration, and type are collaboratively determined with the patient. The key practitioner in this process is referred to as the "regiebehandelaar" (lead practitioner) or often as the "GGZ-psycholoog" (GGZ-psychologist). This title signifies several years of experience culminating in a leadership role. Other roles contributing to the treatment process include "basis psychologen"(basis psychologists), "verslavingsartsen" (addiction doctors), and "gedragswerkers" (experts on behavioural expertise). Ultimately, the regiebehandelaar, in consultation with their team, finalizes decisions regarding the treatment department, type, duration, intensity, and setting (group or individual). Table 2.1 outlines the various treatment departments, types, their characteristics, duration, intensity, and settings. Given the varied treatment settings connected to specific departments, which are consistently referenced throughout this report, they are detailed as follows:

- **Policlinic care setting:** Often referred to as outpatient or ambulant care, this setting involves treatment sessions spanning an average of three months, usually conducted once a week (Optum, 2020). These treatments may be in the form of group sessions or individual sessions, typically lasting 45 minutes each. Notably, patients continue residing at home during this period. This category also features outreaching care, wherein practitioners employ the Community Reinforcement Approach (CRA). This involves not only providing treatment but also making home visits and engaging with the patient's social environment.
- **Day or partial care setting:** This setting also spans three months but is more intensive, requiring patients to visit the mental health service (MHS) thrice a week (Optum, 2020). Each visit lasts approximately 6 hours.
- **Clinical care setting:** In this setting, patients reside full-time at the mental health care facility for up to six weeks, receiving intensive care (Optum, 2020). Post this residential treatment, they typically undergo a follow-up program, which involves a 6-week stay at the facility for three days each week.

Table 2.1: The departments of a MHS in alcohol addiction, their treatment programmes, duration, settings and description

Department	Treatment	Description	Duration	Intensity	Group or individual
Policlinic	CBT2	Motivational and cognitive behavioural therapeutic techniques are used to support the client in realizing a change in substance use.	45 min/session (Optum, 2020)	13 sessions	Group
	CBT4	Same as before	45 min/session	13 sessions	Both
	Minnesota	Associated with the "12 Steps" model, is a holistic, abstinence-based approach to addiction treatment that integrates medical, psychological, and spiritual elements, emphasizing peer support and the principles of alcoholics anonymous (Optum, 2020).	45 min/session	3 months, weekly	Both
	ACT	Acceptance and Commitment Therapy focuses on reflecting and accepting negative experiences related to addiction and committing to a valuable and abstinent life (Optum, 2020).	45 min/session	14 sessions in 3 months	Group
	CRA (outreachend)	A wide range of cognitive-behavioural and systemic therapeutic interventions aimed at increasing alternative reinforcers for substance use and reducing substance-related reinforcers (Optum, 2020).	n.a.	n.a.	Individual
Day/ partial	CBT	The basic modules in the program are cognitive behavioural therapy for addiction problems, social skills training, psychodiagnostics, psychoeducation, and possibly pharmacotherapy (Optum, 2020).	3 months	3 times a week, 6 hours/day	Both
	Minnesota	Same as before	10 weeks	5 days/week	Both
Clinical	CBT	Same as before	12 weeks	First 6 weeks: full, then 6 weeks: 3 days/week	Both
	Minnesota	Same as before	6 weeks	Full weeks	Both

As can be seen in figure 2.1 the different departments contain different treatment options. As the patient and practitioner have their preference according to the status of the patient and the maybe already depicted treatments before or based on treatment history, different treatments or settings could be changed. This can be noted as a referral. Next to that, the patient has also the right to have a notable voice in choosing which treatment is suited for him/her.

2.3. Assessment of treatment outcome and progress

Evaluating the effectiveness of a system can be approached through various interpretive lenses. A prevalent method within most healthcare services is the use of Routine Outcome Measurement (ROM) (Nugter & Buwalda, 2012). As will be indicated in the literature review (see chapter 4), other organisations employ Patient Reported Outcome (PROM) or Patient Reported Experience (PREM) Measures. While PROM and PREM are commonly utilized in hospital settings, the ROM measurement is the favoured approach for GGZ instances in the Netherlands (Nugter & Buwalda, 2012). This metric is assessed both at intake (pre-treatment) and immediately post-treatment. This is accomplished by a survey administered by the regiebehandelaar and is given to the patient to complete. The feedback from these surveys, concerning treatment outcomes or progress, can be categorized under various outcome labels, which are:

- abstinence;
- controlled use;
- excessive but reduced use;
- excessive remain same use;
- excessive increased.

Abstinence, at the top tier, denotes the complete non-use of substances, meaning that patients have refrained from alcohol or other substances throughout their treatment. Controlled use is defined as a status wherein the patient continues to use substances but maintains control over their consumption. Such usage does not necessarily correspond to an AUD (refer to chapter 2), though this status remains a concerning situation. Subsequently, there exists persistent excessive use post-treatment. Excessive use captures the extent to which a patient's substance use behaviour during the treatment period. The classifications include a slight decrease, which signifies a reduction in substance use; remaining the same use, indicating consistent substance usage as prior to treatment; and increased use, highlighting an augmented substance consumption post-treatment.
The categories numerated above are employed during treatment as well, instead of only pre to post-treatment though these apply to only a minority of patients treated over time (Nugter & Buwalda, 2012). Typically, they are introduced midway through the treatment to assess specific outcomes. Such assessments facilitate discussions between the practitioner and patient, offering insights into the patient's progress. While they provide behavioural insights about the patient to the practitioner, they also gauge the efficacy of specific treatments for particular patient groups. This evaluation assists in determining the optimal treatment setting, duration, and so forth for distinct patient cohorts or treatment departments. This information proves valuable not only for service management but also for practitioners. They access it through dashboards that display real-time updates.

3

Research approach

In this chapter, the research methodology is presented. Section 3.1 provides a comprehensive overview of the adopted methodologies. Subsequently, specific methods such as the literature review (section 3.2), exploratory interviews (section 3.2), the system dynamics model and approach (section 3.4) and the participatory system dynamics method (PSDM): group model building (section 3.4.2) and expert interviews (3.3.2) are identified as the most pertinent approaches for this study. These methods are elaborated upon in their corresponding subsections.

3.1. Research design considerations

An exploratory mixed method design is used, in order to determine the different perspectives and to conceptualize and analyze the socio-organisational mental health care system (see figure 3.1) (Creswell & Creswell, 2017). Given the inherent uncertainty and complexity of the subject, such an exploratory approach is particularly interesting for dissecting and understanding the system's intricacies and interconnections (McKim, 2017). The research methodology combines quantitative and qualitative information through the application of system dynamics modelling. This methodology is selected for its proficiency in combining these data types, thereby facilitating a comprehensive exploration of the system's boundaries and behaviours (Vennix, 1996).

Care-related research frequently adopts exploratory mixed methodologies, exemplified by the integration of qualitative interviews and quantitative simulation models to aid professionals in making optimal decisions for child welfare, as discussed by Munro (2013). Swanson and Holton (2005) emphasize that research about care has a heightened risk of bias owing to the intricacies involved in analyzing human behaviour. Consequently, Mahoney and Goertz (2006) contends that an iterative approach is imperative in this field of study to mitigate bias, utilizing insights acquired from preceding data-gathering phases to inform subsequent ones.

As elucidated by Rosen et al. (2020), the exploration of various systemic levels (including social and organisational) is crucial for identifying and understanding the intricate interconnections. Such differentiation of perspectives is particularly relevant when assessing the disparate impacts of interventions in terms of their effectiveness and efficiency. This research, therefore, will investigate the array of perspectives outlined by Rosen et al. (2020). Given the inherent complexities of such systems, a system dynamics modelling approach is deemed suitable (Creswell & Creswell, 2017).

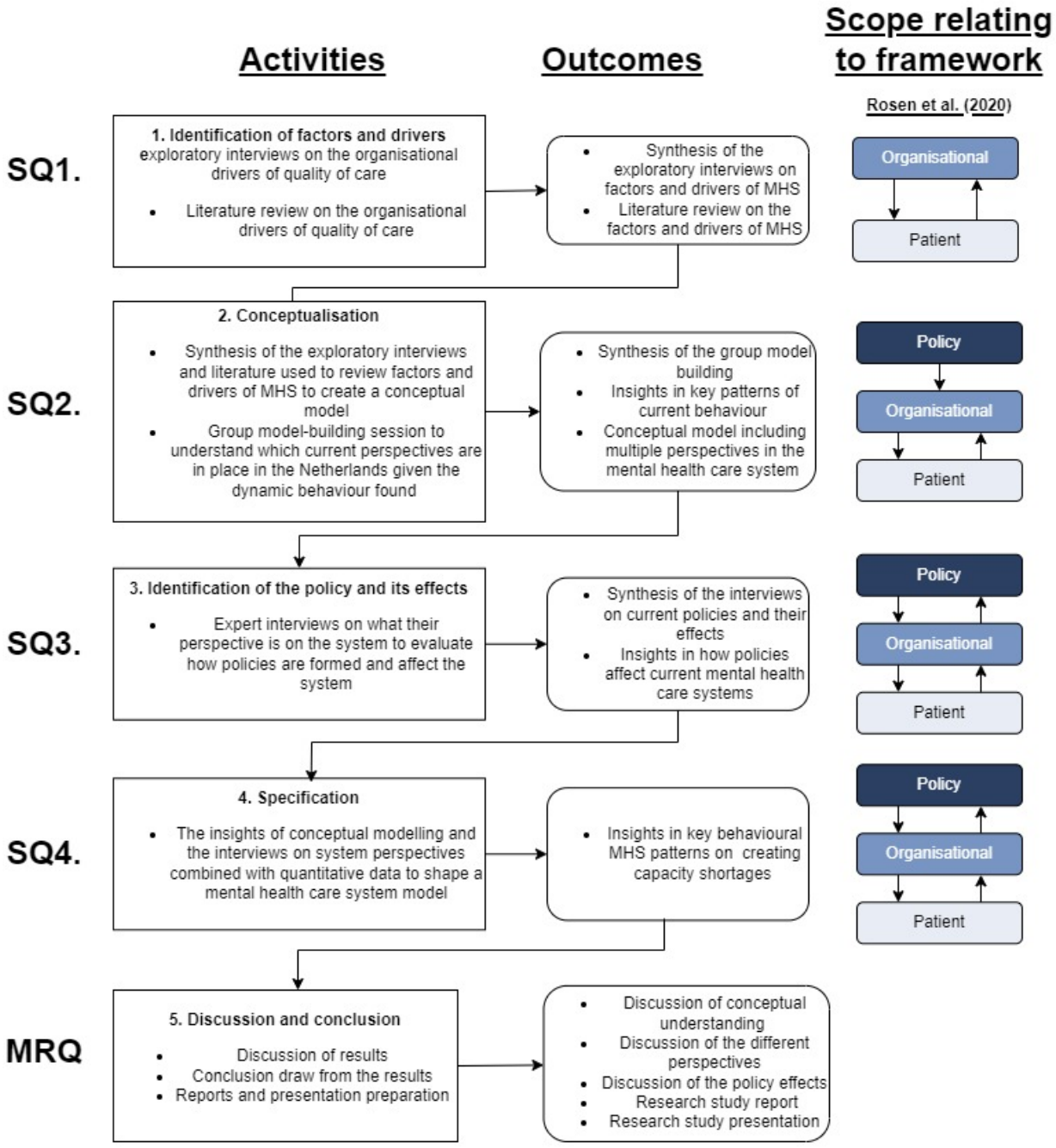

Figure 3.1: Research flow diagram with the activities on the left and the outcomes in the middle (inpsired by Kruseman Aretz (2023) and Videira et al. (2012)). The scope of the system analyzed related to the framework of Rosen et al. (2020).

3.2. Literature review

To address sub-question 1, a literature review was undertaken using PubMed, employing a methodology influenced by systematic literature review principles for rigour. The search query utilized is presented in Figure 3.2. We focused on literature from 2013 to 2023, constrained by time and the observation that recent decade sources have more thoroughly explored this domain. While it might have been pertinent to filter studies from high-income countries, we included literature from all income levels due to limited available articles. Additionally, while some articles specifically addressed gender or age, we incorporated all such articles given the domain's limited literature.

Titles and abstracts were screened, after which we retrieved the full texts of potentially relevant articles. The full texts were read and categorised according to the different measurable perspectives that were addressed and emerging themes. The literature review provided a jumping-off point but was not adequate to paint a full picture of all the drivers that affect the quality of care in an organisational scope, but to reflect on how performance is evaluated in mental health care systems in order to reflect on what approach is suitable, given the highly qualitative aspect in the health care sector. To fill in the gaps, we followed up on references and conducted targeted ad hoc review searches. This increased the number of references included in the review considerably, but did expose discrepancies between study findings, and, consequentially, allowed us to make better decisions regarding study design.

In the end, we added records by also searching through other sources as well, these contained: (Web of) Science, Google, Google scholar and the TU Delft Library. Additional information is found via grey literature as well, this in order to get an understanding of the Dutch health care system as well as specifically the mental health care system. These came from governmental reports (or internal letters from ministries), policy papers, and internal research from public institutions as Trimbos instituut, Zorginstituut Nederland or the Nederlandse zorg authortiteit (NZa) (English:"Dutch health care authority").

All sources underwent an appraisal involving the researcher's critical interpretation and a review of their relevance and reliability, taking into account the characteristics of the sample and the context of the study. The evaluation was conducted according to these specific criteria:

1. The study needs to explore at least on both organisational as well as social drivers related to health care;
2. The study needs to be assessed within the mental health care sector;
3. Full-length English or Dutch text needed to be available;
4. The authors need to be transparent regarding limitations and disclosures.

The goal of this process was, on the one hand, to inform judgement about the strength of evidence for the measurement used, and on the other hand to determine whether an article needed to be included. The main takeaways of all eligible sources are listed in section Chapter 4. An overview of the process is shown in the PRISMA diagram provided below 3.2:

("mental health service*"[Title/Abstract] OR "Mental health care"[Title/Abstract] OR "mental health cent*"[Title/Abstract]) AND ("Capacity planning"[Title/Abstract] OR "Capacity management"[Title/Abstract] OR "performance measure*"[Title/Abstract] OR "performance assessment*"[Title/Abstract] OR "performance"[Title/Abstract]) AND ("efficien*"[Title/Abstract] OR "success*"[Title/Abstract])

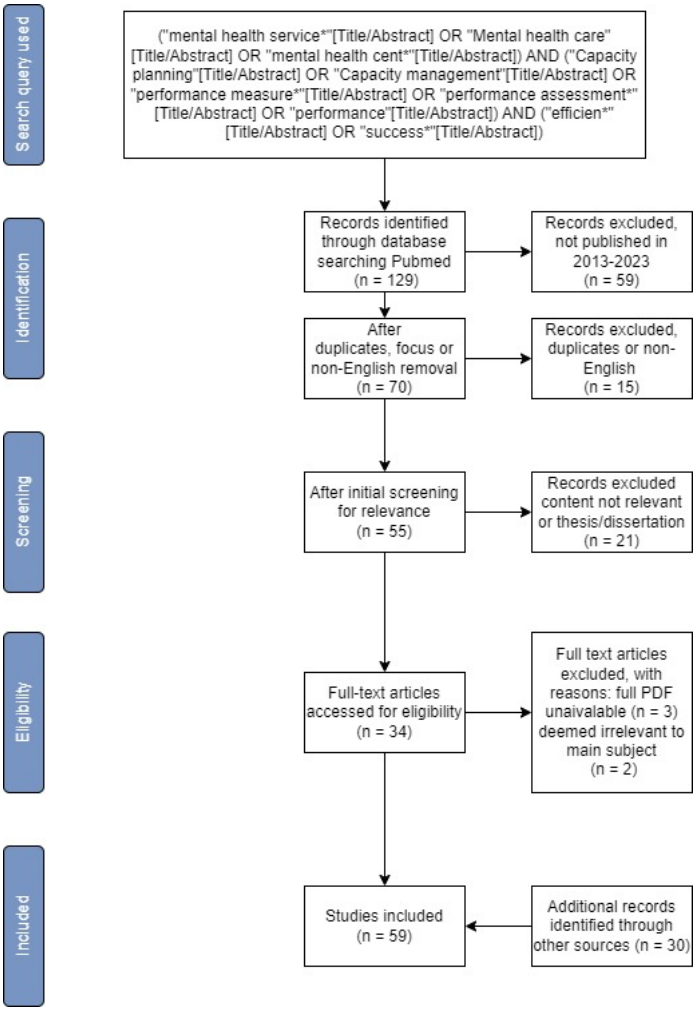

Figure 3.2: PRISMA Systematic literature review flow chart

3.3. Interviews

Two distinct interview approaches were employed in this study. Initially, exploratory interviews were conducted to provide a comprehensive understanding. Later, semi-structured interviews were carried out in phase three, as depicted in figure 3.1. These approaches will be further discussed below.

3.3.1. Exploratory interviews approach

The semi-structured exploratory interviews aimed to define the research scope and conceptualization, focusing on current challenges in the Netherlands' mental health care sector, particularly within GGZ instances. This phase required insights into organisational facets specific to the Dutch context, as well as a comprehensive understanding of factors influencing care quality. To minimize bias, interviewees were selected from diverse professional backgrounds and regions in the Netherlands. Literature indicates that notable regional differences can be present within a national context (Rosen et al., 2020). Consequently, Figure 3.1 showcases the endeavor to capture varied viewpoints by interviewing individuals across different regions and system scopes.

The interviews varied owing to the diverse interests of the experts. Depending on their expertise, the emphasis was either on internal drivers or criteria measurement. The primary aim was to capture the most influential drivers affecting quality of care identified by the interviewee. This involved understanding the key criteria for system evaluation, the external factors influencing these criteria, and the policies that might disrupt the interactions established by endogenous variables through their interrelationships. Before the interviews commenced, participants received five questions via email that

set the foundation for the interview discussion. These questions were:

1. What do you identify as the core issue hindering the reduction of alcohol use disorders in the Netherlands?
2. What factors do you consider most critical in influencing the quality of care within the alcohol addiction sector?
3. What are the primary drivers or barriers contributing to the gap between demand and available resources in this sector?
4. How would you assess the role of GGZ facilities and other clinics in addressing this gap and can you give examples of challenges that they find difficult to manage?
5. What would you describe as important criteria indicators that are important to value the mental health care sector and/or GGZ instances more specifically?

The interviewer aimed to capture all important insights and viewpoints deemed significant by the interviewees during the interview. Each interviewee had previously signed an informed consent form and agreed to disclose their role and area of expertise, as outlined in the data management plan.
The information gleaned from the interviews was systematically categorized and documented under various themes, such as pre-treatment, during-treatment, and post-treatment issues. After that, the analysis of the interview outcomes commenced with the transcription of each interview, followed by the clustering of various elements according to their relevance to the system perspective, including criteria, means, policies, external factors, and internal drivers (see figure 4.1. These elements were rigorously examined and compared to the different systems' views on the organisational. This structured approach facilitated a clearer depiction of system behaviour, its understanding and a clear comparison.
A synthesis of this categorized information is presented in paragraph 4.8. The subsequent analysis involved integrating these insights with existing literature by employing a system dynamics approach, with a comprehensive exposition of this approach provided in section 3.4.

Table 3.1: Overview of all the exploratory interviewees, their job description and work field focus

Expert	Description	Work field focus
Expert 1	Psychiatrist & manager of treatment affairs Long-term Care	Regionally
Expert 2	Director of treatment affairs and psychiatrist	Regionally
Expert 3	Head of Care Development & Quality and Member of the Supervisory Board	Regionally
Expert 4	Health care organisational consultant and simulation optimisation expert	Nationally and Internationally
Expert 5	Analyst in the research department of the mental health care service and holds a professorship at a university, specializing in quality development within mental health care services	Regionally and Nationally
Expert 6	Clinical psychologist and former psychotherapist also manager of treatments in the mental health care service	Regionally

3.3.2. Semi-structured interview approach

A semi-structured approach was selected for the interview, as it facilitates open discussion within the interviewee's expertise while minimizing the possibility of inaccurate information. The expert interviews were conducted with four distinct objectives, as outlined in the script (refer to Appendix E). Firstly, the aim was to discern how current policies are identified, reviewed, and their impact on the system structure. The primary interview emphasis was on understanding the policy effects on the system: How do policies influence the existing system structure? This also addresses the third research question. Secondly, experts were prompted to share their insights on external drivers influencing

capacity shortages, focusing on factors driving current demand and care quality. This constituted a significant portion of the interview. The third segment of the interview delved into revealing and discussing the system structure across various levels. For instance, stigma affects multiple levels, from governmental challenges in effective regulation to clients' hesitancy in system engagement. Some GGZ institutions might also feel marginalized and overlooked by governmental policies (stigma related to government regulations). Lastly, the interview sought the experts' perspectives on valued criteria for policy formulation and their preferred system time frame.
In advance, experts were emailed a week prior to the interview, providing details about its purpose, context, and specifics of the project. Alongside this, the informed consent form was sent, which included a request for recording permission, as declared in the data management plan.

The interview comprised three phases. Initially, a warm-up session allowed the interviewee to introduce themselves and the interviewee provided the structure of the interview. Subsequently, the main questions were posed. In the concluding phase, the interviewee had the opportunity to ask any additional questions, provide feedback on the comprehensiveness of the interview, and received acknowledgment for their contribution and time.
All interviewed experts had a background in policy-making and maintained connections within the Ministry. The findings from these interviews are elaborated upon in chapter 6.

Table 3.2: Overview expert interviewees and their job description

Expert	Description
Expert 7	Expert in the field of policy-making, specialised in addiction prevention
Expert 8	Expert in the field of policy-making, specialised in addiction prevention
Expert 9	A managing director of a mental health care service specialised in substance use disorders

The analysis of the interview outcomes commenced with the transcription of each interview, followed by the clustering of various elements according to their relevance to the system perspective, including criteria, means, policies, external factors, and internal drivers (see figure 4.1. These elements were rigorously examined, and a summary was constructed to encapsulate the diverse aspects. This structured approach facilitated a clearer depiction of system behaviour and understanding.

3.4. System Dynamics approach

In the exploration of the social-organisational dynamics within the mental healthcare ecosystem, a System Dynamics (SD) modelling approach is utilized. As argued by Lyons and Duggan (2015), SD furnishes a structured inquiry framework facilitating comprehensive system identification and analysis. Invented in the late fifties by Forrester (1994), SD employs a range of tools including stocks, flows, internal feedback loops, and time delays to analyze the nonlinear behaviours of complex systems over time, thereby facilitating the understanding of both social and organisational and other complex components. It is especially valuable in comprehending systems characterized by feedbacks and delayed effects. This differs from the optimisation of a model, where SD serves an added value in exploring wider public context and interdependencies between social, organisational, and economic systems (Lyons & Duggan, 2015).

SD's potential within a healthcare setting is further demonstrated by Wolstenholme and Coyle (1983), who contend that a qualitative analysis phase is important to the understanding of healthcare dynamics, attributed to its multifaceted foundational principles. Therefore from 2013 onwards SD got really under the attention and adapted more frequently within research (Davahli et al., 2020). In more recent years, several studies have affirmed and proven the usability of the system dynamics approach for healthcare, highlighting its applicability and utility in a socio-organisational setting (Davahli et al., 2020; Lyons & Duggan, 2015; Wong et al., 2012). Lyons and Duggan (2015) expounds upon the implications of

aging and population growth on the sustainability of healthcare systems in Ireland. In a more focused study, Wong et al. (2012) examines the issue of wait times in emergency departments, identifying various ineffective solutions. Meanwhile, Davahli et al. (2020) conducts a comparative analysis of System Dynamics (SD) studies, concluding that while most research emphasizes operational aspects of feedback loops, there is a need for greater representation of social-organisational perspectives adopting a whole systems view.

3.4.1. Model development

Within system dynamics, different methods are applicable for the analysis of social-organisational dynamics. Causal loop diagrams are relevant in determining and explaining feedback between system components, also mentioned as factors or auxiliary variables (Wolstenholme, 1999). Another way of explaining the interactions within the system, but harder to interpret is stock-flow modelling, as some forms of feedback are depicted as processes rather than causal influences. Here the stocks are so-called accumulators, or quantities that change over time. And flow's represented by arrows these signify the rate at which objects or information move from one stock to another over time.

Throughout the creation of the qualitative models, the prominence of feedback mechanisms became apparent, also noted within (more evident) the inflow and outflow dynamics of Mental Health Services (MHS) organisations, which are often quantified by rates in the literature. Consequently, the decision to employ Stock-Flow Models (SFM) in this study was judicious, driven by the need for greater visibility (due to the number of loops) and the clarity provided by the specific variable names. Despite Stock-Flow Diagrams (SFD) being more complex to decipher than Causal Loop Diagrams (CLD), their explicit delineation of stocks and flows enhances their utility and conceptual precision. This is especially advantageous for explicating and scrutinizing system behaviour in the context of mental health ecosystems.

As illustrated in figure 3.3, the exploratory interviews and literature review are initially integrated to identify relevant variables and relationships within the mental health care sector. This results in a first organisational model with some social influences, with enhanced accuracy and reduced subjectivity achieved by continuously cross-referencing interview insights with literature. Subsequently, this model informs the participatory system dynamics method: group model building, leading to the development of a more robust socio-organisational model. The model of combined literature and exploratory interviews serves as a "framework", highlighting pivotal behaviours and facilitating participant reflections to garner deeper insights.

Ultimately, the collective insights from the group model building and the organisational model are juxtaposed and combined to formulate a comprehensive system perspective, assessing how the group model building enriched this view by incorporating diverse expert opinions. The participatory system dynamics method is further detailed in the subsequent paragraph 3.4.2.

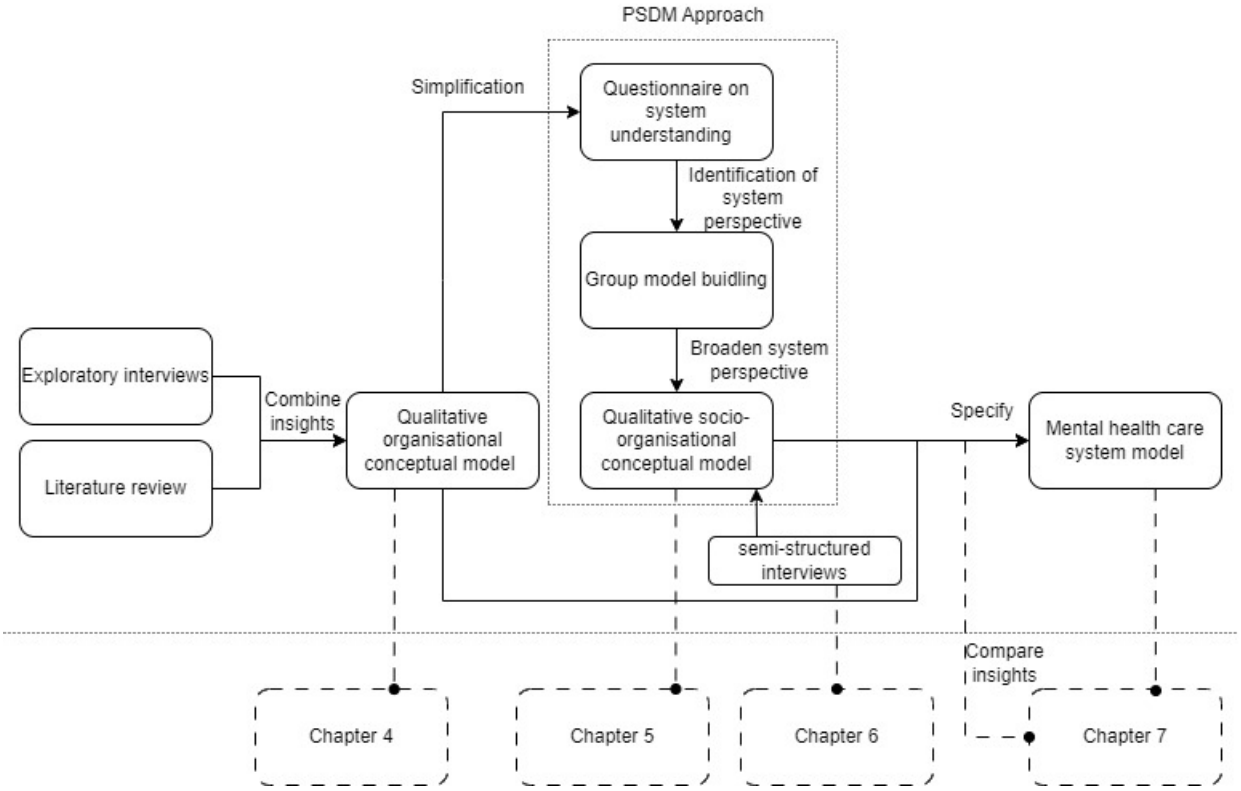

Figure 3.3: Both the evolution of the different conceptual understandings and the depicted chapters are demonstrated

Ultimately, the mental health care ecosystem model aims to assess the dynamics leading to capacity shortages and their impact on care quality. For a detailed description of this model, refer to chapter 7. This evaluation will also elucidate how current policies influence these dynamics, determining the system's primary implications and thereby addressing the central research question.

3.4.2. Participatory system dynamics method: Group Model Building workshop

As previously noted, perspectives within the mental health care system vary among field experts, a divergence further highlighted by the outcomes of the literature review and exploratory interviews (refer to chapter 4). In complex systems, Vennix (1996) posits that diverse perceptions can emerge regarding system behaviour. Group model building exposes these perceptions and mental models, facilitating a dialogue that can foster consensus on dynamic behaviour or provide deeper system insights, leading to a "systematic understanding" (Vennix, 1996).

According to Vennix et al. (1996), the GMB approach not only yields significant insights for the modelling team but also enables the client to comprehend behaviours, such as discerning factors potentially influencing an organisation, thereby differentiating external and internal factors, or identifying potential effective policies. It is crucial to note that within this approach, all perspectives are given equal weight, and achieving a unanimous consensus was not the primary objective of the session. Furthermore, the significance of this method, particularly in the healthcare domain, is emphasized due to the participation of experts who regularly address public health challenges (Homer & Hirsch, 2006; Vennix et al., 1996). Furthermore, research suggests that focus groups or group model-building sessions are infrequently employed in the healthcare domain due to time limitations (Endalamaw et al., 2023), underscoring the value of this particular session.

Before the main group-model-building session, a trial session was conducted two days prior to ensure the effectiveness of the script (see appendix B) and the overall flow of the session. It was crucial to delineate a clear beginning, middle, and conclusion to maintain engagement and clarity for all participants. During this trial, two individuals with expertise in System Dynamics (SD) - a student and

a consultant - were present to evaluate the entire PSDM approach. Additionally, an architecture student was tasked with assessing and analyzing the graphics produced during the trial. Feedback from this trial informed subsequent refinements to the session.

Roles of modelling team and experts background
As per Vennix (1999), the client is intricately involved in the Group model session, with the model being developed over several sessions. In this context, the mental health care service acts as the "client," having approached me to analyze the mental health care sector and align their viewpoint accordingly. Typically, a group model-building session comprises the following roles:

- Facilitator: Facilitates the whole session by guiding the whole session. Responds to the participants and respects each perspective.
- Observer: who listens to what is being graphed, the way people are talking about the graphs, and who is also be able to conceptualize the early seeds of system structure to document the session as well.
- Modeler: who places the different factors related to the conceptual diagram, asks questions about the perspective and draw live the different relations and ask for clarification if needed.
- Recorder (time-keeper): who keeps track of the time in order to structure the whole session accordingly.

Due to practical constraints with the modelling team, it was not feasible to designate an individual for each of the roles mentioned earlier. Consequently, the facilitator also assumed the timekeeper's responsibilities. Additionally, with participants' consent, the session was recorded to facilitate a post-session analysis, complementing the observers' insights.
The facilitator maintained a neutral stance, concentrating on gathering input from participants and integrating diverse viewpoints concerning the factors and relations that drive dynamic behaviour.
Supporting the facilitator, the modeller played a pivotal role in the session, assisting in categorizing various variables within distinct subsystems and ensuring that all sketches or ideas were prominently displayed, either on a large whiteboard or, by the session's end, on a vast whiteboard screen, as depicted in figure 3.4. Additionally, he posed critical questions to clarify factors or behaviours highlighted by various participants.
Apart from the modelling team, to guarantee the representation of diverse viewpoints, participants were chosen from an array of backgrounds. Consequently, these participants brought a range of work experiences, as detailed in Table 3.3. To protect the identities and the personal data of these participants they are referred to be Expert A/B/C/D.

Table 3.3: Overview of the participants and staff in group model building, their role and background

Role	Background
Moddeling team:	
Facilitator and Time-keeper	Expert in systems thinking, system behaviour and policy-analysis
Modeller	Expert in systems thinking, system behaviour and policy-analysis
Observer 1	Expert in systems thinking, system behaviour and policy-analysis
Observer 2	Expert in systems thinking, system behaviour and policy-analysis
Participants:	
Expert A	Serving in the research department of the mental health care service, Expert A is currently investigating the measurement of Routine Outcome Monitoring (ROM) and patient outcomes. In addition, they hold a professorship at a university, specializing in quality development within mental health care services.

Expert B	As a clinical psychologist and former psychotherapist, Expert B now serves as a manager of treatments in the mental health care service. Their experience includes managing numerous cases involving clients with alcohol addiction.
Expert C	Having personally experienced alcohol addiction, Expert C is now an expert by client. They play a significant role on the client board of the mental health care service, striving to increase client participation in policy-making within the service.
Expert D	Currently, Expert D holds the position of a business/administration manager within a mental health care service.

Room setting and design of workshop
As depicted in Figure 3.4, participants are seated facing each other. This arrangement encourages participants to engage more openly and respond to one another. Additionally, a digital screen displays a PowerPoint presentation throughout the session. This presentation highlights various differentiation methods (utilizing A3, small whiteboards, working individually, in pairs, or plenary) and also showcases the content of causal loop diagrams and their respective sub-systems.

As shown in the lower part of Figure 3.4, nine A3 whiteboard papers are affixed to the back wall of the room, serving as a big whiteboard to construct the final causal loop diagram and interlink the factors.
Before the session commences, experts are briefed on the day's agenda (refer to Appendix B). They are also apprised of the session's objectives and requested to complete a questionnaire addressing both the content of the problem (essentially their system perspective) and their familiarity with group modeling (see Appendix C). The latter aims to gauge their understanding and growth in system thinking.

Throughout the session, observers are tasked with evaluating the proceedings using an observation form B.2. This form captures intricate system details and poses specific questions to further reflect on the flow of the session, the interaction with the participants, and which perspectives they reveal to be important (categorised as content, different formats (introduction, NGT, GMB), roles (facilitator/modeller, participants) and room setting in the Appendix B.2).

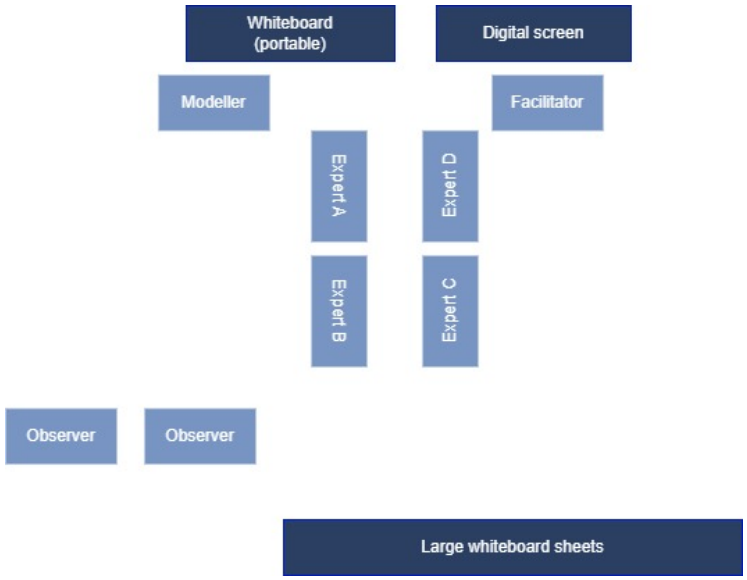

Figure 3.4: A conceptual view of the room setting during the group model building session

Group model building script
Given that the participants were not familiar with system dynamics, a simplified conceptual causal loop diagram (CLD) was selected as the starting point. Next to that, as beforehand during the preliminary informational session, it remains evident that the experts also have a quite narrow system scope, as they describe the system in terms of their own experiences, whether occurring in the social, resources, or treatment context (as seen in Appendix C). Therefore, during the development of the session, the idea is to shape a format that makes it possible to widen their own perspectives during the GMB in order to combine those perspectives and learn from each other.

This CLD diagram was informed by the literature review, exploratory interviews, and informal conversations with some of the participants. This approach was taken to ensure participants were not overwhelmed and could see their contributions reflected during the session, fostering prior contemplation about the problem. Additionally, to organize such a meeting, several preparatory meetings were held with a former GMB facilitator, a PhD student, and World of Minds, a firm specializing in conducting these sessions.

To prepare for this session, inspiration was drawn from Scriptpedia (Wikibooks, 2023) and other group model sessions conducted in the mental health care domain. The session was structured into four primary parts: first, an introduction covering both methodology and content, followed by a Nominal Group Technique (NGT) to gauge participants' understanding of significant factors. A third part primarily focused on a group model-building session where the identified factors were further explored by determining causal behaviour. The session concluded with a wrap-up discussion.

Part 1: Introduction
During the introduction, to ease into the session, participants, observers, and the modeller introduced themselves. Subsequently, the facilitator outlined the day's agenda. The primary objective of the day was articulated as: "To map out the perspectives of you, the experts, by fostering and facilitating a dialogue." The facilitator framed this objective in a manner that sought the participants' assistance in enhancing his understanding. Following this, the ground rules for the session were introduced. Three pivotal rules, inspired by consultations with experts in the PSDM approach (former GMB facilitator, PhD student, World of Minds), were emphasized. These rules were:

- "There is no absolute truth": This rule emphasized that the session's goal was not necessarily to achieve consensus.
- "Not everything requires scientific justification": This guideline aimed to foster a safe environment where experts felt at ease sharing and elaborating on their insights.
- "Do not concern yourself with how outcomes will be processed": This was established to prevent participants from self-censoring based on perceived relevance, ensuring all aspects, potentially significant, were shared.

After these rules, the system scope of the session was defined. It was essential to set a broad scope to capture various perspectives without directing participants towards a specific direction, thus minimizing bias. The issue was framed around the capacity shortages in the alcohol addiction sector. Subsequently, four primary themes were addressed:

- **Policy:** This covered directives at both the ministry level and the mental health care service level.
- **Organisation:** Discussions included both short-term care and long-term mental health care strategies.
- **Time:** Considerations spanned from short-term periods (a few years) to longer horizons (decades).
- **Alcohol Clients:** Emphasis was on complexities, such as those due to comorbidities. Financial aspects were excluded unless explicitly relevant, aiming to keep policy discussions open and to prevent experts from dismissing ideas based on financial constraints.

Additionally, the concept of "factors" was introduced, defining them as elements or aspects that can influence the problem either negatively or positively. Recognizing that this concept might be abstract for those unfamiliar with system dynamics, an illustrative example was provided from the field of epidemiology: the bathtub model (PublicHealthAgency, 2020). This model showcased various factors

such as incidence, prevalence, recovery, and deaths, illustrating both balancing and reinforcing loops. This served to familiarize participants with the idea of feedback, referred to in Dutch as "terugkoppeling".

Part 2: Nominal Group Technique (NGT)
A consistent theme throughout this part, sometimes referred to in NGT protocols as delineated by Harvey and Holmes (2012), is to initially encourage participants to silently and independently reflect on their own ideas and formulate their thoughts. Following this period of reflection, participants are given a few minutes to share and exchange their ideas with a partner seated next to them. Post this duo discussion, the facilitator consolidates the discussed points, fostering a comparison of the varied outcomes both within and between the pairs. This approach is known to foster deeper engagement and mitigate the overshadowing of quieter individuals by more dominant participants, thus reducing a certain bias.

This strategy to improve engagement, frequently utilized in high school beta education as described by Bruggink (2017), is termed the "DDU"-approach: "denken, delen uitwisselen" (an acronym representing the Dutch phrases for "think, share, exchange"). It lays a foundation for critical individual thinking before collaborative discussion, promoting a richer, more inclusive dialogue where participants find resonance with others' thoughts, become more engaged in the conversation.

In the Nominal Group Technique (NGT), it is common to diverge and then converge on the "most relevant" aspects of a problem by voting for or against specific factors (Harvey & Holmes, 2012; Vennix et al., 1996). However, this approach was not adopted here. Some studies suggest that such voting can divert attention from genuine problem identification, especially when consensus building is not the primary objective (Mumba et al., 2017). To subtly incorporate a ranking mechanism, participants were asked to note down factors on sticky-notes of varying colors: pink for "critical factors", orange for "important factors", and yellow for "relevant factors". This color-coding facilitated post-session analysis of the perceived importance of each factor.

The foundation for this session was a framework derived from literature and exploratory interviews, which was printed on A3-sized papers to streamline the process (see in chapter 5, figure 5.1). After identifying factors on sticky-notes, participants positioned them within the conceptual causal loop diagram based on their understanding of how these factors influenced the system (an example of the outcomes can be seen in Appendix D). Each participant then took turns explaining their factors to the person seated next to them. Additionally, the facilitator allocated time for each expert to elaborate on their factors. As these factors were discussed, and occasionally rephrased following group input, the modeller was tasked with placing them on a mobile whiteboard. This setup facilitated the drawing of causal relationships between factors, setting the stage for the session's second segment.

Part 3: Group model building: drawing causal relations with the identified factors
In the session's second segment, the mobile whiteboard was positioned at the back of the room, next to the large whiteboard sheets. This segment was divided into two primary sections: initially focusing on the lower three sub-systems, followed by the upper two sub-systems (see figure 5.1). This division was implemented to structure the session and allow for breaks between discussions.

To begin, the facilitator prompted the experts to draw relationships from the identified factors displayed on the mobile whiteboard onto smaller individual whiteboards provided to each participant at the start of the session. The approach of first working individually to sketch out relationships was maintained. However, due to time constraints, individual discussions were bypassed in favour of a collective, plenary discussion. The assumption was that experts were already engaged and comfortable sharing their insights.

Subsequently, the facilitator invited participants to explain the relationships and loops they had identified. This phase encouraged interruptions and dialogue, fostering a collaborative environment. The modeller then captured these insights, drawing them onto the large whiteboard sheets where the conceptual causal loop diagram (see figure 5.1) was also displayed.

Part 4: Conclusion of the session
The session concluded by posing questions such as, "What elements are absent from the diagram?" and "Which factors have we overlooked?" This approach was designed to provide a broader perspective and encourage reflection on the content discussed. Following this, feedback was solicited using the "tips and tops" method, a well-known approach that invites both constructive criticism and positive insights (Tailoryou, 2023). The session wrapped up by outlining the subsequent steps in the research project and expressing gratitude to the participants for their contributions.

3.5. Data sources and analysis approach

To transition from a qualitative to a quantitative model, a data request was initiated to discern the nature of the data collected, how it could inform the model and any associated complications. The rationale behind opting for this data request and approach was to elucidate the correlation between capacity shortages and the quality of care. The data sets utilized in this research are sourced from a mental health care organisation in the Netherlands. This organisation operates 12 Mental Health Services (MHS) facilities across the Netherlands, catering to patients with Alcohol Use Disorder (AUD) and other substance dependencies, including tobacco, cannabis, amphetamines, cocaine, heroin, and other opiates.

The analysis of these datasets involved three steps:

1. Multiple discussions were held with the mental health care organisation to determine data relevance. Subsequently, a table containing the required information was dispatched to the MHS facilities, after which the data was received in Excel format (See appendix H).
2. The datasets were analyzed using Jupyter Notebook from Anaconda Navigator 2.1.4. Python, a computer programming language, was employed for this analysis, offering the advantage of executing all analytical steps within the same environment.
3. Potential relationships with the System Dynamics (SD) conceptual model were explored, determining their implementation.

The datasets comprise metrics from 2016-2022 related to inflow, outflow, and patient behaviours, such as drop-outs, no-shows, and referrals between treatment settings (e.g., outpatient clinics, day/partial treatment, inpatient). Additionally, they provide data on the unique number of patients in treatment, the effectiveness gauged by pre-to-post treatment measurements through Routine Outcome Monitoring (ROM), and accessibility reflected by waiting times labelled as w1, w2, and w3. The datasets also encompass information on treatment hours, both indirect and direct. On top of that it contained information on the translation of those direct/indirect times towards what is reimbursed by health care insurance organisations.
The data was extracted monthly, adhering to the specifications of the request. This frequency was deemed relevant given that treatment durations typically span several months, and daily activities are not itemized.

3.6. Ethical considerations

This research, involving human subjects, necessitates rigorous ethical scrutiny. Through participatory processes such as exploratory/semi-structured interviews and Participatory System Dynamics Modeling (PSDM) with group model building, real individuals are engaged both professionally and personally. Given the thesis's context, focusing on healthcare, particularly individuals in challenging circumstances, heightened sensitivity is essential. As the study delves deeply into real-world care activities centred on humans, emphasis is placed on context, values, power, and trust. Adhering to ethical standards is imperative, not solely due to moral obligations but also as it enhances the overall quality of the research (Rau et al., 2018).

Before initiating the study, the Human Research Ethics Committee (HREC) of Delft University of Technology granted approval for the research involving participants. All gathered data is securely stored and remains inaccessible to those outside the research team. Participants provided informed consent (refer to Appendix I), and the study's purpose and limitations were transparently communicated to them. The data has been anonymized where applicable and will be discarded for one month after the research ends. Any data derived from human subjects in this research has been suitably anonymized.

4

Organisational drivers: factors and their behaviour affecting care quality

This chapter explores the main organisational drivers affecting care quality in mental health services, guided by the research question: "What are the main organisational drivers of mental health care services that affect the quality of care?" The analysis examines system boundaries and distinguishes between internal and external factors based on a system diagram (see figure 4.1) using literature review and exploratory interviews to develop a conceptual understanding. An overview of all the literature and their focus on the dimensions of quality of care is depicted in Appendix A).

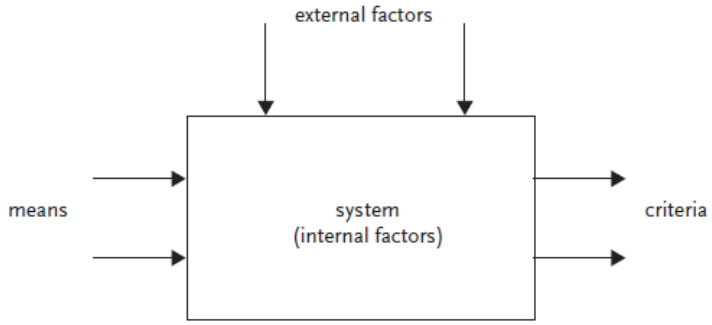

Figure 4.1: Systems diagram by Hermans et al. (2010)

4.1. Criteria in mental healthcare: the quality of care

Before delving into capacity shortages, it is essential to understand the established methods of measuring the quality of care. Quality of care is typically defined as a health care system's ability to meet specific quality objectives, such as effective recovery, prevention of premature mortality, and increasing client satisfaction (Donaldson et al., 1999). The sector's shortage is the relative discrepancy between demand and resources, considering the number of patients, treatments required, and the corresponding number of practitioners.

In recent years, there has been an increased focus on quality measurement, identifying areas for enhancement (Looi et al., 2022). Despite its significance, the general health-care domain remains underutilized and requires further improvement (Moran & Jacobs, 2017). Literature reveals that healthcare system analysis is multifaceted compared to other systems.

Recognizing the challenges faced by current organisations, the Ministry of Healthcare and Sports (VWS) outlines four primary principles for optimal healthcare (MinisterieVWS, 2023b):

- care must be safe;
- care should be client-centric, ensuring timely and appropriate services;
- care must be universally accessible;
- care should be both effective and cost-efficient.

The ministry has delineated these qualifiers across the healthcare domain to discern the prerequisites for achieving the desired outcomes. However, recent studies suggest a potential limitation in this approach, given the evolving standards in the mental health care domain (Looi et al., 2022). To evaluate a health system comprehensively, researchers categorize three distinct aspects (AIHW, 2022):

1. *determinants of health*, encompassing environmental factors, health behaviours, personal biomedical factors, history, and socioeconomic elements;
2. *health status*, which includes metrics like mortality rates, prevalence, disorders, and well-being;
3. *health system*'s efficacy in maintaining health status while mitigating external influences.

The interplay between the first two categories is depicted in diagram 4.2, highlighting the significant impact of various determinants on health status. To optimize health status, a robust healthcare system is imperative. This perspective diverges from previously discussed notions, emphasizing the anticipation of societal drivers affecting health status (Looi et al., 2022). Thus, the evaluation methodology of care systems in this context is crucial.

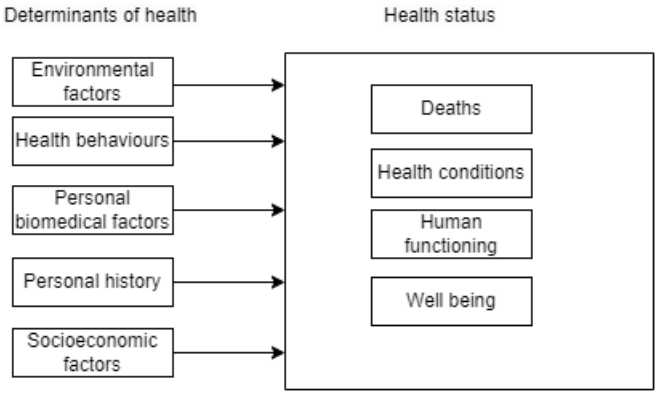

Figure 4.2: Relation between external context to health status (Looi et al., 2022)

Building on prior research, the quality of care in the healthcare sector has been scrutinized by studies such as Shepherd et al. (2019). A figure, depicted in 4.3, was formulated based on domains identified by Shepherd et al. (2019) to juxtapose various healthcare quality frameworks. This illustration underscores the terminological and definitional congruencies and disparities between the frameworks of Shepherd et al. (2019), AIHW (2022), and the qualifiers posited by MinisterieVWS (2023b). On the figure's left, six healthcare domains and the national mental healthcare framework are derived from contemporary performance literature. A comparative analysis reveals divergences in categorizations, notably in terms of 'equitability' and 'timeliness' within 'accessibility' and 'continuity of care'. Some frameworks subsume 'equitability' under 'effectiveness', while others omit it. The Dutch Ministry of Healthcare delineates quality into only four segments, integrating elements from the discussed frameworks. For this research's scope, four such elements are elaborated, as they most overlap with the analysed frameworks elucidated below in Figure 4.3.

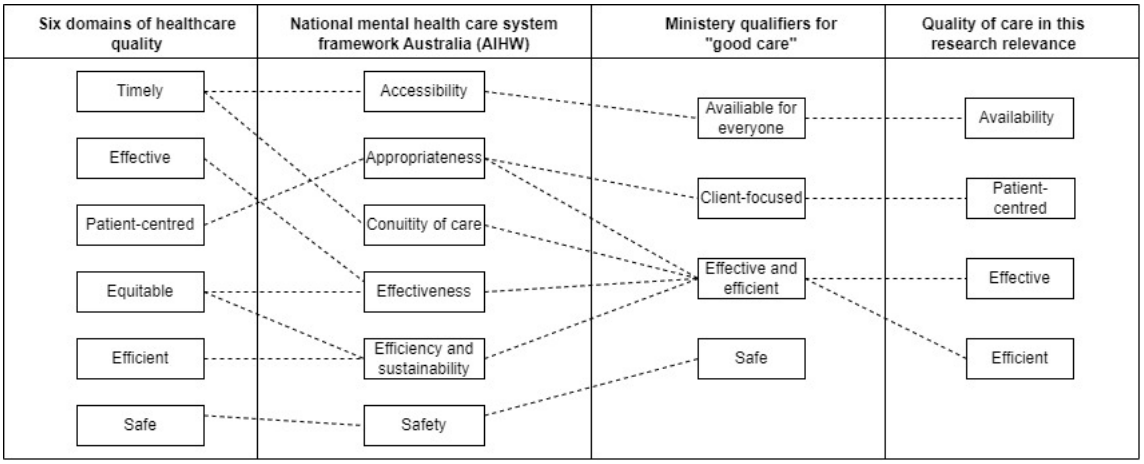

Figure 4.3: Different frameworks on quality of care measures and their relation (Looi et al., 2022; MinisterieVWS, 2023b; Shepherd et al., 2019)

In this study, we explore the impact of capacity shortages on specific aspects of care quality. Given the varied interpretations of "quality of care" in literature and by different organisations, we base our definition on previously discussed frameworks. We focus on the following themes (AIHW, 2022; MinisterieVWS, 2023b; Shepherd et al., 2019):

- *Availability:* Care should be consistently available and accessible, ensuring minimized waiting times and addressing diverse needs. It should be provided timely, regardless of income, geographical location, or cultural background.
- *Effectiveness:* Care should yield the desired outcomes, grounded in scientific knowledge from both clinical and mental health standpoints. Effectiveness can be gauged using metrics like Routine Outcome Monitoring (ROM).
- *Efficiency:* Care should be cost-effective and affordable, ensuring the sustainability of the sector. This entails avoiding wastage of resources, time, and energy, and ensuring continuity of care across various programs, practitioners, and organisations over time.
- *Patient-Centeredness:* Patients should receive timely and appropriate care, ensuring their satisfaction throughout the treatment process.

It is noteworthy that "safety" is not a focal point of this study. While the direct impact of safety on capacity shortages is not extensively covered in literature, we've chosen to exclude it from our conceptual model. However, we will address the influence of safety on the mental well-being of patients and practitioners during treatment in the subsequent literature review and will be discussed in chapter 9.

4.2. Internal organisational drivers: the patient and treatment response

Recent literature increasingly emphasizes the client's perspective, examining patient outcomes in relation to treatment duration or process (Brimelow et al., 2023; Chinman et al., 2017; Chinman et al., 2021; Endalamaw et al., 2023; Forman-Hoffman et al., 2017; Khan et al., 2023; Prat Vigue et al., 2022; Rastpour, McGregor, et al., 2022; Titov et al., 2018). This highlights the research focus in client's active role in mental health care processes. Therefore terms like "patient-centred" care have gained prominence. However, limited knowledge exists about the interaction between clients and their treatment programs, despite its significance in determining process outcomes, particularly in mental health (Titov et al., 2018).

Impact of the therapeutic alliance on treatment outcomes

A crucial factor is client satisfaction in aspects like "patient-centred" care, which remains under-adopted (Brimelow et al., 2023). Satisfaction is closely linked to the collaboration between practitioners and clients. Often termed as the "therapeutic alliance", the quality of the relationship between the practitioner and

client has been identified as a strong predictor of mental health outcomes (Ardito & Rabellino, 2011; Chinman et al., 2021). This is particularly evident in alcohol treatments where mutual understanding is crucial in order to be highly self-reflective and transparent to an easily accessible substance relative to other substances. Therefore the treatment environment and the patient's satisfaction, which influence their receptiveness to treatment, play significant roles in determining treatment outcomes (Chinman et al., 2021; Zaitsev Assuline et al., 2023).

Waiting times and patient behaviour: understanding patient satisfaction
Numerous studies highlight factors driving patient satisfaction (Rastpour, McGregor, et al., 2022). A significant emphasis is placed on waiting times, which influence patient behaviour. There is a notable correlation between patients' reactions to waiting times, their satisfaction levels, and an increased likelihood of treatment drop-outs or non-attendance (so-called: 'no-shows') (Lakeman et al., 2023). Endalamaw et al. (2023) posits that this behavioural shift is a reliable predictor of treatment outcomes, with a discernible connection to the number of admissions at an MHS (Garcia-Alonso et al., 2022) and subsequent treatment results.Chinman et al. (2017) suggests that enhanced satisfaction correlates with increased self-management activities, leading to improved treatment outcomes and overall quality of life. Next to that, Endalamaw et al. (2023) emphasizes that satisfaction is not solely determined during treatment; pre-treatment accessibility, including queue durations, is equally vital. Other research corroborates the importance of satisfaction, indicating that dissatisfaction can lead not only to treatment drop-outs but also drive the severity of patients, leading to outcomes like suicidal tendencies during treatment (Harmer et al., 2020). This is particularly pronounced in the AUD sector, with studies performed in the USA from Harmer et al. (2020) revealing that 60 % of suicides during treatment were attributed to accessibility issues, such as inefficient referrals and feelings of not being heard, either during or post-treatment.

Adapting peer support in treatment: the importance of patient experiences
Recent research highlights also the relationship between patient satisfaction and the involvement of peer support workers (Chinman et al., 2017; Chinman et al., 2021; Prat Vigue et al., 2022). The essence of this connection is the mutual experience, enabling patients to resonate with individuals who have encountered similar challenges. In the Netherlands, GGZ institutions are increasingly adopting this approach, leveraging experts and clients' collaboration to mitigate the expanding waiting lists in MHS (Menzis, 2023). Yet, Chinman et al. (2021) did not identify definitive benefits from peer worker participation, leading to discussions about their role. The changing landscape is also evident in the shift from Patient-Reported Outcome Measures (PROMs) to Patient Reported Experience Measurements (PREMs) (Fernandes et al., 2019), emphasizing the importance of patient experiences during treatment. A key finding suggests that prolonged untreated durations correlate with diminished treatment efficacy, subsequently affecting patient satisfaction.

The critical or nuanced role of initial engagement before treatment
Other research states that patient satisfaction extends beyond their affinity for the treatment; it encompasses the quality of interaction and mutual understanding between the patient and practitioner (Babor et al., 2017; Lakeman et al., 2023; Van Slingerland et al., 2022). Khan et al. (2023) emphasizes the significance of feedback and communication between therapists and clients (Babor et al., 2017), suggesting that individual differences between practitioners and patients can influence outcomes (Wilson et al., 2022).

An effective communication format can notably enhance client satisfaction and boost practitioner productivity (Wilson et al., 2022). A recommended approach (Lakeman et al., 2023) involves establishing an initial bond between the practitioner and client, characterized by empathy, respect, and understanding. This research underscores the need for dedicated time and effort to set those aspects right before finalizing a diagnosis. This is partly reflected by Lakeman et al. (2023), who highlighted that the initial engagement with a Mental Health Service (MHS) is crucial for treatment success, a sentiment echoed by Wright et al. (2020) and Titov et al. (2018). They advocate for "shared decision-making" and regular interactions to foster trust and engagement, leading to improved treatment outcomes. One study emphasizes more on that aspect and revealed the significance of the initial contact as a crucial indicator, suggesting the integration of hybrid formats such as e-health (online tools for addressing issues) with regular practitioner meetings (Gellatly et al., 2018).

Another study underscores the importance of an interdisciplinary approach, noting the challenges general practitioners (GPs) face in identifying early or at-risk drinkers, who often present primarily with physical complaints (Babor et al., 2017). Contrarily, Gotham et al. (2022) disputes the value of establishing a strong bond for treatment success. He posits that treatments are most effective and efficient when they are goal-oriented. While practitioners may sometimes overextend, focusing on primary objectives can enhance satisfaction, reduce no-shows, and increase overall effectiveness. Given these existing disagreements, there remains further debate on the most suitable patient-centric approach (Van Slingerland et al., 2022). This approach's significance is underscored in various studies (Lakeman et al., 2023).

Challenges of undertreatment and over-treatment: an everlasting balance
In the Netherlands, "Collaborative Care Treatment" (CCT) (Van Slingerland et al., 2022) was traditionally conceptualized as stepped care, progressively intensifying treatment if earlier stages did not yield desired outcomes (Trimbos, 2023). However, nowadays this leans more towards "matched" care, wherein the treatment plan is established post-intake with minimal alterations, aiming to optimize client satisfaction and mitigate risks of under or over-treatment (Chinman et al., 2021; Wright et al., 2020). In such scenarios, patients sometimes receive care that is less intensive than needed, leading to undertreatment initially. Therefore the stepped care model can lead to patient disengagement due to lack of progress, resulting in drop-outs or extended treatment durations.
Conversely, over-treatment implies a more intensive intensity than necessary, although effective, but at a higher cost and workload. Therefore literature lacks a unanimous agreement on the optimal outcome for patient satisfaction (Chinman et al., 2021; Khan et al., 2023). The dilemma often revolves around whether a patient prefers to await a tailored treatment or desires immediate intervention for immediate relief. Moran and Jacobs (2017) terms this as the "need for care," emphasizing the importance of accurate identification, which subsequently influences the choice of provider and the required treatment intensity.

Accordingly, the progression of a patient's severity over time is a recurrent theme in the literature (Chinman et al., 2021), naturally influencing patient outcomes and recovery duration. A primary strategy for mental health care services to optimize treatment alignment involves patient classification, commonly termed as triage (Le Glaz et al., 2021). This method is employed across various mental health disciplines. However, research indicates challenges in distinguishing between patients due to factors like comorbidity. Nevertheless, severity is generally considered a predictor for treatment outcomes, leading to standardized treatment intensities for similar patient groups or "clusters" (Babor et al., 2017; Lakeman et al., 2023). While this classification inherently dictates treatment duration for each cluster, the process remains dynamic. Changes in severity during treatment can alter the duration, especially when patients are redirected by other departments.

4.3. Steering towards treatment optimisation: time is money

Interactions between clients and practitioners in mental health care often present a balance between efficiency and thoroughness, commonly termed the "efficiency-thoroughness trade-off" (Babor et al., 2017; De Beurs et al., 2018). This trade-off suggests a potential shift from prioritizing quality (thoroughness) to emphasizing cost-saving efficiency. Supporting this, (De Beurs et al., 2018) posits that while treatment outcomes or changes from pre-to-post treatment are essential, there is a strong correlation between time, costs, and treatment modalities like group therapy, e-health interventions or individual sessions.
Contrarily, Moran and Jacobs (2017) challenges this narrow scope of this perspective, emphasizing the complex and various other components interplay between quality and costs. This research suggests that the relationship is not balanced but involves complex feedback loops between different intertwined variables in the long term due to personnel turnover and growing patient demand. The study further identifies that major cost drivers at the provider level include provider type and size occupancy, impacting care quality. Echoing this, Rastpour, McGregor, et al. (2022) emphasizes the significance of patient identification and prediction in cost management, noting the substantial resources lost to no-shows and drop-outs.

In contrast, some research highlights capacity shortages as a concern for efficiency (Endalamaw et al., 2023), others argue that such metrics are not reliable indicators of health care quality and must be

contextualized. Emphasizing patient satisfaction and alignment with patient needs is posited as a more accurate quality measure than Average Length of Stay (ALoS), waiting times, or practitioner availability. However, studies by Lari and Sefiddashti (2021) and Moran and Jacobs (2013) challenge this view, asserting that efficiency remains a pivotal metric. They advocate for considering patient perspectives through variables like disability-adjusted life years (DALYs) and years lived with disability (YLDs) as crucial inputs. These measures, in turn, inform resource allocation decisions, such as the number of psychiatrists, bed occupancy rates, and other health expenditures.

4.4. Empowering the resources: workforce

In the mental health care workforce, various factors influence care delivery and resource allocation (Chinman et al., 2017; Chinman et al., 2021; Van Slingerland et al., 2022). While patient-practitioner interactions are crucial, the practitioner's perspective often takes precedence (Van Slingerland et al., 2022). Research indicates that effective collaboration between practitioners and clients enhances the practitioner's job satisfaction and improves patient outcomes, where the positive outcome or success reinforces the willingness to work which increases job satisfaction (Van Slingerland et al., 2022). Another critical consideration is the skill set of the staff (Aebi et al., 2023). Some studies highlight the challenges of recruiting highly skilled professionals due to increased workloads, stringent regulations, and protocol-driven tasks as it reduces autonomy over their own working abilities and freedom of treatment choices(Lakeman et al., 2023; Wolk et al., 2019). On the other side, these challenges coupled with demanding work environments, non-adherence of patients and highly complex patients have been linked to higher burnout rates among practitioners (Ahuja et al., 2019; Van Slingerland et al., 2022).

The influence of organisational culture on MHS work environments

The increasing complexity of patient cases, potentially stemming from diminished quality, may be influenced by bullying and social shaming within Mental Health Services (MHS) (Zaitsev Assuline et al., 2023). Such behaviours, but also other challenging behaviours, both among staff (horizontally) and between practitioners and clients (vertically), contribute to a toxic work environment. This environment exacerbates burnout rates and heightens intentions to leave the profession. Chinman et al. (2017) also emphasizes the role of organisational culture in shaping the MHS work environment. This cultural aspect intersects with the challenges of high-pressure settings, organisational adaptability, and the effective use of training (Zaitsev Assuline et al., 2023). In the end, a correlation was observed between burnout rates and the decision to leave MHS, attributed to these increasing demands of multitasking due to resource constraints. However, Chinman et al. (2021) did not pinpoint multitasking as the primary cause of burnouts in MHS. Instead, they identified team processes, emphasizing the importance of flexibility and consistent practices across practitioners, as significant contributors.

The role of skill development in enhancing workforce capacity

Other studies emphasize the importance of skill development within the mental health workforce (Aebi et al., 2023). Effective skill enhancement can partly address capacity shortages and the subsequent reduction in care quality. Lakeman et al. (2023) further asserts that a diverse range of staff should be incorporated and trained throughout MHS organisations. Notably, there's a tendency to overlook the educational needs and contributions of nurses.

Protocol-driven approach: balancing administrative load and professional autonomy

Another factor influencing the protocol-driven approach in MHS is the administrative burden, largely stemming from governmental policies and organisational regulations (Garcia-Alonso et al., 2022). Current MHSs often grapple with fostering knowledge exchange among teams, leading to extensive documentation of patient reports and performed tasks. The study by Garcia-Alonso et al. (2022) indicates that this administrative load varies by country. Enhancing professional autonomy could potentially reduce this burden, allowing for improved treatment alignment and increased patient-practitioner interaction.

4.5. Community health versus a family

Recent studies indicate that many Northern European countries have transitioned from traditional inpatient hospital care to community-based systems (Moran & Jacobs, 2013). This approach emphasizes

supporting patients within their local communities. Conversely, in many Southern European countries, the family often assumes this caregiving role, with hospitals intervening in more severe cases (Moran & Jacobs, 2013; Wilson et al., 2022). Consequently, the social context, particularly the role of the family, is more pronounced in Southern European settings.
However, the literature presents varied perspectives on the primary drivers of these care factors. One recurring theme is the importance of awareness, which can foster a safe environment for individuals to discuss issues, especially within the family (Moran & Jacobs, 2013; Wilson et al., 2022). Yet, heightened awareness can also lead to an influx of patients seeking care. Prat Vigue et al. (2022) highlights the correlation between self-esteem and treatment outcomes, suggesting that bolstering self-esteem can mitigate the severity of conditions and reduce the admission of complex cases in certain MHS settings, as observed in Spain.

Another dimension explored is the link between suicidal ideation and alcohol consumption (Harmer et al., 2020). The study emphasizes the significant impact of economic factors and an individual's sense of societal value on alcohol consumption patterns. Specifically, these elements influence the motivation to consume alcohol, the perception of treatment progress, and post-treatment success in maintaining abstinence. Therefore a distinct connection was observed between alcohol consumption and suicidal ideation, with societal factors such as family and economic conditions playing a pivotal role in alcohol use. Harmer et al. (2020) suggests that the absence of coping mechanisms for socio-economic challenges, coupled with inadequate family support, can be seen as warning signs in developing a substance use disorder and, consequently, suicidal ideation.

4.6. External drivers have a significant impact on mental health care

Both prevalence and incidence serve as vital indicators of the total number of individuals affected by a disorder at a given time and the rate of new cases over a specified duration (Brimelow et al., 2023). These variables reflect a decline in health status as depicted in figure 4.2. While they do not directly measure care quality, several studies De Beurs et al. (2018), Hennessy et al. (2018), and Wright et al. (2020) highlight the significance of "social context" in influencing treatment decisions. Factors such as family support, education (Wilson et al., 2022), and comorbidity significantly impact the prevalence of AUD (Harmer et al., 2020; Wright et al., 2020), subsequently affecting care quality.

Next to that, occupational performance (Prat Vigue et al., 2022), or the ability to secure employment, is identified as a key determinant of prevalence in mental health care as well, particularly noted within the SUB sector and also for AUD (Wilson et al., 2022). The article emphasized that the perceived burden of treatment can discourage individuals from seeking care, resulting in more complex cases. Education level, especially among younger individuals, and early awareness through educational initiatives (Ahuja et al., 2019; Wilson et al., 2022) have a positive effect on treatment-seeking behaviours in later stages. As an example studies by Chinman et al. (2021) and Wright et al. (2020) have shown that school-based mental health prevention programs not only enhance awareness but also reduce stigma, facilitating open discussions even among populations not initially deemed at risk. In the substance use disorder sector, early detection is crucial for both youths and adults in determining AUD prevalence. The significance of incorporating this into awareness programs is highlighted by its proven effectiveness (Moran & Jacobs, 2013).

Not just for youths, but also for others in the substance use disorder sector, early detection significantly influences AUD prevalence. The importance of incorporating this into awareness programs is emphasized by its demonstrated effectiveness (Moran & Jacobs, 2013).
Stigma in society is another significant factor within the social context influencing mental health (Ahuja et al., 2019; Garcia-Alonso et al., 2022). This stigma affects the accessibility of mental health care, as patients often hesitate to acknowledge their disorders (Holtz et al., 2023). While some studies associate this primarily with accessibility and prevalence (Garcia-Alonso et al., 2022; Holtz et al., 2023), others highlight its impact on the treatment process and outcomes (Wilson et al., 2022).

4.7. Conclusion of the literature review

In synthesizing the literature, several main organisational factors emerge as critical to the quality of healthcare delivery. These factors are categorized into internal and external drivers, each influencing care quality in distinct ways:

- Internally, the patient treatment process is paramount, with patient satisfaction being essential for maintaining a strong therapeutic alliance (Zaitsev Assuline et al., 2023). This not only influences treatment outcomes but also impacts the duration of care (De Beurs et al., 2018). Micro-level examination of treatment reveals the challenge of balancing over-treatment and under-treatment, with stepped care or matched care approaches being contentious in the literature due to their varied effects on treatment provision (Aebi et al., 2023).
- Further internal considerations include operational efficiency and its correlation with patient behaviour—specifically (Titov et al., 2018), the financial implications of patient no-shows or treatment discontinuation (Gotham et al., 2022). Here, the incentive structures for high-quality care delivery, strategic workforce management, and staff educational development are also pivotal.
- Social environmental factors exert a significant internal influence, with patient self-management and economic conditions playing critical roles (Harmer et al., 2020). Cultural dimensions are particularly salient, with differences noted between low- and middle-income countries (LMICs) and high-income countries (HICs) (Ahuja et al., 2019), especially regarding family involvement in care (Wilson et al., 2022).
- Externally, educational attainment and associated stigmas present barriers to treatment, contributing to the 'treatment gap'—the discrepancy between the prevalence of conditions and the number of individuals receiving care.

In conclusion, while the literature does not offer a unanimous perspective on the primary organisational drivers, it converges on the importance of efficiency, effectiveness, and patient-centeredness in evaluating care quality (Holtz et al., 2023).

4.8. Drivers affecting Dutch mental health care

From the exploratory interviews conducted, several aspects were identified as significant. This section summarizes the findings from these interviews, highlighting both internal and external drivers that influence healthcare quality. This is followed by an evaluation of criteria specific to mental health care.

4.8.1. Internal drivers

One expert highlighted the waiting queue as a critical factor affecting treatment outcomes and, more specifically, the success of the treatment. Although there are three distinct waiting queues: w1, w2, and w3 (refer to figure 4.4), the first two are deemed relevant from the patient's perspective, as per some experts.

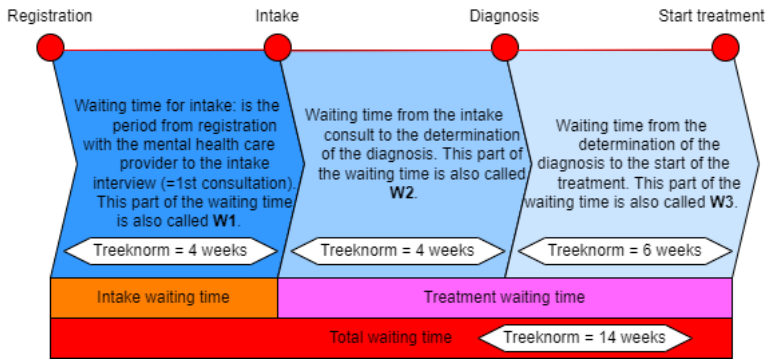

Figure 4.4: An overview of the waiting queue at a MHS and the "treeknorm" as maximum waiting time policy

Many practitioners in MHS highlight the pivotal role of the first month after a patient commits to addressing their addiction. This is evident in 4.5, which identifies key drop-out points in the treatment

pathway and is also recognised by literature (Hunkar, 2016). Notably, a large proportion of patients discontinue shortly after the intake and at the commencement of treatment. When patients stay engaged in the treatment beyond this initial month, it often indicates a positive trajectory for their recovery. Practitioners who interact with patients daily emphasize that the primary goal of any treatment is achieving abstinence from alcohol. This objective entails ensuring that patients abstain from alcohol consumption after the treatment concludes.

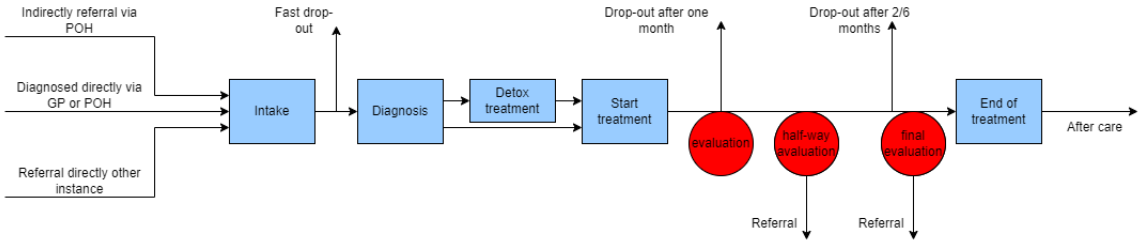

Figure 4.5: The pathway of a patient during treatment identified by experts

Practitioners attribute certain challenges for reaching abstinence from alcohol in treatment to "non-specific factors of treatment." These encompass barriers such as not speaking the Dutch language, low intelligence, aggressive behaviour, suicidal tendencies, low motivation for change, and potentially related, patient satisfaction. Patient satisfaction can be gauged when individuals seek a "listening ear," which gives them a sense of being assisted. Experts note that if patients do not perceive the value in their treatment, they might be directed to other departments or institutions. Misaligned treatments can lead to drop-outs, referrals, or what are termed as "no-shows." Both drop-outs and no-shows pose significant financial challenges for organisations due to high costs associated with administrative tasks and increased workload. A new healthcare model mandates MHS's to bear these costs or pass them onto the clients, though the latter introduces additional administrative complexities.

Apart from that, another important role within health care systems is mentioned before patients arrive in MHS. They often navigate other parts of the healthcare system, as depicted in figure 4.5. One of the most resource-intensive groups consists of patients referred from other MHS services or hospitals, primarily because previous treatment avenues have been unsuccessful. These individuals are often termed "draaideur" patients, characterized by high comorbidity. Specialized teams, such as the Flexible Assertive Community Treatment (FACT) teams, are deployed to assist these patients (Fact-Nederland, 2020). FACT teams not only focus on treatment but also on securing financial resources and fostering social integration to ensure a consistent quality of life. A significant portion of this group includes homeless individuals. Another practitioner emphasized that within their organisation, 40% of the budget is allocated to just 1% of the patients, indicating a substantial workload associated with high-severity patients. The complexity of these cases necessitates an interdisciplinary approach, involving nurses, psychologists, MHS practitioners, addiction experts, psychiatrists, and more.

Within the mental health care system, the previously mentioned "treeknorm" sets the maximum waiting time for patients (see figure 4.4). Some experts particularly critique the outcomes of this focus on waiting time policy, noting that they often sidestep these regulations. In some cases, the waiting period from intake to treatment can extend up to half a year. Additionally, several MHS managers believe that the waiting times, categorized as w1, w2, and w3 (see figure 4.4), are not of primary concern. From their perspective, both from the patient's and the organisation's standpoint, a few additional weeks of waiting after years of struggle do not significantly alter the treatment's impact. However, psychiatrists often disagree with this viewpoint. Another universally acknowledged factor among experts is that a shorter queue leads to more intakes in the long run. This is because general practitioners (GP's) tend to refer patients to places where they can receive immediate assistance. In this context, GP's play a crucial role, often termed by experts as the "gatekeeper problem." This role involves accurately identifying disorders based on patients' narratives of disabilities, illnesses, or physical complaints and subsequently directing them to the appropriate facility, whether it is an MHS, hospital, or another institution. This process is closely tied to nosography, which classifies various identified disorders.

Another crucial factor is the support patients receive post-treatment. In the Netherlands, MHS institutions are aware of a patient's origin but lack insight into their subsequent paths, especially if they drop out or conclude their treatment. Due to privacy concerns, it is not feasible to follow up with patients to inquire about their well-being after treatment. Consequently, these institutions remain uninformed about the number of recidivists (individuals who relapse or resume substance use) returning for treatment or those evading treatment altogether.

4.8.2. External drivers from an organisational perspective

Several experts often represent overarching organisations that address both psychotic disorders and addiction-related issues. They consistently emphasize that alcohol is a predominant concern, with 42% of their clientele presenting with alcohol addiction. They further assert that alcohol continues to pose an escalating challenge within mental health facilities. Therefore the notion of demand remains pivotal. While some experts equate demand with the intake at their MHS, others interpret it as societal prevalence. Yet, a few argue that mere prevalence does not capture the full picture, pointing to a discernible treatment gap. This gap pertains to individuals who genuinely require intervention but remain untreated. Such patients often encounter barriers to seeking treatment. Efforts to mitigate this gap include educational initiatives in schools and brief promotional campaigns. However, the efficacy of these strategies on the prevalence of Alcohol Use Disorder (AUD) in the community is largely undetermined.

Upon entering the diagnostic process of an MHS, three primary components are crucial for determining the suitable treatment. Known in Dutch as "zorgvraagtypering," this evaluation is essential not only at the GP level but also after being referred within the MHS to maintain quality care. The factors shaping this demand include a patient's treatment history, which outlines previous treatments, their results, and instances of therapy adherence leading to potential dropouts. Other considerations are the level of socio-societal integration and the intensity of the disorder. The severity is assessed based on metrics like substance consumption, duration of addiction, frequency of use, and the extent of physical symptoms.

An expert highlighted the "double ageing" effect in healthcare as a significant factor influencing overall alcohol consumption. This not only results in increased alcohol intake, especially given the disproportionate representation of the elderly in the alcohol addiction sector, but also poses challenges due to the rising care demand and a shortage of qualified personnel.

4.8.3. Criteria

One expert places significant emphasis on the analytical approach to evaluating the healthcare system. Advocating for quantifiable systems in mental healthcare is challenging. At present, there are no clear performance metrics in this area, or they are ambiguously defined. Established KPIs, if any, often fail to convey the complete picture. For instance, ALoS (average length of stay) serves as an effective metric in medical care, offering insights into patient progress and the efficiency of treatments or departments. However, in mental healthcare, issues often persist much longer, sometimes spanning a lifetime, and require extensive efforts to mitigate. The Goal Question Metric (GQM) approach is commonly employed to define goals at a conceptual level, address pertinent questions for MHS, such as the prediction of no-shows or drop-outs, and determine the precise metrics to capture these aspects. Another recently adopted framework is the Objective Key Results (OKR), which aids organisations in outlining their objectives and the milestones necessary to achieve them (Panchadsaram, 2021). A recurring theme in these strategic approaches is the central role of the client and their behaviour. Viewing the system from the perspective of patients navigating various paths could offer valuable insights. Consequently, alternative methods like microsimulation and agent-based simulation have been suggested as potential areas of exploration.

A notable point is that every GGZ institution in the Netherlands currently liaises with health insurance providers regarding their expenses. This is manifested in the varied KPIs communicated, reflecting the diverse perspectives even within GGZ entities. While some institutions prioritize treatment

duration, others emphasize effectiveness and outcomes. However, these are contentious, as severe mental health issues often persist beyond treatment. Given this, an expert advocates for a more data-centric decision-making tool. Such a tool would consider factors influencing treatment costs, such as treatment intensity, capacity reallocation, and e-health, aiming to alleviate workload pressures and assist more patients.

4.9. Preliminary conceptual model and dynamic hypothesis

Within this conceptual model, several loops were identified from both literature and exploratory interviews. Some intriguing contradictions also emerged, as depicted in figure 4.6

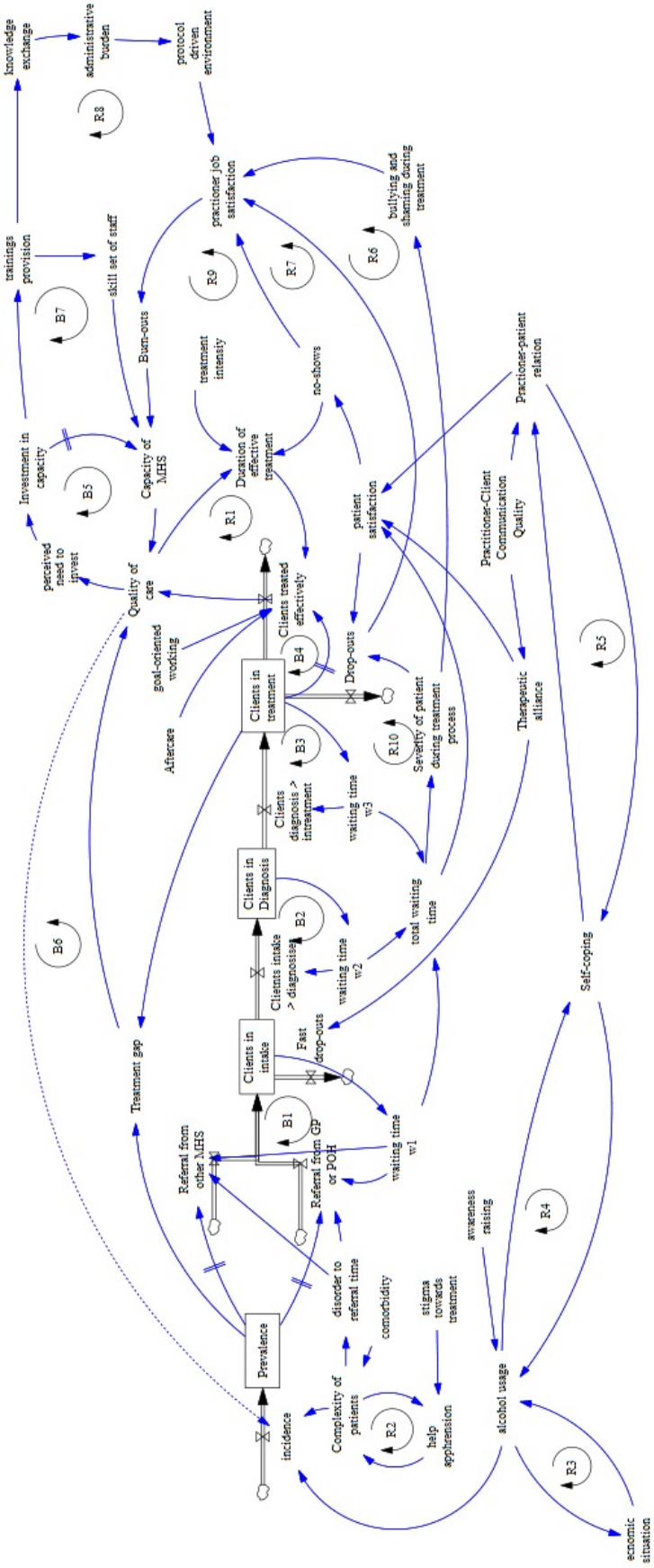

Figure 4.6: The interpretation of both the literature review and the exploratory interviews results in the "qualitative organisational conceptual model"

Central to the diagram is the organisational component, represented by three stocks: clients in intakes, clients in diagnosis, and clients in treatment, consistent with findings from expert interviews. To the left, the social context is portrayed, where the incidence shapes the inflow prevalence of AUD patients in society. On the right, both resources and their constraints are presented.
The social context, treatment process, and resources collectively affect organisational drivers, which in turn affect the quality of care, as shown in the central-right part of the diagram. The subsequent section will detail the specific loops identified.

R1- Efficacy and quality of care: As the efficacy of treatment improves, the quality of care may be compromised in terms of duration. This results in more patients receiving effective treatment.

R2- Complexity and treatment apprehension: An increase in patient complexity leads to greater treatment apprehension, further complicating the patients' conditions.

R3- Economic situation and alcohol use: A deteriorating economic situation drives increased alcohol consumption, as individuals turn to alcohol as a coping mechanism for mounting challenges.

R4- Self-coping and alcohol dependency: A decrease in self-coping mechanisms results in increased alcohol consumption. Over time, this pattern erodes patients' self-coping abilities further, creating a cycle of deterioration.

R5- Self-coping and practitioner relationship: Weaker self-coping skills in patients strain their relationships with practitioners. Practitioners are tasked with addressing more issues, complicating the dynamics between the two parties.

R6- Waiting time and patient severity: An extended waiting time intensifies patient severity during treatment. This rise in severity leads to undesirable behaviours such as bullying and shaming, which subsequently reduce practitioner job satisfaction.

R7- Drop-outs and practitioner satisfaction: Increased patient drop-outs diminish practitioner job satisfaction, as unfinished treatments prevent practitioners from achieving desired outcomes.

R8- Investment in capacity and quality of care: Increased investment in capacity boosts knowledge exchange but also impacts administrative burdens. Over time, this shift promotes a more protocol-driven approach, potentially compromising the quality of care and heightening the perceived need for further investment.

R9- No-shows and practitioner satisfaction: As patient satisfaction deteriorates due to no-shows, practitioner job satisfaction declines. This reduced satisfaction leads to increased burn-out rates among practitioners, subsequently diminishing capacity and compromising the quality of care.

R10- Treatment delays and drop-outs: An increase in patient severity during treatment results in more drop-outs. This is connected to the relationship between the delay from intake to treatment start and the number of individuals discontinuing treatment.

B1, B2, B3- Patient flow and waiting time: With a surge in clients at a particular stage: before intake, diagnosis or treatment initiation, the number of patients in that category expands. However, as waiting time ensues, the inflow starts to diminish, creating a balancing effect.

B4- Treatment duration and patient intake: As the number of clients in treatment rises, the number of treated individuals falls, making space for new admissions. This leads to an increase in patients undergoing treatment, but with the prolonged treatment duration, this effect is delayed.

B5- Investment in capacity and quality of care: As the quality of care declines over time, there is a growing need to consider increased capacity investment. This heightened perceived need eventually leads to a delayed improvement in care quality.

B6- Quality of care and incidence: An enhancement in the quality of care results in a gradual decrease in incidence rates as more individuals receive help. This feedback loop operates over an extended period, often represented by a dotted line.

B7- Capacity improvement through training: One approach to boosting capacity is by providing staff training, enhancing their skill set. Consequently, as the staff's expertise grows, the capacity of the Mental Health Services (MHS) also increases.

This conceptual model is an attempt to converge the information in one whole (holistic) systems view. A lack of consensus among experts and in the literature is noted (and explained above), particularly regarding the treatment process and, to a lesser extent, within the domains of resources and social context, about the precise impact of these relationships. A more detailed discussion on these areas of disagreement will be presented in Chapter 7. The model serves as a foundation for further exploration

of these disagreements and the interplay between the social, and organisational contexts, particularly focusing on the treatment process and organisational resources. Within the social context, economic status and help-apprehension emerge as primary areas of focus, while self-coping remains a crucial element both in and during the treatment process.
When inferring system behaviour from the model's structure, the dynamic hypothesis posits that factors such as satisfaction, therapeutic alliance, and practitioner-patient relationships are crucial for treatment efficacy. Conversely, socio-economic factors like help apprehension, economic situation, and self-coping further exacerbate the treatment gap. On the resources front, training and enhanced staff skill sets can amplify capacity. However, the increase in administrative tasks and a rigid protocol-driven environment can aggravate shortages, leading to prolonged waiting times.

4.10. Outcomes on the main organisational drivers affecting the quality of care

Both the literature review and the exploratory interviews have identified a broad range of drivers that, from an organisational standpoint, influence the quality of care within a healthcare system. Our analysis revealed several positive loops that inadvertently exacerbate the gap between demand and available resources. Many studies directly associate this with a decline in the quality of care, often referring to a lack of efficiency and cost constraints (De Beurs et al., 2018). Other research points to the impact on treatment effectiveness or patient-centeredness, focusing on treatment outcomes and patient satisfaction (Khan et al., 2023). However, there is variability in these interpretations. Some studies prioritize specific factors as only costs, or treatment process (duration, modality, etc.) (indicating a narrow system scope), while more comprehensive research suggests that numerous external drivers, such as economic factors, political influences, disorder prevalence, and the intricacies arising from comorbidity, have a more dominant role in affecting the quality of care of mental health organisations and make it challenging to establish clear relationships (Garcia-Alonso et al., 2022; Moran & Jacobs, 2013, 2017). A significant concern is data scarcity, especially when patients are not distinctly categorized as mental health patients or when they receive care from multiple entities. This ambiguity complicates the identification of primary analytical drivers. While some authors present intricate analyses, they often omit essential methodological details, hindering independent evaluations of effect size, effect precision permits an independent evaluation of the effect size (Lochman et al., 2009), precise measurement of effect (Carroll et al., 2013; Glisson et al., 2012; Lester et al., 2009), or potential biases (Carroll et al., 2013; Forman-Hoffman et al., 2017; Lochman et al., 2009).

From the exploratory interviews, it became evident that the observed differences stem from varying perspectives on the healthcare system. Some experts centred their attention on the process of care provision, which can be understood through the lens of health determinants (see figure 4.3). In contrast, others were interested in the patient's pathway, examining the challenges faced at each stage. Additionally, many interviewees emphasized cost or efficiency metrics, exploring strategies like adjusting treatment intensities, integrating e-health solutions, or minimizing patient no-shows and drop-outs. Given the diverse viewpoints among experts and the importance of the relationship between each system's perspective and the outcome of relevant drivers, a framework was constructed. This framework, detailed in figure 4.7, will be used to examine different perspectives in mental health care, particularly in the context of the limited literature on alcohol or substance abuse disorders. This framework aims to capture the key areas of focus of research for experts in mental healthcare dealing with alcohol use disorders that affect the quality of care. The details of this framework will be further expanded in the subsequent chapter 5 and used as a starting point for the participatory system dynamic approach.

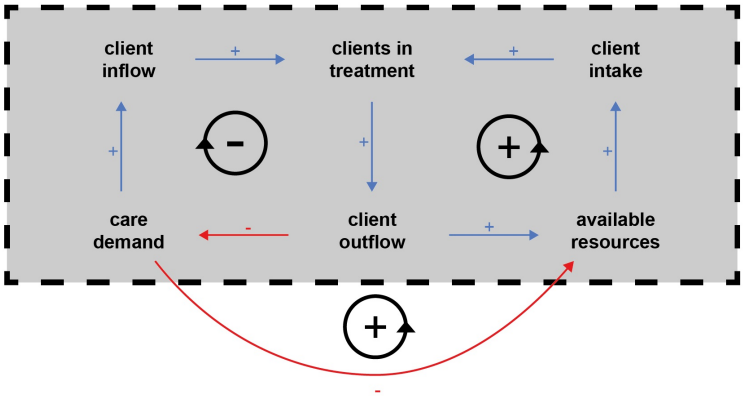

Figure 4.7: Simplified framework, describing three key feedback loops affecting capacity shortages in mental health care according to the literature and interviews

5

Understanding expert perspectives on the mental health care system: a participatory approach

This chapter analyzes the results of the group model-building session conducted to address the research question: "What are the expert perspectives on the Dutch mental health care system in the context of alcohol use disorders?". It synthesizes the session to provide insights into its proceedings, including the preparatory phase, outcomes observed during the workshop, the conceptual interpretations, and perspectives, resulting in a conclusion. The full script of the session, along with the observation form for observers, is accessible in appendix B. The chapter commences with the expected outcomes based on a questionnaire detailed in Appendix C and insights from preliminary meetings. A transcript and summary of the session are available in appendix D.

5.1. The participatory SD modelling workshop results

In this section, the questionnaire and preliminary informal meetings are examined to assess participants' perspectives on the issue and their familiarity with group model building. This is followed by an exploration of the various conceptual understandings discussed, culminating in the presentation of a final conceptual model.

5.1.1. Questionnaire and individual sessions with participants on forehand

Familiarity with the method

Before the group model-building session, it was evident that the majority of participants (3 out of 4) were unfamiliar with system dynamics. One participant had heard of it but had never applied it personally. Their expectations ranged from understanding the relationships between factors such as treatment costs, duration, intensity, treatment modality (group versus e-health), and resource factors like staff and culture, to gaining insights into the complexity and diverse perspectives. They also hoped to identify various viewpoints, such as the treatment and client perspectives, and to focus on session flow by "asking the right questions." Furthermore, they anticipated the session would provide clearer insights into factor relationships, increase understanding of complexities, and address the MHS's challenges related to resource scarcity and reducing waiting times.

Content input

Before the session, participants were asked about the driving forces behind the mental health care shortage. Their responses touched upon various aspects of the system and are added to the simplified earlier mentioned framework in figure 5.1. First of all, socio-contextual factors highlighted included societal ageing, increased individualization, double ageing, a strong alcohol lobby, societal stigma, alcohol availability, and changing family situations pre-and post-treatment. Secondly, from an organisational perspective, there were concerns about the alignment of treatment options, the number of intakes at

facilities, the flexibility of personnel, the need for a more integrated approach to recovery support beyond just treatment programs, the balance between over- and under-treatment, and the challenges posed by administrative tasks. Thirdly, multi-actor drivers identified were the potentially flawed financial incentives from the government and the dynamics between Mental Health Services (MHS) and health insurance companies. Lastly, in terms of policy considerations, within the organisational context, there was an emphasis on the potential of digital support, the need for varied treatment intensities, a shift towards a more goal-oriented treatment approach, prioritizing certain treatment options, and focusing more on severe cases over milder ones. In the social context, the importance of awareness campaigns, such as through television programs, was mentioned, along with the need to reduce both the availability and visibility of alcohol and address the issue of public substance display.

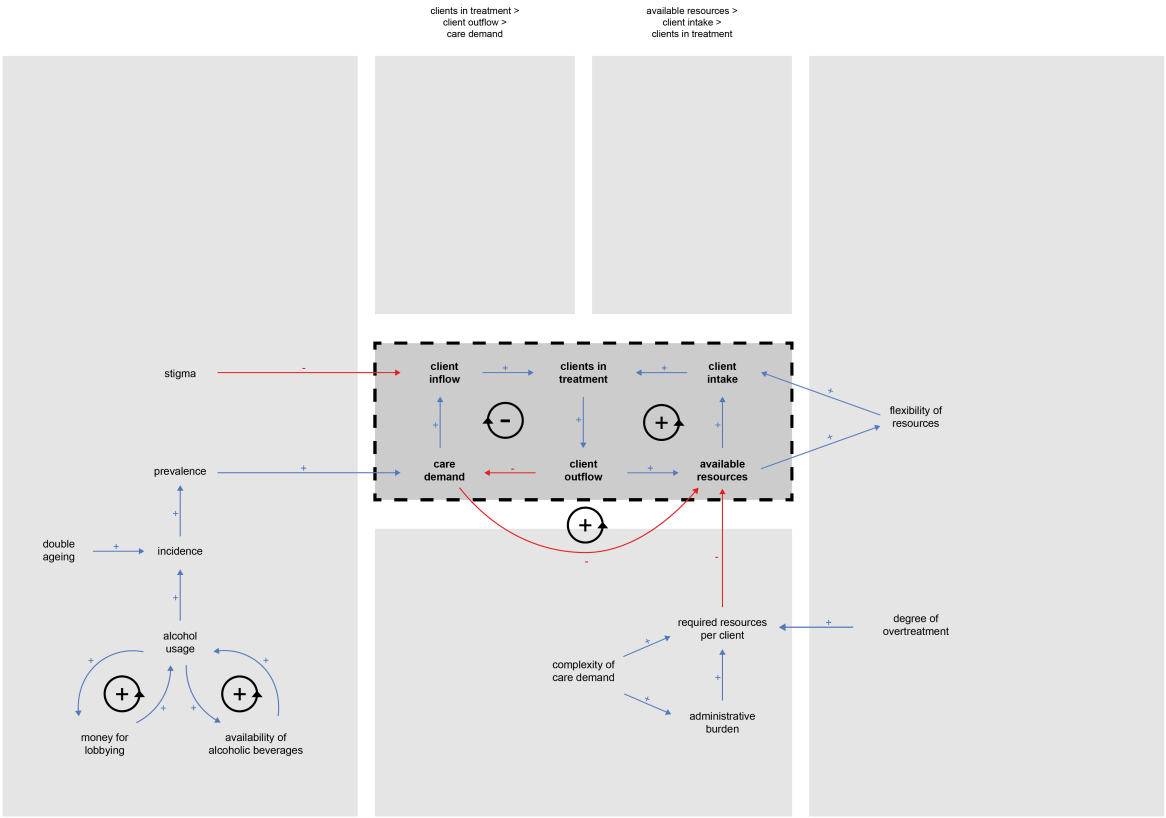

Figure 5.1: Simplified framework depicted from the previous chapter added with input from the participants before the workshop started

The aforementioned framework emerged from our analysis. As detailed in section 4.9, at the heart of the framework (indicated by a square of dotted lines), three loops interplay. The initial loop is a balancing one related to healthcare demand. Logically, effective treatment boosts patient outflow, subsequently reducing healthcare demand. Another consequence on resources (on the right) is that as outflow rises, available resources expand since more slots open for other patients. The third loop discerned is that a direct surge in healthcare demand diminishes available resources. This is because factors beyond patient treatment, such as workload or intensity, play a role. An uptick in these factors can swiftly deplete available resources, while the in or outflow of patients remains the same.
It is important to highlight that all terms used are broad in scope. This implies that all variables and factors can be identified at both an organisational level and a more expansive "national" or social level. This approach ensures openness to the diverse perspectives presented by participants during the session and will be reflected on.
Additionally, the social context is indicated on the left side. Both incidence and prevalence were

incorporated based on the literature review findings. The phenomenon of double ageing escalates the incidence, as a growing elderly population results in more older individuals seeking treatment. Concurrently, alcohol consumption is influenced by lobbying funds, creating a reinforcing cycle. Increased alcohol consumption also promotes its sale, further boosting its availability. Within the organisational system, patient complexity positively impacts both the resources required per client and the administrative load. Overtreatment further amplifies the resources needed per client. When an organisation has more available resources, resource flexibility is enhanced, potentially leading to increased patient intakes as they feel their treatment program better aligns with their needs.

5.1.2. Results part 1: Nominal Group Technique

As detailed in chapter 3, experts recorded their identified factors during the session. The facilitator then initiated a plenary discussion about these factors, which we will address in order. First of all, expert A believes the following factors, pertaining to treatment costs or policy levers affecting those costs, are interconnected:

- Treatment duration: length in terms of months.
- Treatment intensity: frequency and hours per week.
- Treatment modality: group versus individual sessions.
- E-health: its implementation can partly substitute practitioners.
- Treatment setting: distinctions between inpatient/clinical and policlinic settings, also related to contact hours.
- Triple ageing: a rise in the elderly population due to both increased longevity and a previous birth increase, leading to higher demand in Mental Health Services and fewer young people contributing resources.

Additionally, national government policies, such as the IZA-agreement (in Dutch: "integraal zorg akkoord"), play a role. This policy aims to reduce patient influx and strategically allocate resources to specific treatments.

Secondly, expert B primarily emphasized the external factors that influence the organisation. These factors pertain to patients, their surroundings, and the determinants of health and well-being, as discussed in section 4.1. The emerging themes include:

- Policy-making trends: Observations indicate a system driven more by government and insurance expectations rather than the actual needs of the clients.
- Individualism: Rising individualism in society, marked by an increase in people living alone without a robust social network, has made patients more vulnerable. This influences both patient inflow, by increasing the complexity of cases, and outflow, where post-treatment social contexts matter for patient recovery.
- Rising client complexity: Comorbidity has led to a surge in complex patients, resulting in extended waiting lists for various disorders. This has increased the likelihood of patient relapses and substance abuse.
- Staff scarcity: There are high turnover rates in this service, especially when compared to other areas of MHS's. The challenges associated with substance-using patients contribute to this trend. Another concern is the limited expansion of specialized training positions, leading to a decline in specialized practitioners.

Thirdly, expert C offers insights into the social domain, striving to integrate different subsystems: the social context, treatment methodology, the treatment process, and resource constraints. The factors highlighted by this expert include:

- Client stigma: Clients often grapple with social and financial stigmas, where issues like debt and personal shame significantly influence their experiences.
- Societal stigma: The Mental Health Services sector is generally undervalued in society. A notable example is the disparity in government financial support for hospitals compared to MHS in the Netherlands in general, especially during the COVID-19 outbreak, as no financial support was provided.

- Treatment apprehension: Committing to treatment may entail giving up certain habits, such as substance use. Additionally, patients often experience hesitation due to uncertainty about treatment outcomes, the process involved, including medication intake, potential suffering, and fear.
- Preventive care: Holistic care, which encompasses more than just the immediate treatment period, is crucial. However, this comprehensive approach is not always adopted.
- Patient referrals: Primary care providers, such as general practitioners, play a pivotal role in directing patients to the appropriate care services. Their decisions determine whether a patient is referred to one service over another.

Lastly, expert D identified a range of factors, even adjusting and adding more as he responded to points raised by other experts. The factors highlighted by this expert are:

- Budget Cap: Compensation is determined by the number of treated patients, subject to a pre-set annual monetary limit. Consequently, treating a higher number of patients within the year does not ensure additional financial support, creating a mismatch where the budget does not scale with the volume of treatments.
- Societal Alcohol Endorsement: The normalization of alcohol, evident in promotions like TV commercials, exacerbates issues for those already struggling with alcohol-related problems.
- Society's Disturbance Level: Greater societal disruption increases support for treatment. Conversely, if treatments are highly effective and disturbances decrease, societal support may wane.
- Treatment Funding Paradox: Health insurance organisations fund only treatments proven effective. But without initial funding, how can treatments be developed and proven effective?
- Administrative Burden: There is a significant administrative workload. While the recently adopted ZPM-policy has alleviated some of this burden, it remains a major factor affecting resource availability.
- Job Satisfaction: High staff turnover is evident. Lack of career progression, overwhelming administrative tasks, and a lack of challenging roles prompt many practitioners to leave.
- Patient No-shows: Unreliable patients who schedule but skip appointments impede the system's efficiency. Previously, missed hours received some financial compensation, but with the current ZPM model, there is no remuneration for no-shows.

Discussion during session
During the discussion, the relevance of certain factors was contested. While some experts regarded the quality of care, grounded in theory-driven approaches like cognitive behavioural treatment and specific protocols such as the Minnesota treatment, as pivotal, others perceived it as an ambiguous "black-box" and questioned its significance. Their understanding of the specific factor 'quality of care' remained therefore ambiguous.

The increasing complexity of patients was recognized by the group, but its root causes sparked debate. Some participants attributed it to the declining influence of religion or pillarization, suggesting that in past eras, individuals with less severe issues sought solace in religious or familial settings. Others contended that societal individualism, characterized by people living more independently, is a predominant factor increasing the inflow of complex patients. The organisation's reputation for treating only severe cases, potentially driven by patient stigma, was identified as another contributing factor. This perception results in longer treatment durations and comparably inferior effective outcomes for the MHS. Next to that, post-treatment care remains crucial, underscored by the statistic that 60% of patients relapse post-treatment and subsequently seek treatment for a different disorder. Patient apprehension towards treatment was another topic of discussion. While some experts believed the fear stemmed from potential treatment outcomes, others argued it is the initial commitment to treatment—such as the necessity to quit drinking—that intimidates patients.

The participants each had different focuses as can be seen in figure 5.2. Expert A emphasized potential "policy levers." Expert B, drawing from their background as a psychologist, centred on the social context, external drivers, and the growing complexity of patients, particularly noting the role of individualism. Expert C aimed to uncover subsystem connections and interlinkages. Expert D, having

previously outlined the micro, meso, and macro perspectives through email and in-person discussions made his system perspective evident and honed in on the phrasing of various factors of others. During the session, he particularly emphasized external factors affecting patient inflow.

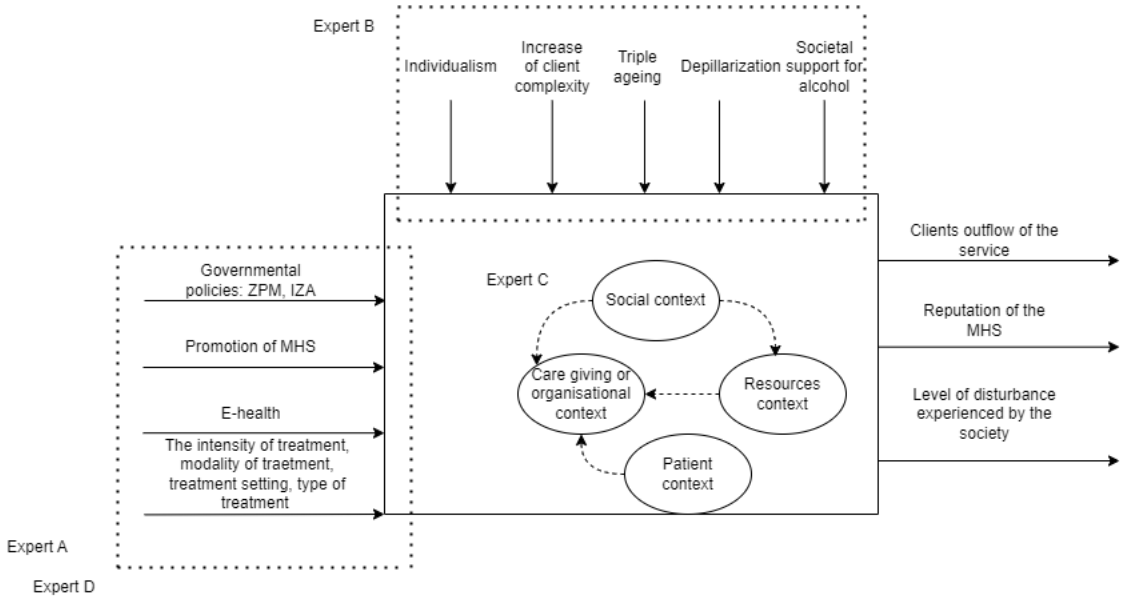

Figure 5.2: System diagram and the perspectives of the participants on the system of experts A, B, C and D within the system

5.1.3. Results of part 2: Group model Building session

The result of the group model-building session is depicted in Figure D.13. It was developed after experts drew loops on individual whiteboards and engaged in a comprehensive discussion. The primary insights from this session are provided below the figure.

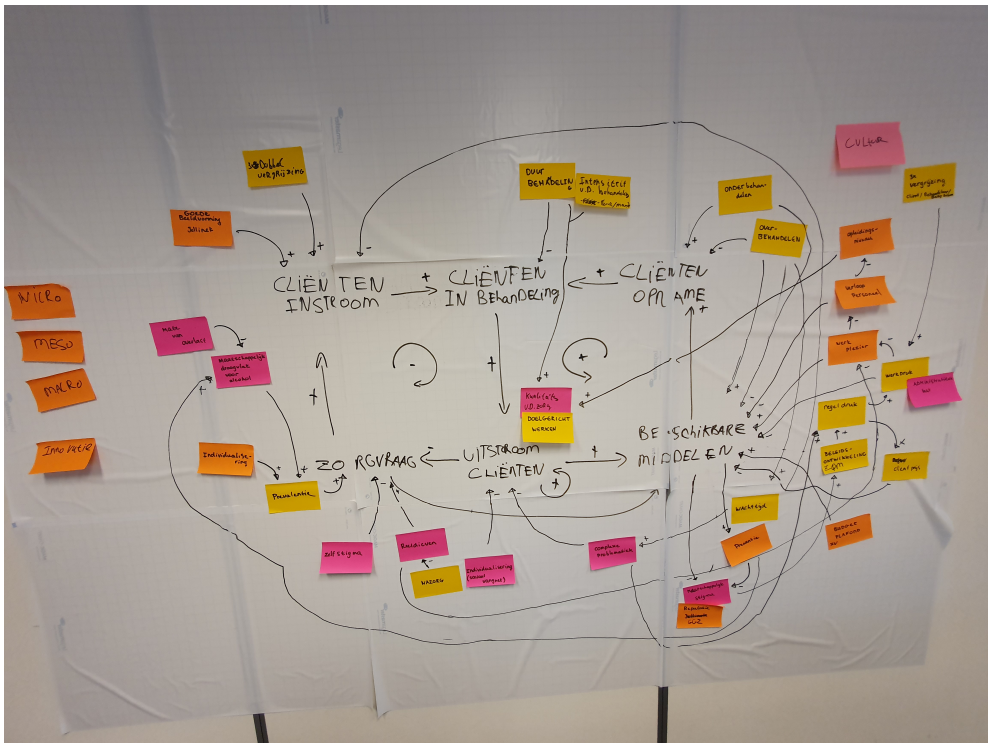

Figure 5.3: The outcome of the group model presented in causal loop diagram reviewed on the large white board sheets

Meso-level: ruling pressure and adequacy of treatment affects quality of care
The salient observation from an expert highlighted the positioning of "quality of care" at the center of the diagram, which aligns with its pivotal role in the organisation. Given that this concept encompasses multiple facets (see section 4.1), it significantly influences both the duration of effective treatment and the subsequent treatment outcomes. As depicted in 5.4, the quality of care directly impacts the duration of effective treatment, thereby enhancing the efficacy of client treatment.

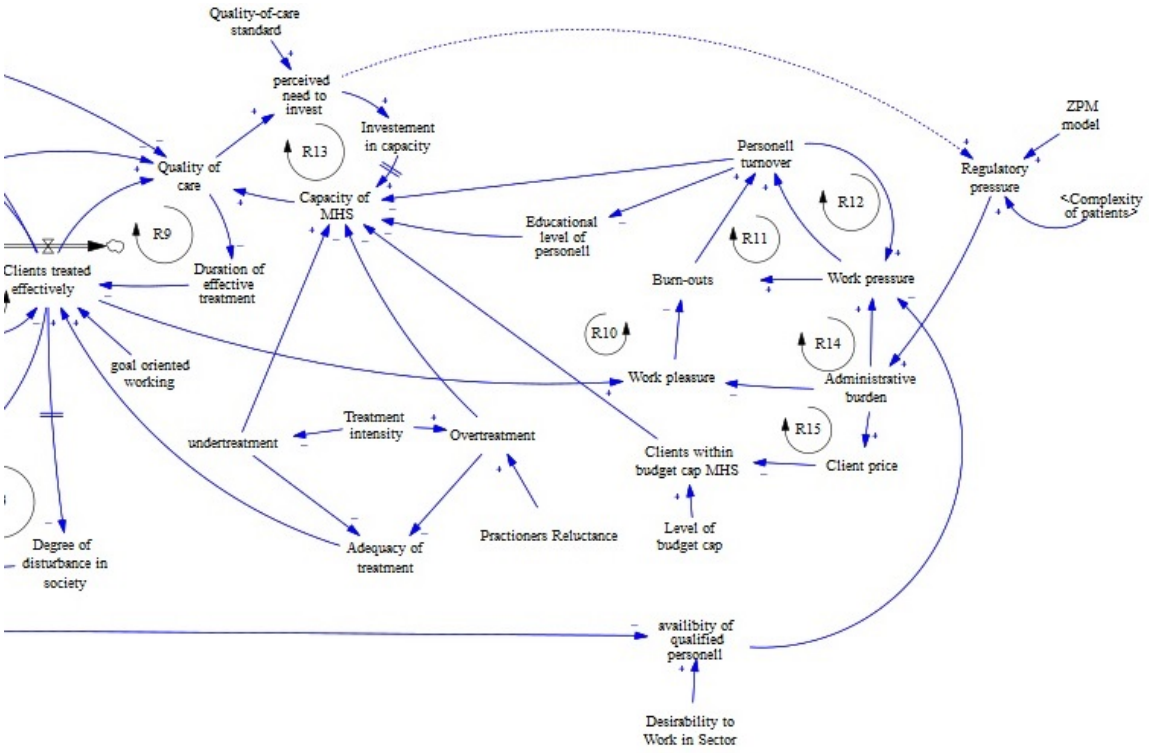

Figure 5.4: The interpretation of the group model building in organisational context of interaction between resources and quality of care

Moreover during the session, the topic of "suitable care" was deliberated upon. The appropriateness of care is vital, as treatment should aim to properly inform patients. Experts highlighted the tendency among practitioners to treat a patient for multiple disorders, rather than focusing on a specific one. This inclination to treat a plethora of disorders could stem from an aim to address the complexities presented by incoming patients.

Treatment intensity, a factor determined at both organisational and patient levels, plays a crucial role in this context. The challenge lies in striking a balance to avoid both under-treatment and over-treatment. As shown in figure 5.4, the treatment intensity influences this balance, affecting the adequacy of treatment. A potential repercussion of this imbalance is patients regressing in their treatment. Over-treatment can strain capacity, while short-term under-treatment might seem beneficial for resource availability. However, in the long run, under-treatment compromises the efficacy of patient care, increasing the risk of relapse. Expert C introduced the concept of 'diminishing returns,' commonly used in finance, to describe the balance between over and undertreatment in healthcare. They illustrated how there is an optimal point — the maximum yield for the best treatment outcome — relative to the intensity and duration of the treatment. Here, the input of treatment should be calibrated to find the equilibrium between excessive treatment (over-treatment) and insufficient treatment (under-treatment), aiming to achieve the optimal treatment outcome, phrased as the point of maximum yield.

Another significant element brought to attention was the "ruling pressure to maintain protocols and standards". This pressure, while aimed at upholding market quality and affordability, presented various side effects. Firstly, it heightened the obligation for practitioners to document their actions

comprehensively, resulting in an escalation of administrative tasks. This increase in administrative tasks not only raised client costs due to the increased time commitment but also diminished job satisfaction as workloads expanded. Moreover, this heightened stress contributed to greater instances of burnouts, leading to higher staff turnover. Such turnover affects potential future capacity, impacting both the educational competency and the sheer number of staff members available. Crucially, the availability of qualified personnel and the desirability of working in such sectors also become significant determinants, as depicted by the lower factor influencing work pressure in figure 5.4. A comprehensive discussion on this topic is presented in chapter 6.

Meso-level: Complexity and demand of patients increase waiting time and effectiveness of treatments
Among undiagnosed individuals, a clear prevalence can be observed, which over an extended period results in a surge of clients as general practitioners refer patients, as illustrated in figure 5.5. The incoming patient demand is bifurcated into the complexity and the volume of patients. Experts indicated that the perceived complexity of patients is elevated due to the service's reputation, stemming from a belief that they primarily cater to highly complex cases. Another critical element is treatment apprehension. Expert C identified a self-stigma, where acknowledging an Alcohol Use Disorder (AUD) and seeking treatment proves challenging. Furthermore, societal stigma discourages many from seeking help, perpetuating misconceptions about substance treatment. The coexistence of multiple disorders, or comorbidity, in patients further amplifies the complexity and subsequently the demand.

Another dimension to consider is substance prevention. This references the societal phenomenon where, in the absence of overt disturbances, public endorsement for alcohol policies wanes, swaying political agendas away from proactive AUD prevention. Diminishing societal support may stem from the misconception that there are no substantial issues concerning alcohol consumption, as depicted in figure 5.5.

Collectively, diminishing societal support and lack of prevention forecast an expanding treatment gap. The disparity between undiagnosed or prevalent cases and those diagnosed and receiving treatment is likely to widen. Consequently, as the ratio of those necessitating help to those receiving it enlarges the quality of care diminishes.

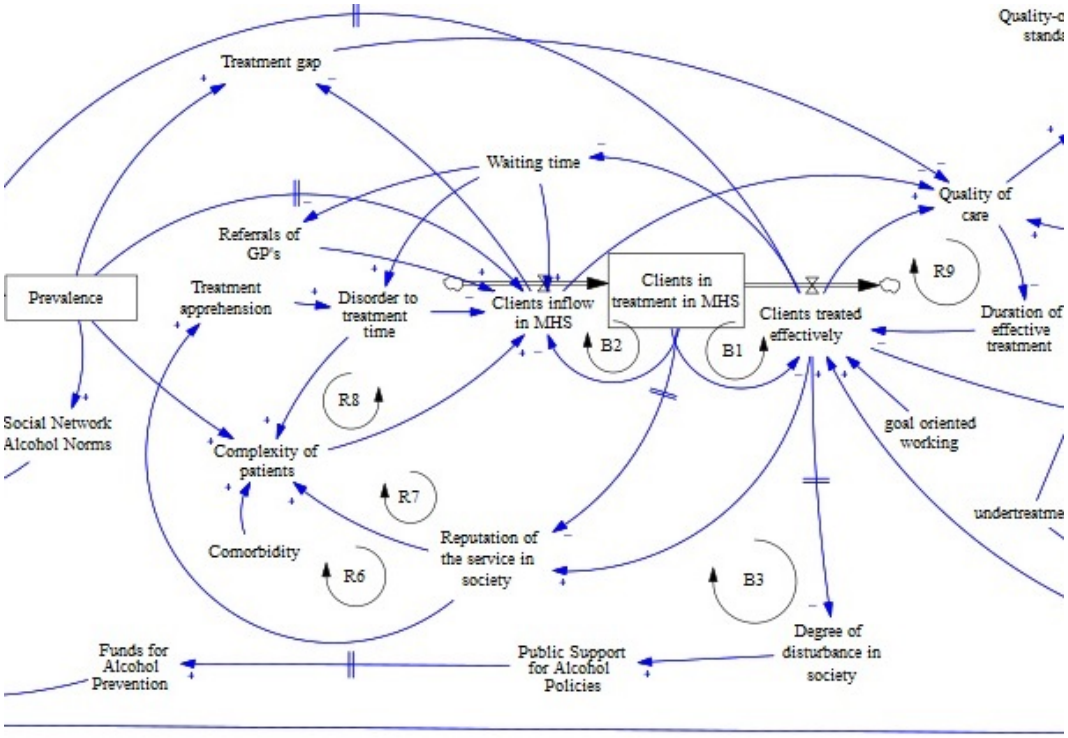

Figure 5.5: The interpretation of the group model building in organisational context during treatment process

Macro-level and micro-level: The social context & patient behaviour

Within the social context, various behaviours were identified as pertinent during the group model building, with a particular emphasis on the significance of the social environment, as demonstrated in figure 5.6. The economic perspective, focusing on the economic context and viability from a patient's standpoint, was highlighted only once. It emphasized the importance of demonstrating financial stability as a means of self-coping (more will be discussed in the discussion chapter 8). This is closely linked to a patient's social network, which is crucial for assessing if a patient can regulate their alcohol consumption within their social circles. The concern intensifies if a higher number within that network suffers from AUD or indulges in excessive drinking.

These trends can be attributed to society's shift towards individualism, as more individuals live independently and participate in communities, unlike earlier times when they could rely on tight-knit communities, such as religious congregations. This trend was also referenced during the session as "Depillarization". Additionally, the availability of alcohol and the financial power to lobby were reiterated during this session as significant factors influencing the incidence of AUD, as depicted in figure 5.6.

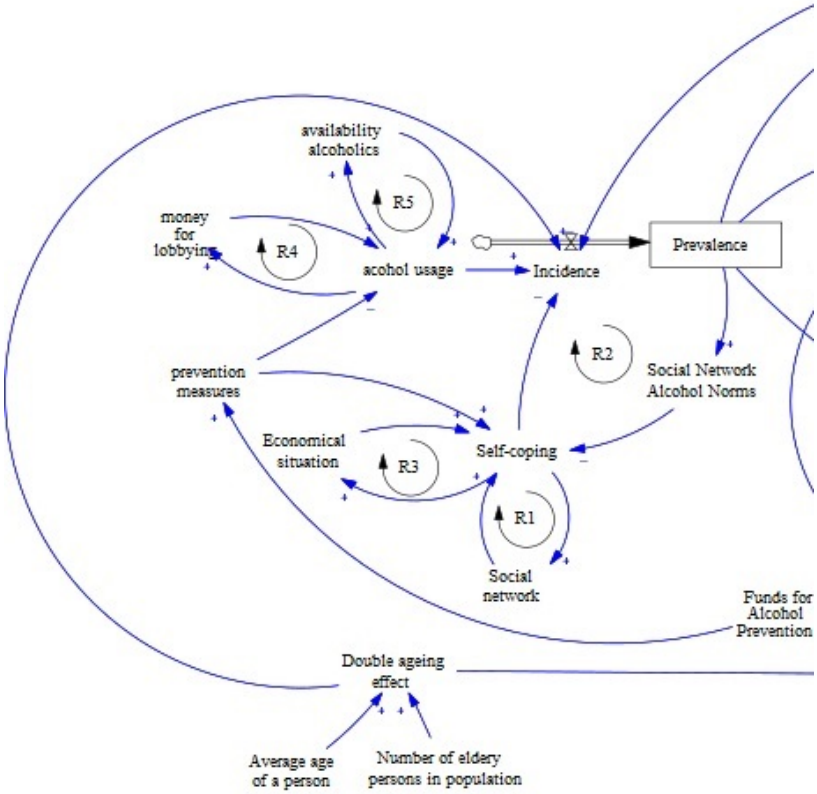

Figure 5.6: The interpretation of the group model building in social context

Discussion during session

At the outset of the session, Expert A highlighted a potential oversight in the causal loop diagram, inquiring about the absence of specific treatments. This aspect was somewhat subsumed under the broader category of resources. By the session's end, the same expert revisited this point, questioning the diagram's representation of his service by asking, "Where are we in this picture?" He observed that the diagram may not necessarily capture the variables he deems vital, a notable point given he had the platform to address crucial facets during the discussion.

Additionally, the consequence of prolonged waiting times for patients was discussed. Extended waiting times, often resulting from overtreatment and subsequent capacity limitations, were identified as detrimental. From the patient's viewpoint, even minimal delays can be catastrophic. Despite our Mental Health Services experiencing minimal waiting times, there is a notable 40% dropout rate between initial intake and diagnostic setting. Another participant echoed this concern, emphasizing the ethical implications: "Is it justifiable to keep a patient waiting, especially if they're in a critical state or have already overcome numerous obstacles to seek treatment?"

Furthermore, in the initial model, the term "health care demand" (refer to figure 5.1) was scrutinized. Expert D proposed that this variable be divided into "diagnosed" and "undiagnosed" treatments. The broader group concurred, acknowledging that during the session, these two distinct variables had been erroneously merged.

5.2. Interpretation of conceptual models: growth and under investment

The conceptual model emerged from the group model-building session. The predominant insights from the session can be categorized into three main areas: the social context, the organisational context related to the treatment process, and the organisational context concerning resources. These divisions are illustrated in figure 5.7.

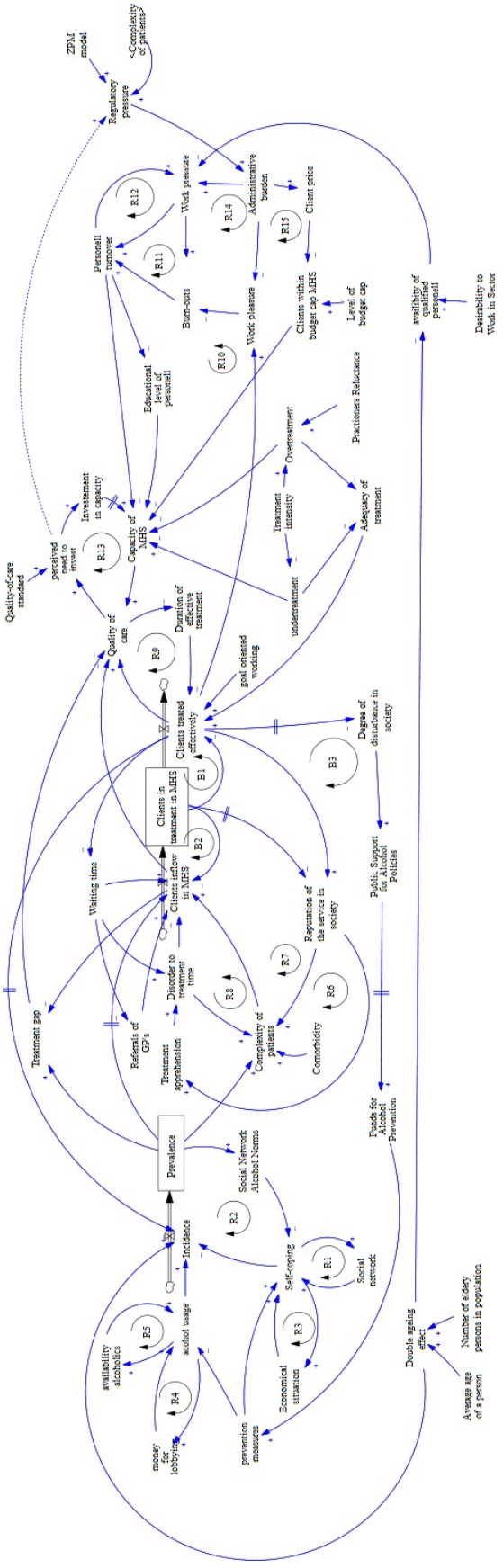

Figure 5.7: The interpretation of the group model building resulting in the "Qualitative socio-organisational conceptual model"

Various reinforcing or balancing feedback loops have been identified across three contexts. Given that the contexts of these loops have been outlined in prior sections, first briefly the loops will be discussed before pinpointing a primary observed behaviour.

Social context (driving forces of alcohol consumption):

R1- Individualization in Society: An enhanced social network surrounding an individual implies that people are better equipped to cope with challenges related to alcohol use, making them less susceptible to developing AUD.

R2- Social Network Influence: As a greater number of individuals within a social network consume alcohol, the collective capacity to manage alcohol consumption diminishes. This may result in a rise in AUD incidence, indicating an increasing segment of the population that might require assistance.

R3- Economic Strain: When individuals face economic challenges, their ability to self-regulate diminishes, leading to an increase in AUD cases. Among all the factors discussed, this is singularly situated within the economic context.

R4- Influence of Lobbying: An increase in lobbying funds can correlate with heightened alcohol consumption. All experts have underscored the significant influence of a robust alcohol lobby, pointing out its alignment with contemporary Dutch cultural norms.

R5- "Blurring" and Alcohol Availability: The term "blurring" refers to the growing availability of alcoholic products in unconventional venues, such as hair salons or clothing stores, and their prominent display in supermarkets. Additionally, the emergence of more night-shops suggests expanded access, potentially leading to increased alcohol consumption and a consequent rise in AUD incidence.

Organisational context, treatment process (affecting treatment outcome and delays):

R6- Reputation and Complexity: The service's growing reputation makes potential patients hesitant to seek assistance, particularly if they have mild cases, because the facility is perceived to treat severe and complex cases. This perception lengthens the disorder-to-treatment time, leading to the inflow of more complex patients.

R7- Direct Attraction of Complex Cases: The service's reputation also directly attracts more complex cases, resulting in an increase in the number of such patients.

R8: Complexity Rise and Waiting Time With an uptick in complex patients, treatment durations extend, causing a decrease in the effective treatment outflow. This results in longer waiting times, further increasing disorder-to-treatment time and leading to higher patient complexity.

R9- Quality Improvement: An increase in effectively treated patients enhances the quality of care. Consequently, the duration of effective treatment decreases, allowing more patients to benefit.

B1- Effective Treatment Outflow: A higher outflow of effectively treated patients reduces the overall treatment duration, thus decreasing waiting times and increasing the patient inflow. However, this effect is delayed since effective treatment requires time.

B2- Treatment Inflow Regulation: As more patients enter the treatment process, the influx rate into the treatment slows down, balancing the overall patient count.

B3- Societal Disturbance and Funding: On a broader scale, when more patients are treated effectively, societal disturbances related to the disorder decrease. Over an extended period, this reduces public support and funding for preventive measures, as the perceived need diminishes.

Organisational context, resources vs. demand (regulations and organisational treatment in):

R10- Positive Work Environment and Capacity: Effective treatment of clients enhances work satisfaction. This leads to reduced burnouts and subsequent reduction in personnel turnover, thus increasing overall work capacity.

R11- Work Pressure and Personnel Turnover: An escalation in work pressure results in a rise in burnouts and, consequently, personnel turnover. This cycle further intensifies work pressure for remaining practitioners.

R12- Adverse Work Climate and Pressure: Heightened work pressure, due to various aforementioned reasons, amplifies personnel turnover. The consequent reduced workforce leads to even more pressure on the remaining staff.

R13- Quality of Care and Investment: As the quality of care improves, the perceived need for further investment also increases. Governmental attention, as reflected in the quality-of-care standards, spurs intervention in the sector to bolster its robustness. Such investments can increase capacity, ensuring long-term quality.

R14- Regulation Impact on Work Pressure: With increased investments come new regulations. These additional regulations often enhance the administrative burden, leading to increased work pressure and subsequently higher personnel turnover. This reduces the capacity of mental health services (MHS) and, in turn, the quality of care.

R15- Administrative Burden and Client Price: An increase in administrative tasks not only diminishes work pleasure but also elevates the client price, given the additional time spent per patient. Consequently, fewer patients can be treated within the budget cap established by negotiations between insurances and MHS. This eventually leads to a further constraint on capacity as the work hours allocated per client rise.

5.3. Participant perspectives resulting from the workshop

The preceding sections highlighted diverse perspectives on the system's behaviour. For its sustainability, a deeper understanding of the system's relations, including the loops linking social context, organisational treatment processes, and regulatory considerations, is crucial.

Despite analyzing the same relationships, participants occasionally diverged in their interpretations. Expert A emphasized organisational strategies, referring to them as "levers we can pull," such as extending treatment duration and focusing on staff allocation and the educational level of staff. In contrast, Expert B was attuned to the external factors shaping treatment inflow. She considered how an increase in patients might escalate alcohol consumption or how systemic complexities can manifest in prolonged wait times and treatment delays.

Expert C, while echoing concerns about deteriorating aspects, underscored the interconnectedness of the subsystems. He deliberated on the trade-offs between organisational goals of treating numerous patients to boost quality, such as over- and undertreatment, and a patient-oriented approach aiming for in-depth care. Meanwhile, Expert D, coming from a managerial perspective, perceived some subsystems as self-contained "ecosystems", notably highlighting the implications of burnouts and increased work pressures on overall capacity. He frequently critiqued ambiguous terms like "quality of care" and engaged in probing discussions on the validity and significance of certain system relationships. For example, he pointed to Expert B's assertion that patients may be more afraid of entering therapy than they are of the therapy's outcomes.
These discussions underscore the complexity inherent in the system and accentuate the necessity for a holistic approach to decipher its nuances.

5.4. Conclusion of the expert perspectives on the Dutch mental health care system

The analysis from the Group Model Building (GMB) session depicted in figure 5.7 highlighted pivotal perspectives that play a role in the Dutch mental health system. Increasing regulatory pressure demands higher quality, leading not just to a rise in capacity but also an intensification of regulations. Consequently, the anticipated enhancement in capacity gets absorbed into administrative tasks, augmenting the administrative load for the MHS. This cascade effect results in increased personnel turnover, often leaving the capacity unchanged or even reduced post-investments. This trend mirrors the 'fixes that fail' archetype described by Senge (2006), where governmental solutions to affordability trigger unintended consequences such as overregulation. A more in-depth exploration on this insight is provided in chapter 6.

Social dynamics further complicate matters. With five identified reinforcing loops in the social context, the demand for mental health services is on the rise. Delays in intake, driven by patient apprehensions about treatments and varying waiting times based on individual complexities, ensure that the gap between demand and supply is widened. On top of that, the regulatory emphasis on more complex cases exacerbates the system's propensity widening the gap between demand and

supply even more. As a larger portion of the workforce is allocated to administrative tasks, treatment durations increase, and practitioners often leave due to diminished outcomes and reduced autonomy resulting from excessive regulatory administration. Consequently, patients with more significant needs experience longer waits for treatment.

The gap between demand and supply not only leaves patients untreated or disillusioned by extended wait times but also escalates the treatment gap. This delay-induced oscillation, as demand rises and supply lags, is analogous to Senge (2006) growth and underinvestment' archetype. The growing undiagnosed demand eventually does not correspond with the MHS's perceived "real demand" as indicated by the number of intakes. Waiting time issues due to insufficient capacity result even in more severe patients entering the MHS and therefore the demand per patient rises. MHS's hesitation or inability to scale up capacity, potentially due to budgetary caps, further entrenches this problem.

6

Fixes that fail: current policies and their system impact

This chapter addresses the research question, "How do policies in the long term influence the dynamic behaviour in the mental health care system?" through group model-building sessions, exploratory and semi-structured interviews with policymakers. The chapter starts by analyzing relevant policy dynamics from their perspectives and then illustrates these dynamics' influence on various subsystems in a conceptual overview. The chapter concludes with an analysis of policy behaviour using specific frameworks, integrating key insights from both literature and interviews.

6.1. The market reform of the (mental) health care sector

In January 2006, the Netherlands revamped its healthcare system, focusing on regulated competition and increased patient choice (Jeurissen & Maarse, 2021). This reform granted health insurers heightened risk acceptance and institutions more freedom in procurement and investment. The aim was to bolster access, cut costs, elevate quality, and foster profound solidarity by encouraging market workings between hospitals, MHS instances and insurance companies (Jeurissen & Maarse, 2021).
Numerous studies express reservations about this transformation (Schäfer et al., 2010). Notably, the governmental approach is predominantly guided by two inspection committees, the NZa and the Healthcare Inspectorate (IGJ) (MinisterieVWS, 2023a). Consequently, care quality oversight transitioned from the government to the market, resulting in policies that direct mental health care services while the government assumes a more supervisory role.

Based on the group model building results, various aspects are distributed across different sections of the system. The primary policies currently pertinent and applicable to this project targeting those sections are identified as:

- The ZPM model;
- Budget caps in MHS;
- The Treeknorm;
- IZA-agreement.

The subsequent sections will delve into these policies, examining their impact on the identified factors and loops. Each policy's underlying concept will be explored, followed by an interpretation and emphasis on its outcomes and results.

6.2. Budget caps: pushing the sector towards risk aversion

Budget caps are implemented in mental health care to ensure the sector's affordability. Governmental organisations stress this issue as the importance of not escalating costs annually. Health insurance organisations interpret this as a maximum annual turnover, which is negotiated between MHS and these insurance entities to maintain affordability (Paauw, 2022). These agreements typically occur on an annual basis. If a budget cap is met within a year, institutions must halt admissions for new patients seeking treatment and direct them elsewhere, despite having available resources and a willingness to assist (Paauw, 2022). Such situations might arise from an unexpected increase in effective treatments or from service expansion freeing up capacity within that year. The implications of enforcing these budget caps are outlined below, focusing on five key outcomes:

1. Patients with severe diagnoses requiring urgent care are redirected to other institutions, resulting in prolonged waiting lists, which can impact the efficacy and outcome of their treatments (Paauw, 2022).
2. MHS services become risk-averse. Rapid recovery rates could justify increased budget allocations from insurance companies in subsequent years. As a result, some services are reluctant to accept complex cases, leading to extended waiting lists for these patients as they are passed over by multiple institutions.
3. The budget caps drive institutions to optimize their treatments to ensure financial viability. This emphasis on financial health often leads to strict practitioner schedules and stringent treatment protocols. As a result, practitioners might feel overly "regulated," causing some to leave their positions and leading to staffing shortages.
4. "Cow-boy" institutions emerge to address the long waiting lists (Pointer, 2019). These institutions typically avoid contracts with health insurance companies, setting their tariffs at a maximum as they do not have to negotiate, which is, surprisingly enough, in line with the rules of the NZa (Groot, 2022). Consequently, they are not accountable to insurance companies for care quality (Koenraadt, 2022). Given the straightforward process and requirements of appropriate education and certification, many such MHS institutions are emerging. However, patients often face some out-of-pocket expenses as not everything is reimbursed, leading sometimes to more problems for individuals. A related concern is that some of these institutions may falsely claim to offer specific treatments, misappropriating funds intended for healthcare (Groot, 2022).
5. A demand-driven system emerges, where patients have the autonomy to select their preferred treatments. If a patient opts for treatments with less scientific backing, MHS institutions with insurance affiliations may diversify their offerings, potentially compromising treatment efficacy.

An additional outcome, not previously mentioned, involves MHS using a buffer accumulated over the years to cover treatment costs that do not contribute to the budget cap. Such a practice is undesirable for institutions, as it could lead to bankruptcy if done annually. This information is provided as a contextual side note.

6.3. Ensuring sector affordability: from DBC to ZPM

In early 2022, the government sought to reduce the vast disparity between direct and indirect treatment time, primarily driven by the overwhelming administrative and regulatory burdens in Mental Health Care (Jeurissen & Maarse, 2021). Within the DBC (Dutch: Diagnose, Behandel, Combinatie) or Diagnosis, Treatment, Combination model, practitioners were obligated to log all activities, including indirect tasks such as breaks, peer discussions, and administrative duties, alongside direct patient care. This system meant nearly 70% of their time was not dedicated to patient treatment. The increased administrative requirements reduced the number of clients treated. The implications were twofold:

1. Financially, as more time was allocated per patient, fewer patients were treated within the set budget cap. This led to higher costs per client and strained negotiations with health insurance companies about future financial viability.
2. The sector became less appealing for practitioners like psychologists, who were bogged down by administrative tasks, prompting some to consider leaving the profession.

In 2022, the ZPM model was introduced with the hope of addressing these concerns. The policy aimed for a 50/50 split between direct and indirect time. Additionally, it sought to simplify the process for stakeholders concerning "zorgvraagtypering" (care demand determining for patients) by standardizing reimbursement formats based on treatment types, settings, duration and other factors, also known as triage. Consequently, only direct time became reimbursable for MHS by the health insurance company, with a fixed percentage allocated for indirect time based on these factors. The implications of this policy are threefold:

1. The standardized compensation for indirect time often falls short in covering all indirect activities, even with reduced administrative tasks. MHS institutions now involve patients in meetings between practitioner and GP (e.g.), previously considered as indirect time, to qualify for direct time compensation. While this might seem beneficial, practitioners view it as additional regulation, with schedules becoming overly structured, leaving little room for genuine care and flexibility.
2. Whereas prior DBC policy dictated reimbursement parameters based on direct and indirect time registration, the new system lacks these regulations. Instead, MHS institutions now guide practitioners on reimbursement, marking a shift from government-to-MHS control to MHS-to-practitioner governance.
3. In the ZPM model, 'no-shows' previously reimbursed by health insurances, now fall under the indirect time percentage. This means patients must compensate for missed hours. High-specialized MHS facilities note that complex patients, often with socio-economic challenges, miss appointments more frequently. This leads to increased administrative work, decreased direct patient care, and potential treatment deterrents due to financial burdens.
4. The NZA's early assessment of the ZPM model in 2022 highlights challenges in standardizing treatment settings and durations, especially for complex patients. The system struggles as it replicates a UK model designed to determine patient care needs and match them with appropriate treatments. The report finds only half of the treatment methods aligning with the proposed treatment methods of practitioners, considering differences between English and Dutch patients. Moreover, practitioners feel the system's overregulation is problematic and question its necessity, especially given the unique needs of complex or "exceptional cases" as labelled by the NZa.

6.4. Waiting time: a good proxy, or wrong incentive?

To enhance accessibility within the mental health care sector, the "Treeknorm" was introduced in 2005 as an agreement between the government and MHS organisations. As illustrated in figure 4.4, the Treeknorm mandates that the waiting period from patient registration to the commencement of treatment should not exceed 14 weeks. However, gauging these waiting times accurately has proven challenging. Different institutions employ varied methodologies to report waiting times, leading to inconsistencies when communicating with stakeholders such as patients, government entities, and insurance companies.

Some institutions measure waiting times retrospectively, calculating the average waiting duration over the past year, for example. This approach may account for patients who have doubted to enter treatment after an intake session, leading to potentially inflated or deflated estimations. Conversely, other institutions provide prospective estimates, forecasting the earliest possible treatment slots based on practitioners' schedules. This prospective approach is inherently unpredictable as it must factor in unforeseen variables such as potential practitioner illnesses or unanticipated extensions in treatment durations for current patients. Indeed forecasts can exhibit fluctuating and often imprecise estimates. The implications arising from the challenges in measuring waiting times are:

1. MHS organisations tend to de-emphasize the importance of waiting times. Shorter waiting times could inadvertently lead to a surge in demand as more GPs would refer patients to them. Consequently, prioritizing existing patients over potential new ones becomes their main focus, rendering waiting times less significant as an operational metric.
2. Waiting times also serve as a buffer for MHS organisations, allowing them to allocate resources more efficiently in response to intake demands. If waiting times were non-existent, it would necessitate the immediate hiring or laying off of practitioners, depending on the demand. This fluctuation is not only challenging for staffing but can also be financially strenuous if beds remain unoccupied or professionals are underutilized.

3. Prolonged waiting times, as discussed in section 4.2, exacerbate patient complexities by the time they receive treatment. The delays not only deteriorate their health conditions but also impact their employment prospects and put a strain on their personal networks, leading to compounded socio-economic challenges for the affected individuals.

Governmental decisions often rely on current waiting times as an indicator of care quality in the sector (MinisterieVWS, 2021). Given the complexities and issues previously highlighted, the validity of using waiting times as a proxy for quality is debatable (Wright et al., 2020). A more in-depth discussion on this topic is provided in Chapter 7.

6.5. IZA-agreement: the future hope?

A recent policy introduction is the IZA agreement (in Dutch: "Integraal Zorg Akkoord"). Designed to guide the entire healthcare sector towards a more sustainable future, this agreement emphasizes the upcoming role of more preventive care aided in MHS and by GPs for example. Its core tenets include (MinisterieVWS, 2022b):

- Providing appropriate care to reduce both over and under-treatment.
- Enhancing collaboration among regional stakeholders.
- Emphasizing preventive health and lifestyle measures.
- Giving greater attention to GPs and MHS.
- Accelerating the digital transformation of care, with a focus on e-health.
- Standardizing contracts between health care insurances and health care providers.

While the IZA agreement appears to be a positive step forward, there are inherent challenges, some of which have been previously discussed. For instance, the agreement advocates for treatment optimization, citing concerns about wasted time, energy, and resources. However, juxtaposing this with retaining healthcare professionals can present a paradox. As prior chapters have shown, increasing protocols to save resources might inadvertently push practitioners out of institutions.

Another notable point is the agreement's push for technological advancements. In hospitals, digitalization has been fast-tracked with the integration of tools like artificial intelligence (AI) and machine learning (ML) algorithms. In contrast, MHS has been slow to adopt these innovations, primarily due to insufficient compensation structures for such investments. Compounding this issue is a practical dilemma related to evidence-based practice. For any new technological implementation in healthcare, the gold standard is to have clear, empirical evidence that supports its effectiveness. In the case of these advanced tools in the MHS context, such evidence is sparse or non-existent. Without definitive studies or data showing the benefits of these technologies, it becomes a challenge to justify their adoption, both in terms of clinical outcomes and financial feasibility. This lack of evidence, in turn, restricts available budgets even after introducing this agreement, making it even more difficult to allocate funds for research that could steer the sector in the right direction.

Next to that, this agreement does not exist in isolation. Previous debates, especially those facilitated by the WHO, have highlighted a paradigm shift. The WHO emphasizes three distinct preventive measures to stave off healthcare deterioration(Boot & Knapen, 2003; Eshuis et al., 2013):

1. *Primary Prevention:* This strategy targets individuals or groups who have not yet manifested any health problems. The goal is to preemptively address potential issues before they arise. Success in this approach requires knowledge of one or more risk factors associated with the health problem and the ability to influence these factors.
2. *Secondary Prevention:* The emphasis here is on early detection and intervention. This form of prevention seeks to identify diseases or their risk factors at their nascent stages, thereby allowing for timely treatment to prevent the disease from worsening or leading to symptoms.
3. *Tertiary Prevention:* This strategy focuses on managing and mitigating the impact of established diseases or injuries. The aim is to prevent the aggravation of the condition and its potential complications, which could lead to disabilities or incapacity. The ultimate objective is to forestall permanent disability.

With the surging prevalence of mental health issues and the overwhelming demand on hospitals in the Netherlands, a strategic shift is taking place within this agreement (Aebi et al., 2023; MinisterieVWS, 2022b). The healthcare sector is transitioning from an emphasis on *tertiary prevention* to a greater focus on *secondary* and *primary prevention*. This policy change signifies that the MHS will assume a more dominant role, particularly in preventive measures.

6.6. Deciphering policy dynamics within the socio-organisational context

As illustrated in the subsequent figure 6.1, various policies address distinct facets corresponding to the previously identified subsystems. Given that these policies target different elements of these subsystems, the feedback interplay among them is particularly noteworthy, as each subsystem plays a role in the overall quality of care. Singularly, the recently unveiled IZA agreement does not influence any of the subsystems solely, as it delineates multiple objectives and inducements. Pertinently, within this IZA agreement, a lingering question is whether the various targeted measures might be at odds with one another. This will be further dissected in chapter 7.

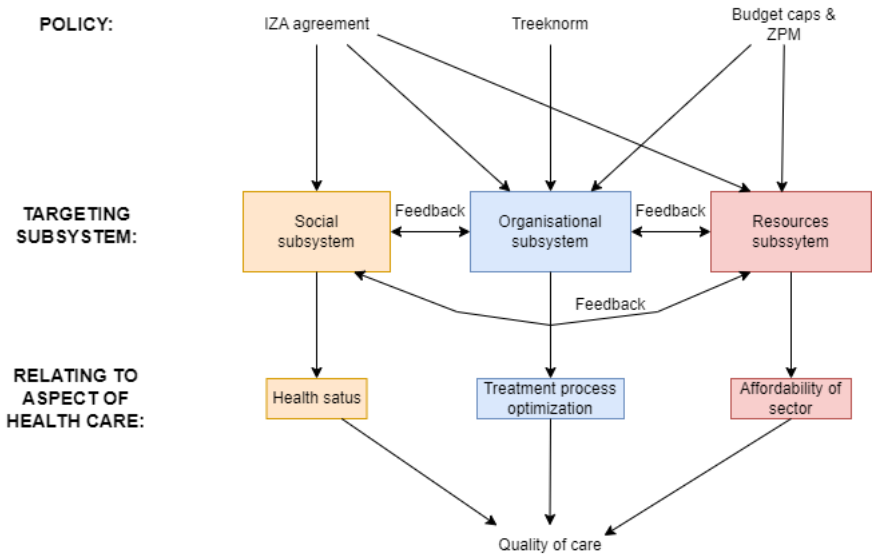

Figure 6.1: Conceptual overview of the different subsystems, their interrelations highlighting policy adverse impacts

6.7. The analysis of policy-making in mental health care

Discussions with policy-makers, revealed a clear distinction between the different sub-systems. The policy-makers frequently referenced the presence of "partitions" (in Dutch, "schotten") between various departments even at the Ministry level. Some departments focus on prevention, others on the specific treatment optimization of GGZ, and yet others on financial matters. Such a departmental delineation is evident in figure 6.1, where distinct policies target varied components.
Moreover, a point raised during the policy-maker interviews was the current dearth of data accessibility in the Netherlands. Specifically, the absence of the "landelijk alcohol en drugs informatiesysteem" (LADIS) or the National Alcohol and Drugs Information System in English played a major role in this data deficit. Following legislative changes, key data points such as incidence and prevalence of AUD, repercussions on dangerous driving or societal disturbances, and the number of patients receiving treatment have been inaccessible since 2015 (LADIS, 2023). This paucity of data complicates, if not impedes, effective policy formulation and awareness among departments of ministries and society. However, there has been more awareness since last year within the government due to questions raised by politicians in parliament about the previously sidelined issue (MinisterieVWS, 2022a). The rise in awareness is further underscored by the establishment of a National Rapporteur on Addiction (in Dutch, "Nationaal Rapporteur Verslavingen" (NRV)), which should inform the Ministery on the latest trends and lack of insights (MinisterieVWS, 2022a). The policy-makers also emphasized that the subject has not garnered significant political attention, mirroring its treatment within governmental organisations. This relative neglect is primarily attributed to alcohol's ingrained status within the Dutch social fabric.

The dynamics described resonate with the Kingdon Streams model, well known in the policy analysis field, as depicted in figure 6.2 (Kingdon, 1995). This model delineates three intertwined streams: problem, policy, and political (Enserink et al., 2013). Their interactions evolve over time, and for an issue to culminate in effective policymaking, it necessitates a rigorous analytical process encompassing both qualitative and quantitative research. Such comprehensive analysis ensures that the problem at hand accurately informs potential policies, as captured in the second stream. When the political climate is ripe and societal awareness escalates, these three streams converge, opening a "policy window" (Enserink et al., 2013). This confluence facilitates the swift and efficacious translation of problem statements into actionable policies.

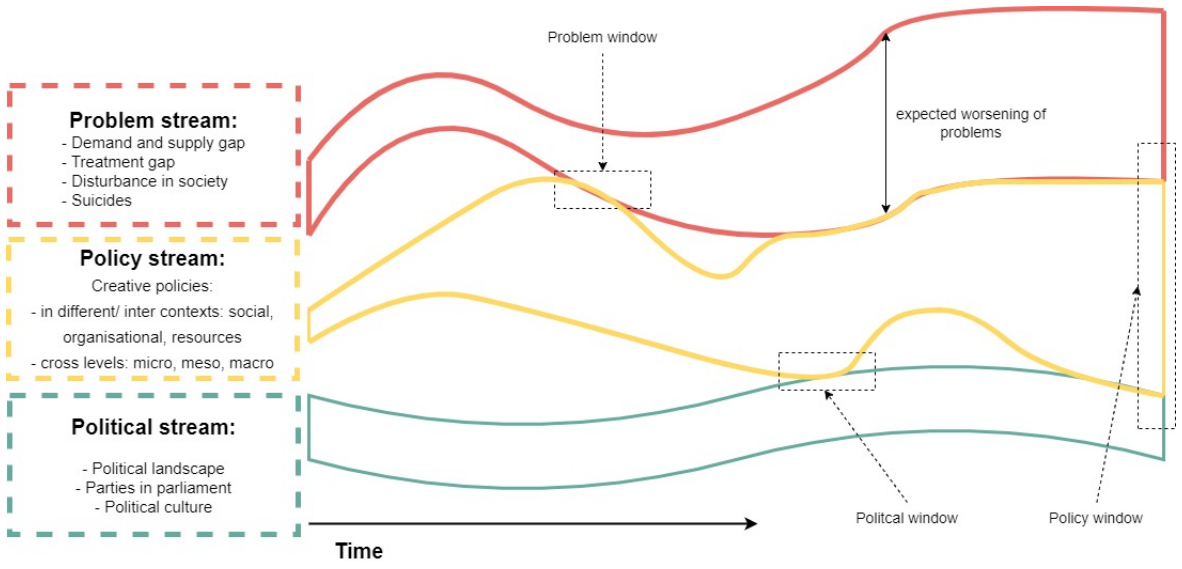

Figure 6.2: Interpretation of Kingdons stream model, containing three different policy streams: problem, policy and political inspired from Enserink et al. (2013) and Kingdon (1995)

7

Critiquing of single-system approaches

This chapter addresses the research question: "What is the relationship between capacity shortages and the quality of care?" by developing a quantitative SD model that builds upon the conceptual model understandings and policy implications discussed in previous chapters (4, 5, 6). It compares and contrasts different conceptual models (A & B) (in section 7.1), outlines encountered challenges (in section 7.2), and constructs a quantifiable model SD model to assess this relationship (in section 7.4), integrating empirical and qualitative data. The chapter culminates in a conclusion (in section 7.5) that merges quantitative analysis with conceptual insights to clarify this relationship.

7.1. Differences and similarities between conceptual understandings

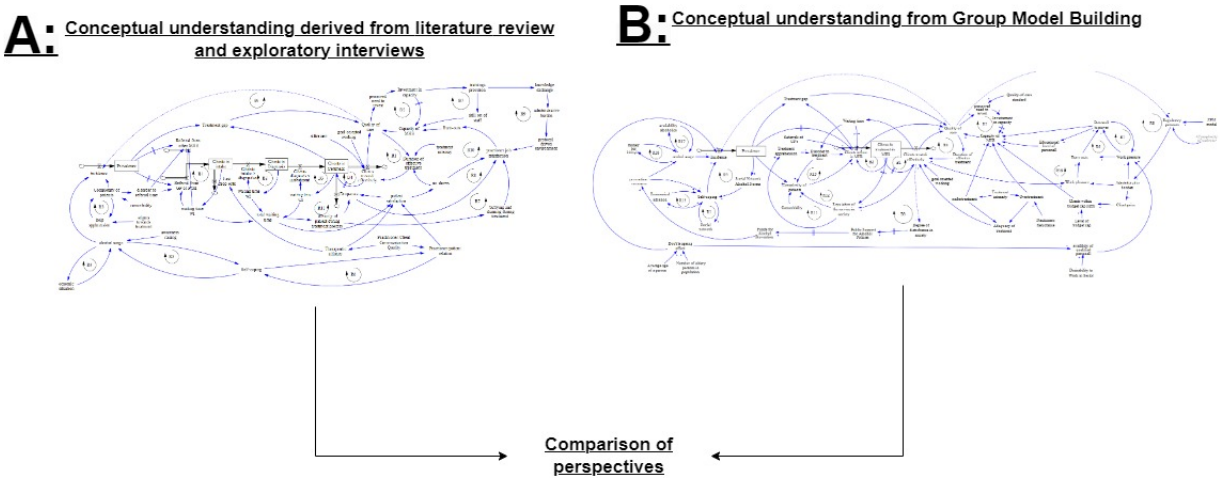

Figure 7.1: The two conceptual understandings of different approaches leading to combined insights

Both models highlight overlapping and unique considerations in the context of social, and organisational treatment processes, and organisational resources. The divergence primarily lies in their interpretation of the significance of certain elements. Key differences are observed around primary causes for treatment delays, reasons for patients dropping out of treatments, and the scarcity of resources. In the lens of the major drivers that affect the quality of care, this section will provide the main differences and similarities. The similarities and differences and their perspectives related to the framework of Rosen et al. (2020) are

more in detail depicted in the tables 7.1 and 7.2

GMB outcome results in a more dominance in efficiency/ availability and the current regulatory implications
The literature review and exploratory interviews revealed variances in research focus. While literature marginally touches upon market dynamics and regulatory pressures, these aspects assume prominence in the Group Model Building (GMB) due to its specific Dutch organisational context. The literature links regulations more to knowledge exchange in mental health care and perceives them as a source of administrative burden, leading to a protocol-driven environment. However, during the GMB sessions, regulations were deemed significant because of constraints like government-imposed budget caps. Such constraints compel Mental Health Services (MHS) to enhance treatment efficiency. This drive is further fueled by government incentives aiming to address affordability concerns for insurance companies, resulting in overbooked schedules and increased staff turnover. This variation is noteworthy as other reinforcing loops similarly impact capacity constraints.

Exploratory interviews and literature highlight an increased focus on the patient
Apart from that, the literature review focussed on the escalating severity of patients during healthcare and their interactions with practitioners. With respect to latter issues such as therapeutic alliance, quality of practitioner-client communication, and patient satisfaction were mentioned. This provided a clear understanding of the reasons for patient non-attendance, evident in no-shows or drop-outs. In the Group Model Building (GMB) session, treatment interactions were seldom mentioned. Instead, the emphasis was on how the service's reputation influenced patient intake and retention. Discussions revolved around the perspective of treating patients, touching on issues of over-treatment or under-treatment. However, the patient's perspective was often overlooked in discussions about the treatment process.

The patient's perspective, termed the "micro-level" as per Rosen et al. (2020), was more thoroughly assessed in the context of increasing complexity. This complexity is evident in literature-cited waiting times and is more pronounced in the GMB responses in terms of barriers patients face when seeking treatment, often stemming from self-coping or their environment. Additionally, a consistent theme across both contexts was the broader social context, or the macro perspective. Here, the stigma associated with self-coping for alcohol usage, socioeconomic conditions, and comorbidity were highlighted as pivotal factors at both levels.

In the conceptual diagrams shown in 7.1, as resource scarcity and the duration of effective patient treatment are evaluated, the motivation to address quality differs accordingly. As resource scarcity becomes a point of evaluation and as the duration of effective patient treatment changes, the motivation to address quality either intensifies or diminishes. From the literature, it emerges that as the quality of care diminishes, there is a perceived heightened need for investment to ensure sector viability, resulting in an increased capacity over time. This is characterized as a balancing loop in the literature. However, during the GMB sessions, a decline in the quality of care did not prompt additional incentives but rather introduced more regulations. This approach reflects the current effect of regulations on the standard of care quality will rise in response to the growing complexity of patient needs. Likewise, when the quality of care is bolstered, it is accompanied by new regulations and therefore its capacity deteriorates.

Despite broader implications, specific relationships emerged as noteworthy in both the literature review and exploratory interviews, as well as through the group model-building approach. These included distinct perspective differences at the aggregation level of Rosen et al. (2020), and the identification of sub-systems in social, organisational: treatment process, and organisational resources. These findings are detailed in Tables 7.1 and 7.2. The main differences are elucidated in each table. The challenges and efforts of integration are discussed in section 7.2.

Context	Main Effects	Quality of Care Focus
	*The systems view related to **conceptual model A***	
Social: Demand	1. The economic situation, apprehension about seeking help, and the presence of comorbid conditions contribute to the rise in alcohol consumption and the complexity of patient cases; additionally, stigma creates a significant obstacle to pursuing treatment (Ahuja et al., 2019; Moran & Jacobs, 2013; Van Slingerland et al., 2022).	Determinants for Health
Organisational: Treatment Process	1. A robust sense of self-coping is indicative of a positive therapeutic alliance, which, in turn, can lead to a reduction in patient dropouts and no-shows. 2. Extended waiting periods (w1, w2, w3) can diminish patient satisfaction and may contribute to an increase in no-show occurrences (Wright et al., 2020). 3. Delays in the treatment process, whether due to patient-related factors or organisational capacity issues, can escalate the severity of the condition, resulting in diminished treatment efficacy (Chinman et al., 2017).	Patient-centeredness and Effectiveness
Organisational: Resources	1. Persistent no-shows may lead to a decline in job satisfaction and an increase in burnout among employees (Gotham et al., 2022). 2. Bullying and shaming behaviours exhibited by patients can negatively impact service capacity (Zaitsev Assuline et al., 2023). 3. An increase in training facilities is likely to result in a workforce with a higher skill set and greater educational achievements (Markon et al., 2017). 4. More training can escalate the need for knowledge exchange and place additional stress on a protocol-driven environment, potentially decreasing overall capacity.	Efficiency and Availability

Table 7.1: The systems view related to **conceptual model A:** the qualitative conceptual model understanding of the literature and exploratory interview approach, their main effects and the focus on quality of care

The literature indicates a clear relationship between social demand and the increasing number of individuals requiring assistance, which is exacerbated by economic factors (Moran & Jacobs, 2013). Economic elements are not merely influential but are compounded by the challenges patients face in navigating their adverse circumstances within declining socio-economic environments. Additionally, the complexity of cases escalates due to comorbidities, alongside a rise in per-patient care demand (Van Slingerland et al., 2022). Consequently, delays in treatment initiation, compounded by treatment hesitation, further intensify patient complexity and demand (Ahuja et al., 2019).

Within organisational treatment processes, a significant emphasis is placed on patient-centeredness, highlighting the importance of the micro or patient perspective. This focus primarily affects therapeutic alliances and patient satisfaction regarding treatment processes (Wright et al., 2020). Notably, the surge in patient demand and case complexity, coupled with capacity constraints, adversely impacts patient satisfaction due to extended waiting times, leading to increased dropout rates and no-shows. Moreover, the efficacy of completed treatments begins to decline (Chinman et al., 2017).

The final aspect of importance is the impact of current treatment methodologies on practitioners and the side effects of training or knowledge dissemination. This is partly due to increased adherence to protocols, which, while promoting treatment coherency, also elevates stress levels among practitioners (Markon et al., 2017). As patient complexity and treatment load intensify, this pressure results in

negative workplace dynamics such as bullying and shaming (Zaitsev Assuline et al., 2023), along with less desirable treatment outcomes like increased no-shows (Gotham et al., 2022), ultimately reducing job satisfaction.

Context	Main Effects	Quality of Care Focus
	*The systems view related to **conceptual model B***	
Social: Demand	1. The complexity of patient conditions in society exacerbates the treatment gap. 2. The phenomenon of double aging results in a continued high prevalence of Alcohol Use Disorder (AUD) among the elderly due to increasing indications. 3. The weakening of social networks and self-coping mechanisms appears to contribute to a rise in the incidence of AUD. 4. Increased funding for lobbying and greater accessibility to alcoholic products are associated with higher consumption rates, which in turn, lead to an increase in the incidence of AUD.	Determinants for Health
Organisational: Treatment Process	1. Both over-treatment and under-treatment can result in varying degrees of effectiveness in patient care. 2. The reputation or stigma associated with a service can attract a higher number of complex cases while deterring those with less severe conditions.	Efficiency
Organisational: Resources	1. The phenomenon of double aging, combined with regulatory pressure, is leading to heightened workloads and exacerbating capacity shortages. 2. An increase in administrative duties and overall work pressure negatively impacts job satisfaction, potentially resulting in higher burnout rates and staff turnover. 3. Elevated personnel turnover can lead to a decline in the collective educational level and, consequently, a reduction in capacity. 4. Overtreatment intensifies the demand for capacity, while undertreatment has the opposite effect, potentially reducing the need for resources. 5. The growing complexity of patient needs demands more administrative work, which serves as an additional catalyst for personnel turnover.	Efficiency and Availability

Table 7.2: The systems view related to **conceptual model B:** the qualitative conceptual model understanding of PSDM approach, their main effects and the focus on quality of care

During the group model building, experts notice that both the demand of care per patient and the total number of patients within the social context dominantly affect the challenges in service delivery, leading to capacity shortages. These challenges encompass factors such as age, social networks, and the impact of government incentives on funding preventative measures. A notable impact of these factors is an increase in alcohol consumption, raising the risk of Alcohol Use Disorder (AUD). The emphasis is more on the growing number of patients rather than the complexity per patient. However, the experts note that these aspects are interlinked over the long term. The capacity shortfall contributes to increased alcohol usage and its normalization, leading to a rise in undiagnosed patients, thereby escalating the demand for services.

At the organisational level, discussions predominantly revolved around the extent of over and under-treatment, impacting capacity availability. Additionally, the reputation of mental health services

significantly influences the type of patients attracted.

The focus on the resources context centers around the financial implications of the current capacity configurations. An ageing population and high staff turnover worsen capacity constraints and reduce the availability of skilled personnel, which in turn affects treatment efficacy. Additionally, the increase in administrative duties, driven by both regulations and rising case complexity, contributes to fears of suboptimal treatment outcomes and declining job satisfaction, aligning with findings by Markon et al. (2017). This situation escalates burnout rates and exacerbates personnel shortages. The increasing demand per patient raises questions about whether under-treatment, as a strategy to manage patient numbers, is viable without compromising the quality of care per patient.

The focus varies not only across contexts such as social, organisational treatment, or organisational resources but also in terms of consensus and dissensus, as detailed in Chapter 4. Interviews and literature reviews reveal differing views on concepts like the impact of waiting time on patient treatment effectiveness, as they deteriorate while waiting, as revealed by Rastpour, McGregor, et al. (2022). These concepts are either unconfirmed or their impact remains unclear. Table 7.2 depicts how those concepts varied per perspective. The perspectives highlight areas of agreement and disagreement both in the literature, the exploratory interviews and within the group model-building workshop or as a comparison with the literature. The table examines whether experts agree during interviews and if articles support certain relationships. Disagreements are still included in the table if they are discussed in the literature and interviews. The group model-building perspective is compared with the literature to determine if the literature supports these arguments and whether the articles are consistent in their findings. In the group model-building process, achieving consensus was not the objective; hence, it would be inappropriate to assess the presence of consensus. Further reflection on the focus of the exploratory interviews and participatory modelling, particularly on the treatment process as opposed to other aspects, is presented in Chapter 10.

Figure 7.2: The comparison of the perspectives and the consensus within literature, colour coding provided below the figure

Context	*Difference in perspective from*		*Sources*
	Participatory system dynamics modelling workshop (conceptual model A)	***Exploratory interviews & the literature review (conceptual model B)***	
Social context: driving of more alcohol consumption	Individualism drives alcohol usage	Economic less stable situation drives the alcohol usage	(Harmer et al., 2020; Moran et al., 2013)
	Social network and social coping reduces the ability to refuse consuming or staying abstinent after treatment	Stigma towards treatment increase barrier to go in treatment	(Holtz et al., 2023; Prat Vigue et al., 2022)
	Blurring drives alcohol usage	Help apprehension increases complexity of patient	(Gothman et al., 2022; Van Slingerland et al., 2022; Wolk et al., 2019)
	Money for lobbying encourages more alcohol usage		(Endalamaw et al., 2023)
Organisational context (treatment process): Behaviour affecting the treatment process	Reputation of the service and therefore more complex patients intake	Severity of patient rises due to delays after take-in	(Ahuja et al., 2019; Wright et al., 2020; Rastpour, McGregor, et al., 2022)
	Increase of patient demand due to comorbidity	High waiting times affect barrier to go in treatment patient	(Wright et al., 2020; Rastpour, McGregor, et al., 2022)
	Trade-off of under and over treatment leads to less capacity availability or less effective treatment of patients	Increase of patient demand due to comorbidity	(Ahuja et al., 2019; Moran et al., 2013)
		Therapeutic alliance will effect especially fast drop-outs	(Forman-Hoffman et al., 2017; Gellatly et al., 2018)
		Practitioner and client relation increases client satisfaction	(Harmer et al., 2020; Khane et al., 2023)
		Quality of communication between practitioner and client will effect the satisfaction of patients	(Wolk et al., 2019; Wright et al., 2020)
		Less patient satisfaction leads to more drop-outs during treatment	(Chinman et al., 2021; Forman-Hoffman et al., 2017)
		Referrals will increase or decrease intakes and therefore a gatekeeper problem is at stake	(Barbor et al., 2017 Titiov et al., 2018)
Organisational context (resources): Behaviour affecting the capacity and affordability	Work pressure due to regulations	Bullying and shaming during treatment affect work environment	(Forman-Hoffman et al., 2017; Zaitsev Assuline et al., 2023)
	Personnel turnover increases capacity shortages	Protocol driven environment reduces job satisfaction	(Forman-Hoffman et al., 2017; Gothman et al., 2022)
	Results of non effective treatment affect practitioner satisfaction	Trainings provision improves the skill set of staff and also promotes knowledge exchange	(Lakeman et al., 2022; Wolk et al., 2019)
	Budget caps make it more complicated to take up more clients yearly and stimulates risk aversion	More knowledge exchange could also imply a more dominant protocol driven environment.	(Ahuja et al., 2019; Markon et al., 2017; Zaitsev Assuline et al., 2023)
	Lacking of autonomy of practitioners due to protocol/steered leads to less practitioner satisfaction		(Aebi et al., 2023; Chinman et al., 2017; Wolk et al., 2019)
	Personnel turnover increases due to work pressure and administrative burden		(Aebi et al., 2023; Wolk et al., 2019)
	Double ageing causes problems in finding high-educated staff		(Titiov et al., 2018)

7.2. Combined insights: the eco-system approach

As the outcomes of those models show, the combined insights of different aspects are represented, such as the social context, the organisational treatment process context and the organisational resource context. This is reviewed in the subsequent figure 7.3 where the three different subsystems are combined and the interrelations are provided.
The comparison between the literature review and the Group Model Building (GMB) outcomes, within the framework of Rosen et al. (2020), reveals these discrepancies in the categorization and overlap of certain subsystems. As depicted in Figure 7.3, the social context primarily focuses on the national prevalence and incidence of Alcohol Use Disorder (AUD). Notable differences emerge in terms of factors like comorbidity (Ahuja et al., 2019) (a frequent topic in literature) and aspects like double ageing and the social networks of patients, which are more emphasized during the workshop. These factors significantly influence the complexity of care demand per patient and the overall number of patients requiring care.

In other areas, such as the context of organisational treatment process, both the literature review and the exploratory interviews revealed that questions persist about how patient satisfaction and therapeutic alliance influence patient behaviour (Titov et al., 2018). Additionally, the workshop highlighted the impact of treatment intensity, whether over or under-treatment, on treatment outcomes. The influence on the resource side is particularly pronounced, with personnel turnover largely driven by factors like training intensity, knowledge exchange, and patient behaviour. The workshop further indicated that the results of treatment significantly affect job satisfaction. Increasing regulatory demands exacerbate the administrative burden, further contributing to high personnel turnover.

Due to these contrasting and sometimes contradictory perspectives, the decision was made to consolidate only certain perspectives into a comprehensive figure that clearly illustrates the interlinkages. This figure, shown in Figure 7.3, juxtaposes the social, organisational, and resource-based elements against the various layers defined by Rosen et al. (2020). Organisationally, the interplay between demand and resources is represented, highlighting the challenges in securing adequate budget and staff to meet the ambiguous demand, further complicated by the treatment gap. Additionally, aspects of the organisational context of the treatment process, including patient behaviour, goal setting, and patient severity, are key observations (noted in the literature, during interviews and GMB workshop) at the micro-level.

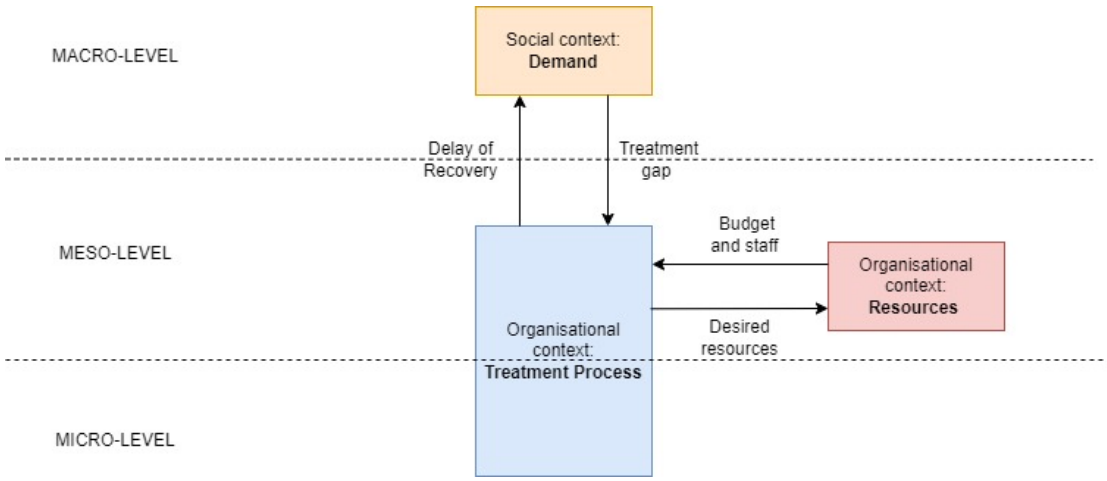

Figure 7.3: Subsystemdiagram of the mental health care ecosystem with differentiated on micro, meso and macro level (Rosen et al., 2020)

7.3. Conceptualisation of mental health care system model

The concept of distinct subsystems forms the basis for developing a specialized "mental health care system model," which aims to analyze various stocks, flows, and previously mentioned behavioural

aspects to answer the question of what the relationship is between capacity shortages and the quality of care. This model's primary focus is on quantifying patient-related metrics within the mental health care system. It specifically examines the number of patients entering treatment, system-induced delays such as waiting times, and the subsequent impact of these delays on treatment duration. Additionally, the model evaluates the proportion of billable hours in relation to total worked hours, encompassing both direct and indirect time spent on patient care. These aspects are systematically illustrated in Figure 7.4.

The behaviour analyzed in the model aligns with previously identified patterns, particularly in how care quality is impacted by factors within three key subsystems: the social context, the treatment process, and workforce dynamics. Within the social context, factors like the incidence or prevalence of mental health issues play a crucial role. In the treatment process, the model considers variations in waiting queues, along with the impact of patient drop-outs and no-shows, which either extend the duration of effective treatment or lead to its absence. These elements collectively influence the ability of the workforce to deliver billable services to health insurance companies, affecting the system's efficiency and financial viability either positively or negatively.

7.4. Quantification of the mental health care system model

In system dynamics (SD) modelling, Sterman (2000) posits that after problem articulation and dynamic hypothesis stages, model formalization typically follows. However, due to the inherent complexity and abstract nature of the system in question, along with limited data availability from the LADIS information system, a comprehensive quantification and formalization of the model proved challenging. Using the sparse data provided in collaboration with the MHS, it becomes evident that certain variables, like inflow, outflow, treatment effectiveness, patient behaviours such as no-shows, and factors like waiting times, do not easily fit into a model. More critically, these variables offer limited context for understanding the previously examined behaviours. Given the potential contradictions in developing a quantitative system dynamics model, this section will explore the challenges in interpreting single variables and systems due to varied measurement methods for one factor and the difficulty in establishing and aligning relationships in relating capacity shortages towards the quality of care.
The conceptual representation, shown in a stock-flow diagram (see figure 7.4), illustrates the primary quantifiable relations and behaviours. After the diagram, a detailed variable explanation is provided. The data reflects the current state of twelve mental health care services, showcasing base-case behaviour. Variable outputs are presented for specific treatment settings like policlinical, day/partial, or clinical, or are summarized for all patients in the MHS. This summary captures the total count of unique patients at given intervals (e.g., year, month). Importantly, some patients might be counted in multiple settings due to internal referrals, therefore the comparison between the summarized cluster and the different treatment setting cohorts. Further elaboration on this aspect is available in the ensuing section, as referenced in section 7.5.

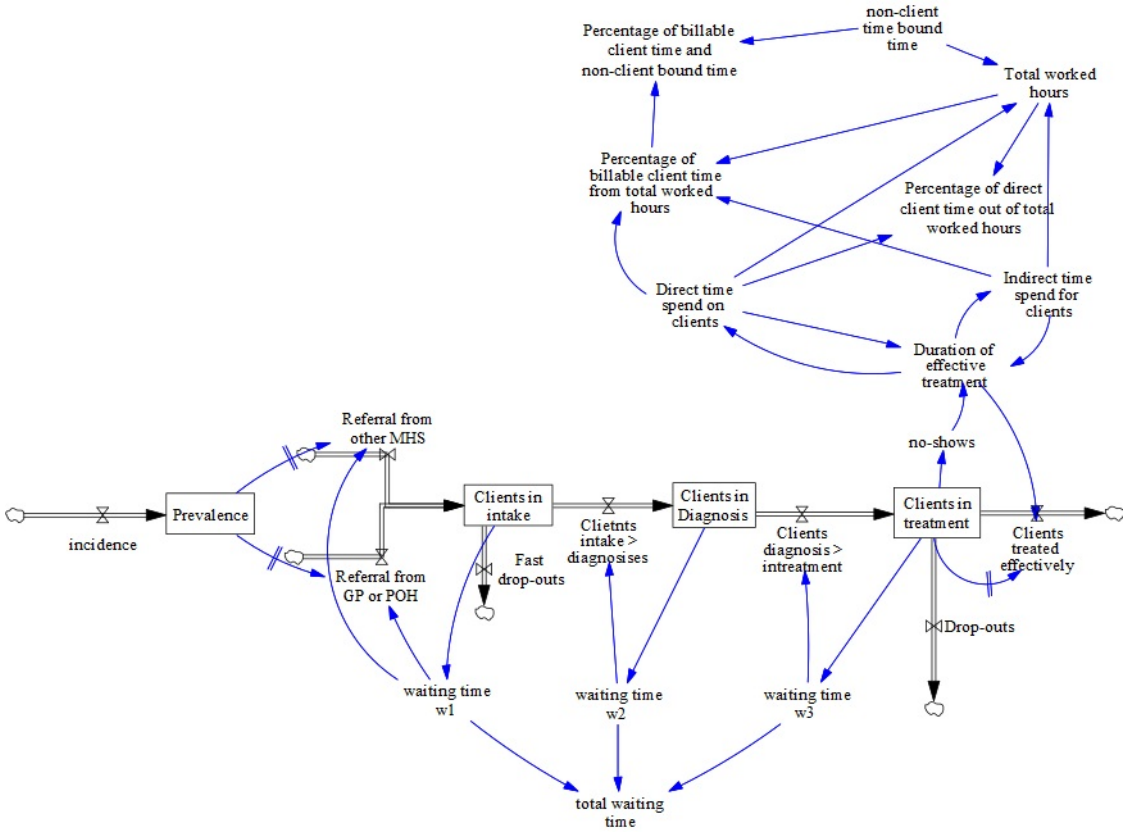

Figure 7.4: Attempt to quantify the previously depicted qualitative understandings in the "mental health care system model" illustrated in a stock-flow structure

The stocks and flows, as represented by the available data, will be discussed in sequence. Notably, as also depicted in figure 7.1, the left side illustrates the inflow and the social prevalence of the disorder. The centre focuses on the treatment process, while the right side delves into the impact of resource scarcity. Initially, the inflow and outflow will be examined, followed by a discussion on delays, patient behaviours like no-shows, and treatment outcomes. Finally, the discourse will shift to the topics of affordability and resource considerations. A more detailed description of those effects is provided in the Appendix J, and a short synthesis is provided below.

7.4.1. Inflow and outflow of the mental health care service

In the analysis of patient flow within the mental health service, figure 7.5 reveals a consistent pattern of patient inflow and outflow, punctuated by significant spikes in 2016 and late 2021 due to a merger and the COVID pandemic, respectively. Despite these fluctuations, the service's capacity remained constant, likely a strategic choice to ensure financial stability by balancing patient admissions and discharges. Notably, drop-outs, which account for about one-fourth to one-fifth of the total outflow, as indicated by the green line in the figure, underscore ongoing challenges in patient treatment adherence and success.

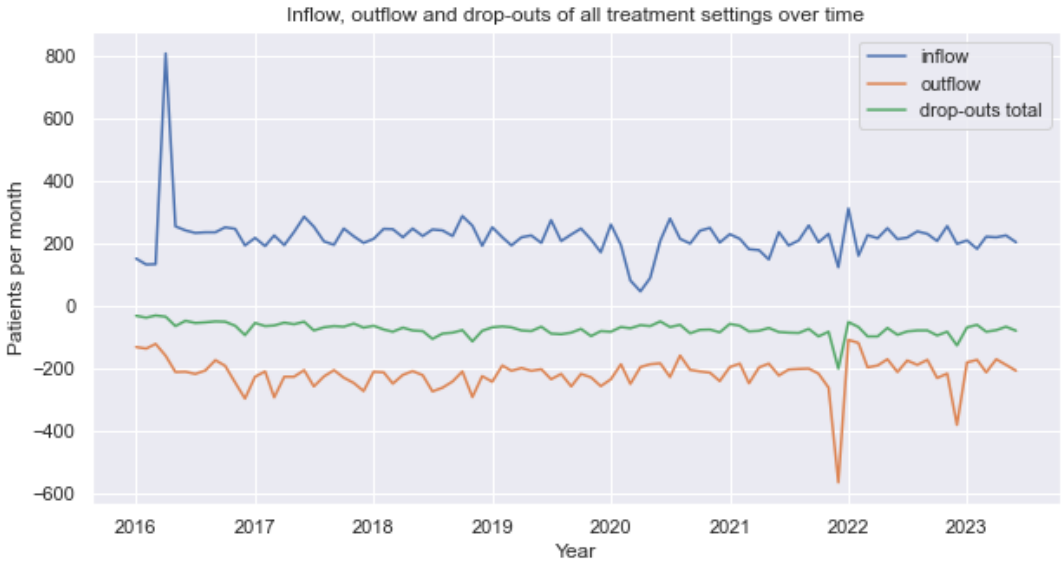

Figure 7.5: Inflow and outflow of patients per month within the MHS over time

7.4.2. Time delays and waiting times

In the mental health service setting described, patient management is intricately tied to the dynamics of waiting times and treatment outcomes. The treatment stages are demarcated by varying waiting periods (w1, w2, w3), with a notable link between longer intake waiting times and initial patient drop-outs as Wright et al. (2020) describes. Despite this, the data analysed shows an intriguing lack of direct correlation between intake waiting times and drop-out rates, even amidst notable spikes in 2020 and 2021. This discrepancy is partly attributed to the introduction of e-health services, which, while expediting treatment for some, do not factor into waiting time calculations for those receiving full digital treatment.

Moreover, the mental health service strategically manages waiting times, a decision influenced by budgetary constraints and the necessity to efficiently allocate resources. This approach, while pragmatic, raises concerns regarding the financial sustainability of the service, given the costs associated with non-active practitioners. Therefore another layer of complexity is formed to relate to the precise effects on waiting times.

7.4.3. Evaluating effectiveness of treatments

In analyzing treatment efficacy within mental health services using the ROM method (a more detailed description depicted in chapter 2), the study categorizes post-treatment outcomes into abstinence, controlled use, and varying degrees of excessive use (as seen in figure 7.6. This categorization highlights the nuanced perspectives on optimal treatment outcomes, which vary among practitioners and institutions. A significant finding is the marginal superiority of clinical settings over policlinics in promoting abstinence, although their effectiveness in achieving controlled use is less notable. The study also acknowledges potential biases due to voluntary participation in surveys and the limited duration of treatment, which precludes long-term outcome analysis. Furthermore, it underscores the distinct focuses and desired outcomes of various treatment modalities, such as CGT, ACT, and the Minnesota model, with the latter placing a unique emphasis on spiritual development as the desired outcome could differ at certain modalities and therefore outcomes are difficult to compare.

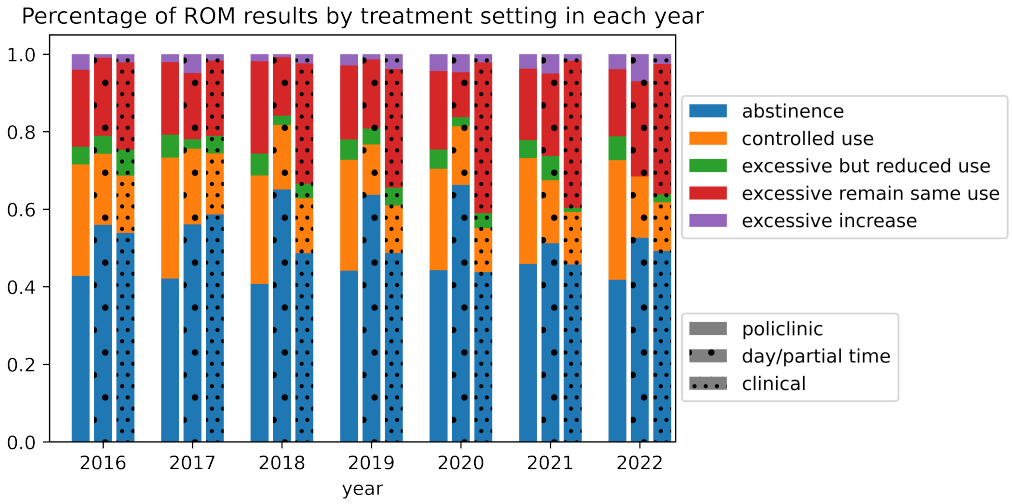

Figure 7.6: Yearly clustered treatment outcomes by setting, demonstrating a spectrum of treatment success indicators including abstinence, controlled use, reduced excessive use, stable excessive use, and increased excessive use that are multi-debatable

Effects of no-shows

In the context of mental health services, patient no-shows, where scheduled appointments are missed, present significant challenges. This behaviour not only impacts treatment outcomes but also incurs additional costs, affecting the financial sustainability of the health service. A notable rise in no-show rates was observed in early 2016, attributed to an influx of patients from a recently acquired institution. The rates of no-shows have remained relatively stable since, with a slight increase in the policlinic setting by the end of 2022.

Interestingly, no-shows are more common in policlinic settings compared to day/partial care or clinical settings. This could be due to the less intensive program requirements and the fact that patients in policlinics usually reside at home. The higher prevalence of no-shows in this setting may contribute to lower abstinence rates and prolonged treatment durations, increasing the likelihood of relapses. Contrary to the existing literature of Rastpour, McGregor, et al. (2022), which suggests no-shows are more frequent among complex patients, the study's data do not fully support this notion. The discrepancy may arise from different definitions and measurements of no-shows across studies.

Referral of patients

In assessing treatment efficacy in mental health services, alongside the ROM measurement, referrals between treatment settings offer additional insights. These referrals can indicate the effectiveness of the current treatment approach. A referral from a lower-intensity to a higher-intensity setting often suggests that the existing treatment is inadequate or there is dissatisfaction from the practitioner or patient. Conversely, referrals from a more intensive to a less intensive setting are typically part of a standard treatment progression, especially post-inpatient care, to prevent relapse.

The data shows referrals patterns from day-partial to clinical and from policlinic to clinical settings. It reveals that approximately 1/20 patients from both day-partial to clinical and policlinic to day-partial settings are referred, with a significant number moving from the policlinic to the clinical setting. However, these referral rates are not definitive indicators of treatment efficacy, as patient preferences or evolving needs might influence the choice of treatment intensity.

Moreover, the dataset might contain a potential data bias due to patient duplication. Since patients may transfer between settings during their treatment, they could be counted in multiple cohorts. This factor complicates the interpretation of treatment efficacy, particularly when analyzing data disaggregated by treatment intensity.

7.4.4. Financially affordability of the service

Chapters 5 and 6 of the text highlight a critical issue in the healthcare system: the challenges of affordability negatively impacting the quality of care and overall effectiveness. The proportion of direct patient care time typically ranges between 30% and 40% of total working hours. This scenario changes when considering billable hours, which are financially covered by healthcare insurance entities.

Before the introduction of the ZPM model in 2023, billable time was nearly double the direct patient care time due to the inclusion of both direct and indirect tasks in insurance coverage. Another important driver for non-billable time is the non-client related expenses, such as maintenance, building rentals, and management tasks, which add a few percentage points to the total costs but significantly impact the financial sustainability of mental health services (MHS) organisations. The intricate balance between hours worked and billable hours is crucial for the fiscal health of these institutions. Negotiations with insurance providers and maintaining operational expenses, compounded by factors like inflation, present challenges in ensuring the affordability of the healthcare sector.

Another aspect influencing affordability is the synchronization of the number of patients with available practitioners. The policlinic setting serves a high number of patients, suggesting a potential shift in focus towards this setting, especially for treating more complex patients. However, treatments in day-partial or clinical settings are more labour-intensive, making it difficult to justify expenses for a MHS, particularly given that abstinence rates in clinical settings are only around 50%. These dynamics underscore the complexity of balancing treatment outcomes, operational costs, and negotiations with insurance companies to maintain an affordable and effective healthcare system.

The last notable point by evaluating the behaviour depicted from the data is the subsequent decline in patient numbers during the COVID-19 outbreak. This decrease exacerbated the MHS's concerns regarding a growing imbalance between patient demand and available staffing resources.

7.5. Conclusion of synthesis and quantitative understanding

Addressing the research inquiry, "To what extent do capacity shortages in mental health care impact the quality of care?", this section endeavours to illuminate the topic by juxtaposing the conceptual models, which provide a holistic comprehension, against a quantitative dissection of data. By amalgamating insights from the models, real-world observations, and analyses delineated in preceding chapters, it becomes evident that quantifying this impact is a formidable challenge. This challenge stems from multifaceted interpretations of 'quality of care', which complicates even the prospect of simulation. Solely concentrating on discrete variables or graphs can inadvertently oversimplify the intricate web that defines the quality of care.
Within this chapter, the discernment of how capacity shortages manifest is contingent upon the lens applied to the system. Three pivotal considerations emerge:

1. The selection of relevant variables.
2. The methodologies adopted to determine these variables.
3. The interplay between variables and their respective dynamics.

At the outset, defining quality in healthcare is not straightforward. Relying exclusively on metrics like effective treatment duration, patient no-show rates, or drop-outs oversimplifies the matter. Complications arise based on measurement perspectives; for instance, assessing waiting time in hindsight versus forecasting can yield divergent results. Similarly, ROM measurements that evaluate patient progress in a narrow time window (e.g., three months) might inaccurately label a treatment as 'effective'. Such restrictive evaluations can inadvertently mask long-term challenges, like potential relapses post-treatment.
Furthermore, the interrelationships between these variables are important. For example, while billing considerations might dominate one perspective, real-world complexities, like the strain of handling intricate cases or the bureaucratic weight of exhaustive documentation, introduce perverse incentives. This could manifest as the neglect of complex patients, treatment optimization, and an onerous emphasis on meticulous record-keeping for regulatory scrutiny.

By synthesizing the insights from interconnected models, capacity shortages adversely influence the quality of care. Examples include extended waiting times, an influx of complex cases, and the daunting challenge of maintaining a sustainable system. The capacity shortages are not only present in the short term but in the long term as well due to external pressures. These include pandemics or societal trends like increased alcohol consumption or double ageing, further straining the number of practitioners able to work and increasing care demand. Consequently, in the long term, the gap in capacity shortages is likely to widen, challenging healthcare providers to bridge this gap while striving to remain affordable.

8

Discussion

This chapter analyzes the results from the research questions, discussing scientific findings from stages including the literature review, (exploratory) interviews, the Participatory System Dynamics Modelling workshop, and the conceptual model evaluation. It also examines policy implications and their impact on systemic structures, as detailed in Chapter 6. The chapter concludes by comparing these findings with the current literature in this research field.

8.1. The literature review and exploratory interviews

In conducting the literature review, the primary focus was on alcohol use disorders (AUD) and substance use disorders (SUD), particularly from a Dutch perspective. The review involved examining care types (ambulatory, inpatient, outpatient), treatment modalities (CBT, Minnesota, ACT), and patient demographics. However, challenges arose due to the limited number of relevant articles found using terms like "substance use" or "alcohol use," as detailed in section 3.2. Additionally, articles lacked clarity in specifying their primary research domain. Therefore within some articles, it was often ambiguous whether the focus was strictly on mental healthcare, medical care (including ED-setting (emergency departments)), or a blend of both, also noted by Wolk et al. (2019). Furthermore, when mental healthcare was mentioned, it was unclear whether the scope was confined to cognitive disabilities or also encompassed other physical substance use disorders.

Regarding the Dutch context, disparities were noticeable in articles that categorized nations by income levels (high, middle, low), as described by (Ahuja et al., 2019). These disparities were apparent in challenges faced by low-income countries, such as transportation to healthcare facilities, religious influences, and illiteracy. Consequently, the type of care setting, treatments, and patient groups varied across the literature.

To address these challenges, an iterative approach was employed, juxtaposing exploratory interviews with a literature review to ascertain pertinent drivers in the alcohol use disorder (AUD) sector within the Netherlands. Consequently, the selection of literature was guided by its relevance to both AUD and the specific Dutch context, as informed by the interviews. This approach also enabled the verification or refutation of potential biases in the perspectives of individual experts during the exploratory interviews. An example of such alignment between the literature and interviews with practitioners was the observed disparity in key drivers of AUD prevalence between rural and urban settings. In rural regions, the focus was predominantly on home-based drinking and familial influences, whereas urban practitioners highlighted issues such as the prevalence of shops and street-side substance sales. These findings have therefore been incorporated and further elaborated upon in chapter 4.

Moreover, both the literature and exploratory interviews showed the progression in the analysis of care systems and their interactions. The majority of the relevant articles, both in terms of content and volume, were published in the past five years, as indicated by (Forman-Hoffman et al., 2017). This raises the concern of potentially overlooking articles, given the constant emergence of new papers during the

research period. The research query scope, covering the years 2013-2023, might explain the prevalent focus on patient perspectives (micro-level) in the literature (Rosen et al., 2020). Similar considerations appeared from the exploratory interviews. For instance, the recent inclusion of a client board in the policy-making processes of MHS's, thereby ensuring that patient preferences are considered during treatment. As a result, the significance of patient experiences in the healthcare sector is increasingly recognized.

8.2. The participatory SD modeling workshop and its implications

Throughout the participatory System Dynamics (SD) modelling workshop, which included various tasks such as the Nominal Group Technique (NGT) and Group Model Building, several notable factors emerged that may have influenced the outcomes of the results.

Bias of the MHS on their perspectives

Participants representing roles such as psychiatrists, business administration managers, or experts by clients inherently bring biases, particularly when discussing from their own organisational perspective and the fact that they belong to the same MHS. Their affiliation with the same MHS institution could potentially cloud impartial judgments regarding service perceptions. The dialogue notably highlighted concerns about service stigma and reputation as revealed in chapter 5. Their status as a TOP-GGZ, although commendable for signifying capability in handling complex patients, might overshadow the patient's perspective. Notably, even if a client-expert was present to counteract this viewpoint, his active role within the service may impede a fully unbiased reflection. Consequently, the assertion that patients experience a sense of burden or stigma when accessing their organisation warrants further scrutiny.

The potential for multiple perspectives, particularly on contentious topics, was an important consideration during the GMB session for the facilitator as it could affect the outcome of the session. The perspectives on contentious topics could include not only objective viewpoints based on years of experience in the healthcare sector but also subjective opinions. The facilitator, utilizing all of their abilities, made efforts to illuminate these varying perspectives, especially during discussions of (potential) contentious issues, by actively engaging with and questioning other experts in the room.

Scoping of the problem affected the outcomes

In the initial phase of the session, outlined in Chapter 3, a deliberate focus was placed on exploring capacity shortages and their consequent impact on the quality of care. This contextual setup was instrumental in shaping the session's primary outcomes, which primarily centred on issues related to alcohol consumption, including the prevalence of AUD, and resource availability, covering financial and practitioner aspects. The emphasis on capacity shortages became clear through discussions that gravitated towards various indicators of increased demand, such as double ageing, self-coping, and blurring. Additionally, personnel turnover discussions were influenced by current policy constraints and time management issues, although literature suggests that patient behaviour and administrative burdens also significantly contribute to these challenges (Garcia-Alonso et al., 2022). The experts participating in the PSDM workshop partially acknowledged that the complexity of patient cases often entails an increased administrative load. This might also be attributed to the fact that the participating practitioners were more engaged in management roles than in direct patient care.

Furthermore, the terminology used in the session consistently referred to the participants as 'you as a GGZ (Mental Health Services) entity,' highlighting the specific perspective adopted during the PSDM session. An example of this perspective relates to a moment in session when participants delineated their organisational roles in the AUD care sector, often showcasing differences in patient treatment approaches and challenges unique to their MHS such as the stigma experienced by patients to enter their instance. Such discussions emphasized behaviours perceived as dominant within the sector.

The scope of the session and the clear framing of perspectives were significant in leading to these outcomes. Had there been a different emphasis, perhaps more on assessing the quality of care in mental health services broadly, the results might have less prominently featured themes such as the stigma associated with organisational practices or the sole emphasis on fluctuating demand and resource availability.

Time constraints affected the time of discussion of some participants
During the session, time constraints presented a significant challenge. This limitation particularly affected two experts, C and D, who had less opportunity to express their perspectives fully. Experts A and B, with their more medical-oriented backgrounds, naturally steered the discussions towards medical implications, thereby influencing the session's dominant focus. Although the role of Expert D and C was evident in more critiquing others and posing questions and therefore their perspective was equally balanced. The prominence of Expert D, who specializes in business administration management, is particularly striking when contrasted with the literature and group model-building outcomes, which were more aligned with regulatory implications and their systemic impact.

This disparity highlights the underrepresentation of the client's perspective, especially regarding the treatment process, in the session's discussions. The dominance of certain experts, such as Expert D, inadvertently led to this aspect being less emphasized or visualized within the session's outcome.

The framing of variable names influenced the outcome
An additional aspect warranting attention is the design and the choice of phrasing the variables of the framework and its subsystems (see section 3.4.2). The participants' unfamiliarity with System Dynamics (SD) modelling, as indicated in Appendix C, was a contributing factor to the decision to adopt a less complex and therefore multi-interpretable aggregated scope. Consequently, as fewer variables would make the framework less complex, some variable names could contain multiple interpretations.

Consequently, variables such as 'care demand' were possibly a bit ambiguous. Because this variable refers both to the demand per patient and the total number of patients. Another example is the 'available resources' which encompass a wide range of elements, including financial resources, treatment options, practitioner roles (such as nurses and psychologists), medications, and physical assets like beds and rooms. During the session, there was often more ambiguity than desired about what specific aspects these variables represented, which complicated discussions and influenced the identification of dominant behaviours.

A notable instance of a discussion on ambiguity occurred when an observer intervened in the discussion to differentiate between societal stigma and service reputation, as depicted in Figure D.13. This intervention guided the session to recognize these as distinct variables: societal stigma referring to the general perception of the alcohol addiction sector, and service reputation pertaining specifically to the specialized services within the participants' MHS. This distinction led to the identification of two separate variables, diverging from the participants' original intentions. Acknowledging the potential ambiguity in these variables, the facilitator exerted all efforts to clarify their meanings by asking the participants one by one, ensuring that consensus was ultimately reached on the definitions of all variables.

8.3. Policy behaviour and focus

The primary insights garnered from the PSDM workshop and interviews were predominantly centred on the implications of policies and the role of healthcare insurance companies in assessing the quality of care. As discussed in Chapter 6, the most salient policy implications identified were those focused on resources, policies (such as the Treeknorm, budget gaps, IZA agreement), and the recently implemented ZPM model. These discussions were primarily informed by the exploratory interviews, the participatory System Dynamics (SD) modelling workshop, and the semi-structured interviews. However, during the interviews and workshop certain critical aspects, such as the tariff agreements set by the Nederlandse Zorgautoriteit (NZa) on types of care, were not sufficiently covered in the scope of the session. However, the significance of these aspects is acknowledged when stimulating the tariffs for negotiations between the MHS and the health care insurance companies and could therefore lead to alternative compensation and risk aversion strategies leaving highly demanding patients aside (NZa, 2020).

By concentrating on the main policies as identified by the experts, there is a possibility that other dynamic aspects were ignored. Including government agreements on regional care, medical-specialist

care, preventive care, and others. An example of such and partly ignored dynamic is partially illustrated in loop B3 of Figure 5.7. The loop depicts the deterioration of societal disturbance experiences leading to either government funding or the lack thereof, as perceived by participants in the participatory modelling workshop. By concentrating on the other agreements, not included in this research, a more complete perspective of financial incentives by governments, provinces, and municipalities could lead to a more comprehensive understanding of the mental health care system in the Netherlands.

8.4. Conceptual model understandings and their implications

Primarily, due to contradictions between experts or literature articles, this research has a focus on aspects observed in social and organisational contexts, particularly in treatment processes and the interconnections of organisational resources. For example, in the core stock-flow models, prevalence and incidence rates were identified as crucial within the social context. However, as suggested by the literature, limiting the analysis to prevalence and incidence rates is an oversimplification. Patients vary widely, with categories such as low, mild, or severe cases (Lyons & Duggan, 2015). Our model interpretations predominantly represent a single patient type, though, in reality, the complexity extends to variations in health demand among different patient groups. Some patients are inherently more vulnerable than others, and this heterogeneity should be accounted for to obtain a nuanced understanding of patient behaviours at various levels.

Moreover, while this research does not focus extensively on stakeholder-specific scale preferences within the mental health care system, it acknowledges their relevance. This concept, also observed in other areas such as flood defence, is noted by Vreudenhil et al. (2010). The preferences of stakeholders or literature impact the identification and extent of delays, influencing the scope of conceptual model interpretations. As established by other quantitative SD research, system behaviour is influenced by these scale preferences (Cash et al., 2006). Acknowledging these variations in literature and expert opinions raises the question of addressing all delays uniformly. Furthermore, as observed in the PSDM workshop, these delays are prevalent not only within organisational contexts but across different levels as well. More insights into the difference of scale preferences could therefore potentially change the current understanding of delays and time horizons in the conceptual models of this research.

8.5. Scientific findings as an extension of previous work

The results provide a conceptual interpretation of the variables, relations, and behaviours detailed in Chapter 7, illustrating the system's complexity to understand. Complexity is related to the cross-level existence, the difficulty in identifying cause and effect and the difference between systems across countries and even regions. Therefore one of the difficulties emerges not only from identifying these variables and relations but also from efforts to quantify them. The findings address strategies for navigating these challenges and incorporate the varied perspectives outlined by Rosen et al. (2020) These insights underscore the need for a multi-layered approach to understanding mental health care systems, as advocated by Lyons and Duggan (2015).

In their literature review, Lyons and Duggan (2015) and Rosen et al. (2020) merge various perspectives. This study advances this effort, concentrating on mental health care for alcohol use disorder (AUD). It examines the effects of capacity shortages on care quality, seeking to conceptually discern the key factors and feedback influencing waiting times, available capacity, and effective treatment durations within the socio-organisational domain. This encompasses practitioners, patients, treatments, and, to some extent, the sector's costs or affordability. By exploring the interrelations among these subsystems, the study could offer insights applicable to healthcare systems beyond the Dutch context. Although current interrelations can produce long-term side effects of policies, they may yield short-term effectiveness. The present stability in behavioural patterns, attributed to the interplay of various factors, suggests that interventions in one subsystem might trigger changes in others, potentially leading to dominant side effects. Recognizing and differentiating these linkages can inform a more nuanced understanding, leading to more effective policymaking, enhanced system analysis, and a more sustainable health sector.

9

Conclusion and Recommendations

With the results of the literature review, exploratory and semi-structure interviews the PSDM workshop and their interpretation in mind, an answer to the research questions can be formulated. In this chapter, the main research question is answered using the answers to the individual sub-questions. Moreover, relevant recommendations for policymakers and future research are suggested in section 9.2.

9.1. Answering the research question

Subsequently, all the sub-questions of this research will be elaborated whereafter the main research question will form the answer to the final research question.

9.1.1. Answering SQ1: "What are the main organisational drivers of mental health care services that affect the quality of care?"

Through a literature review across various contexts, and exploratory interviews focusing on the Dutch setting, numerous drivers were identified as influential to the quality of care. These drivers were dispersed due to varying interpretations of the concepts in question.

Firstly, internal drivers related to patient behaviour emerged as significant. Patient satisfaction, therapeutic alliance, and accessibility issues such as long waiting times, manifested in outcomes like increased no-shows, prolonged treatment durations, and patient dropouts. These issues not only diminish the effectiveness of patient outcomes but also exacerbate affordability issues and capacity shortages. Such challenges escalate as demand surges, leading to practitioner dissatisfaction with the tasks they undertake. These reinforcing drivers, both treatment-wise and resource-wise, widen the demand-supply gap in mental healthcare.

Secondly, from a patient perspective during the process of treatment, the roles of GP's in treatment identification, referral, and patient understanding are crucial. Challenges intensify when patients face language barriers, GP's and practitioners lack proficiency in disorder identification, and societal awareness remains inadequate. Further complications arise when patients experience delays, leading to escalated severities that mismatch with initial treatment identifications.

Thirdly, certain drivers focused on societal determinants that impact both organisational functioning and the effectiveness of treatments within these organisations. The literature indicates that societal elements, particularly familial and social environments, not only influence alcohol consumption and the subsequent risk of AUD but also affect patients' willingness to seek treatment at a later stage. Additionally, double ageing characterized by a disproportionate number of elderly individuals further elevates the prevalence and susceptibility to AUD.

Lastly, organisational perspectives on healthcare quality influence the identification of these drivers and potential interventions. While waiting queues are acknowledged as significant, they are not universally recognized as critical. Prevalence and incidence rates offer insights into societal drivers but lack depth due to existing treatment gaps and therefore raise questions about actual trends of AUD occurrence in society

9.1.2. Answering SQ2: "What is the expert perspective on the Dutch mental health care system in the context of alcohol use disorders?"

Drawing from both literature insights and exploratory interviews elaborated on during the group model building, a distinct differentiation in perspectives emerged, with a predominant focus on drivers in the social context and resource scarcity. During the group model-building session, a simple framework addressing demand and resource scarcity in the mental health care sector was presented. By allowing flexibility in interpreting the aggregation level under consideration, experts working in an MHS underscored a more system-wide viewpoint, encompassing social, organisational, and to a lesser extent, patient perspectives as relevant in impacting this as drivers of increasing capacity shortages resulting in decreasing quality of care.

The backgrounds of participants naturally shaped their perspectives in the interviews. For instance, psychiatrists often emphasize the social context, highlighting challenges or barriers that lead to an influx of more complex patients. In contrast, a business manager's view might pivot towards the financial aspects, debating the number of clients to accommodate within the budgetary constraints set by health insurance companies annually.

These viewpoints are not confined to only the social or organisational context related to capacity shortages impacting care quality. Boundary definitions within a systems perspective also vary. A management role might concentrate on policy interventions, deliberating over aspects of treatment like intensity, duration, and settings to optimize patient care. Meanwhile, practitioners might be more attuned to external factors like government-imposed protocols or administrative challenges, exploring the broader policy landscape and its implications.

9.1.3. Answering SQ3: "How do policies in the long term influence the dynamic behaviour in the mental health care system?"

Diverse expert perspectives play a role in policy formation, which can introduce more regulations, limit preventive measures, and restrict technological freedom, ultimately fostering risk aversion. For example, while GGZ contexts did not consistently include relevant preventive measures, new initiatives like the IZA agreement aim to promote them. However, these measures face challenges as they are expected to be evidence-based when seeking funding, even though such evaluations have not been conducted previously. Another example is the drive for capacity optimization to ensure timely care for all, a move which, paradoxically, can lead to protocols that might prematurely discharge patients as significant health improvements will not be ensured by more extensive treatment. Such constraints counteract practitioners' desire for treatment autonomy, exacerbating their feelings of being under pressure.

Many patients, including those with high care needs, are subjected to extended waiting periods due to declining care quality, capacity shortages, and the challenge of achieving optimal outcomes. Consequently, policies within Mental Health Services (MHS) have been developed to rationalize these outcomes to financial and regulatory bodies, such as healthcare insurance companies and governmental organisations like the Inspection of Healthcare and Youth (IGj) and the Dutch Healthcare Authority (NZa). These policies often rely on a limited set of criteria. As a result, there is an increasing trend towards conducting more patient intakes, including those with lower care demands, a practice commonly referred to as risk aversion.

As such, several factors contribute to the healthcare sector remaining in its current state. Practical constraints and dilemmas surrounding practitioner autonomy and affordability are significant challenges. Additionally, there is a pressing need to justify practices and costs to healthcare insurers and the government. This results in extended waiting times, risk aversion and fewer technological advancements, despite their critical need in this field.

9.1.4. Answering SQ4: "What is the relationship between capacity shortages and the quality of care?"

Capacity shortages have impacted the quality of care, particularly in terms of accessibility and efficiency, as opposed to effectiveness and patient-centredness. Over time, both areas have deteriorated due to external factors such as the effects of an ageing population, increased alcohol availability, and practitioners leaving the sector because of reduced autonomy and the administrative burden. These challenges lead to higher dropout rates, reluctance to seek treatment, and a general decline in the overall quality of care.

This poses challenges as the current data highlights fluctuating waiting times, a high number of referrals, and initially perceived low effectiveness rates. However, a deeper analysis reveals that these numbers are not isolated. Effectiveness rates for complex patients are particularly challenging to assess. Many experts question the current measurement methods, noting that abstinence is not necessarily the sole desired outcome. There is tension between the capacity-centered perspective, focused on the ratio of practitioners to patients, and the ever-evolving definition of certain disorders. On the other hand, quality of care, encompassing accessibility, affordability, patient-centredness, and availability, always presents a trade-off. Emphasizing one aspect may result in the system leaning towards it, potentially diminishing the significance of other aspects and thus impacting overall performance outcomes.
Current data indicate that the patient influx and the number of practitioners within 12 mental health care services have remained stable. While waiting times have seen a gradual increase, patient behaviour has largely stayed consistent. This could suggest that the shortage might not be escalating significantly, though the treatment gap (the disparity between diagnosed and undiagnosed cases) might be expanding. Additionally, treatment effectiveness has been relatively consistent over a 6-year span. The precise scope of the growing shortage, as hinted by the waiting times and other efficiency and continuity indicators, might be influenced by the existing stigmas referenced during the GMB, making the impact on the quality of care challenging to ascertain. In conclusion, due to these complexities, it is hard to provide precise statements about the full extent of the issue.

9.1.5. Answering main research question: "What are the effects of socio-organisational drivers and policies on the Dutch mental health care system to maintain long-term sustainable quality of health care in the context of alcohol use disorders?"

The socio-organisational drivers and policies in mental healthcare encompass various elements and their interconnections, significantly impacting the treatment and capacity gaps that affect care quality. Socially, rising unemployment, linked to inadequate mental health support, an increase in complex patient cases, and escalating stigma, aggravate the treatment gap. Additionally, societal trends like increasing individualization lead to reduced self-coping abilities of patients, contributing to greater alcohol consumption and a potential rise in Alcohol Use Disorders (AUD). This surge exacerbates the treatment gap and intensifies capacity shortages.
In the organisational context, the escalating severity of patient cases and diminishing treatment success rates are key. The reduced likelihood of patients' social integration can diminish treatment efficacy. The discussion of over and under-treatment at both organisational and individual patient levels is critical. Short-term capacity relief through undertreatment ultimately diminishes long-term treatment effectiveness, risking patient relapse. In contrast practitioners are inherently motivated to provide the best possible care to their patients, this inclination can sometimes lead to overtreatment. Decreasing treatment effectiveness and increasing patient severity can lead to more regulations and administrative burdens, reducing professional autonomy and job satisfaction, thereby increasing personnel turnover. Consequently, there is a continual decline in care quality in terms of availability, patient-centeredness, effectiveness, and efficiency. The long-term scenario is further complicated by double aging, where more practitioners exit the field, and a higher proportion of the population potentially develops AUD, leading to increased prevalence.
The current evaluation of care quality in the Dutch mental health system, based solely on a single criterion, presents the risk of guiding treatment optimization towards protocol-driven environments and a risk-averse mentality in mental health services, which may compromise long-term sustainability. This trend endangers the prolonged sustainability of mental health systems, especially when policies are crafted within or influenced by localized spheres or subsystems, neglecting the factors that intensify demand. Such underexposed critical policy improvement can worsen the very issues they aim to address.

9.2. Recommendations

9.2.1. Recommendation for policymakers

The findings of this study underscore the need for alternative policy interventions. However, the situation is complex, as there is ambiguity over who primarily drives policy-making as seen in figure 9.1. Presently, the market dynamics between healthcare insurers and GGZ entities are intended to ensure affordable healthcare. Yet, there seems to be a gap, potentially due to inadequate oversight by organisations like the Dutch Healthcare Authority (NZa) and the Inspection of Healthcare and Youth (IGJ).

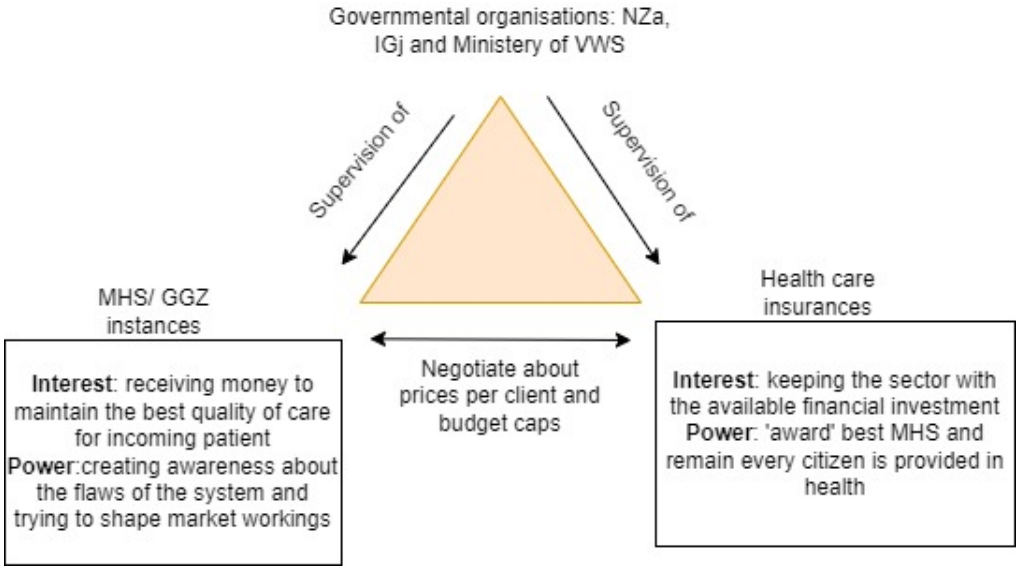

Figure 9.1: The triangle of interest showing the interaction effects between the main actors involved

The interaction dynamics between the three key actors in the healthcare system significantly influence the operational system as this figure shows. As highlighted in Chapter 6, the current ZPM model, Treeknorm, and budget caps are instrumental in formalizing this system, thereby shaping the distribution of administrative burdens and impacting the autonomy of healthcare professionals.

Further elaboration in Chapter 6 therefore reveals a notable gap: the lack of a holistic, integrated systems perspective in the interactions among these actors.This "siloed" approach, colloquially referred to as "schotten", hampers efficient communication and integration of diverse viewpoints. An illustration of this issue was observed during a significant meeting between the Ministry departments and the MHS, where representatives from different departments had to introduce themselves to each other, implying infrequent interactions. With the Ministry compartmentalized into specialized departments, like prevention (focused on societal aspects), MHS-oriented (centring on the treatment process), and affordability (resource-centric), policy initiatives often cater to specific sub-systems. This fragmented approach can inadvertently result in policies that benefit one area while unintentionally exacerbating issues in another. To craft more robust and impactful policies, there is a need to bridge these divisions, fostering a holistic approach that circumvents unintended consequences or perverse incentives.

Given the understanding of the interactions among those actors within the mental health care system, this study proposes interventions in three distinct domains:

1. **Reducing over-regulation and justification:** The cumulative impact of various factors, such as the increase in double ageing, greater accessibility of alcohol, and long-term personnel turnover are currently being mitigated through narrow policy focus leading to more administrative burden. These evolving dynamics are likely to lead to exponential growth in demand and resource constraints, resulting in more pronounced shortages in the future. This trend poses a significant threat to the sustainability of the sector. As systems commonly exhibit overregulation (as noted by Meadows (2008)), interventions should focus on clear deregulation and relaxing the constraints of

rules and policies. Meadows (2008) further suggests that intervention should be directed at local aspects, rather than broadly targeting all or only a few aspects.

2. **Enhancing awareness is crucial for recognizing the dual necessity of prevention and increased financial investment in MHS:** A significant observation from this study is the societal and political neglect towards the sector, which is evident even at the policy-making level. The Netherlands invests merely 1/10 of its financial resources in mental health compared to general health, despite research indicating strong interdependencies. For instance, an increase in the complexity of mental health conditions often results in a surge in hospital demands. Additionally, there is a societal perspective on alcohol consumption which views it as an intrinsic part of Dutch culture. Consequently, tax hikes on alcohol are minimal, yet the demand on Mental Health Services (MHS) remains high. The widespread availability of alcohol, termed as "blurring," is another area of concern. To ensure a robust and reliable alcohol MHS sector, there is an urgent need for preventive interventions, which might require unpopular decisions on policy-making level.
3. **A broader monitoring approach is needed**, especially at both the meso and macro levels, as suggested by the framework of Rosen et al. (2020). The implication here is the insufficiency of data from the LADIS system, which does not disclose the impact of substance use and the ensuing disorders and disturbances. A result of this data deficit results in the approach of policy-makers currently appearing to be more reactive than proactive. They seem to be in a wait-and-watch mode, relying on information to be managed and awaiting feedback from the mental health care sector to inform their policy decisions. However, there is a concerning blind spot when it comes to the societal acknowledgement of issues like alcohol consumption.
   Additionally, there is a lack of data concerning MHS organisations. Given the long-term effects of substance use disorder on patients, merely evaluating the treatment's immediate impact is insufficient. Enhanced screening, allowing for check-ins post-treatment and a year after its conclusion, would be ideal. Additionally, regional statistics, especially around major cities and regions, should be gathered to determine the reasons for addiction within those areas. A deeper comprehension is required regarding who receives assistance and why. Equally vital is understanding who does not get help. What constitutes problematic alcohol use? Which demographics are more susceptible, where do they reside, and what is their age range? Is it possible to live with a degree of disorder? Perhaps up to a certain threshold, one can still function without needing treatment. Currently, data in MHS is used ad-hoc, which implies that current measurement, such as waiting times, or the number of patients is distracted from the data system when certain statements needs to be justified. Despite that, more information will also inform negotiations with health care insurance companies in a more comprehensive way rather than focussing on some criteria that lack the full perspective as underlined in research (Damschroder et al., 2009).

9.2.2. Recommendation for further research

The mental health care sector is marked by profound complexity, presenting numerous intricate constructs and there are no singular treatment outcomes. This is influenced by several core constructs that will guide future research and also partly denoted by previous research (Rosen et al., 2020; Sindakis & Kitsios, 2016; Tran & Kavuluru, 2017):

1. **Multiple aggregation levels and perspectives within the system:** The existence of multiple aggregation levels and perspectives within the system complicates the process of establishing clear system boundaries. For instance, while governmental organisations may prioritize prevalence and incidence as key determinants in health waiting times, Mental Health Services (MHS) might focus more on the number of patients overcoming barriers, intake measures, and the duration of assistance provided. From the patient's and practitioner's viewpoint, the choice of practitioner, type of treatment, and duration of treatment are critical considerations. This multiplicity of perspectives challenges the clarity of system demarcation.
2. **Challenges in determining cause and effect:** Identifying clear cause-and-effect relationships within the healthcare system is particularly challenging due to the diversity of perspectives involved. For example, in a simplified scenario, extended waiting times in MHS can be attributed to multiple factors beyond mere (intuitively) capacity shortages. These include the hesitancy of individual patients to seek treatment and a more complex dynamic where MHS may derive

indirect benefits from maintaining certain waiting times. Hypothetically, a completely eliminated waiting time (indicating no queue) could imply underutilization of resources such as treatment rooms, potentially leading to substantial financial losses and even the risk of bankruptcy for MHS. This multifaceted situation illustrates the intricate interplay of various elements influencing operational decisions within the healthcare system. This complexity hinders the clear demarcation of relationships and complicates the interpretation of results. Furthermore, establishing definitive variables for analysis is difficult, given the extensive range of factors that must be considered when evaluating the quality of care. This variety of variables, stemming from the effort to accurately assess care quality, adds another layer of complexity to the process.

3. **Diverse contexts of the problem:** The context of healthcare problems varies significantly across regional or national settings and patient types. The organisation of healthcare systems differs among regions and nations, influencing the behaviours and prioritization of criteria and Key Performance Indicators (KPIs), as shaped by policies, regulations, and stakeholder agreements (discussed in Chapter 6). A problem prevalent in the Netherlands might not be relevant in countries like Australia or the UK. Therefore scientific research struggles to compare results among these contexts (Rosen et al., 2020). Furthermore, the variation in treatment types and the complexity introduced by comorbidities, such as patients with Alcohol Use Disorder (AUD) also presenting with other conditions like smoking addiction, schizophrenia, or bipolar disorder, complicates the identification of effective, evidence-based treatments. This focus on a 'general patient' model risks neglecting complex or atypical patient cases.
4. **The multi-disciplinary nature of the context complicates interpretation and the development of policies supported by multiple stakeholders:** The collaborative nature of work in the mental health care system, involving various stakeholders, adds complexity to policy-making and interpreting outcomes. As noted by Rosen et al. (2020), on a micro level, the collaboration between patients and various practitioners (including nurses, clinical psychologists, etc.) results in unpredictable short-term outcomes such as the efficacy of treatments, treatment duration, and patient behaviour. And aside that, the interpretation of outcomes will always come with a bias of the practitioner, as it is hardly measurable. This complexity is amplified at the organisational level, where the diversity in personnel capacities and patient profiles further complicates general progress assessment. On the macro level, governmental involvement adds another layer of complexity, making it difficult to establish clear relationships between demand reduction and quality of care improvement.

These complex constructs underpinning the research field allow for building recommendations upon this study's focus. While this approach may introduce additional complexities, it is essential to propose recommendations that address the limitations and methodological shortcomings of this research. Consequently, the following enumeration proposes a series of recommendations:

- **Inclusion of a fifth dimension - safety in health quality:** This study recommends adding 'safety' as a fifth dimension to health quality assessment. This element was not included, but it holds importance. Current staff shortages, leading to reduced personnel attendance, have direct implications for patient safety. Incorporating this dimension can enhance our comprehension of behaviours within the socio-organisational context.
- **Expansion of research scope beyond Dutch mental health care:** The research currently focuses on the Dutch mental health care sector, introducing potential bias.The PSDM workshop specifically involved a particular mental health care entity, introducing potential bias in the results. Although the exploratory interviews often alluded to certain constructs, there is an evident bias. Expanding the scope of interviews, particularly in the realm of policy as indicated in Chapter 6, would substantiate the claim that a system-wide approach is imperative for the healthcare sector. The semi-structured interviews clearly revealed that only three were conducted; a larger sample is necessary to bolster this assertion.
- **Exploration of quantitative dimensions and data gathering:** Although the research initially planned to include both qualitative and quantitative analysis, data-related challenges hindered this aspect. Future studies should investigate these challenges, particularly focusing on undiagnosed patients, barriers to seeking treatment, and treatment delay times.
- **Further research on workforce-related factors:** The study identified a need to investigate further the relationships among burnout, work pressure, administrative burden, job satisfaction, and

staff turnover identified during the GMB workshop. Although existing literature underscores the importance of autonomy in the workplace as a key determinant of job satisfaction, this perspective contrasts with findings from the research where the administrative burden was identified as a more pressing issue. Consequently, further research is warranted to determine the specific contexts in which these factors exert a significant impact.

- **Inclusion of suicide rate factor:** The significance of suicide rates during treatment, although not a central focus of this study, emerged as an important factor. Many interviewees downplayed its importance. However, its significance became increasingly evident as the research progressed, yet it remained excluded. Future research could incorporate this factor within the broader system scope.
- **Application of Exploratory Modelling and Analysis (EMA):** This work contains numerous uncertainties, leading to a more quantitative phase as discussed in chapter 8. Understanding a system is often complicated by the unpredictable nature of human behaviour, creating significant variables. These include the growing complexity of patient needs both in quantity and care demand, treatment barriers, and societal financial reactions towards disturbances observed in society. To address such uncertainties or other uncertainty-based methods, Exploratory Modelling and Analysis (EMA) (Kwakkel & Pruyt, 2013) can be utilized. EMA adjust model assumptions across experiments to identify potential system dynamics, offering insights into potential system behaviours and evaluating the efficacy of diverse policy interventions under different scenarios. Integrating EMA with system dynamics yields a thorough understanding of the system amid these uncertainties. By quantifying a System Dynamics (SD) model, the sensitivity to parameter alterations becomes significant, emphasizing the importance of understanding the effects of these uncertainties. With enough time and resources, EMA could be instrumental in determining the exact impact of capacity shortages on care quality, accounting for variables like patient behaviours, effective treatment durations, societal alcohol consumption, and the influence of staff turnover on workload pressures.
- **Enhanced validation through diverse perspectives:** The validation of this study is limited since it primarily concentrates on the system's structure and scope, with successive interviews helping to define these boundaries. Given that participants' expertise was largely centred either on the social aspects (e.g., as psychologists) or the resource-based financial viability of the process (in other words the scope and structure), inherent biases are present around the identification of behaviour. Enhancing validation would require integrating aspects of system behaviour that align the system structure with the perspectives of these participants.
- **Incorporation of broader disciplinary perspectives:** The majority of interviewees and participants in this research had a medical background or were affiliated with a specific mental health care service. Only four out of the 14 participants had expertise in economics or healthcare consulting. To gain a more comprehensive understanding, particularly concerning the affordability and accessibility of mental health care, incorporating a wider range of disciplinary perspectives is recommended. This could include representatives from healthcare insurance companies and other policy-making entities, thereby enriching the research with more diverse viewpoints.

10 Reflection

This chapter presents a multifaced reflection, beginning with an examination of the PSDM approach in relation to the intricacies of the mental healthcare system. Subsequently, it delves into the approach's contributions to scientific research and the EPA program. The chapter then proceeds to critically reflect on the research process, external workings, and personal experiences encountered during the research process.

10.1. Mental health care system science: revealing complexity, integrating perspectives, and aiming for system-wide approaches

This section highlights the significance of the SD and PSDM approach, underscoring its utility in facilitating reflection on diverse perspectives, particularly in relation to the complexity of the Mental health care systems. Additionally, it elucidates the potential of these methods in approaching these systems within the health care field.

10.1.1. The need to adopt a system-wide approach

As the field of healthcare science evolves from focusing on isolated relationships, such as the effect of specific treatments on individuals or how waiting times influence patient behaviour, towards a more comprehensive understanding of care quality, there is an increasing necessity to comprehend the complex interplay among various components of healthcare (Furst et al., 2021; Lane et al., 2000; Lyons & Duggan, 2015). The focus of this necessity spans across diverse contexts and levels of care on macro, meso and micro-level (Rosen et al., 2020). Consequently, the shift in perspective, emphasizing a more integrated approach to healthcare analysis, is highlighted in the work of Rosen et al. (2020). It underscores the importance of considering a wide array of factors and interactions within the healthcare system to fully understand and improve care quality.

Current System Dynamics (SD) studies in the field, such as those by Lyons and Duggan (2015), also have highlighted the promise of this method in system-wide approaches in the social-organisational context, albeit primarily within the Irish setting. Related other studies also highlighted the importance of aligning perspectives, particularly in complex healthcare systems, emphasizing the need for expert involvement (Sawatzky et al., 2021; Skinner et al., 2023). Therefore this research adopts this system-wide approach with a social-organisational focus, ensuring that it accounts for the unique differences between levels within the Netherlands, whether at the national, organisational, or patient level. The need for more exploration of this system-wide perspective suits the SD methodology quite well and therefore could provide insights into the dynamics between those levels (Forrester, 1994). Without such insights, effective policy-making is hindered, potentially resulting in unintended adverse effects.

In implementing this system-wide approach, it becomes crucial to integrate various perspectives, underscoring the need for consensus-building or discussion around causality among factors. Although consensus was not the primary focus of this study, the use of PSDM approach has shown encouraging prospects for future research in this domain, as it is a well-established method in other research fields (Mumba et al., 2017; Vennix et al., 1996). Another worth noting is that mental health care research

remains a relatively niche domain (Sunderji et al., 2017). Compared to the broader medical healthcare sector where system science is more integrated, mental healthcare often remains overshadowed due to its perceived intricacy, especially in the social-organisational context (E. Wolstenholme, 1999). Consequently, increased awareness and focus on this area of research are imperative, especially in light of escalating societal challenges.

10.1.2. Contribution of PSDM approach in assessing perspectives and complexity in Mental Health Care

This study's approach is versatile enough to permit analyses in various contexts. However, a notable challenge, especially in the PDSM approach, was the diverse perspectives and system boundaries understood by different participants. The variance in definitions and relations across topics revealed participants' unique views and experiences in their respective roles. For instance, a therapist, often in direct conversation with patients, prioritizes the socio-economic contexts of patients, whereas a business manager might be more concerned with affordability or resource allocation. These distinct system perspectives were notable during the PSDM workshop. The PDSM approach not only accommodates diverse viewpoints but also supports other aspects that are characterizing the field of mental health care, as outlined below:

- It fosters systems thinking among experts, encouraging the examination of causal loops. This is particularly valuable in systems with multiple levels of aggregation and complexity, where current research typically focuses on linear relationships. This was observed in expert interviews and workshop outcomes.
- The approach helps in understanding the length and impact of time delays and causal loops. Since System Dynamics (SD) concerns structure and behaviour, these factors significantly influence model outcomes, making their rigorous exploration beneficial.
- Differences in time horizons among experts, regarding the lengths of time to be considered, may be associated with varying perspectives beyond just the internal and external factors and their system boundaries. The adopted approach accommodates these differences, relating them to the system scope of those experts.
- In sectors where quantitative data is scarce, particularly due to the complexity of analyzing human behaviour (see also 10.2.3), SD can integrate qualitative and quantitative aspects, partly overcoming this challenge.
- Given its profound establishment in other socio-technological systems, SD could potentially enhance efforts in the mental health care domain. Although a lot of work should be put into overcoming data scarcity, consensus issues, and the establishment of system thinking remain challenging.

In conclusion, both more comprehensive System Dynamics and participatory work could foster more qualitative and quantitative understanding, both in socio-organisational and organisational-resources contexts in mental health care systems. The outcome of this work presented in two qualitative stock-flow models is an initial effort to bridge the social and organisational perspectives, drawing from the expertise of various professionals in the field of mental health care. While the application of systems thinking in this field appears promising, the PDSM approach is still in its early stages. Further research is necessary to ascertain the full potential and efficacy of this approach in mental health care.

10.2. Contribution of research

The following sections will delineate the contributions made both to the scientific domain and to the aim of the Engineering Policy Analysis (EPA) program.

10.2.1. Practitioners relevance

This study is not isolated, as it involved significant collaboration with a Mental Health Service (MHS), referred to as "GGZ" in Dutch. This prompts the question:

How does this research contribute to the challenges faced by a MHS?

The primary objective of MHS in the Netherlands is to maintain financial viability while simultaneously providing necessary care to patients. From a practitioner's viewpoint, the foremost goal is to offer optimal support for patient issues. However, this contrasts with the financial department, where extensive annual negotiations with healthcare insurers are conducted to secure funding for requisite care. Consequently, terms such as: "productivity", efficiency", and "affordability" often meet with resistance from practitioners, as these concepts clash with their intuitive approach to addressing patients' disorders. This research provides a starting point for addressing these dilemmas and the consequent trade-offs in these institutions. It demonstrates that systems thinking can uncover innovative and alternative approaches for future policy-making and evaluating current health systems. Additionally, the research highlights that fostering knowledge sharing and further application of systems thinking could be instrumental in unravelling the complexities of these systems and in harmonizing diverse perspectives. Further, more extensive quantitative System Dynamics (SD) research, combined with the integration of more quantitative data, could contribute to developing a more sustainable mental health care system. The findings, particularly the tables presented in the chapter 7, could serve as a beginning for a deeper understanding of the relationships, impacts, and behaviours within the mental health care system.

10.2.2. Contribution to scientific research

This research encompasses multiple aspects, each contributing to scientific research. These are detailed in the subsequent points:

1. The study enhances the current understanding of quality of care, in previous research focused on efficiency, effectiveness, patient-centeredness, safety, availability, etc., as noted by (Forman-Hoffman et al., 2017). It integrates these criteria and explores the causality between factors influencing them, addressing the knowledge gap in understanding their interrelations. By adopting a system-wide approach, as suggested by some recent studies such as Lyons and Duggan (2015), this research uses the Dutch mental health care system, with a focus on AUD, to illustrate its complexities. On top of that the study revealed these complexities by demonstrating how different concepts impact each other on a macro, meso and micro level, as identified by Rosen et al. (2020). Concepts are related for example to the influence of macro factors like prevalence and societal context on meso and micro levels and vice versa, affecting patient states and treatment effectiveness.
2. The focus of this research extends beyond merely examining the relationship between structure and behaviour in health care systems to include policy analysis. The findings could offer innovative approaches to policy development. It emphasizes the importance of recognizing divergent perspectives, particularly in understanding the varying scale preferences, their time horizons and disciplinary influences of experts like practitioners, psychologists, nurses, treatment managers, and financial managers, as earlier understood in a flood defence context by Vreudenhil et al. (2010).
3. This research highlights the potential of System Dynamics (SD) and PSDM methodologies in revealing the complexity of (mental) healthcare systems. It builds upon existing research, incorporating insights from experts and literature to understand different viewpoints on the system. The research further underscores the richness of the SD method, prevalent in other socio-technical systems but underutilized in (mental) health care. It advocates for the potential by adopting systems thinking and PSDM in the (mental) healthcare sector, highlighting their potential benefits.
4. The study offers a design for a GMB workshop within a PSDM approach, enhancing the facilitation of workshops and group model-building activities. It expands upon the conventional use of

educational research literature and methods, typically applied in primary and high schools, adapting them for wider application in PSDM research. The usage of educational research in PSDM involves integrating various educational methods into the workshop, including individual, group, and pair activities, complemented by a range of tasks such as writing, thinking, and brainstorming. This approach is designed to foster effective knowledge sharing and collaboration, aligning with the principles of educational research, as noted by Bruggink (2017).

5. Two qualitative stock-flow models were developed to understand the Dutch AUD mental healthcare system from a socio-organisational perspective. These models enhance existing knowledge by intricately linking social context, treatment processes, and resource aspects within the Dutch mental healthcare system.
6. This research also contributes to addressing eventual solution space in this complex system. It highlights the limitations of policymakers' current approach, which is characterized by a narrow system focus, depicted by a reactive 'wait-and-see' attitude towards external factors. This approach is insufficient for active problem-solving. The study suggests exploring options (e.g.) within the social context, such as implementing taxation, enhancing educational awareness, and taking action against blurring to reduce care demand. Emphasizing the importance of proactive lobbying, it proposes that these measures can expand both the policy and problem streams within a shorter amount of time compared to the current approach, potentially accelerating the opening of a policy window (Kingdon, 1995).

Concluding, the System Dynamics (SD) approach effectively illustrates system feedback and interconnected effects between variables. The PSDM approach, on the other hand, offers insight into the distinct perspectives within these relationships, particularly in socio-organisational mental health care systems. While other studies have primarily focused on individual effects, such as those within social contexts or the impacts of extended waiting times on patient behaviour, the combined utilization of SD and PSDM provides a holistic conceptual understanding of these interconnections. Although these research methodologies are already frequently used in other domains (e.g. flood defence, building sector (Forrester, 1994)), systems thinking is not really applied, and PSDM approaches are even in their infancy in the medical and mental care research field. Thus, this study represents an initial step into the potential benefits of these approaches within the (mental) health care research area.

10.2.3. Contribution in solving societal grand challenges

The intersection of technology with pressing societal grand challenges—be it climate change, energy transition, or cybersecurity—has profound implications for our world. However, solving these issues is not just about understanding the technology itself. It is about comprehending how various stakeholders, whether individuals or larger entities, interact with and make decisions surrounding these technologies. In my master's programme Engineering Policy Analysis (EPA) employing modelling methods, bridges the gap between complex systems comprehension and policy-making. Interestingly, one critical area seemed underrepresented in the master's program: healthcare. With the establishment of the Institute for Healthcare System Science (IHSS) within our faculty, it is evident that there is a growing recognition of this gap. This move is indeed a step in the right direction. This thesis contributes to this development by exploring the complexities of mental healthcare. Three primary aspects highlight its significance: a multi-actor perspective, the interconnectedness of social, organisational, and governmental contexts, and its role as a foundational element in maintaining a healthy society that supports its vulnerable members.

Therefore, this research contributes to the aim of the EPA master program in understanding, analysing and solving grand challenges. Utilizing analytical methods such as System Dynamics and policy analysis, this project seeks to holistically address major societal challenges by incorporating a focus on mental healthcare, promoting a comprehensive approach to addressing pressing societal concerns.

10.3. Reflection on the research process

In conducting this research, I adopted an adaptive approach, refining the direction of my inquiry based on the results obtained from each research method and question. This approach leans towards the principles of learning theory and action research (Somekh, 2005). In this section, the different outcomes and strategies that were adapted and interesting observations are discussed.

One challenge encountered in this research was the contradictory nature of information and the extensive scope of the study, particularly given the complexity of assessing the quality of care. A primary issue, identified during exploratory interviews, involved the diverse perspectives on what constitutes the main problem in quality of care. Respondents highlighted various aspects, including contradictions in the relevance of waiting times for patients, the roles and significance of different stakeholders, etc. Comparing these perspectives with their respective system scopes reveals that the perceived relevance of criteria, means (such as interventions, policies), and external and internal drivers varied significantly among individuals, professional groups (psychologists, administrative staff, etc.), and organisations (Mental Health Services, government bodies). This underscores the complexity of analyzing healthcare systems. During the research, the following question therefore emerged as central:

Why are mental health care systems so complex?
By applying system dynamics as a systems thinker, one immediately observes the presence of feedback loops. Such feedback could contain various components, including materials, information, and, in the context of this study, individuals. These components can be represented as 'stocks and flows' (Vennix et al., 1996). These can result in delays and subsequent accumulations. While individuals entering treatment might be an obvious flow to consider, the mere act of treatment does not necessarily equate to quality of care. This raises the question: what determines a patient's successful outcome, and by what criteria should we measure it? A further consideration is defining the system's boundaries. This research does not provide a definitive answer, as the system in question is human-centric. The individuals are not only the direct components flowing through the system but also the determinants of quality metrics. Unlike more tangible metrics in other systems (e.g., sea-level rise as a measure of climate change), quality in human-centric systems might be evaluated by diverse metrics such as affordability, wait times, and accessibility. Some of these metrics, influenced by human behaviour, can be challenging, if not impossible, to quantify. Concluding, this underscores the complexity of a system within the medical realm that is both created and interpreted by humans, where humans are the central focus, and success is determined by human perspectives.

Nevertheless, the question remains: how to effectively manage such complex systems when engineering solutions are limited? My analysis, supported by literature, suggests that a participatory approach involving experts from varied backgrounds not only highlights the complexity but can contribute to the development of a holistic, system-wide understanding to explore potential effective policies. This leads to a critical question:

How can a participatory modelling workshop approach broaden the system perspective by facilitating mutual learning?
To address this question, it is essential to consider both the process and outcomes. It is important to note that the primary goal of my workshop was not to find a definitive answer, as achieving consensus could be also an objective (Vennix et al., 1996). Additionally, the inclusion of participants with diverse backgrounds is crucial. During sessions, experts often express viewpoints rooted in their professional experiences.
Interestingly, the workshop outcomes demonstrate how such a forum can identify and sometimes broaden experts' perspectives, revealing a wider influence of their insights on both internal and external variables. This became particularly evident during the causal diagram construction phase. Experts interrelated their respective 'systems' with others. For example, the discussion brought to light issues like work pressure and staff turnover, with Expert D characterizing these as an 'ecosystem on its own.' Expert C's reference to diminishing returns — an economic principle that associates increased efforts with decreased effectiveness, especially relevant in resource allocation impacting treatment quality — highlighted non-linear behaviour, enhancing understanding beyond mere linearity. This non-linearity was further apparent in the conversation about the balance between over-treatment and under-treatment, where Expert C observed that organisational treatment process changes could increase overall capacity in resource allocation. Reflecting post-workshop, all experts concurred that these interlinkages significantly affect their own variables. Expert D, elaborating on this insight, remarked, 'It is intriguing to note that our service perspective has a more substantial impact than initially thought, as seen in the interaction between treatment and its capacity. This understanding is invaluable for our decision-making processes and could also benefit external entities like government or health insurance companies.

Hence, an intriguing inquiry emerges from this observation:

Which parts seem to be essential in the design for the workshop for deriving the different perspectives?
As part of the workshop design, several aspects were identified as critical for achieving the desired outcomes:

- Conducting a trial session is vital to gauge how non-system thinkers perceive the workshop's starting point. Using a narrative approach and soliciting feedback examples from their respective fields aids in clarifying the workshop's concept.
- Positioning experts face-to-face rather than side-by-side fosters debate and interactions, enhancing engagement.
- It's essential to vary the working dynamics, including individual work, duo collaborations, and plenary sessions, as well as varying task focus. Utilizing tools like whiteboards and A3 papers for both individual and group activities encourages active participation and collaboration. Additionally, it is essential to take into account educational research methodologies, such as DDU approaches. Despite their frequent application in educational settings, there is a notable lack of integration of these approaches in the existing literature on PSDM workshop development (Bruggink, 2017; Harvey & Holmes, 2012).
- Implementing structured rules, as detailed in chapter 3, maintains the session's flow and prevents off-topic discussions.
- In case of a stalemate in discussions, particularly during the 'goal-oriented' debate in this study workshop, it's advisable to 'park' certain variables temporarily.
- Careful consideration should be given not only to the experts' professional skills but also to their social dynamics. Balancing personality types, such as extroverts and introverts, ensures a more effective and inclusive dialogue.
- Lastly, and most importantly, aim to create an enjoyable and fun experience. An engaging presentation, diverse tools, and provision of snacks and drinks during breaks can motivate experts to participate actively and openly, particularly in time-constrained environments such as the healthcare sector.

A final observation is the variance in language among experts in healthcare and the System Dynamics research field. This leads to a pertinent reflective question:

Why do terminologies vary among healthcare experts and within the System Dynamics field?
This research initially adopted 'organisational drivers' as a key term. In healthcare contexts, 'driver' typically denotes factors contributing to trends, such as the increase in alcohol sales at unconventional locations, a phenomenon known as 'blurring,' as revealed in interviews and the PDSM workshop. However, in SD research, the term 'driver' is less clear-cut, potentially referring to either external influences, feedback loops, policy levels, or other factors, making its usage ambiguous and sometimes questionable.

The use of 'organisational' in this study is also pivotal. It draws attention to the transformation of individuals into patients or clients when they enter the medical system. This transition, while physically minor, carries significant systemic implications. In this research, 'organisational' essentially refers to the patient's engagement in treatment, and the term probes into factors that externally influence or internally cause delays within the healthcare system.

Despite the ambiguous nature of 'organisational drivers' from a System Dynamics perspective, this terminology was selected for its clarity and common usage in the medical field. The choice was informed by a comprehensive literature review and preliminary interviews, which highlighted the differing wording between medical research and System Dynamics research. To maintain clarity and coherence, this study retains the use of 'organisational drivers' even amidst its nuanced interpretation within System Dynamics.

10.4. Reflection on the external workings

In the course of this research, I had the privilege of collaborating with a mental healthcare organisation consisting of different services and an external supervisor with expertise in both healthcare consultancy and system dynamics.
The benefit of collaborating with numerous individuals throughout this research was the diversity of perspectives gained, which rapidly enhanced my understanding of this field. Additionally, this collaboration facilitated a clear focus on the primary societal challenges in the day-to-day services of mental healthcare.
However, challenges also emerged, notably due to the limited application of system dynamics in the field. This often results in a lack of understanding of its capabilities and more importantly non-capabilities. As a researcher focusing on mental health care systems, where human factors are paramount, the process of modelling involves diverse opinions as this research shows hard to quantify and also important ethical considerations. I frequently encountered queries from collaborators of the mental health care organisation, urging me to consider or disregard certain issues. Conflicting in perspectives occasionally challenged my own perspective, as the viewpoints of those I collaborated with often varied significantly from or even contradicted my own. Additionally, it was noteworthy that some individuals expressed reservations about modelling techniques. They perceived that current organisational modelling approaches often yield overly generalized statements, overlooking the nuances of individual patient experiences or specific patient groups.
Therefore during this process, I learned the importance of discerning between information that is crucial for the client's needs and what is relevant to the research. In a practical work field context, it sometimes becomes advisable to selectively share information, thereby circumventing potential debates on research methodology. Concurrently, it is vital to comprehensively communicate how the research outcomes are useful for the client and what are the limitations of the research methodology.

10.5. Reflection on personal process

In reflecting on my personal journey, a common challenge, one which I personally encountered, is maintaining motivation throughout the research process. While many argue that selecting the right topic is pivotal to sustaining interest, I believe that is only part of the equation. What is equally crucial is choosing a research methodology that resonates with you as well. Whether you're inclined towards a quantitative analysis of data or a more qualitative or conceptual approach, such as engaging with experts in the field or puzzling with feedback loops and the behaviour of the output, it is vital to find a method that aligns with your strengths and interests. As an example, I discovered that incorporating elements with which I felt an immediate connection, such as organizing and facilitating a PSDM workshop, allowed me to apply the educational insights gained from my minor in 'Education'. Equally crucial was the effort to surround myself with individuals who either resonated with me or, at the very least, did not contradict my working approach, within the limits of my influence. My supervisors played an instrumental role in guiding me towards key areas, such as developing my research design. They also provided crucial support during the challenging phases of integrating various components of my research and offered motivation during moments of doubt, keeping me focused on the ultimate goals of the project. This therefore felt at least that a successful ending would be possible.

Reflecting on this journey, especially while penning this concluding paragraph, I have come to appreciate how it continually ignited my insights and led me to uncharted territories. My initial objective for this thesis was to engage in a project that would captivate and inspire me. Admittedly, there were moments when limited autonomy and self-criticism made me question my engagement level and ability to complete this work. However, these challenges facilitated a level of personal growth, the extent of which remains to be fully realized. To put things into perspective, as my mother often remarks, 'If it were easy, everyone would do it.' This adage has helped me acknowledge a sense of pride in my accomplishments, a feeling I am not typically accustomed to. In closing, I liken this entire thesis experience to climbing mountains, an activity I am personally drawn to and enjoy. The struggles and challenges I faced mirror a recent realization about my fears, best encapsulated in the thought:

"It is not the fear of height, it is the fear of falling."

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A

Overview of integrated literature

Table A1-A6 shows the literature that has been reviewed for the literature study. It states the author(s) of the article, the region or country it is performed in, the drivers that affecting the quality of care market, how the performance is measured according to how quality is defined and the proposed policy interventions to overcome barriers in quality of care. Table A1, A2, A3, A4, A5, A6 shows and explains the relations between drivers, the identification of the observed quality performance, which informs the conceptual understanding depicted in a qualitative stock flow model in section 4.9.

Authors	Region/ Country	Driver of affecting quality of care	Performance is evaluated in (criteria)	Proposed policy intervention
(Le Glaz et al., 2021)	International wide	Symptoms of patients affect the severity of an illness, making classification (nosography) difficult. Efficiency is crucial to ensure quality care.	Efficiency	Development of ML algorithms to overcome barriers in understanding patients' daily habits, making nosography more valuable for care providers.
(Clark, 2021)	USA	Resource scarcity reduces accessibility. Team flexibility across departments can lead to waiting queues and improved patient outcomes. Diverse team skills ensure productivity.	Accessibility, effectiveness	Improve teamwork for coherence. Workshops on team building and continuous improvement culture are essential.
(Markon et al., 2017)	Canada	Primary healthcare is crucial as a preventive measure. Knowledge sharing and decision-making involvement enhance practitioner autonomy, reduce conflicts, and lead to effective patient outcomes.	Accessibility, effectiveness, efficiency	Enhance team collaboration between practitioners, especially by treating highly severe patients, ensuring continuous care and follow-up treatments.
(Looi et al., 2022)	Australia	The national mental health care framework assesses organizations based on care quality values. Evaluations consider ALOS and costs.	Accessibility, appropriateness, continuity of care, effectiveness, efficiency, safety	Structured comparison of organizations at the national healthcare level to improve wider policy-making. Focusing solely on communities is too narrow.
(Moran & Jacobs, 2017)	UK	Costs are influenced by an ageing population, societal ethnicity, and care needs. The latter is related to the severity of a patient. Occupancy and attractiveness are quality indicators. An endogeneity problem arises when intertwining costs with care quality. Therefore assessment on either on one or the other is difficult.	Efficiency	Implement a fixed national tariff to prevent price fluctuations and avoid overtreatment incentives.
(Sunderji et al., 2017)	U.S.	The quality of care is primarily influenced by treatment outcomes. Organizations should also measure quality in terms of safety, as they often underestimate the workload for mental health care practitioners.	Safety, effectiveness, efficiency	Health care should be integrated, promoting collaboration across organizational levels. More specialists should be present in primary health care.
(Rastpour, McGregor, et al., 2022)	Canada	Fluctuating and unpredictable waiting times, influenced by no-shows and queue lengths, affect the allocation of capacities in mental health care. These factors impact patient satisfaction and can lead to treatment drop-outs.	Patient-centredness, accessibility	Priority systems should be implemented in waiting queues. While faster administration benefits lower-priority patients, treating high-priority (more severe) patients can be costlier.

Table A.1: Investigated sources, their region of study and the drivers of quality of care and policy option part 1

Authors	Region/ Country	Driver of affecting quality of care	Performance is evaluated in (criteria)	Proposed policy intervention
(De Beurs et al., 2018)	The Netherlands	The relationship between treatment duration and costs is a significant driver of quality in mental health care. While pre-to-post treatment changes provide some insights, the treatment duration needs further investigation. Factors like education, comorbidity, and living situation drive aftercare needs.	Efficiency, effectiveness	Alternative treatment forms, such as group therapy, e-health, and varying treatment intensities, should be explored.
(Endalamaw et al., 2023)	International wide	Health system policies, human resources, and laws shape quality assessments in countries, influencing clinical outcomes, mortality rates, and treatment completion. High admission rates can degrade care quality due to longer waits. Income levels play a role, with differences between low and high-income countries. Team leadership, referral rates, and service deliveries are indicators of treatment success. Treatment satisfaction is influenced not just during but also before the treatment.	Accessibility, patient-centredness	The use of electronic health records should be enhanced, and decision-making across teams should be more coherent.
(Van Slingerland et al., 2022)	Canada	Collaboration among health care practitioners is crucial. Overlapping practices in mental health care, logistical challenges, and client characteristics negatively influence care. A willingness to collaborate reduces burnouts and enhances treatment recognition.	Availability, effectiveness	The Canadian mental health care system (CCMHS) should adopt collaborative care (CCT) to ensure organizational consistency. Additionally, the CCMHS should provide compensation for CCT implementation in organizations.
(Brimelow et al., 2023)	Australia	Factors such as prevalence, accessibility, clinical outcomes, patient satisfaction, client involvement, staff motivation, and staffing levels are essential for determining care quality. Many organizations overly focus on capacity shortages, neglecting the importance of client satisfaction for treatment outcomes and sustainability.	Availability, patient-centredness	Staff skill development should be prioritized to enhance client satisfaction. The assessment perspective should encompass the "community as a whole", integrating various stakeholders in the patient interaction process.
(Forman-Hoffman et al., 2017)	USA	The therapeutic alliance is vital for treatment outcomes in relation to care quality. Competence and skills play a significant role in patient drop-outs. Protocol-driven approaches and strict adherence can reduce patient engagement, leading to prolonged treatment durations.	Effectiveness	Outreach care educational meetings should be encouraged, along with treatment effectiveness assessments. Knowledge sharing is essential, and patient-mediated meetings and reminders can optimize treatment processes.

Table A.2: Investigated sources, their region of study and the drivers of quality of care and policy option part 2

Authors	Region/ Country	Driver of affecting quality of care	Performance is evaluated in (criteria)	Proposed policy intervention
(Zaitsev Assuline et al., 2023)	Israel	The therapeutic alliance between the practitioner and client is vital. Bullying and social shaming significantly impact burnouts and professional functioning. Horizontal bullying (among practitioners) has a more direct effect than vertical (practitioner vs. client) bullying. These factors can lead practitioners to leave their positions due to increased workloads and challenging client behaviors.	Safety	The introduction of the safewards model can help in early detection and prevention of bullying behavior. This model promotes knowledge sharing on how to interact within MHS and manage client behaviors.
(Prat Vigue et al., 2022)	Spain	Successful reintegration into society post-treatment is crucial. Enhancing occupational performance positively influences treatment outcomes and client satisfaction.	Effectiveness	Peer support can boost occupational performance, leading to increased self-esteem and a sense of mutual assistance for both the peer-worker and the client.
(Garcia-Alonso et al., 2022)	Basque country, Spain	MHS assessments are influenced by factors like the length of stay, discharge rate, service utilization, and treatment outcomes. While capacity allocation affects these outcomes, external factors like prevalence, incidence and the stabilization of stigma on these factors play a more significant role.	Efficiency	Reducing admissions and readmissions for inpatient care can decrease the workload. Implementing more preventive measures and expanding outpatient services and daycare can support this goal.
(Harmer et al., 2020)	USA	Suicidal behavior significantly affects mortality rates and treatment success. Alcohol abuse, compared to other substances, plays a significant role in the prevalence of suicidal ideation. Current MHS often struggles to manage such behaviors, leading practitioners to cease treatments deemed ineffective.	Effectiveness	A clear focus on warning signs for suicidal behavior is essential. Engaging families in a "family care" approach, where they are informed and involved, can potentially reduce factors like alcohol abuse.
(Holtz et al., 2023)	USA	Barriers to accessing mental health care include stigma and the client's distance from care facilities. Gender, especially among men, influences help-seeking behavior due to heightened stigma surrounding mental health.	Effectiveness, efficiency	Emphasize out-patient care and enhance e-health solutions. Apps for mental health monitoring and self-management can effectively bridge the gap between practitioners and clients.
(Aebi et al., 2023)	Switzerland	Treatment intensity serves as a predictor for treatment success. The STEP and collaborative care methods enhance this, leading to increased client satisfaction and reduced overregulation. This positively impacts performance metrics like treatment duration and client relapse rates. Additionally, staff turnover decreases.	Effectiveness, efficiency	Raise awareness among MHS practitioners through regular training and feedback implementation. This approach aims to alleviate psychological distress for clients and streamline treatment workflows within an integrated community network called "Sompsynet."

Table A.3: Investigated sources, their region of study and the drivers of quality of care and policy option part 3

Authors	Region/ Country	Driver of affecting quality of care	Performance is evaluated in (criteria)	Proposed policy intervention
(Khan et al., 2023)	Qatar	Providing and receiving feedback enhances the assessment and outcomes of mental health treatments. This is attributed to the increased measurement of patient satisfaction during treatment, ultimately leading to higher quality care.	Patient-centredness, efficiency	Enhancing both patient and doctor morale can boost performance. Utilizing multi-source feedback forms offers a transparent method of integration.
(Wilson et al., 2022)	UK	Stigmas and knowledge gaps in mental health care deter individuals from seeking treatment. Topics like self-harm and mental health should be discussed in schools. However, barriers to effective education, such as varying home environments and family contexts, exist.	Availability	Implement "Brief education supported treatment" in schools to address disorders, combat stigmas, and remove barriers to treatment.
(Lakeman et al., 2023)	Australia	The quality of care is influenced by the professional development of practitioners. High staff turnover rates are a concern. Furthermore, the relationship between the practitioner and client, characterized by understanding and respect, can enhance treatment outcomes even before a formal diagnosis.	Efficiency, patient-centredness	Training initiatives for practitioners can bolster their impact. Emphasizing proper education and self-development can mitigate high turnover rates and improve care quality.
(Gotham et al., 2022)	U.S.	The quality of care is perceived as inefficient due to challenges in determining effective policies. Knowledge building in routine care and evidence-based practices are essential for improvement.	Efficiency	Implement timely training for clinical staff and provide printed guidelines. Employ motivational interviewing techniques to reduce patient no-show rates and enhance virtual attendance. Promote school-based mental health care programs for increased awareness.
(Lari & Sefiddashti, 2021)	Middle East and North Africa (MENA)	Resource availability directly influences the quality of care. Increased expenditures can enhance quality, while metrics like day-adjusted lifetime years (DALYs), years with disability (YLDs), and available beds in mental health care impact the number of patients served.	Efficiency	Advocate for mental health care programs to reach a broader audience. Emphasize evidence-based policy-making to establish a more trustworthy sector.
(Chinman et al., 2021)	USA	Patient satisfaction and the feeling of being understood and assisted enhance treatment outcomes. The motivation to seek care can be driven by longer, more comprehensible treatments and peer support, especially when patients know others have had similar experiences. A non-judgmental approach and accountability are crucial.	Effectiveness	Peer support, especially from veterans who have experienced mental disorders, can offer valuable insights and make treatments more effective.

Table A.4: Investigated sources, their region of study and the drivers of quality of care and policy option part 4

Authors	Region/ Country	Driver of affecting quality of care	Performance is evaluated in (criteria)	Proposed policy intervention
(Wolk et al., 2019)	USA	Factors like staff turnover, resource scarcity, and leadership quality affect healthcare accessibility. Burnouts among staff, often due to excessive administrative tasks, are prevalent. Workplace culture, collaboration, and team flexibility are essential for effectiveness.	Availability	Adopt team strategies and tools like TeamSTEPPS to enhance performance and patient safety. This approach can foster better communication and a positive environment in school-based mental health care programs.
(Ahuja et al., 2019)	Low and Middle Income countries (LMICs)	In LMICs, there's a need for greater awareness to boost demand. The current severity of illnesses, comorbidities, and functional disorders present at facilities increase complexities.	Efficiency	Introduce integrated health care in LMICs, which encompasses data reporting and simplified administrative forms.
(Wright et al., 2020)	USA	Enhancing provider engagement ultimately leads to increased patient participation in treatments. However, complexities like comorbidity and illness severity pose barriers to patient engagement.	Efficiency, patient-centredness	Emphasize the importance of measuring active patient participation. Patient-reported outcome measures (PROMs) can effectively gauge outcomes and ensure more consistent patient treatments.
(Fernandes et al., 2019)	France	Treatment experiences are indicative of treatment outcomes. However, the treatment context or setting isn't always a reliable predictor since patients vary.	Efficiency, patient-centredness	While PROMs are ideal, patient routine experience measurements (PREMs) also offer insights into patients' treatment experiences.
(Hennessy et al., 2018)	Internationally	Age plays a significant role, with the elderly consuming a wider range of substances, predominantly alcohol, compared to the youth. The social context, like school, influences substance use.	Effectiveness	School-based treatments can be effective. Many patients return post-treatment when education is incorporated, termed as school recovery-based treatment programs.
(Titov et al., 2018)	Internationally	Patient satisfaction correlates with treatment duration. Patient feedback is vital in assessing the impact of cognitive behavioural treatment, evident in the number of self-referrals and their influence on CBT outcomes.	Effectiveness, efficiency	Internet cognitive behaviour therapy (ICBT) can reach more patients and encourage them to continue treatment. Non-specialized personnel can be utilized to address resource shortages.
(Gellatly et al., 2018)	UK	Offering a variety of treatment options reduces barriers for patients, leading to shorter waiting times and increased treatment accessibility.	Availability	E-health can enhance treatment accessibility. A hybrid approach, combining physical and e-treatment, is recommended.
(Chinman et al., 2017)	USA	Low patient activation before and during treatment results in ineffective care. Patient satisfaction, recipient characteristics, and proactive engagement are key drivers for treatment outcomes.	Effectiveness	Veterans can significantly influence patient activation. Encouraging more individuals to undergo treatment can boost patient motivation. Given the unexplored impact of veterans, further evidence-based research is essential for effective treatment.

Table A.5: Investigated sources, their region of study and the drivers of quality of care and policy option part 5

Authors	Region/ Country	Driver of affecting quality of care	Performance is evaluated in (criteria)	Proposed policy intervention
(Babor et al., 2017)	USA	There's a trade-off between treatment efficiency and thoroughness. Reducing treatment intensity may lead to less desirable outcomes but shorter treatment durations, thus lowering costs. The patient-practitioner interaction is crucial for optimizing this balance.	Efficiency	The Screening, Brief, Intervention, and Referral to Treatment (SBIRT) program in the US focuses on prevention and has proven effective. Implemented in primary care and general medicine departments, it aims to optimize the trade-off between efficiency and thoroughness.
(Moran & Jacobs, 2013)	Internationally	Low discharge rates hinder healthcare efficiency. The Netherlands, with its low discharge rates and extended average length of stay (ALOS), faces rising costs compared to other countries. Socio-economic factors and the environment significantly influence treatment outcomes and overall care quality.	Efficiency	Conduct evidence-based research comparing countries to assess how OECD nations perform in terms of care efficiency.

Table A.6: Investigated sources, their region of study and the drivers of quality of care and policy option part 6

B

Group model building script

In this Appendix, the script for the group model-building session is detailed, encompassing the day's agenda, a timetable, various approaches from pre to post-workshop, and the observation form utilized by observers to reflect on the session's content. Included are the session's structure (introduction, Nominal Group Technique (NGT), Group Model Building (GMB)), the roles within the session (facilitator, modeller, participants), and the arrangement of the room.

B.1. Overview of the day

Duration	Description	Process (Input and Output)
13:00 – 13:30	Setup: Preparation of the room through setup changes	We will be guided upstairs by office assitant who booked the room.
13:30- 13:45	*Introduction:* • Purpose of the afternoon • Rules of the game • Scope • What is SD? • Explanation of factors and example	**Input:** Discuss the purpose of the day, explain the scope and rules of the game. Also, explain SD with an example. **Output:** Ultimately, the involved people should understand the idea.
13:45-14:30	*Session 1 Nominal group technique (NGT):* • Understanding the problem variable(s) • Determining the relevant factors • Determining where the factors should possibly be placed (determined diagram)	**Input:** CLD indicating a gap between demand and resources within addiction ("balancing" and "reinforcing"). **Output:** Identifying the relevant factors that match the system scope as we see it.
14:30- 14:40	Short break (10min)	Cake and coffee served by the facilitator. **Input:** The facilitator, modeler, and observers look at the output. **Output:** Clustering of the different factors, possibly new setup.
14:50-15:15	*Session 2 (round 1): Group model building (building a CLD)* Demand-treatment relationship 1: elaborating by drawing causal relationships	**Input:** The clustered variables **Output:** Causal relationships drawn for submodel 1
15:15- 15:25	Short break 10 min	Cake and coffee served by the facilitator
15:25-16:10	*Session 2 (round 2): Group model building (building a CLD)* treatment-resources relationship: elaborating by drawing causal relationships	**Input:** The clustered variables **Output:** Causal relationships drawn for submodel 2
16:10-16:30	*Conclusion/ending session:* • Overview of the entire causal diagram • Discuss parked variables	**Input:** CLD from session 1&2 **Output:** parked variables + discussion

Table B.1: Workshop time schedule and script

While the precision of participatory system dynamic modelling (PSDM) outcomes may not always meet expectations, Ibrahim Shire et al. (2020) recommends aiming for the best possible results by integrating interviews before and after the modelling sessions. This approach will be adopted to a certain extent, with reflective discussions post-session and informal preliminary meetings to capture participants' perspectives.

Pre-session:

- Informal pre-meetings are to be organized with participants to discern their interests in the problem space and to acquire initial insights into their perspectives on the issue's scope.
- A pilot session is conducted with experts and peers to observe group reactions to PSDM outcomes and to refine the facilitation process.
- Participants receive an introductory email, which includes a set of broad questions they are asked to consider and answer.

In-session: The strategy involves using language familiar to participants. Instead of discussing 'increasing severity' in abstract terms, the conversation will focus on specific settings like polyclinical, day-care, or clinical environments.

Post-session: Reflection on the sessions involves:

- Asking participants to deliberate on the main reasons behind the session's outcomes and to offer feedback.
- Conducting individual interviews with participants, especially when outcomes deviate from expectations, to map out their mental models and reflect on the session.

B.2. Observation form

Reflection on:	**Questions**
Content Observationl	• What viewpoints do participants express concerning the disparity between the demand and the available resources in the alcohol addiction sector? • Is there a dominant perspective (micro/meso/macro), either individual or shared, and if so, what does this prevalent viewpoint entail? • Which system boundary do they identify as relevant? • Which exogenous factors are relevant and which not? • Who primarily holds this dominant perspective among the participants, such as professors, managers, clinical psychologists, expert by client, etc.? • If there's no dominant perspective, what different viewpoints do the participants bring forward? • Which actors or stakeholders are identified as the leading forces within these perspectives? • What potential solutions do the participants propose to address these issues? • Which proposed interventions do they pose as relevant?

Table B.2: Observation form on general content

Reflection of workshop format on:	**Questions**
Introduction	• How do participants interpret the "rules of the game"? • Do they comprehend that this session is intended for exchanging ideas about the problem? • As I prioritize their thoughts using various sticky notes, what do the participants deem important and what do they not? • What is the participants' response to the bathtub analogy? • Do they grasp the concepts and loops involved? • Is there a need for additional clarification, possibly through the use of graphics? • What queries are raised during the session? • How does the facilitator respond to these questions? • At what instances does the facilitator interject with his own insights?
Session 1: Nominal Group Technique (NGT)	• How do they react to the format of work for themselves whereafter the discussion? • Does this encourage the participants to speak up? • How do the participants react on the Causal loop diagram based on their own input forwarded before the meeting (starting point)? • How do they react on the "storytelling" – format of the facilitator? • How do they react on a factor that can increase or decrease? • On which moments do the participants add factors (outside the time that is asked to create factors)?
Session 2: Group Model Building (GMB)	• Is there a moment when participants understand that factors that are not decreasing or increasing won't fit into the model? If not, what contributes to this issue (lacking of explanation/already clear understanding? • How do the participants collaborate and work independently to depict the relationships between the factors? • How does the session progress? • Is the transition between individual drawings and the central whiteboard clear and seamless? • At what instances do the participants introduce new factors into the discussion?

Table B.3: Observation form on reflection on GMB, session 1, and session 2

Reflection on role of:	**Questions**
The facilitator/-modeller	• How does the facilitator distinguish between different modes of work (individual work, plenary sessions, pair work)? • How does he respond to the group dynamics and when does he decide to shift the setup? • What is the "flow" of the session? • Does the facilitator perceive the group's mood and react accordingly during the session? If yes/no, at what moments does this occur? • How does the facilitator ensure there's sufficient room for group members to respond to one another? • When does the facilitator facilitate a discussion and balance differing perspectives? • What types of questions does the facilitator pose? • Is there a point at which he guides the discussion, and if so, when does this happen? • What types of facilitation techniques does the facilitator use (aligning interests, capturing attention, motivating, narrating, demonstrating, asking questions, activating, giving feedback, summarising, evaluating)? • At what points during the session are these techniques employed? • Is the role distinction between the modeller and the facilitator clear? • How does the group respond to the interaction between the modeller and the facilitator?
The participants	• Is there a discernible disparity in the dominance of participants based on their personalities? • If so, how does this affect the dominance of one perspective over another? • Can this be linked to the perspective of their respective institutions? • How does the mood fluctuate throughout the session? • Are the participants continuously engaged, or are there moments where they seem to "tune out"? If so, when? • Do participants appreciate the collaborative aspect of the session? If so, what are the notable elements of this collaboration? • How do the participants react during the session? • Do they pose many questions? • Do they seem to pick up momentum towards the end of the session, exhibiting noticeable enthusiasm? If so, what context spurs this excitement? • Conversely, if not, what seems to be lacking in prompting these "a-ha" moments?

Table B.4: Observation form on reflection on the facilitator and participants

Reflection on:	Questions
Room setting	• Are the participants able to interact in a way that ensures mutual understanding? • How does the room setting supports or do not support this? • Is it evident that each section of the room serves a specific purpose (presentation screen, whiteboard, flip chart, whiteboard papers)? If not, why is this unclear? • During breaks, do participants have the opportunity to truly rest, or do they continue discussing the subject matter? • Does the room provide ample space to display all the various elements (presentations, Causal Loop Diagrams, etc.)? If not, what are the limitations?

Table B.5: Obeservation form on room setting reflection

C

Questionnaire on forehand via e-mail towards the GMB participants

Questionnaire on forehand contained two parts where both content and method-wise different questions where asked to already have their perspectives integrated in the start of the group model building session and besides that evaluate what their knowledge is about the method of system dynamics. I did it in the format that the participants were able to see the answers of the others within a email list. The two parts concretely about:

- Questionnaire designed to gauge participants' familiarity with Group Model Building and to understand their expectations and contributions for the upcoming session.
- Survey focusing on the complexities and challenges in mental health care, particularly in addiction care. It introduces the concept of the 'sustainability gap' and asks for insights into the driving forces, critical factors, and possible solutions for this issue.

C.1. Part 1: Introduction methodology

1. How familiar are you with the methodology of Group Model Building?
    - A - You are not familiar with it at all.
    - B - You have heard of it somewhat, but have never applied it yourself.
    - C - You are reasonably familiar with the concept.
    - D - You are well acquainted with the methodology and have applied it regularly.
2. What do you expect to learn during the Group Model Building session (looking at the explanation above)?
3. What contribution do you hope to make during this session?
4. What, in your opinion, would be a successful outcome of this session?"

C.2. Part 2: Content introduction

Over the past few months, I have gained a lot of insight into the issues of addiction care, particularly the problems surrounding alcohol addiction. I have listened to your input multiple times and have already gained many valuable insights from it. To get ahead of things, some of my findings emphasize the importance of field experts' insights for (for example) modeling work. However, I also noticed that these insights can clash with each other in certain areas.
The divergent insights largely arise from the specific context in which the problem is viewed. There are geographical differences (per city, country, region, etc.), differences at the policy level (for example, governance from the government, province, municipality, but also the guidelines of the respective institution), and even within patient groups, treatment options can vary. As if this is not complex enough, these elements can also change significantly over time when a specific context is analyzed. However, the concept of the so-called 'sustainability gap' can be applied in every context and makes the

problem more concrete to analyze. This concept implies that the gap between the demand from clients (both in number and in severity) and the available financial and labor supply is growing, and that this is not sustainable in the long term.

Questions:

1. What do you think are the driving forces behind this 'gap' within mental health care, especially when we look at addiction care (alcohol addiction)?
2. What critical factors do you think play the most important role in explaining this problem?
3. What possible solutions could there be, according to you, for this problem?

C.3. Outcome to the questionnaire

C.3.1. Answers of Expert A:

Part 1

1. B- I have heard of it somewhat, but have never applied it myself.
2. A more systemic view of the relationship between therapy outcome, process factors [duration, intensity, modality of treatment (group, eHealth)] and structural factors (culture, staff) and what their role is as drivers of efficiency.
3. Asking the right questions (I have no specific expertise in the field of addiction). Brainstorming during the session; thinking out-of-the-box.
4. That we gain more clarity on how different factors interact with each other and what we can best do to increase the efficiency of treatment.

Part 2

1.
   - One driver of the increasing gap between demand and supply in addiction care is an increase in the volume and complexity of the care needs per client.
   - Incorrect incentives from the funding side. (For example, insufficient encouragement to treat more complex issues).
2.
   - Insufficient willingness to change in the sector. The existing healthcare services dictate what we do, and there is insufficient flexibility and variety.
   - Insufficient awareness that you must use a scarce resource in a targeted and selective manner.
3.
   - Shorter treatment duration by treating more goal-oriented or stopping treatment earlier if there are signs that little can be achieved with the treatment at this moment (for example, the absence of early therapy response or questionable motivation for treatment or 'interfering' comorbidity).
   - Use more digital support in treatment. Be selective in who you do and do not treat, prioritize within the waiting list, be more selective at the entry point, and refer relatively mild issues elsewhere.

C.3.2. Answers of Expert B:

Part 1

1. A- You are not familiar with it at all.
2. I hope to learn a different way to collectively arrive at insights for complex issues.
3. From the treatment-content side, I hope to contribute insights.
4. Create a coherence in which as many insights into the problem as possible are included.

Part 2

1.
   - Aging
   - Individualization in society
   - Increase in complexity/psychiatry
   - Market forces in healthcare
2.
   - Insufficiently aligned treatment options

- Fewer systems for clients to fall back on, the healthcare system becomes the support system (where this used to be the family), resulting in slower discharge from care
- Fewer healthcare providers offer care for the complex target group (= not financially attractive)

3. • Better analyze the target group we now see in addiction care and develop structural collaborations (with other mental health services) or treatment programs for the most complicated target group; focus less on mild issues. More actively use peer contact outside of healthcare. Reconfigure market forces differently (I don't have a solution for how this could be different).

C.3.3. Answers of Expert C:

Part 1

- A- You are not familiar with it at all.
- I am interested in how such a session goes and very curious about the perspectives of the other participants.
- I hope to bring the client's perspective clearly to the forefront. I do this based on my own client journey, the experiences I gather during my work, and the insights I gain within the co-determination process.
- I hope that a model will emerge that can help our service (in the near future, but also in the long term) to deal with various scarcities and waiting times.

Part 2

Introductory email: What I'm particularly stuck on is how the phenomenon of the 'sustainability gap' that you mention here relates to the 'treatment gap' that I'm more concerned with from my perspective. (By treatment gap in this context, I simply mean the difference between the number of people who drink at risk or are addicted and the number of people receiving treatment for it. Very difficult to measure, but roughly involves hundreds of thousands in the Netherlands.) To my knowledge, there is currently hardly any gap on the supply side - in principle, anyone who wants to can get treatment, and for example, at Jellinek, there are no long waiting times and waiting lists. There is only a scarcity in clinical offerings. I am therefore now also focusing on the demand side of a proverbial gap; also because I think I have more expertise in that role. See my answers below:

1. • Stigma
     - Perception of addiction care (1)
     - (Self)stigma among clients (2)
   • Co-morbidity and Complex Issues (3)
     An increasing number of clients dealing with other mental issues, somatic problems, or socio-economic issues like debt, in addition to addiction.
   • Availability of Substances (4)
     Alcohol used to be available only in bars and liquor stores, now it's available everywhere. The risk of increase due to 'blurring.' Also, alcohol is still relatively cheap.
2. I am still struggling with whether the points mentioned in Question 1 are forces or factors.
3. • Active efforts by the institution to improve public perception (e.g., through programs like "Five Days Inside").
   • Stigma is a significant societal issue. Addressing it is a task for the government (through public education). Self-stigma can be tackled during treatment within recovery-supportive care (e.g., WRAP, HOP).
   • Pay close attention to issues other than addiction during intake, treatment, and aftercare. Also, strict implementation of the IZA (presumably a treatment plan or protocol). More resources for this (a task for the government).
   • Prevention, recognizing 'blurring' in treatment, and counteraction towards the alcohol lobby.

C.3.4. Answers of Expert D:

Part 1

Didn't respond, even after a couple of memories sent via email.

Part 2

1.
   - Micro - administrative burden
   - Micro - guilt shame patient
   - Meso - overtreatment / inability to conclude treatment/ keeping tabs contacts during treatment
   - Macro - double aging
   - Macro - strong alcohol lobby
2. Didn't answer, as this expert wants more explanation, but in the end didn't respond.
3. Didn't answer, as this expert wants more explanation, but in the end didn't respond.

D

Group model building summary session

In this section partly a summary and also a transcript of the day will be fully elaborated on. The results of this session will be discussed in chapter 5. All the different sections will contain a chronological order of the script depicted in Appendix B.

D.1. Introduction and Objectives

Duration time: 00:00-05:00 The session began with introductions from four experts with diverse backgrounds in mental health care, alcohol addiction, and administration. The facilitator outlined the day's agenda, focusing on the primary objective: to collaboratively map perspectives on the capacity shortage in the alcohol use disorder sector and to engage in a meaningful dialogue.

Expert A: Serving in the research department of the mental health care service, Expert A is currently investigating the measurement of Routine Outcome Monitoring (ROM) and patient outcomes. In addition, they hold a professorship at a university, specializing in quality development within mental health care services.
Expert B: As a clinical psychologist and former psychotherapist, Expert B now serves as a manager of treatments in the mental health care service. Their experience includes managing numerous cases involving clients with alcohol addiction.
Expert C: Having personally experienced alcohol addiction, Expert C is now a expert by client. They play a significant role on the client board of the mental health care service, striving to increase client participation in policy-making within the service.
Expert D: Currently, Expert D holds the position of a business/administration manager within the service.

D.2. Ground Rules and Scope

Duration time: (05:00-15:43) The facilitator commenced the session by presenting a series of slides that outlined the agenda for the afternoon. He explained that a few key points needed to be addressed before launching into the main session. The points to be discussed included:

1. The objective for the day
2. The established rules of engagement
3. The scope of the problem to be addressed
4. An example for clarity by explaining the interaction of factors mapped with relations

1. Goal of today:
Mapping your perspectives on the problem and try to understand by creating a dialogue.

2. Rules of the game
The facilitator highlighted several key points during the introduction. First, he emphasized the absence of absolute truth in our discussion, asserting that there are neither correct nor incorrect answers and that there's no need to dispute the importance of any particular point. Next, they encouraged the participants not to feel compelled to limit their thoughts to strictly scientifically based ideas; it's perfectly acceptable if some notions are speculative. They also assured everyone not to worry about how this output would be integrated into later stages, promising a detailed explanation of the process and the next steps at the conclusion of the session. Lastly, the facilitator reminded all attendees to feel free to raise any questions or concerns during the session.

3. Scope of the problem The alcohol use disorder (AUD) sector is experiencing a critical capacity shortage that necessitates urgent intervention in the short term (months ahead) and strategic planning for the long term (extending over years). This shortage is exacerbated by the complex needs of alcohol-dependent clients and the increasing volume of individuals seeking assistance. To expand the potential solutions, it is pivotal to decouple the issue from immediate financial constraints.

Expert A emphasizes the utility of brainstorming as a nonjudgmental ideation process that encourages the free flow of innovative solutions. Expert B recommends that the word mental health sector should be replaced by mental health care .

4. What is SD modelling: factors within system dynamics (using a bathtub model) Feedback loops were delineated utilizing analogies such as the fluctuating water levels in a bathtub or the changing prevalence of a disorder. Three principal loops were identified: the incidence loop (increasing), and the recovery and suicide loops (both decreasing). These loops signify the dynamics that can either amplify or mitigate the prevalence of a disorder. During the COVID pandemic, it was postulated that the prevalence would escalate due to increased incidence—akin to a positive feedback loop—attributable to the heightened transmission rates. Conversely, the prevalence is anticipated to decline through two negative feedback loops: recovery, which removes individuals from the affected pool, and the mortality rate, including deaths attributable to the disease. During the session, these loops were visually represented on a whiteboard, with distinctions made between the positive loop (incidence) and negative loops (recovery and suicide). The facilitator elucidated the implications of each loop.
Moreover, the use of colored sticky notes served to categorize factors impacting these loops by their level of importance. Yellow sticky notes represented factors of minor importance, orange notes indicated critical factors that must be considered, and pink notes were tagged as crucial, denoting elements with significant impact on the feedback loops in question. These classifications were used throughout the whole session.

Reactions on introduction:
In an academic discourse regarding feedback loops and their role in behavioral models, Expert D inquired about the existence of "conservation factors," questioning whether such factors are always classified as either positive or negative.

The Modeller responded, clarifying that within behavioral models, factors with a positive sign invariably indicate an increasing trend. Conversely, the presence of balancing factors leads to equilibrium-seeking behavior. Hence, while positive loops perpetuate growth, balancing loops stabilize the system around an equilibrium.

Expert A sought further clarification, asking whether factors in models are exclusively positive or negative. The Facilitator expanded on this by suggesting that factors could exhibit dual characteristics, being both positive and negative, depending on the context. This multifaceted nature of factors often sparks debate concerning the classification of their relationships within the model. It was acknowledged that the positive or negative impact of a factor may not be absolute but rather contingent upon the specific circumstances in which it operates.

D.3. Nominal Group Technique: Scope of the problem

Duration time: 53 min(00:15:43-1:08:54)
Explanation of the starting point for the nominal group technique: The facilitator presents the underlying

diagram, which is based on both literature and the input via email. The build-up is the centre of a "theoretical framework", the facilitator walks through the whole diagram by telling it in a story. So he explains that if a number of clients have a health care demand (in dutch: zorgvraag) and the impact towards the client inflow, client in treatment, outflow and the right side of the diagram, the available resources, clients intake and the influence in the clients in treatment.

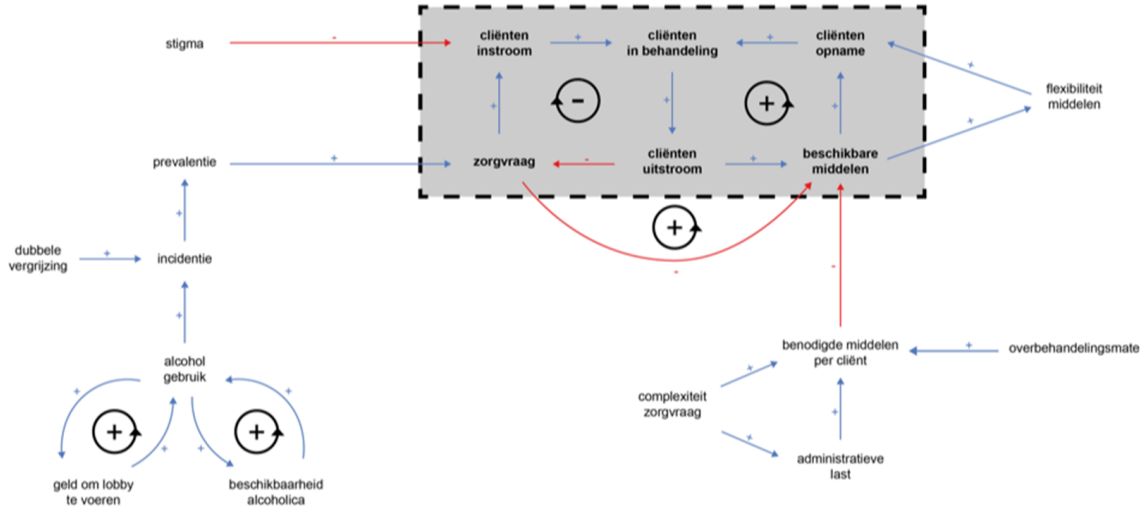


Figure D.1: Causal framework showed at the beginning of the group model building

In the session the facilitator prompted the experts with two questions to gauge understanding and completeness:

- "Do you understand this diagram?"
- "What is missing in this diagram?"

Reactions to these questions from the experts: Expert C acknowledged a clear understanding of the diagram but raised a concern about the incorporation of influential actors such as healthcare insurance providers and the Nederlandse Zorgautoriteit (NZa), the Dutch Health Care Authority, which significantly impact the factors within the system. Expert A responded to this by suggesting that the influence of such actors might already be encapsulated under 'available resources,' which are dictated by the policies of insurance providers. Following this, Expert D proposed the idea of creating a sub-system specifically to capture the 'available resources' in a more granular fashion, presumably to detail the complex interactions and regulations governed by these bodies. Expert A further contributed to the discussion by identifying additional elements that the diagram failed to account for—factors under the direct control of the service provider such as treatment duration, staff allocation, staff education level, and associated costs. These components are crucial for a comprehensive model as they directly influence the system's output and efficiency.

The facilitator asked the question to write down the factors on the different sticky-notes that influence the different aspects of the model and place them in the right "boxes", to cover the multiple important aspects towards the starting diagram of the session. The participants wrote down all the factors that they came up with.

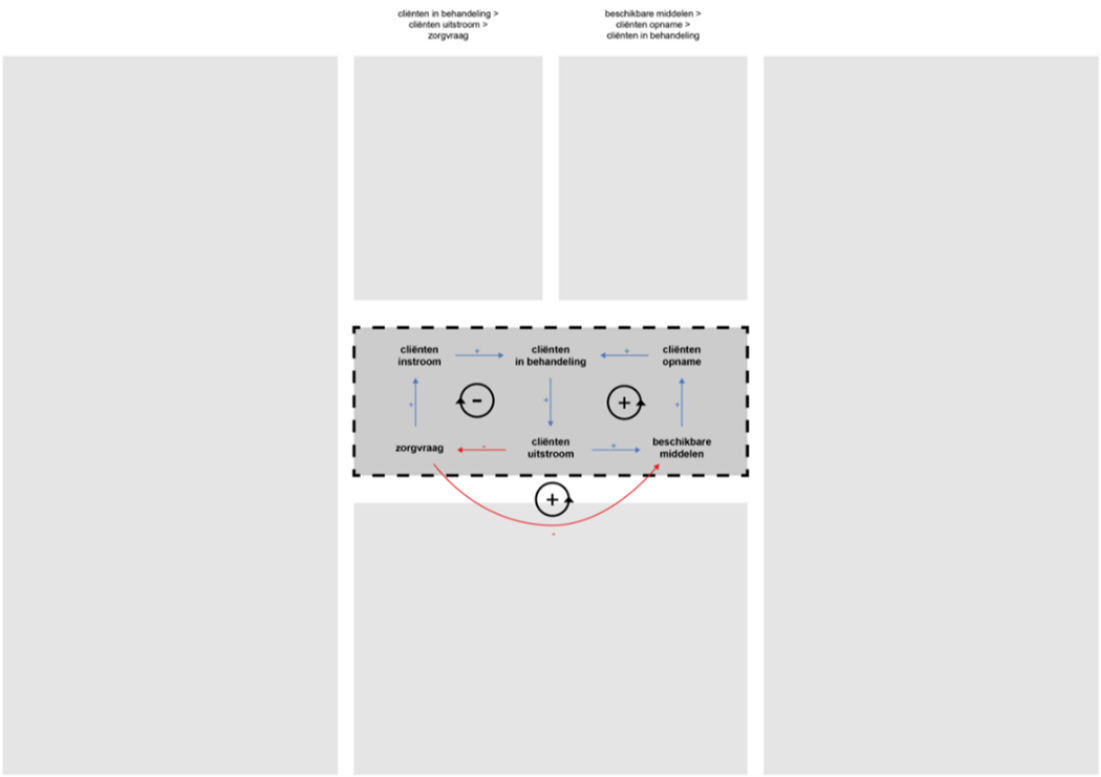


Figure D.2: Causal framework printed on A3 without the input of the experts to place their sticky-notes on during the beginning of the group model building session

Following a 10-minute session, participants documented various factors relevant to the discussion topic. They were then paired off to facilitate a more intimate dialogue, with the intent that this dyadic interaction would encourage a more liberal exchange of ideas. This structure allowed them to articulate and interpret their ideas more freely. Epxert A and B were coupled and Expert C and D were coupled during the session.
Upon conclusion of their discussions, the facilitator allocated time for each duo to present their identified factors and categorize them appropriately. As they elucidated their findings, the modeller transcribed each factor onto larger sticky-notes for visibility and affixed them to a whiteboard positioned for all attendees to observe. This collaborative process ensured that all contributions were recognized and considered for integration into the collective model.

D.3.1. Expert A's Factors and Debates

During the session, the expert identified several important aspects, which are illustrated in the figure below this list (see Figure D.3).

- Economic Factors: Duration, intensity, and modality of treatment.
- Quality of Healthcare: Theoretical underpinnings and protocols
  We should focus more on the questions: is this theory steered? Based on certain protocols? Or do we just asked the client, how are you doing and that's it?
- Policy Impact: Influence of government policies like ZPM and IZA.
- Triple aging: aging of the population itself (so more people live longer), baby-boom generation which is a generation with more people, and the staff is also becoming older.

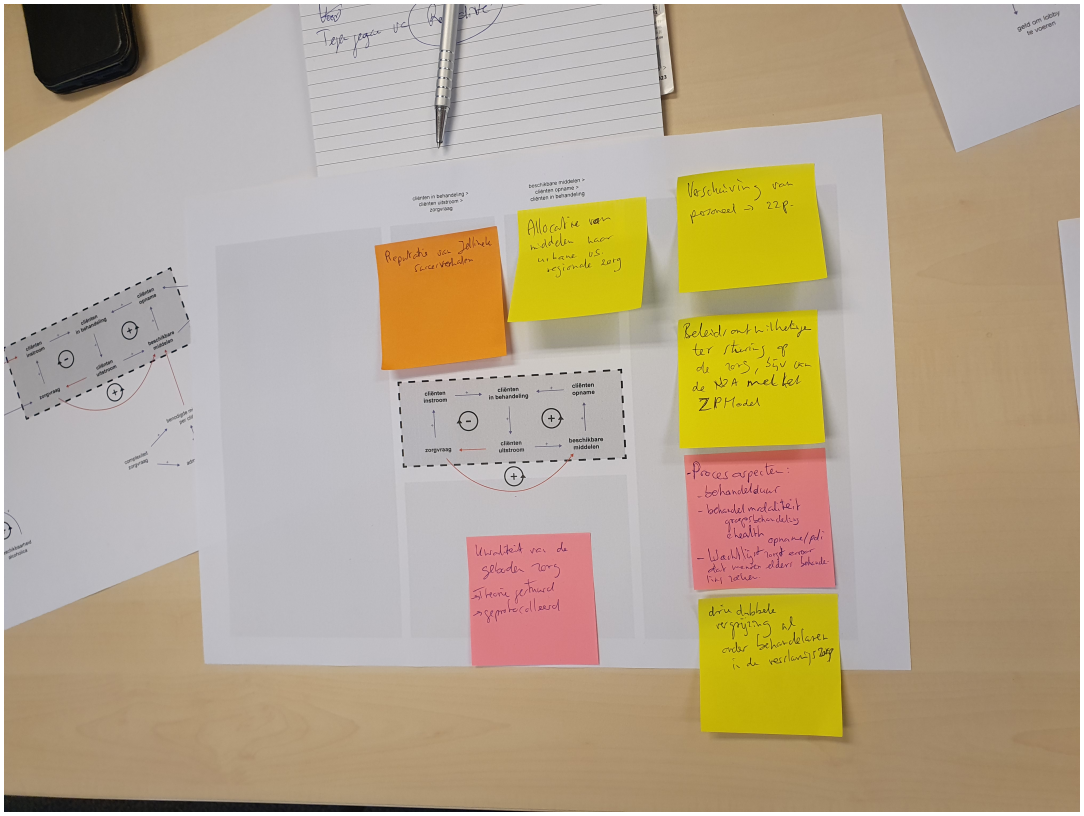


Figure D.3: Picture of the factors identified of Expert A during the nominal group technique

Reaction of the other experts:
Expert D:

- Advocates for evaluating the efficacy of treatment based on the total duration of care provided to patients, suggesting a holistic approach to measurement.
- Differentiates between treatment modality, which refers to the number of individuals involved and the structure of treatment, and the type of treatment, which pertains to specific therapeutic approaches such as Cognitive Behavioral Therapy (CBT), Acceptance and Commitment Therapy (ACT), Minnesota Model, etc.
- Opines that the quality of healthcare should not be incorporated into the evaluation as it represents a 'black box', implying a level of complexity or non-transparency that challenges objective measurement within the current framework.

D.3.2. Expert B's Factors and Debates

During the session, the expert identified several important aspects, which are illustrated in the figure below this list (see Figure D.4). Expert B:

- Policy-making: The operational framework within which government and insurance companies evaluate our services prioritizes their directives over the actual needs of the client. This presents an intriguing discrepancy between policy objectives and patient-centered care.
- Session limitations: The rationale behind confining treatment to a specific number of sessions (e.g., 15 or 20) warrants examination, especially in terms of its alignment with therapeutic outcomes and budgetary constraints.
- Financial boundaries: An exploration of the budgetary limits set for mental health services is essential to understand their impact on service delivery.
- Individualism in society: The decline of communal structures, such as religion, has led to increased individualism, affecting the prevalence of addiction. This societal shift also influences client outcomes, as many return to isolation post-treatment, jeopardizing their recovery. The importance

of adequate preparation for reintegration is noted, with potential for improvement in support structures.

- Multi-comorbidity: The complexity of cases with multiple comorbidities (beyond alcohol dependency) complicates patient outflow. The subsequent waiting times for additional GGZ services contribute to relapse into alcohol use, highlighting a need for more accessible, comprehensive mental health care.
- Staffing challenges: There is a notable shortage of staff and a deficit in adequately trained new personnel, exacerbated by the government's decision not to increase positions in specialized GGZ training programs. The high staff turnover within alcohol services, higher than in other areas, underscores the urgency of addressing educational and workforce needs in the sector.

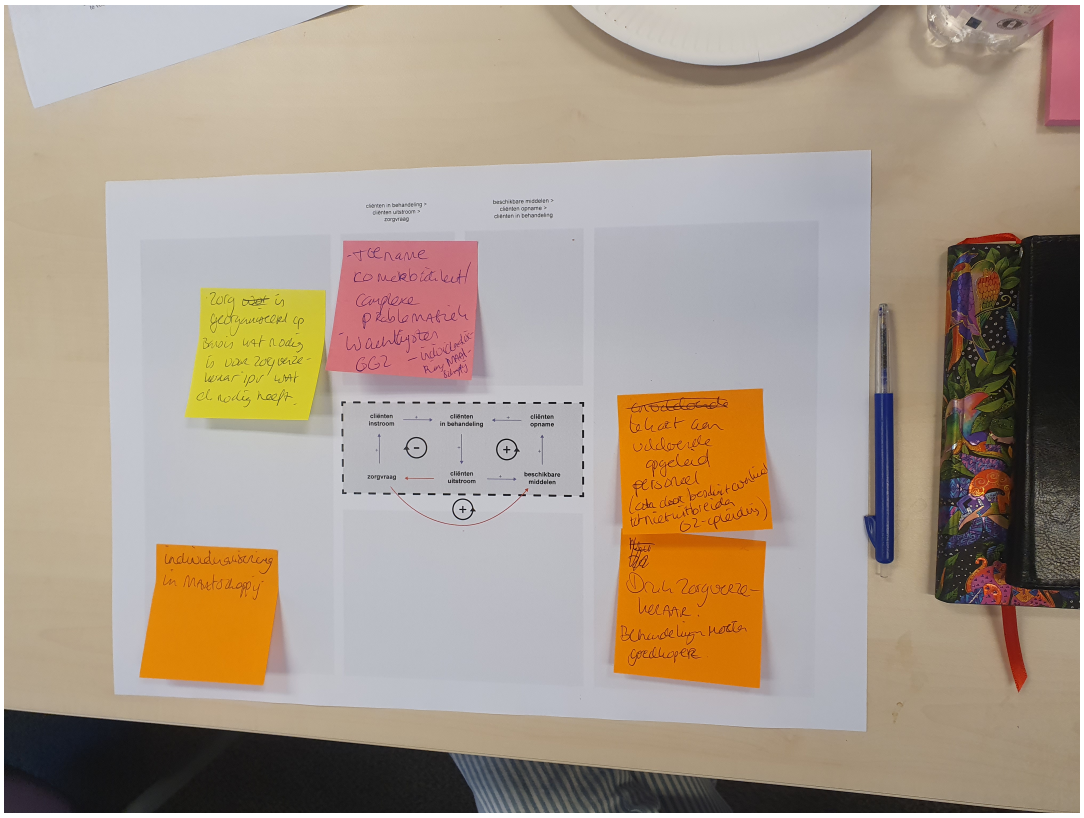


Figure D.4: Picture of the factors identified of Expert B during the nominal group technique

Reaction of the other experts:

Expert D:

- In discussing policy-making, concurs entirely with Expert B's perspective but contends that the resource allocation is primarily driven by governmental and insurance industry pressures. This shift from basic to specialized GGZ reflects these external influences.
- Regarding individualism, acknowledges the significant relapse rate, where 60% of patients regress post-treatment. Questions the sustainability of a system with such a rate of inefficiency.

Expert A:

- In response to the question of escalating complexity, queries whether there is a discernible uptick in the intricacy of cases, referencing Expert B's observation of increased "treatment load." Adds that Expert C sees complexity not only in the disorders but also in the patients' personal circumstances, such as financial strains and unsafe home environments.
- Seeks clarity on whether less severe cases are being redirected to alternative services or if there is an overall rise in complexity. Notes Expert B's uncertainty but acknowledges her inclination towards the latter.

- Introduces the consideration of Jellinek's reputation, suggesting that the institution's high standing may lead to it predominantly attracting patients with severe issues. Concurs with Expert C that their comprehensive range of treatments distinguishes their services from less specialized providers.

D.3.3. Expert C's Factors and Debates

During the session, the expert identified several important aspects, which are illustrated in the figure below this list (see Figure D.5).

- Highlights the critical factors of financial burden and personal shame from the client's perspective as central to client stigma in the context of addiction.
- Critiques societal stigma, emphasizing the disparate societal views on alcohol addiction compared to other mental health areas, evidenced by the disproportionate financial support allocated to hospitals for COVID-19 compared to the lack of aid for GGZ facilities.
- Articulates the deterrent effect of treatment protocols requiring abstinence from alcohol, which often contradicts the desires of patients entering the service.
- Advocates for the necessity of preventive care, both prior to and following treatment, to mitigate the risk of relapse.
- Discusses the influential role of stakeholders such as GPs in patient referral processes, which affects treatment directionality.

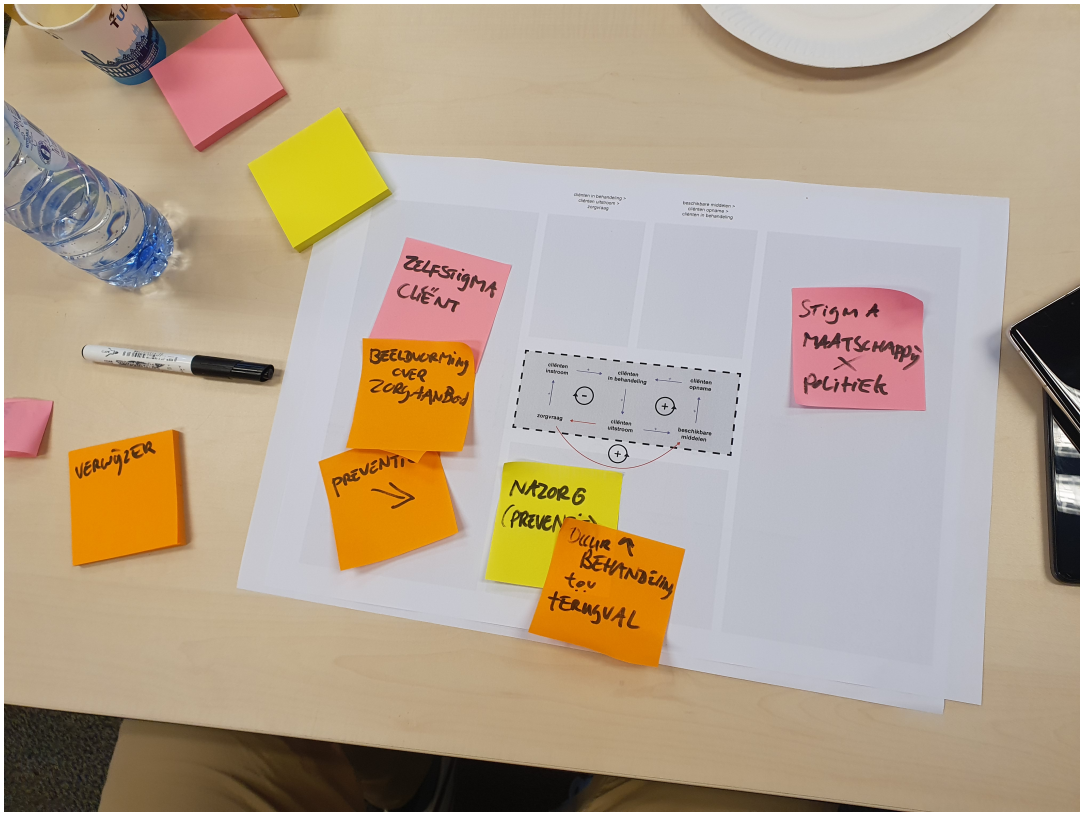


Figure D.5: Picture of the factors identified of Expert C during the nominal group technique

Reaction of the other experts:

Expert B:

Responds to the apprehension surrounding treatment initiation, suggesting that fear encompasses both the anticipated outcomes and the obstacles to accessing treatment services.

D.3.4. Expert D's Factors and Debates

During the session, the expert identified several important aspects, which are illustrated in the figure below this list (see Figure D.6).

Expert D:

- Addresses the issue of a budget cap in addiction care, pointing out the fixed turnover limit regardless of client numbers. Notes Expert B's query about rewards for exceeding patient minimums, clarifying the inflexibility of the system and its potentially perverse incentives that may promote optimizing rather than maximizing treatments.
- Briefly touches on the financial intricacies of the Integrated Healthcare Agreement (IZA), remarking on its significance.
- Comments on societal support for alcohol consumption, critiquing advertisements that promote alcohol under the guise of health, thereby normalizing its use.
- Explores the relationship between societal disturbance levels and support for treatment services, elucidating a 'prevention paradox' where successful treatment outcomes could paradoxically lead to reduced resources, as noted by Expert C. Highlights a shift in Amsterdam from more visibly disturbed substance users to those with alcohol issues, and anticipates potential increases in societal support and awareness.
- Discusses the 'treatment paradox,' where insurance companies fund only proven effective treatments, raising the dilemma of funding such treatments' initial validation. Expert A contributes to the conversation, suggesting that the nature and quality of treatment, as well as its government or organizational steering, are debatable process factors.
- Mentions the administrative burden without further detail.
- Reports high staff turnover linked to limited progression opportunities, administrative load, and lack of challenges. In response to the facilitator's question, downplays working pressure as a significant factor in turnover, instead emphasizing managerial support and career development. Expert C adds that performance-driven management, likened to creating 'production horses' among practitioners, may contribute to job dissatisfaction.
- Raises the issue of patient no-shows, pointing out the inefficiency and quality reduction in treatment it causes, and how the healthcare performance model (ZPM) exacerbates the problem by not compensating for missed appointments like previous systems.

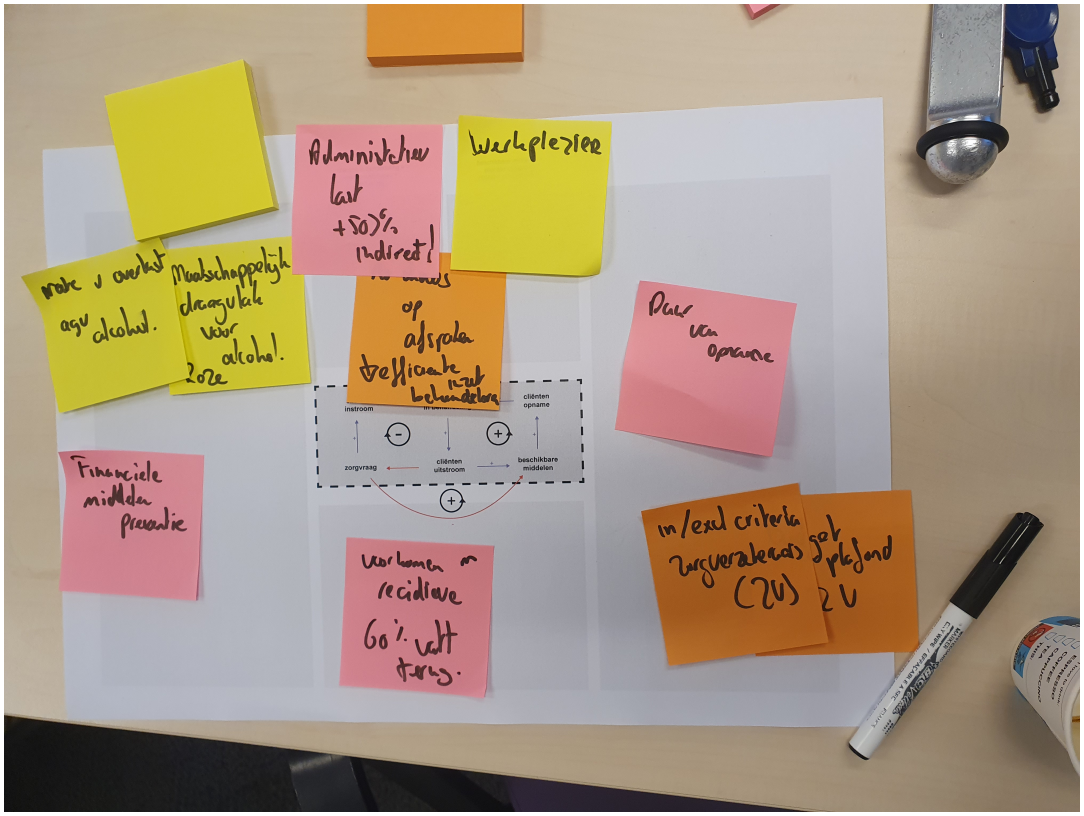


Figure D.6: Picture of the factors identified of Expert D during the nominal group technique

At the conclusion of the session, the facilitator documented all discussed factors on a whiteboard, as depicted in Figure D.7. It should be noted that this image was captured during the commencement of the subsequent Group Model Building (GMB) session, and therefore, it may not encompass all relevant factors identified by the experts. The whiteboard was strategically positioned adjacent to large white sheets, enabling the experts to simultaneously reference the factors identified in both the preceding and the current sessions.

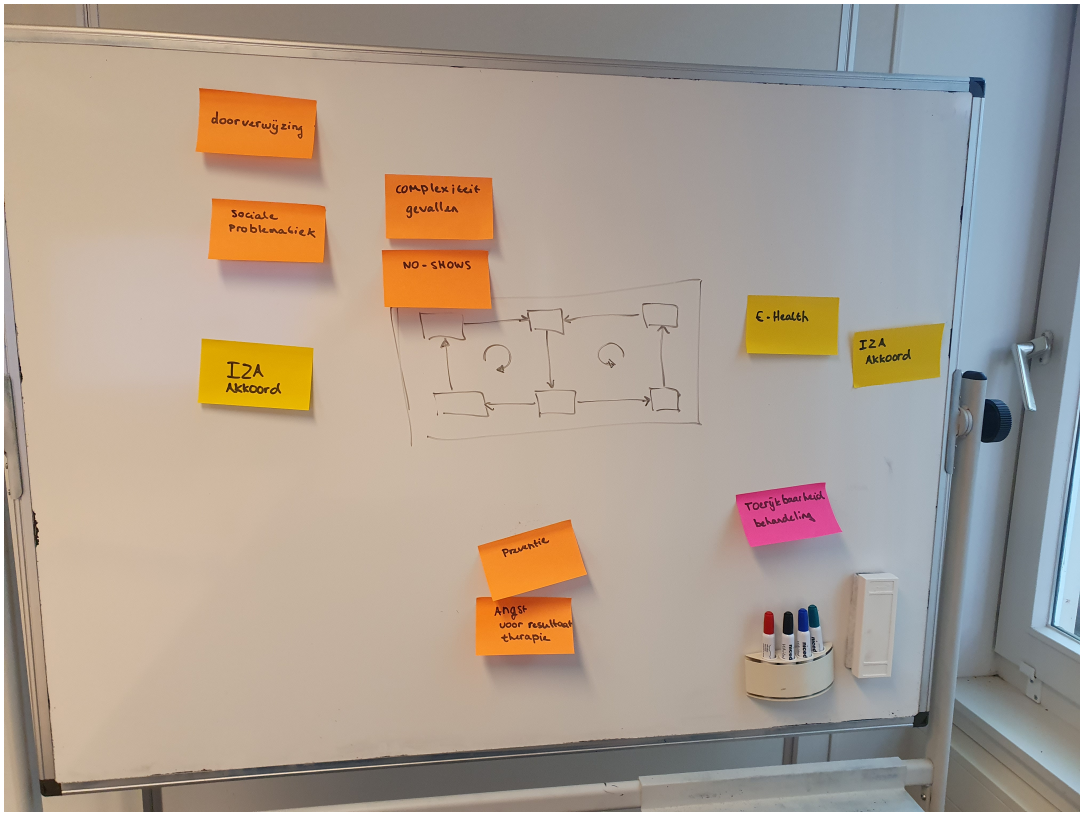


Figure D.7: Picture of the factors identified during the NGT and placed by the modeller on a big whiteboard with casual framework in the middle

Break (took in total 14 min / 1:08:54 – 1:23:00): Only a bit of chitchatting during the break.

D.4. Group model building session 1, building a Casual Loop Diagram

Duration time: 65 min (1:23:00 - 2:33:00)

Following the break, the facilitator prompted participants to map the factors identified in session one into the three sub-models delineated in the figure provided (see figure **??**. The facilitator's request to initially focus on the interconnections within the lower three sections was aimed at encouraging a relational thinking approach. All the relationships identified were then visually represented on a whiteboard for the participants' reference, as illustrated in the accompanying picture D.7.

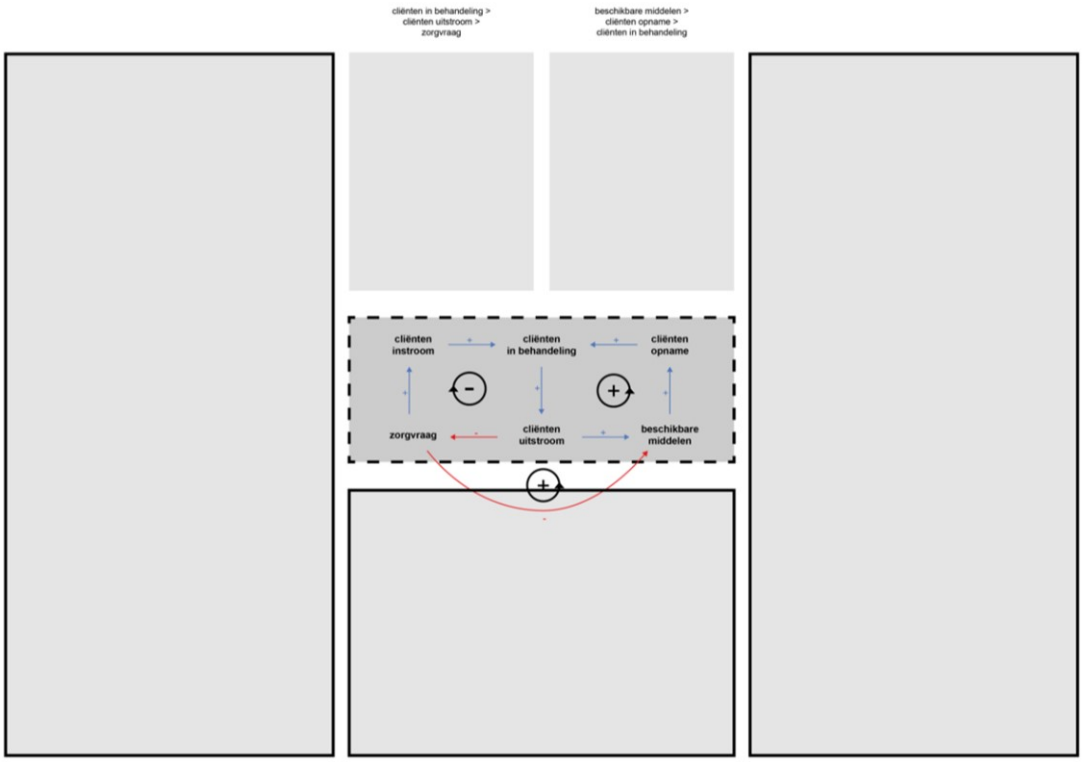


Figure D.8: Figure of the subsystems that will be depicted at the beginning of the group model building part

During the session, the facilitator introduced an example concerning no-shows and demonstrated with the modeller how to delineate a potential relationship and feedback loop as they questioned how a feedback loop can be drawn using the factors from the NGT. After this explanation the participants were then invited to express their ideas on small whiteboards, which would be captured in subsequent photographs. They were given about 10 minutes to jot down their thoughts independently. Consequently all the whiteboards of the participants will be discussed in the upcoming sections.

In the midst of this activity, Expert A identified a gap in the diagram, pointing out that 'treatment' appeared to be missing as a connector between 'clients in treatment' and 'client outflow.' It was suggested that 'treatment' is influenced by the very factors that the group is able to control. The quality of healthcare was mentioned as a factor that determines outflow, influencing patient functionality post-treatment. This expert found it challenging to incorporate their viewpoint into the diagram, highlighting the complexity of modeling such interactions.

Expert A also remarked on the role of societal factors, noting their importance but also the limited capacity to influence these broader issues, apart from through voting for a certain political party.

D.4.1. Discussion of the whiteboard of Expert A

The facilitator tries to give everyone during the session room to explain their ideas to the group The upcoming sections will be visualised using a transcript as the discussion and interactions seems relevant for the context used and discussed in chapter 5.

Expert A: In my opinion, what we can achieve is precisely what's depicted at the center of the diagram. That represents the focus of our service, catering to clients in treatment. The quality of treatment positively influences the outflow of patients. Process aspects, such as duration, intensity, and modality — including e-health — are significant.
Facilitator: Does this also have an effect on the quality of care?
Expert A: The concept is simple: if we could reduce the treatment time, then we could handle more

intakes and treat more patients. It may seem simplistic, but that's essentially correct, right? The others agree?
Moddeler: The inflow will increase because the number of people receiving treatment will rise.
Expert D: That's debatable. As the time required reduces, it could also mean that fewer patients will flow out of the system.
Expert D: Centering the quality of care within the model feels appropriate. Content always leads!
Expert A: Treatments that take longer are not necessarily better treatments, although they must be adequate. Duration and treatment efficacy are not linearly related — more does not always mean better. "A suitable care," matched care, is what we overlooked. That's also mentioned in the IZA document, correct? Expert D: Yes, suitable care is what we overlooked!

Facilitator: Is that a factor that can be increased or decreased? As care managers, we are always busy with the available resources, like a clinical psychologist, for example. Moddeler: What we could consider is that balance cannot be increased or decreased, so we should consider imbalance, as this can intensify or alleviate issues such as shortages.

Expert A: I believe we should refer to it as "suitable care," as that's fundamentally what it's about. However, there are also issues of overtreatment and undertreatment, with the optimal point being suitable care — although achieving this balance is quite challenging.
Expert B: Factors could include undertreatment and overtreatment.
Expert B: Tailored care is not a variable, so we should include other elements because it's not something that can be adjusted, unlike overtreatment and undertreatment.
Expert C: We all recognize Jeroen Muller's graph illustrating diminishing returns. Initially, treatment is highly effective, but there comes a point where additional treatment leads to a decline. Ideally, we should cease treatment before this point.
Expert A: Overtreatment also affects capacity.
Expert C: Overtreatment negatively impacts how many people can be treated, while undertreatment positively affects the availability of resources. That's indeed fascinating!
Expert A: Undertreatment leads to an increased inflow of patients because these individuals fall back into the system without proper management. If we resort to overtreatment, then waiting times will increase, as patients not being helped will have to wait longer.
Expert A: Overtreatment leads to higher waiting times, and higher waiting times result in more complex cases. Is that correct, Expert B?
Expert B: Yes, that's what we observe.
Expert C: I am heavily involved with waiting times, but I didn't consider it a factor because isn't waiting time a non-issue at our service? When you come to us for treatment, you can start immediately, not necessarily with a full treatment admission, but you receive something.
Expert B: Because our treatments don't take that long.
Expert D: Hold on, we see that 40% of patients drop out between registration and the first intake, the W1. I hypothesize that if we can shorten the W1, we might reduce the dropout rate to 10%. We perform excellently compared to other mental health institutions, but from the disorder's perspective, the waiting time is still too long. Therefore, with our digital clinic, we aim to cut down the time to a maximum of 48 hours.
Expert A: How does it work? If patients are not helped promptly, do they quit, or do they seek help elsewhere?
Expert D: If it takes too long, the crisis might pass for the patient, and they'll say, "I've regained some control, the situation isn't severe anymore, it's okay now."

The Facilitator tries to steer the conversation towards the factors related to what has just been discussed.

Expert B: It leads to decreased client inflow.
Expert C: And that contributes to undertreatment. I assert there's no waiting time, but if you need to visit the ACD, you will have to wait.
Expert A: So the essence of the issue is that we should provide something to the patient within a short period.
Expert D: From an ethical standpoint, it's irresponsible to let a patient wait for two weeks.

Facilitator: If we increase the waiting time, is there a direct relationship with healthcare demand or client inflow? Or is there an intermediary factor?
Expert C: If you take healthcare demand literally, it will decrease.
Expert D: [sighs] In this model, I would correlate it to inflow. The healthcare demand we've been addressing involves both diagnosed and undiagnosed cases.

In the diagram below (refer to Figure **??**), Expert A's whiteboard is illustrated, which corresponds to the discussion mentioned above.

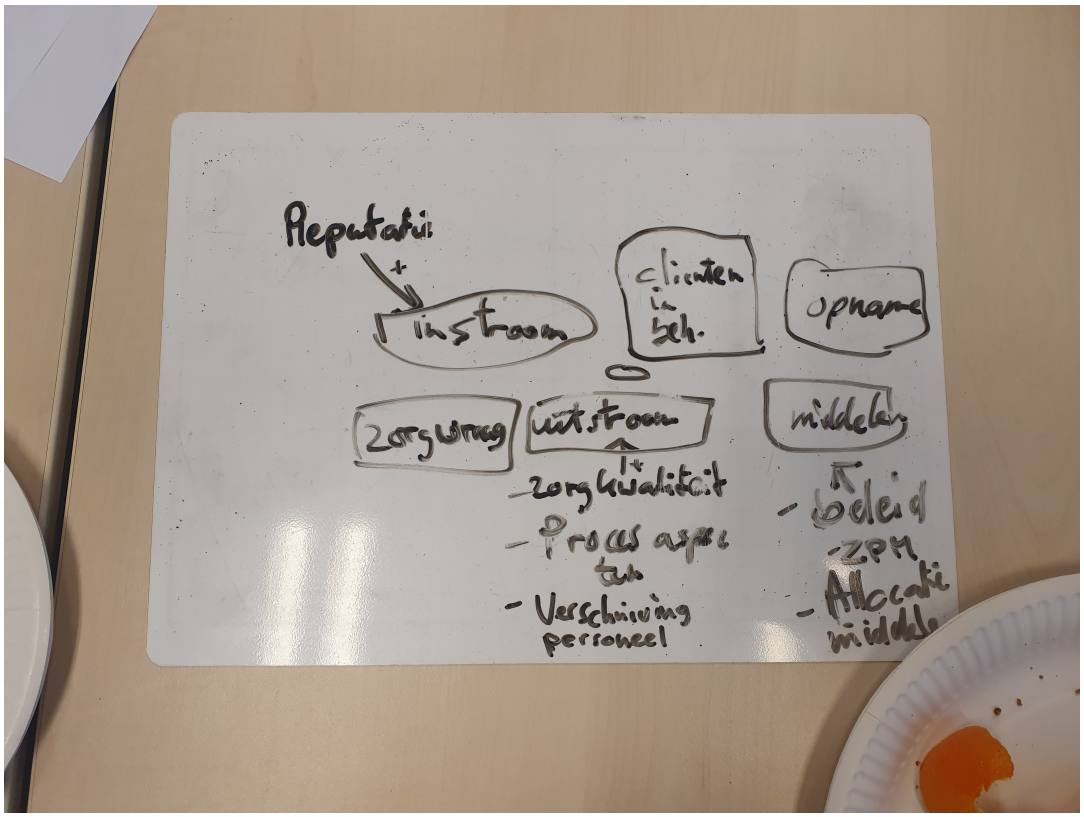


Figure D.9: Expert A identified factors and their relations towards the diagram.

D.4.2. Discussion of the whiteboard of Expert B

Facilitator: Could you please outline the relationships you've identified for us?
Expert B: Certainly. The trend I've noted is the individualization of society, which significantly impacts healthcare demand. There's also a notable rise in the prevalence of diseases, hence affecting healthcare demand. Another factor is the increasing complexity of patient cases, which naturally influences the outflow of patients from the system. Moreover, because society values individualization, it becomes challenging to reintegrate patients into their previous living situations after treatment.

A discussion ensues about the challenges associated with discharging a patient from healthcare services.

Expert A: It seems there's a reluctance amongst practitioners to discharge a patient, which in turn drives up healthcare demand.
Expert D: Is it genuinely difficult for practitioners to discharge patients, or is it a matter of anticipating their return?
Expert B: The difficulty lies in ensuring patients are not discharged prematurely or inappropriately, complicating the process.
Expert D: So, this impacts the allocation of resources as well.
Expert B: Correct. This could be termed as 'completion of treatment.

Modeller: To clarify, if a treatment concludes, it should be accounted for in the outflow metrics, right?
Expert A: Precisely. However, it's also vital to ensure that patients do not become overly reliant on the healthcare system or providers. We aim for goal-oriented treatment, especially in mental health care (GGZ), as issues can arise or evolve during treatment.
Expert B: Therefore, 'goal-oriented treatment' becomes a critical factor.
Expert D: That's a bit nebulous. We're on the right path, but the terminology needs refinement.
Facilitator: [Acknowledging Expert D's point] We'll table this discussion for now and revisit this factor later. What other influences have you identified, Expert B?

The conversation shifts to the impact of policy-making on healthcare.

Expert B: Policy-making, particularly the healthcare performance model (ZPM), affects resource availability. Currently, more policy equates to fewer available resources.
Expert D: The true adverse effect is captured under 'direct time'—the reimbursement for time spent on treatment.
Expert B: The government's intent may differ, but the result is increased bureaucracy. Expert A: It's not just about pressure. It's the dissatisfaction among staff working in an environment heavily influenced by external forces.
Expert D: And it contributes to workload, primarily through added administrative tasks. The obligation to justify one's work is overwhelming.
Expert D: To extrapolate, we could see a cascade: increased regulatory pressure leads to more administrative work, which then reduces treatment capacity, raises patient costs, and eventually diminishes your budget for clients, affecting resource availability. Our staff spend over half their time on administrative tasks. Reducing this to 20% could notably increase treatment capacity by more than 50%.
Modeller: We're looking at two constructs then: 1) Job dissatisfaction leading to a reduction in resources, and 2) the inherent increase in administrative tasks.
Expert D: Observing this, it's apparent that our influence is more significant than previously considered. It's akin to a self-sustaining ecosystem.
Expert B: Furthermore, the educational level of the staff contributes to resource scarcity.
Expert A: Is this a result of high staff turnover? And does it negatively impact the quality of care?
Expert B: Exactly. Optimal care requires a capable staff. Without that, we cannot succeed.

In the diagram below (refer to Figure **??**), Expert B's whiteboard is illustrated, which corresponds to the discussion mentioned above.

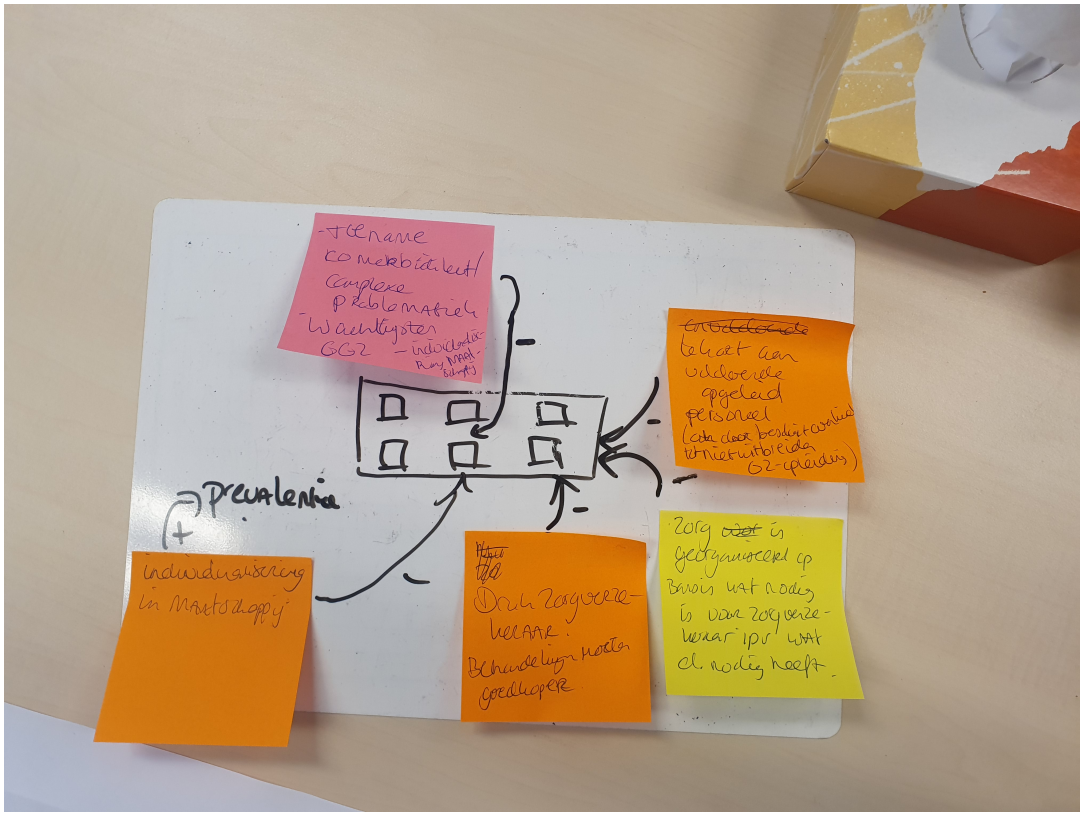


Figure D.10: Expert B identified factors and their relations towards the diagram.

D.4.3. Discussion of the whiteboard of Expert C

Facilitator: [Addressing Expert C] Could you please share with us the relationships you've identified in your analysis?

Expert C: My findings were strictly negative relationships... [The group laughs]. The reputation or patients' perception of our services negatively influences client inflow.
Facilitator: Could you elaborate on what you mean by that?
Expert C: A positive reputation would lead to increased inflow—so in that case, the relationship would be positive.
Expert C: Self-stigma, on the other hand, decreases healthcare demand.
Facilitator: Are we discussing healthcare demand or patient inflow?
Expert D: The challenge is that in this model, healthcare demand is something we acknowledge exists, despite a lack of recognition—this contributes to the treatment gap, which is significant.
Expert C: I'm referring to the actual step of approaching a general practitioner and seeking help.
Expert A: Supporting Expert C's view, recognizing one's addiction is critical, and the lack of acknowledgment shouldn't be underestimated.
Expert D: Therefore, healthcare demand, in this context, should be considered as an explicit request or demand from patients.
Expert C: This under-recognition of demand contributes to the treatment gap, leaving potentially hundreds of thousands outside our service.
Expert C: I've indicated a dotted line between outflow and healthcare demand. I believe that increased after-care will reduce healthcare demand. Moreover, the recurrence of patients significantly impacts work satisfaction. Many colleagues have left the clinic because of the frustration with patients returning.
Expert A: Does this give practitioners the impression that their work is futile?
Expert D: This is not a phenomenon I'm familiar with.
Expert B: It could also be related to the methodology of our work; perhaps they are not accustomed to the approach we take here.
Expert C: We also confront societal stigma, which seems to create a feedback loop. The stigma at the

national level affects resource allocation, which leads to complaints about the addiction sector due to perceived underperformance, resulting in ministers labeling the mental health care sector (GGZ) as elusive.

The group observes as the modeller visualizes the discussed relationships.

Expert D: Perhaps we should generalize the reputation aspect, not just for our clinic but for the entire GGZ sector.
Observer: [Interjecting] I'd like to clarify that societal stigma is distinct from patient reputation, and we should articulate that difference more clearly...

In the diagram below (refer to Figure D.11), Expert C's whiteboard is illustrated, which corresponds to the discussion mentioned above.

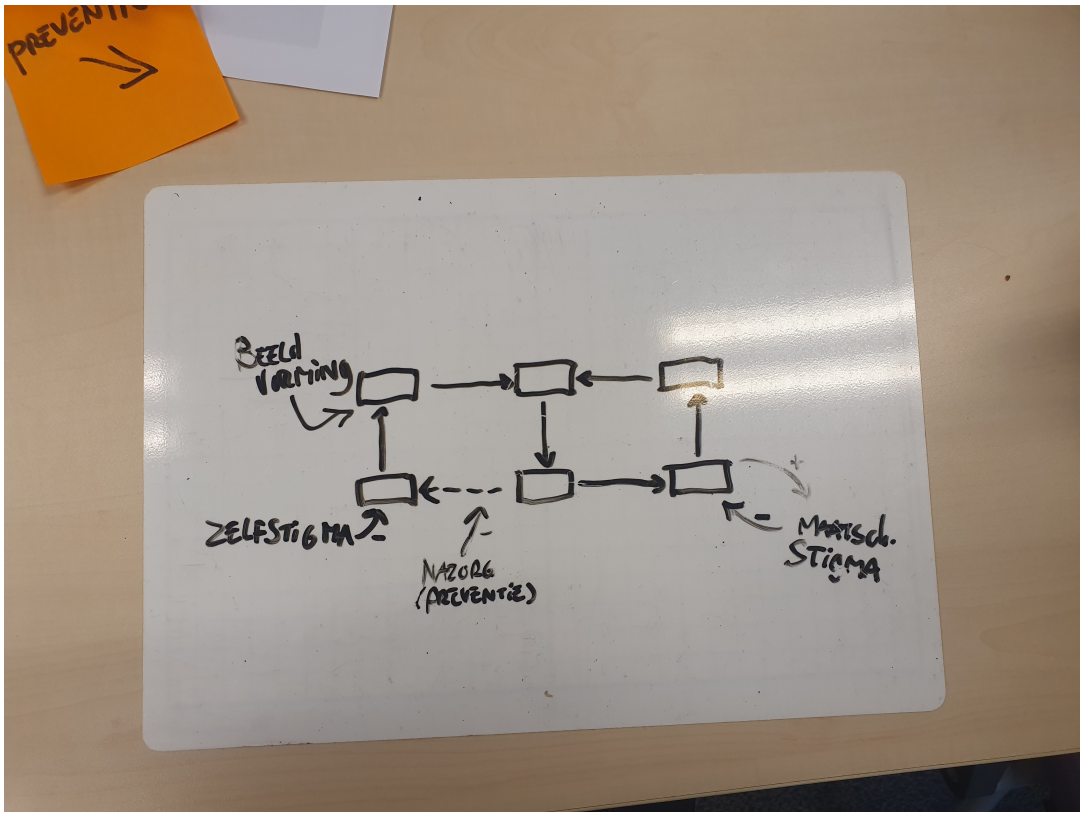


Figure D.11: Expert C identified factors and their relations towards the diagram.

Break (took in total 5 min 2:12:00 – 2:17:00
During the break:
Expert C: It seems we're only adding complexity to our challenges.
Expert D: Regarding the conflict in the UN, I've forwarded the details to Facilitator.
Expert A: It's important to recognize that healthcare can be analyzed at various levels. Currently, in our model, these different levels are entangled, which requires some disentangling for clarity.
Observer: The complexity also relates to the time horizon of our simulation. For a one-year forecast, societal trends might be considered constant. However, projecting the Mental Health Services over the next decade requires us to shift to a more macro perspective, involving a different level of abstraction.

D.5. Group model building extension session 1, building a Casual Loop Diagram

Duration time: 16 min (2:17:00 - 2:33:00)

Facilitator took the decision in the break, as the time was scare at that moment, to finish session 1 and then skip the second session, as the persons where already talking about the upper part of the diagram as well.

D.5.1. Discussion of the whiteboard of Expert D

Facilitator: [Addressing Expert D] Could you share with us the relations you've been working on?
Expert D: I've been considering societal support for alcohol consumption. It should be on the upper left side of our diagram. An increase there would lead to a higher healthcare demand.
Expert B: That would also mean an increase in prevalence, correct?
Expert D: I'm a bit unsure about the distinction between incidence and prevalence.
Expert A: Prevalence refers to the total number of people with a disorder at any given time, while incidence is about the number of new cases developing.

Expert D: Moving on, we haven't talked about financial resources for prevention. More funding there could reduce societal support for alcohol.
Facilitator: And where would the prevention agreement fit into our model?
Expert D: It's related to the allocation of available resources, which should already be included on the prevention side of our diagram.

Expert D: Another point is the extent of disturbance from alcohol use. This disturbance decreases societal support and thus reduces financial incentives for prevention.
Expert A: But wouldn't recognition of the problem increase governmental awareness and financial incentives for prevention?
Expert B: If the problem with alcohol vanishes suddenly, there's no need for prevention at all.
Expert D: Then there's the budget gap, leading to fewer available resources.
Facilitator: Can we clarify what we mean by 'budget gap'?
Expert D: The government expects the GGZ to maintain costs at a baseline without increases, which translates to a capped turnover for healthcare providers.
Expert A: How does that affect the number of patients we can treat? It's possible to curry favor with insurers by showing improved patient recovery within the budget constraints.
Expert D: Our service could potentially grow without bounds in ambulatory care, but that's no longer feasible. We've transitioned from being production-driven to a more regulated environment.

Observer[interruption]: It's important to model this with a delay because policy responses and their effects on mental health services will not be immediate.
Modeller: To reiterate, the relationship with the budget gap and available resources is direct: if one decreases, so does the other, and vice versa.
Expert C: Staff shortage is another limiting factor. It's difficult to attract people to mental health care currently; the interest seems to have shifted towards fields like cryptocurrencies. [The group laughs]

Facilitator: Is there anything else you've noted, Expert D? Expert D: I've been looking at ruling pressure, which leads to higher client costs and reduces the number of patients treatable within the budget constraints. The ZPM reform aimed to shift the focus from indirect to direct patient care. We've had to adapt by restructuring treatment contacts to save time, which ironically, has driven up prices.
Facilitator: So, we're saying that increased regulations result in higher client costs and a reduced capacity for patient care due to budget limitations?
Expert D: Exactly. And with more complex patients, there's an increased regulatory burden.
Expert B: [Agrees] The complexity of patient care adds to this burden.
Expert D: The whole situation in the mental health system is frankly outrageous and a burden on our therapists.

Expert B: Some of the strategies, like involving patients directly in discussions with their GP, make sense, though.
Expert D: I concur, we stand by our methods, but it highlights the tension we're under.
Expert A: What if we had a budget arrangement and could self-regulate treatment targets? That could potentially eliminate a lot of unnecessary hassle.

In the diagram below (refer to Figure D.12), Expert D's whiteboard is illustrated, which corresponds to the discussion mentioned above.

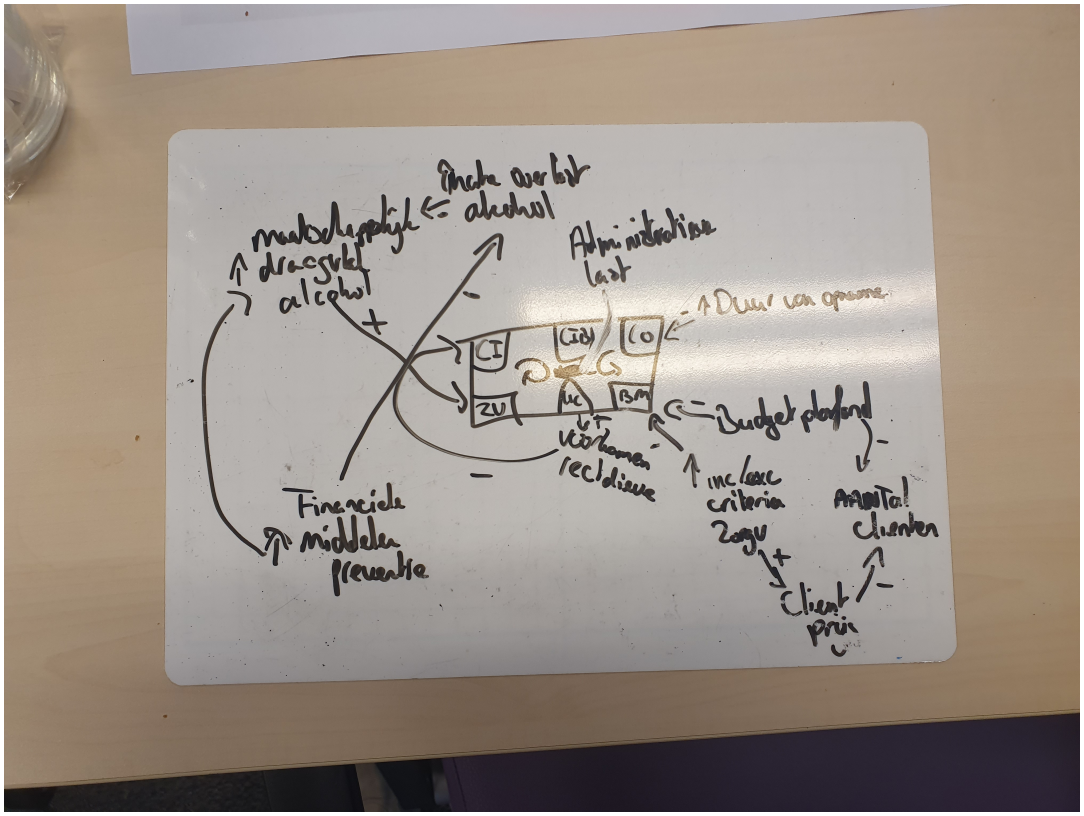


Figure D.12: Expert D identified factors and their relations towards the diagram.

Expert D leaves the room, unable to finish the session due to other meeting constraints; a reflection will be provided at the end of this appendix.

D.6. Conclusion and reflection of the workshop

Duration time: 23 min (2:33:00 - 2:56:00) At the conclusion of the discussion, a causal loop diagram was drafted on the whiteboard (see figure D.13), encapsulating the key points highlighted in the preceding dialogue.

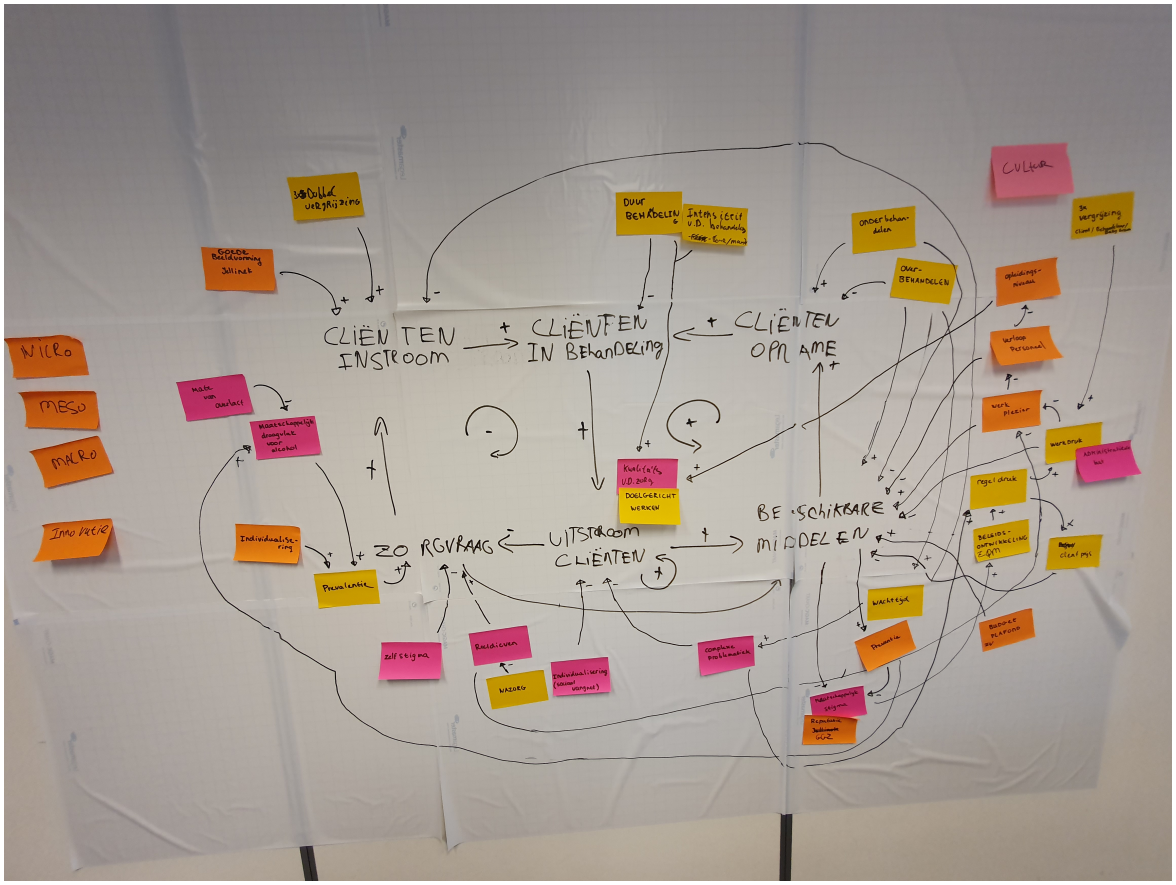


Figure D.13: This final diagram has been developed from the existing discussions during the workshop, with the addition of certain elements such as aggregation levels, innovation, and culture. These new factors have been incorporated without direct connections to the initial conceptual framework.

At the end of the session, two main outcomes were considered. Firstly, a conclusion was drawn regarding the content discussed, followed by an evaluation of the methods employed. Additionally, participants deliberated on what aspects of the utilized methods they would like to carry forward and apply more extensively.

D.6.1. Reflection on the content

Facilitator: As we conclude, let's reflect on what elements might be missing in our current model. Expert A, you brought up something earlier about different levels?
Expert A: Yes, our current model is intricate, intertwining micro, meso, and macro levels. Micro-level deals with patient interaction, meso with our clinic operations, and macro encompasses broader societal factors. We should separate these and explore their interconnections. It's like playing chess on three boards simultaneously.
Expert B: Where does working pressure or satisfaction fit into this? Is it macro-level?
Expert A: That's more of a meso-level concern, specific to our clinic. We can't directly influence societal factors.
Expert D: It's not easy to perfectly segment into the three levels of aggregation due to overlaps.
Expert D: I feel we're missing elements of innovation in the model, not just in treatment methods but also in the development of treatments and ROM measures. For instance, AI-driven treatments might not be covered by our budget, which could affect regulatory burdens.

Observer: (Interrupts) These concerns, such as innovation and implementation, belong to the macro-level considerations.

Expert A: There's another dimension: the culture within our organization. It might be somewhat

arrogant, influenced by our regional context. It's about the ethos of working in our clinic, which differs from external perceptions.
Expert B: Addressing organizational culture is vital. It varies between regions, especially if seen as merely a production factory with strict protocols.

D.6.2. Reflection on the method

Facilitator: Let's gather some feedback on the session's strengths and areas for improvement. Please jot down your thoughts on the sticky notes.

After noting it on sticky-notes the facilitator asked to explain their thoughts:

Expert A: The brainstorming was engaging and enjoyable, truly what I envision such a process to be. It's a mix of less and more promising ideas, providing insight into the complexity we're dealing with. It's tempting to oversimplify, but then we risk losing vital nuances. We could certainly aim for a more structured schedule than what we've outlined today by breaking it down into sub-components. I feel we've touched on many relevant issues currently faced in the clinic, which has been incredibly beneficial.
Expert B: I found the experience thoroughly enjoyable. I appreciated the preparatory work, including the questions sent beforehand and our preliminary discussions. However, the session became somewhat overwhelming when confronted with the complex models.
Facilitator: Could you specify what you found overwhelming?
Expert B: The sheer number of factors at play was daunting. They're not necessarily organized, which is confronting, though it does highlight the inherent complexity of the situation.

Expert A: To add to that, we were able to identify areas beyond our influence, allowing us to sideline certain issues. For instance, the ongoing governmental changes, the constraints on mental health care, and the insurer's interference—these factors help us pinpoint where we can actually make a difference.
Expert C: I resonate with that and have noted it as a highlight. Our meeting brought together four distinct perspectives, enriching the dialogue for your thesis and my personal learning. This wasn't just a brainstorm; it was an exploration of interrelated challenges.

Facilitator: How did you find it different?
Expert C: Unlike typical brainstorming sessions, which focus on a singular problem, here we accumulated a variety of issues. A technical solution would be helpful to untangle this 'spaghetti'—perhaps a large touchscreen or something similar. The process was excellent, but concrete tools could further enhance it.

Facilitator: Did you find the perspectives well integrated?
Expert C: Absolutely, it offered new insights. I usually focus on the client perspective when writing advisory reports. However, incorporating Expert D's perspective on budget constraints, for instance, required me to think in new ways, which I found stimulating.
Expert A: An interesting outcome was the realization that governmental control through regulations can be counterproductive, even exacerbating the problems they aim to solve. This not only hampers efficiency but also detracts from job satisfaction among staff.
Facilitator: That's insightful. It's surprising how regulations can double their impact—on both the system and the work environment.
Expert A: It also touches on cultural differences, like the varying degrees of compliance observed between psychologists and hospital staff. This is noteworthy, considering the resistance to protocols within psychology, despite their proven benefit.
Expert C: There's also the issue of blaming the government for regulatory burdens, half of which are self-imposed by the sector. Compliance is understandable, given the serious nature of the work involved.

Facilitator: What are your thoughts on the session's structure—from sticky notes to the various whiteboards and the comprehensive model?
Expert C: The progression seemed logical to me.

Facilitator: Was the function of each block within the model clear?
Expert B: I found the explanation of the upper two blocks a bit confusing at first.

Facilitator: Any other feedback or thoughts on the next steps?
Expert A: I'm looking forward to a more streamlined model, with redundancies removed to highlight key factors, especially those within our control.
Expert C: Indeed, a solid model could lead to measurable outcomes—like assessing the impact of treatment duration on recidivism.
Expert A: Identifying such correlations could be groundbreaking. For instance, what would be the outcome of implementing more e-health treatments? Policy regulations often lack such predictive analysis.

Facilitator (presents his research process and the session's goals, ending with gratitude for participation):

Expert A: It's crucial that the model not only identifies problems but also proposes solutions—'the proof of the pudding is in the eating,' so to speak. It will be interesting to see if a model can guide whether blended care is a beneficial approach.

Facilitator: That's challenging, considering the complexities uncovered today. The relationships between factors are not always straightforward.
Expert A: Indeed, and while we shouldn't expect you to provide definitive answers, your model will be a valuable starting point for further discussion and consideration.
Facilitator: Precisely, it's not about prescribing specific actions but about offering insights for informed decision-making.
Expert A: And that's exactly the kind of guidance we need.

Reflection of expert D, via a telephone call, the day after the workshop:
Process:
Tops:
Indeed, I found the session to be genuinely enjoyable. The atmosphere was lively and welcoming. You did an exceptional job of introducing us to the method, which I greatly appreciated. It's not an easy task to maintain engagement, especially with someone like me—I tend to require a bit of guidance. It's just part of my nature, something I'm working on, but can't quite change completely. Nonetheless, you managed to keep my attention, and the session was handled timely. Overall, it was a very pleasant experience—kudos to you.

Tips:
On a side note regarding your personal presentation, I'd suggest perhaps slowing down your speech slightly. But what really worked for me was your sense of humor—it's important to maintain that. It adds a light-heartedness to the afternoon that I believe everyone appreciates.
Facilitator: I suppose I do strive for a balance, not too stern. I'm glad that the session was enjoyable for you.
Expert D: Absolutely, it was a success. System dynamics doesn't naturally excite everyone, especially in healthcare where it can be perceived as challenging or dry. But this afternoon was engaging and fun, which is an achievement.

Content:
Facilitator: Is there anything specific you feel you've learned from today's session? Expert D: Several things. Specifically, I've realized that our influence on various systems is greater than we often perceive. This insight into systemic interplay unveils the scope of influence we actually possess, allowing for a clearer understanding of the challenges at hand. I can't recite all the details at the moment, but the revelation of system dynamics—that was a significant takeaway. And then there's the concept that maintaining factors are indeed influential—it's almost a 'Johan Cruijff' level of obviousness, yet you have to grasp it conceptually to really see it.
Facilitator: Could you provide an example of this?
Expert D: Take the interconnection between disruptions, prevention, and funding—that triad. It struck

me as ironic that the better we perform our duties, the less funding we receive.
Expert D: Additionally, I must commend your foundational work; whether it's standard or not, it felt like you had thoroughly considered the core issues. Without that foundational understanding, navigating the complexities would have been far more challenging.

Facilitator: [Explains the next steps in the research process.]

Expert D: If you delve into the ZPM documentation, you'll encounter all the relevant institutions. From there, you can identify the most pivotal stakeholders to engage with.
Facilitator: Are you suggesting that the government might not be the most pertinent entity to involve?
Expert D: Well, "the government" encompasses numerous institutions. You have various ministries shaping policy, but also entities like the Healthcare Institute of the Netherlands and Healthcare Insurers Netherlands. These aren't government bodies per se, but they are instrumental in the healthcare sector. It's about pinpointing where the actual influence lies.
Facilitator: So, direct interaction with the Ministry of Health, Welfare and Sport is minimal?
Expert D: It's a mix—yes and no. They may not always be front and center on funding matters, for instance. Yet, I would suggest beginning with the Ministry as they are an umbrella entity that could provide overarching insights.

E

Script semi-structured Expert interviews

The two semi-structured interviews were conducted using the same script. The first interview took place on September 18, 2023, with Expert 1 and Expert 2, both of whom are specialists in policy-making.The second interview took place on November 1, 2023, with Expert 3. This individual serves as the Director of Operations for a mental health care service and is actively involved in national policy-making for the Mental Health Services (MHS). Additionally, Expert 3 is responsible for making key decisions and managing the resultant implications for the service. In the subsequent section, we will detail the script that was employed for conducting these interviews.

Aim from research perspective:
During the group model-building session, several regulations led by the Ministry directed the services towards specific financial and regulatory goals. However, these regulations sometimes produce unintended side effects that ultimately degrade the overall system performance. This raises the question: What is the systems perspective of the Ministry? Is their viewpoint too narrow in its temporal scope, or is it sufficiently broad to anticipate and account for all potential side effects?
For instance, consider the impact of budget caps and the ZPM regulations, which force service providers to optimize treatment methods. This leads to an increase in protocols, creating a "production-driven" work environment. As a result, client costs rise and fewer people receive treatment. Does the Ministry consider these ripple effects, and is their systems perspective broad enough to account for such temporal variables?

Context:
Within the alcohol addiction sector and the broader GGZ (mental health care) landscape, sustainability is a growing concern. Demand for services is increasing, yet many individuals are not receiving timely or adequate care. Practitioners often describe their work as protocol-driven and burdened by administrative tasks. As a result, patients seeking help from GGZ facilities face long wait times, sometimes exceeding six months, which is far from the immediate care some require and (take the client perspective into consideration) should take not longer than a couple of hours.
Moreover, the sector is experiencing a talent drain, with many practitioners leaving and highly-skilled personnel becoming increasingly scarce. Current policies and agreements, such as the treeknorm, the newly introduced ZPM, budget caps, and negotiations between healthcare insurance companies, the national government, and GGZ facilities, have yet not effectively addressed these issues.
To tackle these challenges, my research employs the framework developed by Rosen et al. (2020). I aim to identify critical drivers and barriers at various aggregation levels to understand the dynamic behaviour of the mental health care system for Alcohol Use Disorder (AUD) treatment in the Netherlands. The goal is to inform policy debates on the critical dynamics of healthcare systems, both nationally and regionally, and to fill knowledge gaps in the academic understanding of healthcare systems, particularly mental health care.
My research utilizes System Dynamics, a mathematical modelling method developed in the 1950s

by James Forrester at MIT. This method blends qualitative (and optionally, quantitative) insights to understand the complex dynamics behind systems. The findings will serve as a foundation for policy discussions and help identify further gaps in the mental health care system.

E.1. Part A: Warming up

1. Ask if the person agrees to record the interview either audially or audio-visually and if they agree to sign the informed consent form. If online: repeat the online consent form and ask to insist with the interview (agreed upon by HREC)
2. Explain the schedule for the interview (Typically 45 minutes, but dependent on expert availability)
3. Explain research (what the study is about (subject, geographic and time boundaries), relevance, goal, reason for interview)
4. Interviewee ((Professional) background, tasks, work, experience)
5. (Optional: Organization (vision, goal, structure, business activities))

E.2. Part B: Interview questions on system perspective, focus on policy handling

Between brackets the aim of the question related to the system diagram and/or certain category of the question

1. Could you please introduce yourself, including your name, job title, and daily responsibilities? What is your relationship with addiction in general, and specifically with the alcohol addiction sector? (introductory question)
2. What do you identify as the core issue hindering the reduction of alcohol use disorders in the Netherlands? (problem analysis)
3. What factors do you consider most critical in influencing the quality of care within the alcohol addiction sector? (external factors)
4. What are the primary drivers or barriers contributing to the gap between demand and available resources in this sector? (external factors)
5. How would you assess the role of GGZ facilities and other clinics in addressing this gap? (policy handles)
6. Can you provide examples of challenges that GGZ facilities find particularly difficult to manage? (policy handles)
7. Regarding performance assessment of GGZ instances, what difficulties are currently present, and how effective are existing policies in addressing these issues? (policy handles)
   (a) (if not already been discussed) How does the current ZPM model relate to these challenges? (policy handles)
8. Through my research, I've developed a nuanced understanding of performance indicators in the addiction healthcare sector. One significant finding is the government's dilemma between overregulation and under regulation. Currently, GGZ facilities are compelled to streamline treatments to minimize overhead and maximize direct client engagement. This has resulted in an increase in regulations imposed on practitioners within these institutions. In light of this, what are your thoughts on transferring more responsibility to the market or individual organizations? How do you perceive the government's role in this scenario, particularly given current trends? (policy-handles, governmental)
9. Commonly cited factors influencing alcohol use or treatment barriers include (to name a few): individualism, stigma by society, the stigma of governmental organisations itself, the level of disturbance experienced by the society, shame of a patient, normalisation of alcohol: lobby of alcohol etc.. What do you foresee as a significant driver or drivers of influencing the demand in the next decade and further than a decade, and how might it evolve? (system structure)
10. How long is the typical duration of shifts in the mental healthcare landscape, and what is the general timeframe utilized to formulate policies based on past and current trends? (time frame boundary)

11. The results of the quality of care is highly correlated with the criteria of the system, actually how the system is measured for example. You could look at costs-related outcomes for treatment: intensity of treatment, duration of treatment, the type of treatment, etc. But also at the extend that we feel the need (degree of disturbance experienced by society): car incidents with alcohol in role, or the number of persons who remain abstinent. What would describe as important criteria indicators from your perspective? (criteria/kpi for measuring the system)
12. Do you anticipate any shifts in the most critical factors for prevention and treatment? How should these be addressed? (external factors and societal changes)
13. A common observation is that stigma permeates multiple levels, from the government, which struggles to effectively regulate, to clients who are reluctant to engage with the system. Additionally, some GGZ institutions may feel both undervalued and unheard by the government. Largely due to these factors, I've observed a trend toward risk aversion in the sector, with a focus on treating "easier-to-handle" clients. Have you noticed these effects from your own perspective? Whether you have or haven't, could you please explain why? (connection of level and perspectives?)
14. As I was going through the election programs for the forthcoming elections in November, I noted some data points in the nine programs currently available from the majority of the significant parties. The word "alcohol" is mentioned six times in total across these programs, with two parties where a preventative measure concerning alcohol reduction is proposed. The main emphasis is on enforce more strictly the existing laws that prohibit the sale of alcohol to minors under the age of 18. Remarkably, a lone smaller party proposes a broader strategy, suggesting a ban on alcohol sales in supermarkets and a prohibition on advertising alcohol in TV commercials. Considering this, would you argue that this problem is also a political issue? If so, how does it shape the work you do? Are you in favor of "soft" (no direct effect on persons) preventative measures, such as banning commercials or setting up barriers (hiding it against walls) similar to those used for cigarettes? Alternatively, do you support more stringent "prevention measures," such as imposing higher taxes on alcoholic beverages (to encourage people to feel the financial pinch), restricting sales after 8 PM, or even limiting availability during weekends and at night-shops? (ethical/ bias in politics)

E.3. Part C: Finish

1. Ask if they have any questions for me
2. Summarization
3. Feedback on completeness (Gaps in information of discussion)
4. Benefit for the interviewee (Sharing of the thesis)
5. Acknowledgement

F

Outcome Expert interview 1

Practicalities: The interview took online place, both experts where seated in different rooms. Because of anonymisation we will mention the experts as “expert 1” and “expert 2” within this research. Both experts have the following background within the mental health care system:

Expert 1: expert in the field of policy-making, specialised in addiction prevention.
Expert 2: expert in the field of policy-making, specialised in addiction prevention.

F.1. Analysis of the interview

The analysis of the interview consisted out of two parts, firstly how do these experts view the problem and what external, means and criteria do they identify. Secondly, what remains important within policy-making and the different tasks that are divided within the knowledge exchange between stakeholders.

F.1.1. Part 1: The systems view

Problem identification: Both experts emphasized that the problem at hand is multifaceted and should ideally be approached through the lens of a patient’s experience, outlining what could be referred to as the "pathway of a patient". This pathway encapsulates everything from preventing addiction to ensuring high-quality aftercare. They identified several key factors, including:

1. **Prevention of Addiction:**
   The Bio-psycho-social model:
   a. Biological Factors (e.g., vulnerability, diseases, medication) — These are intrinsic factors that might predispose someone to addiction.
   b. Psychological Factors (e.g., personality traits, coping mechanisms, substance use) — These factors relate to an individual’s mental health and their ways of handling stress and other emotional issues.
   c. Social Factors (e.g., relationships, family dynamics) — The environment and social networks someone is a part of can significantly affect their susceptibility to addiction.
2. **Timely Intervention:** Ensuring individuals receive treatment promptly when problematic use is identified can prevent the issue from escalating and shorten the recovery time.
3. **Quality of Addiction Care:** Providing high-standard care during the recovery process to aid effective rehabilitation.
4. **Aftercare:**
   a. Social Domain: Considering the social environment the patient will return to post-treatment and addressing potential issues to prevent relapses.

b. Underlying Trauma: Understanding and addressing any underlying traumas that could influence a patient's recovery journey.
c. Socio-economic Indicators: Recognizing the role socio-economic factors play in a patient's recovery and potentially in driving addiction.

The experts noted that socio-economic indicators can be both a driver as well as aftercare related for addiction. Next to that, they noted that this view is also limited. They clarified that while they have gleaned this understanding from their experiences and discussions with other professionals, they are not themselves experts in addiction healthcare.

Criteria Measurement in Addiction Care:
We must clarify that we are not specialists in this domain, and it falls outside our remit to establish the criteria in this context. Nonetheless, it is worth noting that there are established organizations responsible for defining these standards in addiction care, including but not limited to:

- The World Health Organization (WHO): Recognized globally, the WHO has delineated certain benchmarks to uphold the standards of care in addiction treatment.
- Standards Databases: There exist various databases that consolidate different sets of standards, providing a rich resource for criteria in addiction care.
- European Monitoring Centre for Drugs and Drug Addiction (EMCDDA): This entity also establishes certain standards, operating within a European framework to maintain and monitor the quality of care in the addiction field.

It is recommended to refer to these organizations for detailed and authoritative criteria in addiction care.

External Driver: Addressing the Gap between Demand and Resources in GGZ Institutions
Preventive measures play a pivotal role in mitigating the chasm between the demand for and the resources available within GGZ institutions. The VVGN stands as a significant entity in spearheading initiatives for this problem. Apart from this organization's knowledge, the experts highlighted several other pressing issues:

- Self-Acknowledgment and Stigma: Before seeking help, individuals must first recognize and admit to having a problem. This step is often hindered by the prevailing stigma around addiction, creating a significant barrier to reaching out for assistance.
- Identification Challenges for Practitioners: Practitioners often find it challenging to pinpoint addiction issues, especially when patients present with a range of physical complaints. There exists a critical need for more robust mechanisms to facilitate accurate identification and linkage to potential addiction issues during consultations with general practitioners (GPs).
- Recurrence Metrics: There is a noted difficulty in tracking the number of individuals experiencing relapses. Key questions in this realm include determining the optimal timeframe for measuring recurrences (be it a month, a year, or longer) and establishing what these metrics indeed reveal about the efficacy of a particular treatment.

System structure: stigma on different levels, what is driving the demand?
At the heart of the matter lies a complex question: what exactly constitutes an addiction or a substance use disorder? The bio-psycho-social model is frequently referenced, spotlighting how childhood issues and experiences can be deeply entwined with addiction problems. To address this adequately, it becomes imperative to delve deeper into the root causes and identify where intervention or heightened awareness could be most impactful.

Bridging Diverse Perspectives and Understanding Market Dynamics
We also hear a concern in the mental healthcare sector with the finger-pointing between services, with accusations of profit-driven cherry-picking and the referral of complex cases to larger institutions. This suggests a underlying issue rooted in profit margin motivations. From a medical standpoint, it is pivotal to acknowledge that some disorders are lifelong. This acknowledgment brings to fore the non-profitable aspect of treating such disorders, emphasizing society's role in facilitating collaboration

between (e.g.) municipalities and mental health services. It calls for a focus on securing aftercare for patients, a move not only humane but potentially beneficial from a cost-benefit perspective, promising broader societal gains.

F.1.2. Part 2: Means: policy-making in mental healthcare

Policy focus during conversation, apart from mentioned above

Early Intervention

Maintaining a steadfast focus on early and timely intervention should be considered in the policy landscape. It's not just about initiating treatment at the first possible instance, but ensuring that it is appropriately targeted to address the underlying issues efficiently.

Amplifying Patient Voices

The policy framework could also become receptive to the lived experiences of the patients themselves. By actively encouraging patients to share their stories and perspectives, it fosters a richer understanding and provides a well-rounded view of the existing scenario, allowing for more empathetic and effective strategies to be formulated.

Harm Reduction

An example in policy deliberation is harm reduction, a strategy centred on minimizing the detrimental health effects associated with drug use, without necessarily ceasing the use altogether. Currently it some examples include:

- Supplying clean needles or base pipes to reduce health risks associated with substance use.
- Disseminating reliable information to guide individuals in making informed decisions.
- Considering the prescription of controlled substances like methadone or heroin as a possible risk mitigation strategy.

Policy-making process

Current Landscape

Policy-making in addiction care is a complex and multifaceted process. The leaders in this domain are experts and network organizations who are tasked with determining the essential needs in addiction care. However, the task is monumental given the number of stakeholders and the diverse professional groups involved. A significant issue hampering policy formulation and implementation is the existence of barriers – often referred to as "schotten" – that create divides between different departments, organizations, and hierarchical levels, making collaboration a challenging endeavor.

The Role of GGZ

The role of GGZ in the policy-making arena is currently interesting. Addiction care, being a part of the broader mental health sector, sometimes gets overshadowed, with not enough focus on addressing the unique challenges it presents compared to other also GGZ-problems. To amend this, a new role of a national rapporteur for addiction was introduced in the recent past. This position brings hope for more streamlined and focused policy-making that addresses the specific needs of the addiction sector more effectively.

Future Outlook: Balancing Healthcare Needs and Political Readiness

As we look forward to the evolution of policies, it is essential to note that society is still warming up to the idea of introducing "hard" policies, i.e., stringent and direct measures to curb addiction. While these policies might be crucial from a healthcare perspective, the political landscape is yet to be fully receptive to such approaches.

An interesting observation is the integration of more direct measures in managing tobacco use, signalling a potential shift in the acceptance levels for hard policies in other areas of addiction care too.

Time boundaries in policy-making

The policy-making landscape grapples with significant hurdles, chiefly the lack of current data systems. The lack of the LADIS system have resulted in a knowledge gap spanning 9 to 10 years, casting

doubts on whether in what format this data will be retrievable. This impedes the ability to analyse past trends effectively, given the insufficient data from previous years.

G

Outcome Expert interview 2

Practicalities: The interview was conducted online with the participant situated remotely. For purposes of anonymization, the participant will be referred to as "Expert 1" throughout this research. The individual's background is established within the mental health care system, characterized by the following credentials and experience:

Expert 3: expert in the field of policy-making, operational director of a mental health care service in the Netherlands (MHS).

G.1. Analysis of the interview

The analysis of the interview consisted out of two parts, firstly how do these experts view the problem and what external, means and criteria do they identify. Secondly, what remains important within policy-making and the different tasks that are divided within the knowledge exchange between stakeholders.

G.1.1. Part 1: the systems view

Problem identification

The expert highlighted the complexity of the issue, advocating for an analysis through a lens that acknowledges its multi-dimensionality. This perspective encompasses the preventive framework, the mental health care services, and the challenges associated with affordability. The examination of the issue requires an understanding of the distinct yet interrelated subsystems, particularly the delicate equilibrium and trade-offs between cost-effectiveness and the volume of care provided per patient.

Key elements identified include the healthcare infrastructure, the social context, and the resource environment. Intervention strategies are conceivable within these three domains. The expert delineated these subsystems, providing a detailed description that serves to clarify the distinct yet interconnected nature of these components:

1. *The cooperation of actors and demarcation of financial incentives* The interaction between various stakeholders and the delineation of financial incentives is crucial in addressing prevention and care. Currently, prevention does not fall within the purview of mental health services (MHS). Municipalities take the lead in preventive measures, focusing on educational initiatives. The primary services provided by clinics, such as the one in question, are funded by health care insurance companies. These companies often lack detailed insight into the quality of care, focusing predominantly on the financial aspects. Municipalities face challenges in prioritizing prevention due to their broad scope of responsibilities, including safety and housing. Consequently, initiatives for preventing substance use are often the first to be neglected, contributing to the increasing complexity of patient cases encountered by health care providers.

2. *Long-term effect and causality between the factors* The long-term effects and causal relationships between preventive efforts and health outcomes are difficult to ascertain due to the extended timeframe over which they unfold. A societal tendency to prioritize immediate results over long-term outcomes undermines the resolution of complex health issues. Effective solutions require an integrated approach that encompasses both health care services and preventative measures.
3. *Complexity of patients, rise, and the current demand of patients is much higher* The complexity and number of patient cases are escalating, and the current patient demand substantially exceeds the available care. This discrepancy is exacerbated by health care insurance companies not accommodating the increased demand, instead compelling providers to operate within budget constraints. This mismatch between patient needs and service provision ultimately intensifies as budget caps limit the extent of care that can be offered.

Criteria Measurement in Addiction care:

- There is a concerning indicator of the decline in care quality within the realm of addiction care: the rate of suicide within the polyclinical environment has surged, increasing twentyfold. This trend suggests a correlation with the escalating complexity of care and the deteriorating conditions within the treatment setting.
- The principle of efficiency in health care refers to the implementation of strategies and processes designed to achieve optimal outcomes with minimal expenditure of time and resources. This principle is influential across various sectors, including economics, public policy, and business management, where it steers the decision-making process and the optimization of outcomes. In the context of health care, particularly in addiction treatment, it is pertinent to consider the efficiency principle in relation to the affordability and sustainability of care models.
- Concerning waiting times, the accountability for timely treatment of patients does not rest solely with the care providers but is more a function of market dynamics, particularly the role of health care insurance entities. An economic principle posits that excessive free capacity within a health system is not conducive to standardized patient treatment. In the current system, the onus of addressing waiting queues does not fall exclusively on care providers, especially when such providers face restrictions like budget caps that impede the ability to increase staffing and, consequently, capacity for patient care. Despite an increase in waiting times, even within our own facility, the limited budgetary allotment restricts the possibility of addressing these delays through staffing expansions.

External Driver: Addressing the Gap between Demand and Resources in GGZ Institutions

- *Increasing complexity of patients numbers and complexity in care demand per patient*
  The escalation in both the number and complexity of care demands per patient represents a significant external driver impacting mental health services. This situation is often conceptualized through the iceberg model. Mental health services dedicated to treating patients with intricate substance use disorders are witnessing increased duration of treatment episodes and the need for more intensive treatment programs. As the complexity of patient cases multiplies, so does the requisite level of care, contributing to a substantial increase in the 'volume' of the iceberg, metaphorically speaking, which complicates the provision of effective treatment.
- *Other instances reluctant providing care to complex patients*
  The reluctance of certain facilities to accept patients with complex needs can be attributed to what are termed "diagnostic contraindications," which imply that these institutions perceive the establishment of a treatment relationship with certain patients as unfeasible. Such cases often involve acute and severe conditions necessitating crisis intervention or clinical treatment, which further strains the capacity of mental health care institutions that do take on such complex cases.

Bridging Diverse Perspectives and Understanding Market Dynamics

- *Implementation of market workings leading to risk aversion*
  The adoption of market principles within health care systems does not inherently yield negative consequences. For instance, prior to the incorporation of such dynamics, lengthy psychoanalytic

treatments were common, but the shift towards market efficiency has led to the diversification of treatment modalities in the interest of serving a greater number of clients. Previously, the emphasis was on the number of contact moments rather than the actual number of clients served. However, there are critical limitations within the framework of a market-oriented system, especially concerning its viability. The quest for cost reductions can result in the provision of less care, which intersects with the minimum standard of care that must be maintained to ensure ethical and effective treatment. Furthermore, the focus is not solely on the volume of care but also on its complexity; the intricate needs of certain patients may render their care less economically viable due to existing system incentives, leading to potential risk aversion in treating these individuals. This phenomenon underscores the tension between market incentives and the intrinsic requirements of comprehensive health care.

- *DBC tot ZPM model changed the market dynamics*
  The shift from the Diagnosis Treatment Combination (DBC) to the Care Performance Model (ZPM) has significantly altered the landscape of market dynamics in the health care sector. Under the DBC framework, there was a substantial emphasis on tracking time spent on patient care, distinguishing between direct and indirect patient-related activities. This meticulous documentation was critical as it facilitated the attachment of specific costs to particular diagnoses. However, this system also engendered a considerable administrative burden. With the transition to the ZPM, the allocation of indirect time to patient care continued to hold significant importance. The sector, aiming to avoid the pitfalls of a rapid shift—which would likely result in a prohibitive increase in administrative tasks—opted for a gradual transition from DBC to ZPM. This request stemmed from a desire to minimize the potential for a doubled administrative workload. Nonetheless, the current phase of implementing the ZPM has surfaced considerable challenges as the mental health care (GGZ) sector finds itself inadequately adapted to the new model, leading to significant issues that need to be addressed to ensure a smooth continuation of care provision under the new system dynamics.
- *Upcoming new "cowboy organizations" as incentive of changing patient demand*
  The emergence of new, so-called "cowboy organizations" in the mental health care sector can be viewed as a direct response to shifting patient demands and the incentives created by lengthy waiting lists. High-profile individuals in the Netherlands have been entering the mental health care (GGZ) domain, capitalizing on the minimal barriers to establishing such services. These nascent organizations contribute to a diverse landscape but are often characterized by high operational costs, raising concerns about their long-term affordability and economic sustainability within the health care system. Despite these challenges, the presence of these new entrants can also be interpreted as a form of countervailing power. They provide a necessary check against established services, potentially catalysing improvements by challenging the status quo and introducing alternative approaches and competition within the sector.

G.1.2. Part 1: Means policy-making in mental health care

Policy focus during conversation, apart from mentioned above

Responsibility should be at the government

The allocation of responsibility for prevention initiatives, particularly those involving educational outreach at events such as festivals that draw attendees from across the country, extends beyond regional boundaries. The current system, wherein municipalities bear the cost of such interventions, inadvertently results in some municipalities subsidizing the welfare of individuals from other regions. This situation presents a case for the reassignment of financial responsibility for preventative measures from local municipalities to the national government. Centralizing funding at the governmental level could ensure a more equitable distribution of the financial burden and facilitate comprehensive, nationwide preventive strategies.

Politics are frequently looking at the services to serve complex patients

Political entities are closely monitoring health care services that cater to patients with severe and complex conditions. A notable trend is the closure of several institutions specializing in complex patient care, leading to increased visibility of these individuals in public spaces. Subsequently, authorities often turn to remaining service providers, requesting the establishment of new operations in affected regions. However, the feasibility of such expansions is limited. The availability of qualified professionals to meet

the increased demand is a significant constraint. Additionally, scaling up to meet such demand without compromising affordability remains a challenge. This situation underscores the need for a strategic approach to resource allocation and service provision for the most vulnerable patient populations.

Policy-making process The policy-making process in mental health care is influenced by external consultancy firms that determine the "crucial capacity" for the sector. However, defining what constitutes crucial capacity is a flawed approach due to its variability and increasing complexity over time. The involvement of political forces further complicates the implementation of preventive policies, as commercial interests, exemplified by the sale of alcohol in non-traditional settings, may overshadow public health concerns. Furthermore, the compartmentalization within ministry-level policy-making departments, such as those focused on alcohol, drugs, prevention, mental health care, and financial sustainability, leads to a lack of cohesion and communication. This siloed structure impedes the development of integrated policy solutions, as evidenced by the necessity for introductions during interdepartmental meetings, underscoring the infrequency of their collaboration.
Policy implementations, such as the treeknorm, ZPM models, or IZA, demand a robust system of checks and balances. Current dialogues among health care providers, insurers, governmental bodies, and regulatory agencies shape the organizational structure of the health care system. The unintended consequences of policy decisions, like the shuttering of complex treatment facilities, have resulted in excessive waiting times, undermining the system's effectiveness. The negotiation process, often cumbersome and redundant, with health care organizations engaging in multiple negotiations for a single department, highlights the inefficiency prevalent within the system.

Future of policy-making
The future of policy-making is frequently perceived as reactive, with current policies often regarded as temporary fixes rather than sustainable solutions. This perspective persists with the recent implementation of the IZA agreement, where the focus has been on the distribution of funds among stakeholders rather than addressing the root issues. There is a need for a systemic discourse that transcends singular topics and emphasizes innovation. Current practices among institutions fail to incorporate innovation due to budgetary constraints. Such a shift would require reevaluating the allocation of resources to foster an environment conducive to long-term, innovative policy development.

Time boundaries in policy-making
In the realm of policy-making, temporal constraints significantly shape the policy landscape. The transition from DBC to ZPM, for instance, is anticipated to span approximately a decade. This protracted timeframe exemplifies the inherent time-bound limitations within which policy transformations must operate. Acknowledging and planning within these temporal boundaries is crucial for effective policy development and implementation.

H

Table data-request to MHS

As outlined in section 3.5, data were solicited from a mental health care organization to gain a quantitative grasp on patient flow, treatment effectiveness, and other observed constructs during the treatment process. The subsequent table delineates these data requests by category, highlighting their relevance to the study. The data request encompassed six categories: inflow and outflow, policlinical/day-partial/clinical/detox treatment performance indicators, waiting time evolution, and capacity concerns. The corresponding table, referenced as H.1 H.2, H.3, also details relevant units and years of request.

Label	Data omschrijving	Eenheid	Jaar (veranderend over de jaren)
1	**Instroom van kliniek**		
1.1	Prevalentie van alcohol verslaving in Amsterdam	Clienten	2010-2023
1.2	Incidentie van alcohol verslaving in Amsterdam	Client per week	2010-2023
1.3	Aantal doorverwijzingen andere ggz instellingen naar kliniek	Client per week	2010-2023
1.4	Aantal doorverwijzingen POH/ huisarts naar kliniek	Client per week	2010-2023
1.5	Aantal intakes binnen kliniek	Clients per week	2010-2023
1.6	Aantal diagnostellingen binnen kliniek	Clienten per week	2010-2023
1.7	Aantal clienten die na intake uitvallen: drop-outs (vroeg)	Clienten per week	2010-2023
2	**Poliklinische behandeling**		
2.1	Aantal startende clienten in poliklinische setting	Intakes per week	2010-2023
2.2	Gemiddeld behandelingsduur + afwijking van CGT/ACT/Minnesota	Week	2010-2023
2.3	Behandelingsuitkomst aantal clienten: 1. abstinentie 2. gecontroleerd drinken 3. Verminderd excessief drinken 4. gelijk gebleven in excessief drinken 5. vermeerderd excessief drinken	Aantal clienten per categorie per maand	2010-2023
2.4	Doorverwijzingen naar dag deeltijd behandeling	Aantal clienten per week	2010-2023
2.5	Doorverwijzingen klinische behandeling	Aantal clienten per week	2010-2023
2.6	Aantal no-shows (een afspraak niet komen opdagen)	Aantal consulten per week	2010-2023
2.7	Aantal drop-outs (mensen die volledig de behandeling verlaten)	Aantal clienten per week	2010-2023
2.8	Wachtduur van poliklinisch behandeling (na diagnose stelling)	Aantal weken	2010-2023
2.9	Aantal mensen overleden tijdens behandeling	Aantal clienten per week	2010-2023

Table H.1: Data request on the inflow & outflow and treatment setting

Label	Data omschrijving	Eenheid	Jaar (veranderend over de jaren)
3	**Dag of deeltijd behandeling**		
3.1	Aantal startende clienten in dag/deeltijd setting	Intakes per week	2010-2023
3.2	Gemiddeld behandelingsduur + afwijking van CGT/ACT/Minnesota	Week	2010-2023
3.3	Behandelingsuitkomst aantal clienten: 1. abstinentie 2. gecontroleerd drinken 3. Verminderd excessief drinken 4. gelijk gebleven in excessief drinken 5. vermeerderd excessief drinken	Aantal clienten per categorie per maand	2010-2023
3.4	Doorverwijzingen klinische behandeling	Aantal clienten per week	2010-2023
3.5	Aantal no-shows (een afspraak niet komen opdagen)	Aantal consulten per week	2010-2023
3.6	Aantal drop-outs (mensen die volledig de behandeling verlaten)	Aantal clienten per week	2010-2023
3.7	Wachtduur van dag-deeltijd behandeling (na diagnose stelling)	Aantal weken	2010-2023
3.8	Aantal mensen overleden tijdens behandeling	Aantal clienten per week	2010-2023
4	**Klinische behandeling**		
4.1	Aantal startende clienten in klinische setting	intakes per week	2010-2023
4.2	Gemiddeld behandelingsduur van CGT/ACT	client/week	2010-2023
4.3	Behandelingsuitkomst aantal clienten: 1. abstinentie 2. gecontroleerd drinken 3. Verminderd excessief drinken 4. gelijk gebleven in excessief drinken 5. vermeerderd excessief drinken	Aantal clienten per categorie per maand	2010-2023
4.4	Aantal no-shows (een afspraak niet komen opdagen)	Aantal consulten per week	2010-2023
4.5	Aantal drop-outs (mensen die volledig de behandeling verlaten)	Aantal clienten per week	2010-2023
4.6	Wachtduur van klinische behandeling (na diagnose stelling)	Aantal weken	2010-2023
4.7	Aantal mensen overleden tijdens behandeling	Aantal clienten per week	2010-2023
5	**Detox behandeling**		
5.1	Aantal detox behandelingen uitgevoerd per department: Polikliniek, dagbehandeling, klinisch	aantal consulten per week	2010-2023
6	**Wachtrijontwikkeling**		
6.1	Wachttijd W2 (duur van wachttijd tussen de intake en de diagnosestelling)	Dagen	2010-2023
6.2	Wachttijd W1 (duur van wachttijd voor intake)	Dagen	2010-2023

Table H.2: Data request on the treatment settings and waiting time

Label	Data omschrijving	Eenheid	Jaar (veranderend over de jaren)
7	**Capaciteit**		
7.1	Diensturen: aantal uren per week gemiddeld en spreiding	Uren	2010-2023
7.2	Operationele uren:Aantal uren dat een behandelaar effectief besteed aan cliënten (fractie van diensturen) per functiegroep per type behandeling	Uren	2010-2023
7.3	Aantal behandelaars werkzaam per cliënt, per afdeling, per functiegroep (gemiddelde, spreiding)	Aantal behandelaars (uitgesplitst per functie:GGZ psycholoog (regiebehandelaar), basis psycholoog, verpleegkundige, behandelmedewerker, verslavingsarts)	2010-2023
7.4	Aantal behandelingen uitgevoerd per afdeling per week per type behandeling	Aantal consults/behandelingen	2010-2023

Table H.3: Data request on the Capacity

I

Consent form for participants in interviews, and GMB

Research involving human subjects required participants from all different regions in the Netherlands in our interviews and GMB. The consent form of both the interviews and GMB are shown below. This form and research approach have received approval from the Human Ethics Review Committee at Delft University of Technology.

Group model building session:
You are being invited to participate in a research study titled "bridging the gap: the workforce - patient dynamics". This study is being done by Daan Bos from the TU Delft for the masters of Engineering Policy Analysis.
The purpose of this research study is to develop a system dynamics model that reflects the drivers of the gap between the demand and the resources and the resulting problems for mental health care institutions and will take you approximately 180 minutes to complete. The data will be used for:

- Determining the key factors that cause the growing gap between demand and resources.
- Obtain an overview of the causal relations between those factors.
- Develop a model that reflects those insights and perspectives in order to explore potential interventions.

We will be asking you to provide input regarding the situation from your perspective and experience in the mental health care sector on an aggregate level without giving much detail on sensitive information of individual patients, situations or about the institute you are working for (e.g.).
As with any online activity, the risk of a breach is always possible. To the best of our ability, your answers in this study will remain confidential. We will minimize any risks by anonymising the group model-building recordings. The recordings will be anonymised by translating the recording to a summary, not mentioning all potentially sensitive information and mentioning your function as an "expert" and your general domain of activity (e.g. practitioner in mental health care service). These session recordings will be stored on the protected project storage of the TU Delft and will be solely available to Daan Bos and supervisors of the TU Delft. Session recordings and consent forms will be deleted within one month after the thesis defence. The anonymised session summary will be publicly available within the appendix of the thesis document on the repository of the TU Delft.

Your participation in this study is entirely voluntary and you can withdraw at any time. You are free to omit any questions.

_____ _____ _____
Name of participant Signature Date

I, as researcher, have accurately presented the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

_____ _____ _____
Researcher name Signature Date

Daan Bos – D.T.A.Bos@student.tudelft.nl

Figure I.1: Informed consent of the group model building workshop

Interviews:
You are being invited to participate in a research study titled "bridging the gap: the workforce - patient dynamics". This study is being done by Daan Bos from the TU Delft for the masters of Engineering Policy Analysis.
The purpose of this research study is to develop a system dynamics model that reflects the mental health care system, including drivers of the gap between the demand and the resources, and other problems within the sector. This will take you approximately 60 minutes to complete. The data will be used for:

- Determining the key factors that cause the growing gap between demand and resources in the situation of AUD and other problems.
- Develop a model that reflect those insights and perspectives in order explore potential interventions.

We will be asking you to provide input regarding the situation from your perspective and experience in the mental health care sector on an aggregate-level without giving much detail on sensitive information of individual patients, situations or about the institute you are working for (e.g.).
As with any online activity, the risk of a breach is always possible. To the best of our ability, your answers in this study will remain confidential. We will minimize any risks by anonymising the interview transcripts. The interview transcripts will be anonymised by mentioning your function as an "expert" and your general domain of activity (e.g. practitioner in mental health care institute). These interview transcripts will be stored on the protected project storage of the TU Delft and will be solely available to Daan Bos and supervisors of the TU Delft. Interview recordings and consent forms will be deleted within one month after the thesis defence. The anonymised interview transcripts will be publicly available within the appendix of the thesis document on the repository of the TU Delft.

Your participation in this study is entirely voluntary and you can withdraw at any time. You are free to omit any questions.

_____ _____ _____
Name of participant Signature Date

I, as researcher, have accurately presented the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

_____ _____ _____
Researcher name Signature Date
Daan Bos – D.T.A.Bos@student.tudelft.nl

Figure I.2: Informed consent of the interviews held

J

Data-analysis in the treatment process: towards a quantitive understanding

This appendix includes graphs not presented in the main text, along with extended information on the treatment process and organizational insights, particularly emphasizing the challenges in developing a quantitative model for system dynamics modelling. These are depicted in several sections as the inflow and outflow of the service, evaluating the effectiveness of treatments and the financial viability of the services.

J.0.1. Inflow and outflow of the service

As depicted in figure J.1, the inflow and outflow of patients have remained relatively consistent over the years, with a few notable spikes. Intakes during the treatment process represent the inflow, while the outflow consists of either drop-outs or successful treatment completions. Drop-outs are delineated by the green line and constitute a portion of the total outflow.

A key observation from this diagram is that, while the MHS witnesses a steady flow of patients entering and exiting, its capacity appears largely unchanged annually. This constancy can be attributed to the institution's necessity to maintain financial stability by balancing patient intakes and discharges. The surge in 2016 resulted from a merger with other entities under the same MHS umbrella. Furthermore, the pronounced increase at the end of 2021 is linked to the COVID pandemic and is reminiscent of the 2016 spike. Post-merger, many patients eventually exited the system, and similarly, the COVID-induced spike saw an increase due to reduced intakes and extended treatment durations necessary to offer equivalent treatment intensity during the pandemic.

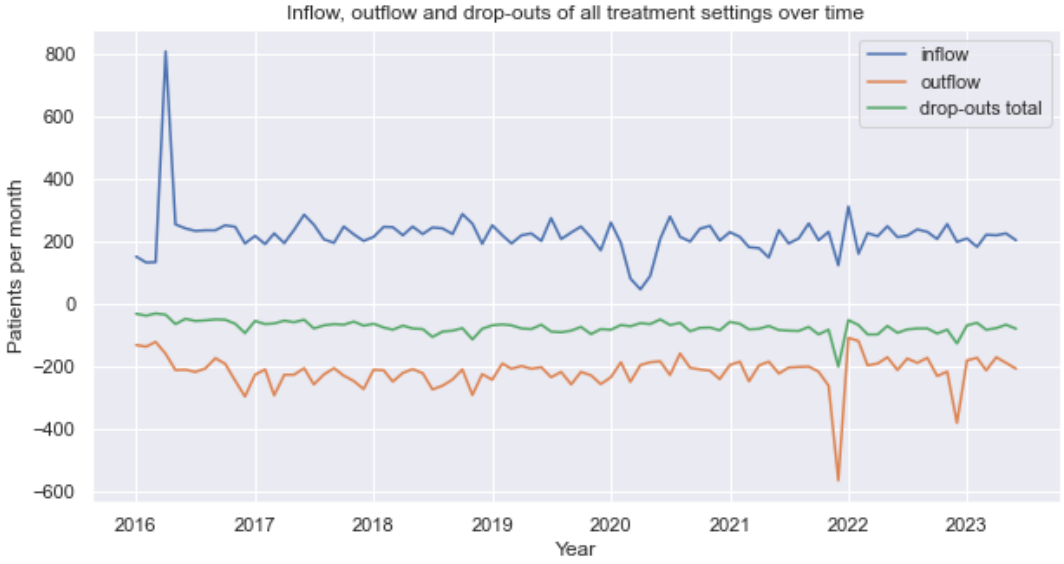


Figure J.1: Inflow and outflow of patients per month within the MHS over time

The consistent inflow and outflow within the services is mirrored by the stable drop-outs, represented by the green line in figure J.1. This line illustrates the total number of patients dropping out throughout the treatment process. As observed, drop-outs constitute roughly 1/4 to 1/5 of the total patient outflow, underscoring the patient challenges discussed earlier. These patients often don't complete treatment successfully, making them prone to relapses or necessitating retreatment. Various factors, as elucidated in chapter 4, can contribute to this phenomenon.

Time delays within a mental health care process

During the treatment process, patient delays are illustrated as flows with associated waiting times, denoted as w1, w2, or w3, based on the specific treatment stage (refer to figure 7.4). The literature suggests a correlation between initial drop-outs and intake waiting time. In figure J.2, patient intake origins are delineated: general practitioners' referrals (blue), referrals from other institutions (MHS focused on solely psychological issues e.g.) (orange), or early treatment drop-outs (green). Figure J.3 on the right depicts a fairly consistent waiting time (w1) for intake, with noticeable spikes in 2020 and 2021. However, when juxtaposed with the drop-out data from figure J.2, there isn't a direct correlation. Specifically, while 2021 sees an uptick in drop-outs and a subsequent decrease in 2022, the average intake waiting time, in contrast, increases during that year as evidenced in the subsequent figure.

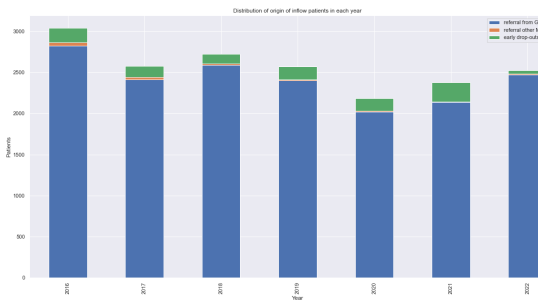


Figure J.2: Distribution of intake inflow

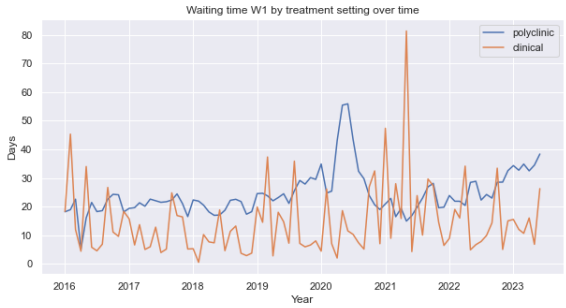


Figure J.3: Waiting time W1 over time

Although patient inflow and outflow appear consistent as shown in figure J.1, waiting times exhibit

fluctuations across all queues, as observed in figure J.4. As discussed in chapter 6, the method of measuring waiting times contributes to this variability. In this analysis, waiting times are measured retrospectively, meaning queue length predictions rely on past data. This method can produce significant data spikes, especially when patients linger in waiting queues. Interestingly, the waiting time for w1 is shorter than for w3. This could suggest that resource availability determines patient intake and subsequent treatment initiation. However, the discrepancy might also be due to some patients receiving e-health services, which can skew waiting time measurements. While some patients appreciate immediate digital interventions, others may feel neglected, which could explain the lack of correlation between figures J.2 and J.3. If a patient receives full digital treatment, their waiting time isn't captured. Hence, the displayed waiting times pertain only to patients awaiting in-person treatments involving practitioners. Furthermore, to manage resource allocation in line with patient demand, MHS intentionally maintains a specific waiting time length. This is influenced by budget constraints, as non-working practitioners incur costs, raising questions about the service's financial sustainability.

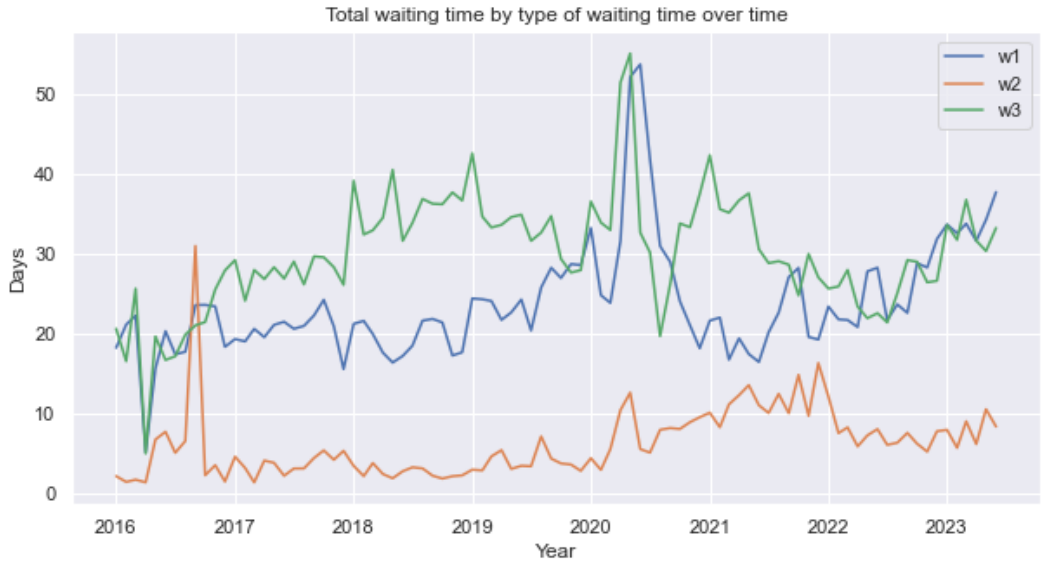


Figure J.4: The number of days waiting time by waiting queue type summed over all settings over time

J.0.2. Evaluating the effectiveness of treatments and treatment affecting behaviour

As detailed in section 2.3, the ROM method is employed within MHS to evaluate treatment efficacy. Figure J.5 illustrates the various potential outcomes post-treatment. This analysis exclusively captures the change from pre-treatment to post-treatment, generally spanning just over three months, subject to extensions. The figure displays the patient distribution across cohorts of: abstinence, controlled use, and varying degrees of excessive use (reduced, unchanged, increased).

Interpreting the data is challenging due to divergent perspectives on treatment outcomes among practitioners, mental health institutions, and even across countries or cultures. The optimal result is often viewed as abstinence, where patients completely abstain from substance use. However, some advocates argue in favour of controlled use, contending that heightened self-awareness and self-regulation of substance use can be a more sustainable and desirable outcome in the long run. This debate is evident even within the MHS, making it intricate to make definitive assertions about outcomes, given that some practitioners might lean towards advocating controlled use over abstinence and vice versa.

One clear observation is the effectiveness of day/partial departments in promoting abstinence. Annually, clinical settings consistently report higher percentages of abstinence compared to polyclinic settings, although the difference is marginal. This could be attributed to the complexity of cases in the clinical setting and the less intensive interventions in the polyclinic environment, potentially leading to suboptimal outcomes. Moreover, the clinical setting's controlled use outcomes are not as commendable, making policlinical or day-partial settings a preferable choice in this regard.

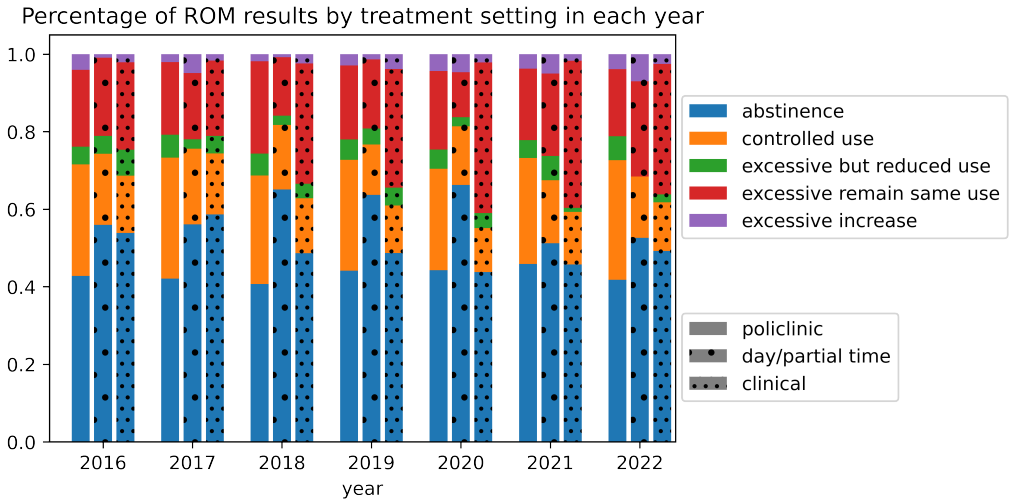


Figure J.5: Yearly clustered treatment outcomes by setting, demonstrating a spectrum of treatment success indicators including abstinence, controlled use, reduced excessive use, stable excessive use, and increased excessive use that are multi-debatable

The results presented carry potential biases. Neither the practitioner nor the patient is mandatorily required to complete these surveys, possibly skewing the representation of those who opt to participate versus those who abstain, especially in terms of perceived treatment effectiveness across various departments. This non-participation can arise from factors such as language barriers or oversight by the practitioner. Moreover, given the short duration of treatments (approximately three months), these results do not encompass the long-term effects. Such extended outcomes are vital when considering resource scarcity and the sector's sustainability, as literature suggests. Furthermore, specific treatment modalities like CGT, ACT, and Minnesota have distinct desired outcomes and focus on varying elements. For instance, the Minnesota model places greater emphasis on an individual's spiritual development than their substance use, adopting an approach reminiscent of a religious perspective.

The effects of no-show contacts

Another behavioural facet of patients, aside from the previously discussed waiting times and potential drop-outs, is the occurrence of no-shows. These instances, where patients fail to attend scheduled appointments with practitioners, not only complicate treatment outcomes but also introduce additional overhead costs, challenging the MHS's financial sustainability, as illustrated in figure 7.4. This behaviour can subsequently extend the duration of treatment. Figure J.6 displays the no-show rates as a percentage of total contact moments across treatment settings over time. A noticeable spike in early 2016 arose from an influx of patients following the acquisition of another institution by this MHS. Overall, no-show rates remain relatively stable, though a slight uptick is evident in the polyclinic setting towards the end of 2022.

Furthermore, no-shows are more prevalent in the polyclinic setting than in day/partial care or clinical settings as figure J.6 shows. This trend may be attributed to the less rigorous program requirements of the polyclinic setting and the fact that patients in this setting typically reside at home, as opposed to clinical settings where patients stay overnight at the MHS. Literature suggests that the polyclinic setting achieves lower abstinence rates, as indicated in the preceding section. Consequently, the prevalence of no-shows in this setting might amplify these figures since extended treatment durations can lead to potential relapses.

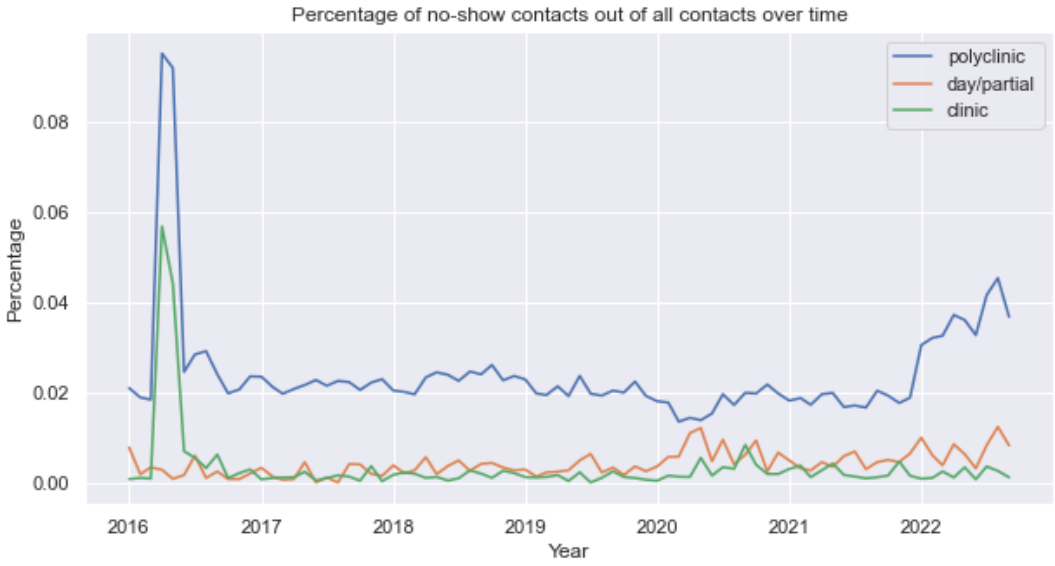


Figure J.6: The number of no-show contacts divided by all contact moments over time

Another intriguing observation from existing literature suggests that no-shows predominantly occur among complex patients, a notion seemingly contradicted by the presented data. Potential explanations for this discrepancy might stem from the definition and measurement of no-shows. In some studies, no-shows might encompass patients reluctant to undergo treatment, while in the context of our data, it strictly pertains to patients who terminate treatment contact 24 hours prior to the scheduled time. Another possible reason could be the divergent treatment approaches for complex patients in other research contexts; they might not be enrolled in clinics with overnight stays, leading to increased no-show rates because of the treatment setting.
Additionally, with the implementation of the ZPM model, these missed contact moments are no longer billable to health insurance providers, as they don't qualify under indirect time. This shift imposes an added administrative strain on the MHS, exacerbating financial challenges when liaising with insurance companies. The implications of this will be elaborated upon in section J.0.3.

Referral of patients between departments and changing treatment setting

Another metric, alongside the ROM measurement, gauging the efficacy of treatments is captured through referrals. These can serve as indicators of less-than-optimal treatment outcomes. When a patient is referred from a lower-intensity treatment setting to a higher-intensity one, it often suggests that the current treatment isn't effectively addressing the patient's needs or there's dissatisfaction from either the practitioner or patient. Conversely, referrals from a more intensive setting to a less intensive one are more routine. After undergoing comprehensive inpatient care in a clinical setting, it's typical for treatment to be gradually scaled back, ensuring patients can continue receiving care without risking a relapse. Consequently, figure J.7 displays referrals from day-partial to clinical, while figure J.8 illustrates referrals from polyclinic to the clinical setting. When juxtaposed with the patient treatment data in figure J.11, it's evident that approximately 1/20 patients from both day-partial to clinical and polyclinic to day-partial settings get referred. Furthermore, there's a notable number of referrals from the polyclinic to the clinical setting.
However, all these referral numbers aren't solely indicative of treatment efficacy, as patients might initially opt for less intensive treatments and later transition to more rigorous ones based on preference or need. Consequently, while these statistics provide insights, they don't offer a definitive assessment of treatment effectiveness.

zorgtype	year	day/partial to clinical setting
D	2016	6.0
	2017	2.0
	2018	14.0
	2019	5.0
	2020	9.0
	2021	9.0
	2022	13.0

Figure J.7: Referrals from day-partial to clinical setting

zorgtype	year	polyclinic to day/partial setting	polyclinic to clinical setting
P	2016	82.0	502.0
	2017	73.0	629.0
	2018	87.0	644.0
	2019	123.0	669.0
	2020	104.0	629.0
	2021	109.0	681.0
	2022	92.0	575.0

Figure J.8: Referrals from polyclinic to day-partial and clinical setting

Additionally, because of these inter-departmental referrals, several patients might be duplicated within the dataset, leading to potential biases in how the data is presented, especially when disaggregated by departments (treatment intensity). Since data was partitioned by treatment settings, patients who are transferred from one setting to another might appear in both categories. Such transfers can occur even in the midst of treatment, leading to the possibility of a patient being counted in multiple treatment cohorts.

J.0.3. Financially affordable mental health service

The previous chapters, specifically 5 and 6, highlighted a significant concern: the existing affordability challenges are adversely impacting the quality of care, and by extension, the overall effectiveness of the healthcare system. As depicted in figure J.9, the proportion of direct time dedicated to patients typically ranges between 30% and 40% of the total working hours. This proportion, as represented in figure 7.4, indicates the total hours explicitly allocated for patient care.

When translating these numbers into billable hours, which refers to the time covered financially by healthcare insurance entities, the picture shifts slightly. Prior to the 2023 introduction of the ZPM model (detailed in section 6.3), billable time was nearly double the direct patient care time. This was because both direct and indirect times, before the advent of ZPM, shared an almost equal 50/50 distribution and were both covered by healthcare entities. This meant that time was split evenly between direct patient care and indirect tasks carried out on the patient's behalf. This distribution is visualized in the left column of figure J.9, labelled as the "percentage of billable client time from the total worked hours". As expected, the percentages are approximately twice as much as those presented in the right column, which denotes the percentage of direct client time relative to total worked hours.

The central column in figure J.9, labelled as the percentage of billable client time plus non-client bound time out of total worked hours, encompasses a percentage that accounts for non-client related expenses such as maintenance, building rentals, electricity bills, management tasks and HR recruitment time. While this adds only a few percentage points compared to the left column, it remains significant, given its implications for the financial sustainability of MHS organizations.

year	month	percentage of billable client time from total worked hours	percentage of billable client time + non-client bound time of total worked hours	percentage of direct client time out of total worked hours
2021	January	78.59	82.35	36.32
	February	80.07	84.06	37.68
	March	82.48	86.24	37.17
	April	80.15	83.68	37.39
	May	78.91	82.60	37.49
	June	79.69	83.66	35.50
	July	78.77	82.34	35.72
	August	80.25	84.31	37.24
	September	81.88	86.01	35.35
	October	75.72	79.46	35.28
	November	76.26	80.10	35.97
	December	75.80	79.62	35.28
2022	January	67.46	72.62	34.15
	February	70.77	76.27	35.98
	March	73.31	78.82	37.26
	April	76.65	82.63	39.23
	May	79.21	84.89	40.25
	June	77.80	83.48	39.46
	July	77.76	82.62	39.51
	August	78.23	83.82	39.90
	September	78.64	83.76	40.27
	October	77.31	82.03	39.84
	November	74.48	79.60	38.43
	December	73.56	78.61	37.86

Figure J.9: Percentage of billable clients time compared to indirect client time

The core implication of these figures underscores the intricacy of maintaining affordability within an MHS. The presented percentages highlight challenges associated with ensuring a balance between hours worked and hours billable, a pivotal aspect for the fiscal health of these institutions. Therefore the balance between treatment results and the percentages of hours billed to the health insurance companies is vital. Even though these metrics don't directly pertain to the delivery of actual treatment services, they are heavily influenced by it. Moreover, when negotiating with insurance providers, these percentages hold tremendous significance. Thus, balancing operational expenses such as staffing, management, and maintenance with the objective of maximizing treatment outcomes becomes crucial. Additionally, challenges like inflation over the years make it tough for MHS to keep maintenance percentages low, leading to strenuous negotiations with health insurance companies. This often results in increased governmental regulations to ensure the affordability of the sector.
Another key component in ensuring the affordability of MHS is by synchronizing the number of patients with the practitioners available, and, as previously discussed, the associated treatment costs. Figure J.10 illustrates the disparity in the number of practitioners employed and patients receiving treatment across various treatment settings. Notably, the polyclinic setting serves a vast number of patients, suggesting a potential focus shift towards it, aligning with findings from chapter 5 about the treatment of more complex patients. Conversely, treatments in day-partial or clinical settings are labour-intensive, making it challenging to justify the expenses to health insurance entities, especially when abstinence percentages in clinical settings hover around only 50%, as seen in figure J.5.

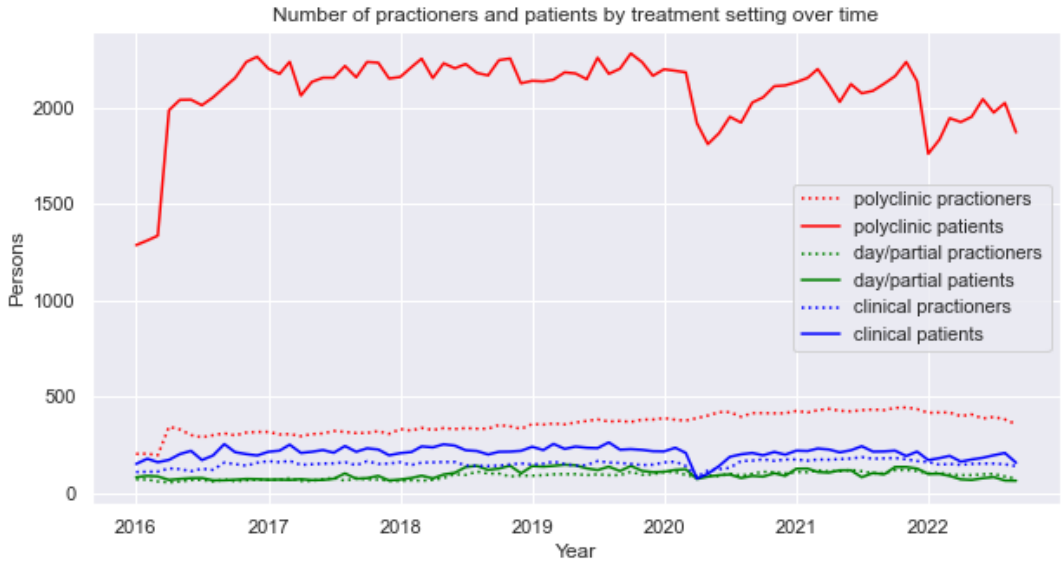


Figure J.10: Difference in the number of practitioners working and the patients over time

A crucial observation derived from figures J.10 and J.11 is the pronounced surge in patient numbers in 2016, attributable to a merger involving the MHS. However, of equal note is the noticeable decline in patient numbers during the COVID-19 outbreak. This trend intensified the MHS's apprehensions, given the emerging mismatch between patient demand and staffing resources. Adding to the challenge was the absence of government financial relief, a stark contrast to the compensations extended to hospitals during the same period.

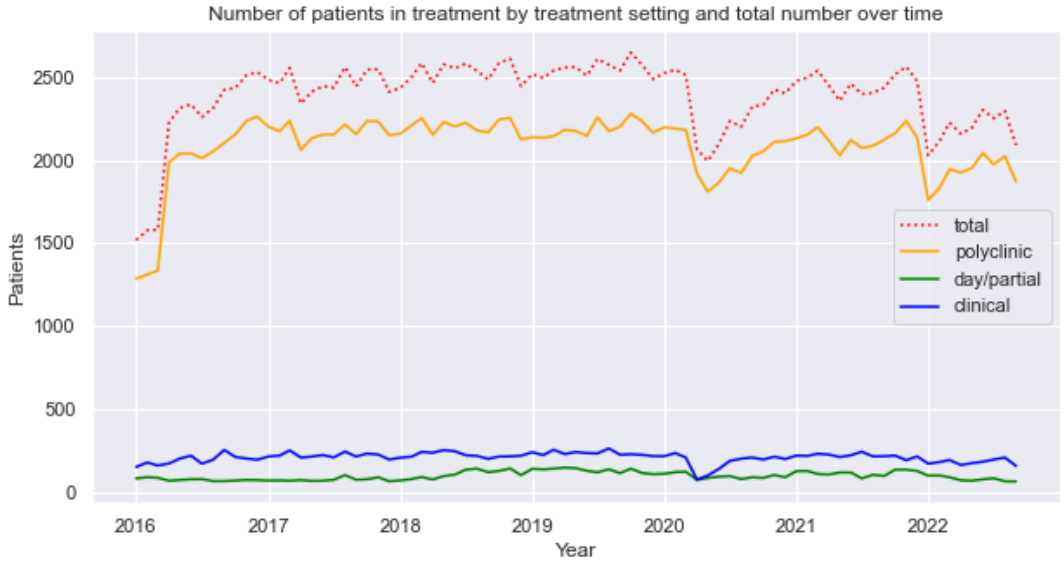
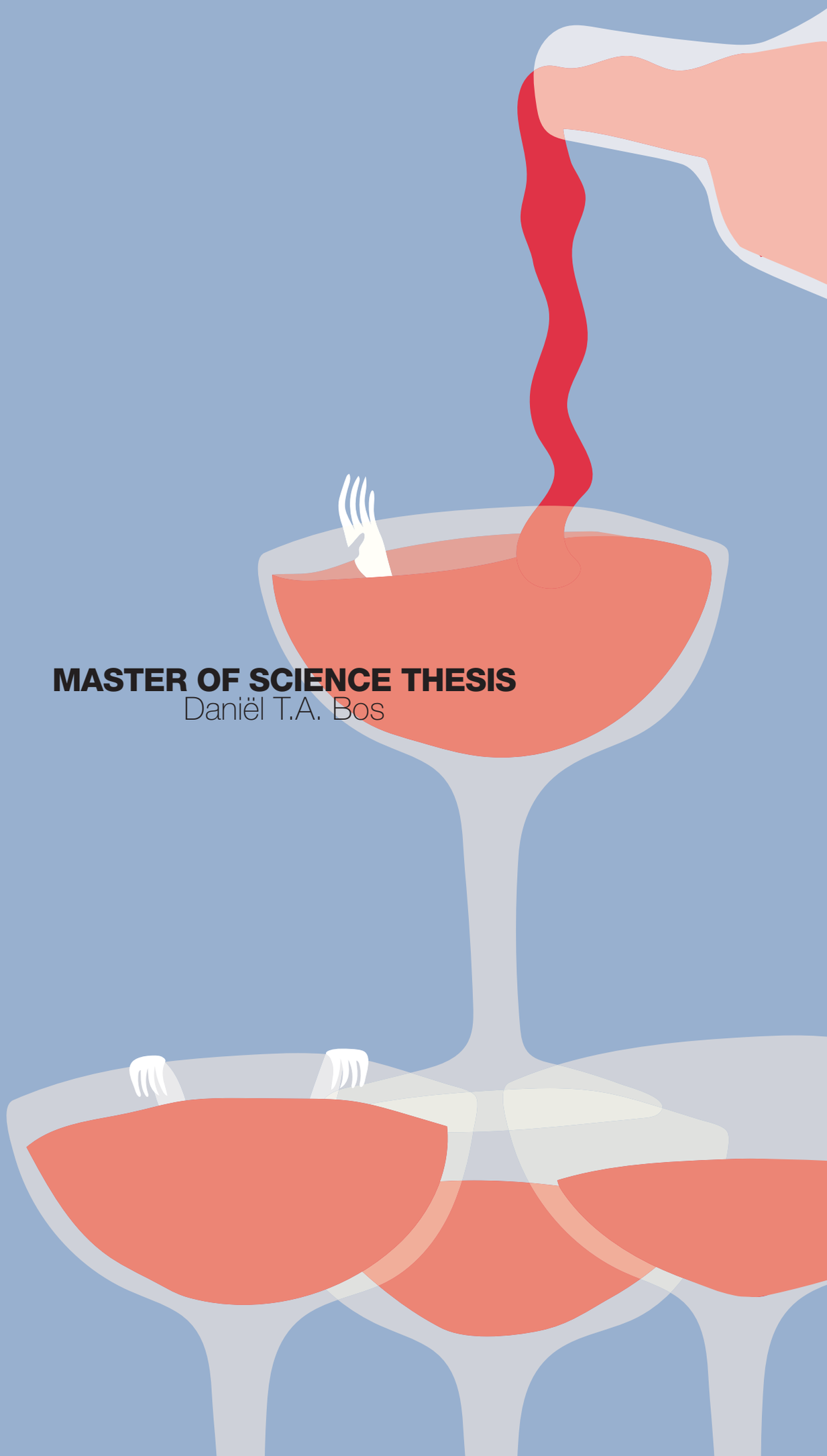


Figure J.11: Number of patients in mental health care service



MASTER OF SCIENCE THESIS

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