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Towards a public health approach for (unmet) needs for mental health care in the province of Antwerp

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Lay summary

This doctoral thesis examines mental health in Antwerp using a public health approach. A public mental health approach consists of the promotion of mental wellbeing, and the prevention and adequate treatment of mental health problems and disorders in society through informed choices and actions of governments, organizations, communities and individuals. It is based on relevant data, enabling sufficient and adequate mental health services tailored to the needs of the population. An important aim in this regard is reducing inequities in access to care.

The outbreak of COVID-19 in 2020, during the proceedings of the studies described in this thesis, illustrated once again that mental health is a crucial component of general wellbeing. Because of the impact of COVID-19 on both physical and public mental health, the topic received more attention and concerns grew that our mental healthcare system might not be able to adequately respond to the increased need for care in the population.

Yet, it has longer been known that there is an important ‘treatment gap’ in mental health care: a significant proportion of individuals in need of mental health care does not seek or receive it. Several studies have examined population needs for mental health care and to which extent these needs are met or unmet. However, Belgian data fall short in this regard. Studies on (unmet) mental health needs are outdated or limited, making it difficult to draw up reliable and up-to-date conclusions. Moreover, nationwide studies often lack regional detail. The main studies in this thesis examine mental health needs more locally and in depth and use different methods and designs to describe the current situation regarding mental health and health care use for mental health problems in the province of Antwerp, specifically in one rural and one urban primary care zone.

Qualitative focus group discussions and interviews with primary care, mental health and social care professionals indicated that unmet mental health needs are more common in some vulnerable groups, such as those in poverty, those with more complex or long-lasting mental health conditions, and children and youth. Several barriers were discussed, including waiting times in mental health care and a lack of insight into the own needs and the care offer among individuals with a need for mental health care. It was argued that there is a high need for multidisciplinary care and accessible mental health care that reaches out to people in need, especially targeted at vulnerable groups. The underfinancing

of mental health care and the fragmentation within the health care system were mentioned as important sources of unmet mental health needs.

Next, survey research examined mental health problems and mental health care use in the region. It was found that about one in five Antwerp residents has poor mental wellbeing according to validated tests, and about one-tenth has a clinical need for mental health care that causes significant dysfunction in daily life. Of those with a clinical mental health need, only about half seek help. This means that approximately six percent of Antwerp people has an unmet need for mental health care.

Another way to examine unmet mental health needs is through the individuals' own subjective evaluation. Using this approach, about one-tenth reported completely unmet mental health needs as they perceived a need for mental health care but sought no care for this. Four percent reported partially unmet needs, meaning they received care for mental health problems but considered it insufficient. Interestingly, measured needs and self-perceived unmet needs are distributed differently between subgroups of the population. For example, more men *have* measured unmet needs, while women are more likely to *perceive* unmet needs.

The studies described in this dissertation demonstrate the importance of population-based research on mental wellbeing and mental health care use. A strength of the work done is the regional in-depth analysis, which provides a more detailed picture of the local treatment gap. Follow-up research should better identify the patient group with more severe and complex psychiatric conditions and their (unmet) care needs, and to gain insight into patient flows and care pathways between providers and institutions in the Antwerp region. Moreover, the length of waiting times and the dynamics underlying them should be investigated more thoroughly. A future opportunity for this is the exploitation of iPSYcare (Improved Psychiatric Care and Research), which is a database linking electronic patient records of the Antwerp psychiatric hospitals and general hospitals with a psychiatric unit. Given the high societal burden of mental illness, this may provide a basis for future and essential health economic analyses as well.

Samenvatting

Deze doctoraatsthesis onderzoekt de geestelijke gezondheid in Antwerpen aan de hand van een public health benadering. Public mental health, ofwel 'geestelijke volksgezondheid', bestaat uit de bevordering van psychisch welzijn en de preventie en adequate behandeling van psychische gezondheidsproblemen en stoornissen in de samenleving door geïnformeerde keuzes en acties van overheden, organisaties, gemeenschappen en individuen. Het is gebaseerd op relevante data en voorziet een voldoende uitgebreid en adequaat aanbod aan geestelijke gezondheidszorg afgestemd op de noden van de populatie. Een belangrijk doel hierin is het verminderen van ongelijkheden in de toegang tot zorg.

De uitbraak van COVID-19 in 2020, tijdens de werkzaamheden van de in dit proefschrift beschreven studies, illustreerde eens te meer dat geestelijke gezondheid een cruciaal onderdeel is van het algemeen welzijn. Door de impact van COVID-19 op zowel de fysieke als de mentale volksgezondheid kreeg het onderwerp meer aandacht en groeide de bezorgdheid dat onze geestelijke gezondheidszorg wellicht niet adequaat zou kunnen inspelen op de toegenomen behoefte aan zorg in de bevolking.

Het is echter al langer bekend dat er een "behandelingskloof" in de geestelijke gezondheidszorg bestaat: een aanzienlijk deel van de personen die geestelijke gezondheidszorg nodig hebben zoekt of verkrijgt dit niet. Verschillende studies onderzochten reeds populatienoden voor geestelijke gezondheidszorg en in welke mate deze noden al dan niet worden vervuld. Belgische gegevens schieten hierin echter tekort. Studies over (onvervulde) psychische noden zijn verouderd of beperkt, waardoor het moeilijk is om betrouwbare actuele uitspraken over te doen. Bovendien ontbreken in nationale studies vaak regionale details. De hoofdstudies in deze doctoraatsthesis onderzoeken psychische noden meer diepgaand en lokaal, en gebruiken verschillende methoden en onderzoeksdesigns om de huidige situatie inzake psychische gezondheid en zorggebruik voor psychische problemen te beschrijven in de provincie Antwerpen, en meer specifiek in één rurale en één stedelijke eerstelijnszone.

Uit kwalitatieve focusgroepdiscussies en interviews met professionals uit de eerstelijnszorg, de geestelijke gezondheidszorg en sociaal werk bleek dat onvervulde psychische noden vaker voorkomen in sommige kwetsbare groepen, zoals personen in armoede, personen met meer complexe en langdurige psychische problematieken, en

kinderen en jongeren. Verschillende drempels werden besproken, waaronder wachttijden in de geestelijke gezondheidszorg en een gebrek aan inzicht in de eigen noden en het hulpaanbod bij personen met een psychische zorgnood. Er werd geargumenteed dat er een grote nood is aan multidisciplinaire samenwerking en toegankelijke geestelijke gezondheidszorg die actief tracht om personen met een psychische zorgnood te bereiken, in het bijzonder gericht op kwetsbare groepen. De onderfinanciering van geestelijke gezondheidszorg en de fragmentatie van de zorgsector werden vermeld als belangrijke bronnen van onvervulde psychische noden.

Vervolgens werd aan de hand van een vragenlijststudie de prevalentie van psychische problemen en het gebruik van geestelijke gezondheidszorg in de regio onderzocht. Ongeveer één op vijf Antwerpenaren bleek een verminderd psychisch welzijn te hebben volgens gevalideerde tests, en ongeveer een tiende heeft een klinische nood aan geestelijke gezondheidszorg waarbij er sprake is van een significante functiebeperking in het dagelijks leven. Van degenen met een klinische nood zoekt slechts ongeveer de helft hulp. Dit impliceert dat ongeveer zes procent van de Antwerpenaren een onvervulde psychische zorgnood heeft.

Een andere manier om onvervulde psychische noden te onderzoeken, is door deze te laten evalueren door het individu zelf. Volgens deze aanpak rapporteerde ongeveer een tiende van de Antwerpenaren een subjectieve volledig onvervulde nood, aangezien ze een nood aan psychische zorg waarnamen maar hiervoor geen hulp zochten. Vier procent rapporteerde deels onvervulde noden, wat betekent dat ze zorg ontvingen voor psychische problemen maar deze hulp onvoldoende vonden. Opvallend is dat gemeten noden en zelf-waargenomen noden anders verdeeld zijn over bevolkingsgroepen. Bijvoorbeeld, meer mannen *hebben* gemeten onvervulde noden, terwijl vrouwen vaker zelf een onvervulde nood *waarnemen*.

De studies beschreven in deze doctoraatsthesis tonen het belang aan van bevolkingsonderzoek over psychisch welzijn en gebruik van geestelijke gezondheidszorg. Een sterkte is de regionale diepte-analyse, wat een meer gedetailleerd beeld oplevert van de lokale behandelkloof. Vervolgonderzoek moet de patiëntengroep met meer ernstige en complexe psychiatrische aandoeningen en hun (onvervulde) zorgbehoeften beter in kaart brengen, en inzicht geven in patiëntenstromen en zorgtrajecten tussen zorgaanbieders in de Antwerpse regio. Bovendien moet de lengte van de wachttijden en de dynamieken die hieraan ten grondslag liggen grondiger worden onderzocht. Een toekomstige opportuniteit hiervoor is het gebruik van iPSYcare ('Improved Psychiatric Care and Research'), een databank die elektronische patiëntendossiers van de Antwerpse psychiatrische

ziekenhuizen en algemene ziekenhuizen met een psychiatrische afdeling aan elkaar koppelt. Gezien de hoge maatschappelijke kost van psychische stoornissen kan dit eveneens een basis vormen voor toekomstige nodige gezondheidseconomische analyses.

Background: 'Chair Public Mental Health'



In October 2018, several Antwerp hospitals joined forces by financing a strategic psychiatric care planning project. Specifically, all five psychiatric hospitals (i.e., Multiversum, OPZ Geel, UPC Duffel, PC Bethanië Zoersel, ZNA Stuivenberg) and three general hospitals with a psychiatric unit (i.e., AZ KLINA Brasschaat, GZA Antwerpen, Heilig Hart Ziekenhuis Lier) wanted to install a more data-driven and demand-driven mental health care in the province of Antwerp, and therefore set up a collaboration with the University of Antwerp. This marked the beginning of the Chair “Public Mental Health”.

Given the importance of mental health in primary care, and the fact that specialized psychiatric care is sometimes recommended, the Chair Public Mental Health is rooted in both the department Family Medicine and Population Health (FAMPOP) and the Collaborative Antwerp Psychiatric Research Institute (CAPRI). The multidisciplinary academic team consists of five members:

- Prof. dr. Kris Van den Broeck is Chairholder and is a clinical psychologist
- Prof. dr. Roy Remmen is promotor of the Chair and is a general practitioner
- Prof. dr. Geert Dom is promotor of the Chair and is a psychiatrist
- dr. Joris Michielsen is voluntary academic staff and is a sociologist
- Eva Rens, the author of this dissertation, is PhD candidate and is a research psychologist

The expected output included an inventory and evaluation of available Antwerp mental health data, the development and trial of a multi-methods methodology to assess (unmet) mental health needs, resulting in estimates of the prevalence of (unmet) mental health needs. Further, there was a request for the mapping of patient flows and care trajectories in the Antwerp region based on linked health care data of the partners.

At the same time, the Flemish Government (Agency for Care and Health) consulted the researchers to develop a strategy to assess the (unmet) mental health needs at the level of a primary care zone (PCZ; '*eerstelijnszone*'¹). As the aims of the Flemish project partly overlap those of the Chair Public Mental Health, the projects were merged and the deliverables of the Flemish project were integrated in those of the Chair.

¹ PCZs are regions covering approximately 100.000 citizens with the aim to strengthen the collaboration and coordination between partners from primary health care, social welfare and local authorities.

In agreement with the steering committees, it was then decided to select two PCZs to pilot the method: PCZ Antwerpen-Oost (consisting of Antwerp city districts Deurne and Borgerhout, and the municipality Wommelgem) and PCZ Baldemore (consisting of municipalities Balen, Dessel, Mol and Retie). These zones were chosen because of their contrasting character: PCZ Antwerpen-Oost is urban and has a relatively extensive specialized mental health care offer, and PCZ Baldemore is rather rural and has a more limited offer of mental health care in the region. Some demographic information about the PCZs is shown in Table 1 (retrieved from www.provincies.incijfers.be). The location of the PCZs within the province of Antwerp is visualized in Figure 1.

Table 1. Demographic information of PCZs Antwerpen-Oost and Baldemore.

	Antwerpen-Oost	Baldemore
Population density	2 232 per km ²	311 per km ²
Persons aged 65 and older	17.0%	20.8%
Persons of non-Belgian origin	24.7%	18.6%
Persons with increased allowance (poverty indicator)	26.5%	13.6%

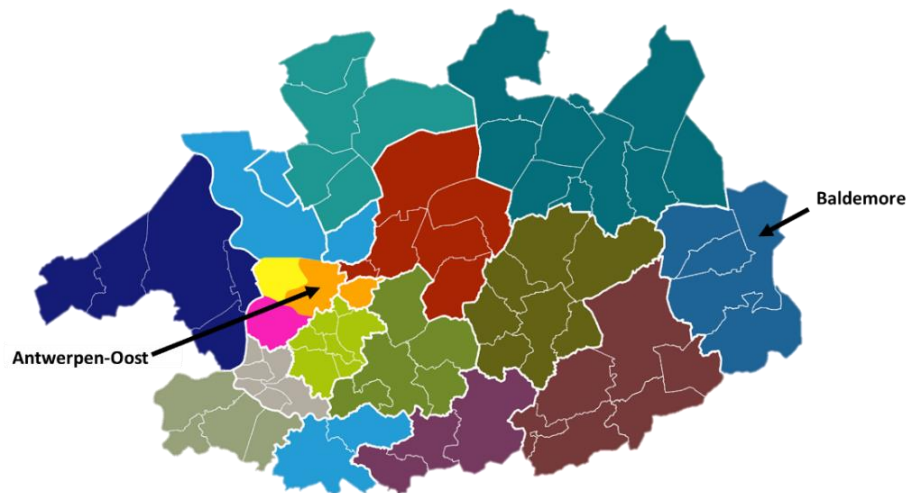


Figure 1. Primary care zones Antwerpen-Oost and Baldemore within the province of Antwerp.

PhD trajectory and outline of the thesis

After finishing my studies in Psychology (Master in Theory and Research) at KU Leuven, my PhD-trajectory officially started in June 2019 at the Chair Public Mental Health at the University of Antwerp. An introduction to the main literature on public mental health and research on (unmet) mental health needs is described in **Chapter 1: “Introduction”**.

The pilot PCZs were then selected and the methodology of the research project was decided in coordination with the steering committees. Moreover, an overview of the existing and freely available data on mental health needs and mental health care in the province of Antwerp was made. A concise and recent overview of the most important data and corresponding conclusions can be found in **Chapter 2: “Mental health needs and mental health care in Antwerp: an overview”**.

A first study consisted of a qualitative exploration of (unmet) mental health needs in Antwerp. Professionals from mental health, social work and primary care settings were recruited in the two PCZs. A total of four focus groups and two additional interviews took place between October 2019 and January 2020, in which we explored the most important barriers and target groups, and the priority actions to tackle these unmet needs. After transcribing and thematically analyzing the conversations, the first peer-reviewed paper was written and was published in September 2020. This paper is covered in **Chapter 3: “Qualitative research: exploring professionals’ perspectives”**.

In 2020, the methodology of a population study was explored. It was decided to conduct a questionnaire survey with a randomly selected sample, paying extra attention to vulnerable groups. The questionnaire was professionally translated in six languages and was implemented both online and on paper. We collaborated with services of the National Registry for the selection and recruitment of participants. Finally, the two invitation letters were delivered in May and July 2021, and the data collection was finalized in September with 1208 participants. The analyses were performed at the end of 2021, after which the results were written down in a paper published in July 2022. The paper and some additional findings are described in **Chapter 4: “Survey research: mental health needs in two Antwerp primary care zones”**.

The third and most challenging part of the Chair Public Mental Health involves the linking of electronic patient data of the participating hospitals into a database called 'iPSYcare' (Improved Psychiatric Care and Research). The goal here was to study psychiatric care trajectories in the province of Antwerp. Throughout the years, numerous efforts were made to achieve this. The ethical committees of the university and the participating partners came to an agreement, and there was positive advice from the National Safety Board. A collaboration with eHealth as a 'trusted third party' allows for secure data transfer, and a software company created the database framework and data encryptor. However, there were several obstacles that prevented the effective start of the data collection. Because of the complex nature of this work package, which proved even more difficult than initially expected, this dissertation could not yet include a description of the findings of the database. However, a brief 'Research Note' about the plans and the process was written and published in 2021. This paper, together with the different barriers of the implementation and an update of the project in 2023, can be found in **Chapter 5: "iPSYcare: linkage of electronic health records of Antwerp inpatient psychiatric care"**.

Besides the three main parts of the Chair Public Mental Health, we participated in some research paths on the sidelines. First, there is the involvement of the Chair Public Mental Health in the waiting times working group of the 'Staten-Generaal Geestelijke Gezondheid' (SGGG). Given the lack of data about waiting times in mental health care, there was the opportunity to collaborate closely with the professionals and patient representatives of the working group of waiting times of the SGGG and to set up the first set of studies to inventory waiting times in Flanders. A first online survey was conducted in 2020 and was aimed at people who recently sought professional mental health care, and parents/guardians who sought mental health care for their child. We studied the waiting times for several types of mental health care, and the impact and experience of the waiting period. The results of this study were disseminated in December 2020 as a Dutch report titled "Wachten op psychische hulp: de lengte en beleving van wachttijden in de Vlaamse geestelijke gezondheidszorg". Next, a second online survey was targeted at mental health professionals working in a private practice. Questions covered waiting times and patient stops in their practices, and the impact of COVID-19. The results were published in June 2021 as a Dutch report titled "Wachttijden in Vlaamse privépraktijken". Both studies were discussed in the media and newspapers, and even in the Flemish parliament. Finally, an essay was written about the causes and dynamics of waiting times and included an overview of the results of the patient survey of the SGGG. This essay was published in the Flemish-Dutch peer-reviewed journal *Tijdschrift voor Psychiatrie* in 2021. A translated version of this essay and a brief overview of the most important results of the surveys can be found in **Chapter 6: "Waiting times in Flemish mental health care"**.

As with many research projects, this doctorate took an unexpected turn, as the COVID-19 pandemic began in early 2020. On the bright side, this brought interesting research opportunities, as the Chair Public Mental Health became involved in several studies about mental wellbeing during the pandemic. First, there was a collaboration with Walloon researchers of UCLouvain. We were provided with the dataset and conducted analyses on the mental health of young people between 16 and 25 years old and the predictors contributing to mental distress. Secondly, there were data from the Antwerp Monitor (AMON, a recurring panel survey in Antwerp city), which allowed to investigate the difference in mental wellbeing before and during COVID-19 in the city of Antwerp. The results of these two studies are described in **Chapter 7: “Mental health during the COVID-19 pandemic”**. Finally, we also collaborated on a study of mental health related consultations in out-of-hours primary care before and during the COVID-19 waves, using the iCAREdata database. This paper, named “Increase in Anxiety-Related Out-of-Hours Primary Care Consultations Since COVID-19: An Observational Study Using Routine Data in Flanders”, is not included in this dissertation as I was not the first author, but it was selected as one of the winners of the Paper of the Year Award 2022 of the journal *Frontiers in Health Services*.

A final line of research in which I was involved during my PhD, is project #CAVAAs. This project started in early 2021 and is a partnership between the Flemish Centers for General Wellbeing (‘Centra voor Algemeen Welzijnswerk’; CAW) and the Flemish Pharmacists’ Network (‘Vlaams Apothekersnetwerk’; VAN). The goal is to examine the potential of a collaboration between community pharmacy and psychosocial care. Community pharmacists are trained to detect and discuss a wide range of psychosocial problems (e.g., mental health problems, family problems, substance abuse...), to inform patients about possible help and to refer them to a CAW if needed. The project is still running and will be broadly implemented in Flanders as of 2023. However, the output of #CAVAAs is beyond the scope of this dissertation.

This doctoral thesis ends with **Chapter 8: “General discussion”**, in which the main findings, the research strengths and limitations, implications and recommendations are outlined. I end with a general conclusion that underscores the need for a public mental health approach.

1. Introduction

This doctoral thesis stresses the importance of public mental health research, both in an international context, and with a special emphasis on the Belgian, Flemish and Antwerp context. I start with an introduction describing the concepts of mental health and illness, highlighting the impact of mental disorders. There is a focus on (unmet) mental health needs and 'needs assessment': what makes someone 'in need of mental health care', when is someone sufficiently helped and how is this operationalized? Finally, the organization of mental health care and some recent Belgian evolutions are described.

1.1 Mental health matters

Mental health is a vital part of general wellbeing and forms the foundation for a happy and productive life. The World Health Organization (WHO) defines mental health as *“a state of wellbeing in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community”* (1). This does not mean, however, that good mental health includes positive affect only. Negative emotions are part of a fully lived life, and even people in good mental health can struggle with daily stressors and responsibilities at times. Other authors have therefore described mental health in terms of a *“dynamic state of internal equilibrium”*, meant to reflect the reality that mentally healthy people can experience periods of mental distress and even meet criteria for a mental health disorder for a short time, but are resilient enough to regain balance (2).

The origin of mental illness is complex, but it is generally agreed on that an interplay of a genetic, biological and environmental factors is at the root. The biopsychosocial diathesis-stress model states that an individual's predisposition ('diathesis') interacts with life stressors which can trigger the development of a mental disorder if it exceeds the individual's personal threshold (3). Thus, this theory hypothesizes that some individuals are more susceptible to adverse environments or events, and therefore are more at risk for a mental disorder. Closely related to the diathesis-stress model is the dual-susceptibility model, which suggests that 'vulnerable individuals' are not only extra sensitive to negative stressors, but also to positive environments (4).

It has long been known that mental health problems are widespread worldwide, as it is estimated that about one in three people experiences a common mental disorder at some

point during their life (5). It is therefore no surprise that mental illness is one of the leading causes of disability and reduced quality of life globally, according to the Global Burden of Diseases Study in 2019, and this is especially the case for the two most common mental disorders, which are depressive disorders and anxiety disorders (6). Moreover, the Belgian National Burden of Disease Study in 2020 used disability-adjusted life years (DALYs), which are an overall measure of burden and represent the loss of the equivalent of one year of full health, and found that mental health and substance use disorders are the main cause of disease burden among youngsters and adults in Belgium (7). Depression is even the leading specific cause, accounting for 7.6% of DALYs.

Disability often leads to invalidity. The National Institute for Health and Disability Insurance (NIHDI), the Belgian federal body responsible for disability benefits, defines invalidity as work disabilities of at least one year. According to NIHDI data, psychiatric problems are the most important cause of invalidity in Belgium. In 2020, 36.87% of all invalidities were due to mental health problems. Overall, burnout and depression represent a fourth of cases of long-term disability, accounting for 7.14% and 17.0%, respectively. Alarming, these numbers have risen substantially in recent years. Between 2016 and 2020, invalidity due to burnout and depression increased by 38.7%. Two thirds of these people are women, and it mainly concerns people in their fifties.

Besides morbidity and disability, mental ill health also contributes to mortality. Suicide is one of the leading causes of death globally, with even more deaths due to suicide than to AIDS, breast cancer or war (8). In Belgium, 1728 deaths from suicide were registered in 2019, and about one in four deaths of 15- to 24-year-old Belgians were due to suicide (9). The Belgian suicide mortality rate is about 1.7 times higher than the EU-average, although this must be interpreted with caution due to differences in registration (9). Also beyond suicide, it is estimated that people with severe mental illness have a life expectancy that is up to 20 years less than that of people without severe mental illness, mainly due to cardiovascular diseases and a higher prevalence of risk behaviors in this population (e.g., smoking, drug use...) (10, 11).

The high societal burden comes with considerable costs, both in terms of social security (e.g., hospital stays) and economically (e.g., sick leave): the Organization for Economic Co-operation and Development (OECD) estimated the annual total costs of mental illness at over €600 billion across the EU (12). Belgium is among the leaders with an estimated cost of €20.7 billion per year, just under five percent of the gross domestic product. More than €1.5 billion was spent on long-term disability benefits caused by depression or burnout alone in 2019 (13).

The aforementioned numbers underline the need for a high-quality population management of mental health problems, including the prevention and accessible and adequate care for the general public as well as for specific vulnerable groups. This is what 'public mental health' entails. Public mental health research investigates the prevalence of different mental health problems in the general population as well as specific groups, health care use for mental health, barriers to mental health care, ...

A public mental health needs assessment is essential for optimizing the current and future mental healthcare organization and the use of available resources (14, 15). Besides mental wellbeing promotion and prevention of mental disorders, one of the main aims of public mental health policies is to reduce inequities in seeking and obtaining mental health care, often described as unmet mental health needs (16).

1.2 Definitions of mental health needs

It is clear that mental health is more than the mere absence of mental illness. But when can one speak of a mental health problem? And does a mental health problem automatically imply that there is a need for mental health care? Several definitions and approaches have been proposed to define a 'need for mental health care', or simply a 'mental health need'. In what follows, I will compare the different approaches and describe the prevalence rates of mental health needs according to the approach.

In a review by Aoun, Pennebaker and Wood (2004), different approaches for assessing the population's need for mental health care are discussed (17). There are four types of need: felt or perceived need, expressed need, normative or assessed need and comparative need. Perceived needs are 'felt' by the individual and are typically investigated by surveys or interviews at the general population level. If a perceived need progresses to a demand, it is called expressed need, demonstrated by individuals' use of mental health services. Assessment of expressed need does not consider the needs of those who do not use services for their mental health. Normative or assessed need is determined on the basis of clinical assessments and is defined in objective terms, commonly based on the prevalence of psychiatric disorders. Comparative need is a need in which one person's need can be evaluated in relation to the position of others, e.g., the relative access to psychiatric services by population groups.

In what follows, I will briefly discuss the literature on assessed (1.2.1), perceived (1.2.2) and expressed needs (1.2.3) for mental health care.

1.2.1 Clinically assessed mental health needs

Clinically assessed or 'normative' mental health needs are assessed using evidence-based diagnostic instruments or scales. Two subtypes of approaches are most commonly used to assess mental health needs in the general population: diagnostic assessments and the use of screening instruments.

1.2.1.1 *Diagnostic assessment of mental disorders*

A first approach to assess mental health needs is to use predefined diagnostic criteria for mental disorders, mostly in the form of a structured interview. For example, the most comprehensive research on mental health needs in the general population used the WHO World Mental Health Composite International Diagnostic Interview (WHO WMH-CIDI), which is a structured computer-assisted interview generating diagnoses based on DSM-IV criteria (18). The instrument was used in the WMH Surveys, a large project in the early 2000s aimed at investigating the epidemiology of mental disorders worldwide (19). The studies found that the median lifetime prevalence estimates of mental disorders vary widely across regions, from 12.0% in Nigeria to 47.4% in the United States, with an inter-quartile range (IQR; between the 25th and 75th percentile) of 18.1% – 36.1% (20, 21). The majority of mental disorders are generally mild, which means there is only a limited degree of interference in one's daily life and no suicidal ideation (22). Gender differences are commonly found in all countries, such that women report more internalizing (mood and anxiety) disorders than men, but men report more externalizing and substance abuse disorders compared to women (23).

As part of the WMH Surveys, the European Study of the Epidemiology of Mental Disorders (ESEMeD) investigated the prevalence of mental disorders in six West-European countries: Belgium, the Netherlands, France, Germany, Spain and Italy (24). Even though the data may be outdated, ESEMeD is the most extensive study available on the epidemiology of DSM-IV diagnoses in Belgium and surrounding countries. Overall, about one in four had a lifetime presence of any mental disorder and nearly one in ten experienced a mental disorder in the prior year (25, 26).

The prevalence rates of different mental disorder categories in Europe and Belgium are presented in Table 1. Major depression and specific phobia were the most common psychiatric disorders in Europe: 12.8% reported a lifetime history of major depressive disorder and 7.7% reported an episode of specific phobia in their life (25). Among Belgians, lifetime prevalence estimates were highest for major depression (13.6%) and alcohol abuse (7.7%), while the twelve-month prevalence estimates were highest for major depression

(4.6%) and specific phobia (3.1%) (26). Moreover, high levels of comorbidity were found in the population, especially among women, younger people, and those with a lower socio-economic status. Comorbidity is highest for mood disorders: among all respondents with a mood disorder, about four in ten (41.7%) Europeans also had an anxiety or alcohol disorder (27).

The projected lifetime risk for any disorder at age 75 is 37.1% in Belgium, and is highest for mood disorders (22.8%), followed by anxiety disorders (15.7%) and alcohol disorders (10.8%) (28). These estimations are made by taking into account the median age of onset and cohort effects. The median ages of onset for the different diagnostic categories in Belgium are presented in Table 2. Prevalence estimates of mood and alcohol disorders were significantly higher in younger birth cohorts (28).

Table 2. Prevalence and median age of onset of different types of mental disorders in Belgium and Europe, based on the ESEMeD study (2000).

	Europe: lifetime prevalence	Europe: 12-month prevalence	Belgium: 12-month prevalence	Belgium: median age of onset
Mood disorders	14.0%	4.2%	5.0%	38
Anxiety disorders	13.6%	6.4%	6.0%	14
Alcohol disorders	5.2%	1.0%	1.8%	23
Any mental disorder	25.0%	9.6%	10.7%	24

The rationale of assessed approaches is generally that the presence of a psychiatric diagnosis implies that individuals who meet criteria for a psychiatric disorder need mental health care. However, some authors have argued that the mere presence of a mental disorder does not necessarily mean that mental health care is needed (29-31). The finding that the majority of mental disorders are mild and do not cause major dysfunction suggests that not all assessed diagnoses are clinically significant (22, 30). People may meet criteria for a common mental disorder during a transient distressing period in their life, but research has shown that about half of those with a common mental disorder have a remission of symptoms even without treatment (31). For this reason, Alonso et al. (2007) defined a 'formal mental health need' as the presence of a 12-month mental disorder which had interfered at least 'a lot' with one's life or activities, or led to the use of health services in the year prior to the interview (29). While about one in ten had a mental disorder in a 12-month period, only 6.5% of the ESEMeD respondents actually had a formal need for mental health care using the more stringent need criteria. This is in line with an American

study on clinical significance, which suggested that applying clinical significance indicators such as disability and suicidal ideation reduces the mental health need prevalence estimates approximately up to 30 to 40% (30).

Studies using diagnostic structural assessments have provided a wealth of information on the prevalence and correlates of psychiatric disorders. The most important advantage is the standardized assessment of common mental disorders across cultures and languages. However, even a fully structured diagnostic assessment does not allow to reliably assess the full range of mental disorders, especially less common disorders such as schizophrenia. Validation studies showed that diagnoses of psychotic disorders obtained in lay-administered interviews in research contexts agree poorly with clinical diagnoses of doctors, leading to a dramatic overestimation of prevalence estimates (33). Another practical disadvantage is that the method is expensive and time-consuming: the WMH-CIDI takes approximately two hours to administer, and the interviewers must be trained thoroughly. However, online self-report assessments can address these pragmatic difficulties. Possibly, the last population study using structured diagnostic assessments in Belgium took place in 2000 because of the high cost and complexity of such research. Although the findings remain valuable, the question is whether policy can still be based on twenty-year-old epidemiological data, even when adjustments can be made to extrapolate the numbers to more actual population compositions. Various demographic shifts have occurred, such as an increase of ethnic minorities, and cohort effects may have resulted in an increase or qualitatively different pattern of mental disorders.

1.2.1.2 Symptom screening tools

Symptom screening tools are brief psychological measures which can be used to screen individuals for a range of mental health conditions. Whereas structured diagnostic assessments are lengthy and complex, screening measures require few resources and are generally easy and quick to administer. Some screening measures still require face-to-face administration, but digital or pen & paper self-administration is possible in most cases. A drawback of using screening tools is that the result is only indicative of a probable mental disorder but does not always correspond strictly with all diagnostic criteria of a disorder.

A meta-analysis conducted in 2017 identified 24 publicly available and psychometrically valid screening tools for common mental and substance abuse conditions for community-dwelling adults, of which 13 were ultra-brief (a maximum of five items) single-disorder screeners (34). For example, the Patient Health Questionnaire-9 (PHQ-9) is one of the most often used and best validated screening scales for unipolar depressive disorder. The nine items correspond to DSM-IV criteria for depression, each scored from 0 ('not at all') to 3

(‘nearly every day’). This results in a total depression severity score with cut-off points to distinguish between no depression and mild, moderate or severe depression (34-37). According to the PHQ-9, 9.4% of all Belgians suffered from major depression in 2018 (38).

It must be noted that the traditional PHQ-9 cut-off scores tend to overestimate the prevalence of depression when compared to Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders (SCID) major depression diagnoses (39). In general, screening questionnaires tend to overestimate the true disorder prevalence and can consequently blur the distinction between high-prevalence and low-prevalence populations (40). One of the main reasons for this overestimation is that screening questionnaires typically do not take functional impairment into account or do not investigate non-psychiatric conditions that can produce similar symptoms (e.g., shortness of breath can also be the result of a lung disease). One solution to this problem is to combine symptom screening tools with a measure of functional impairment and to add questions on physical conditions. Another solution is to implement a two-step procedure, such that only those with a positive screening will receive a full diagnostic assessment.

1.2.2 Perceived mental health needs

Perceived mental health needs are subjective needs based on the individual’s own perspective. Simply put, does one think that they need some form of health care because of their mental health? Perceived mental health needs were briefly questioned in the ESEMeD study. It was found that 9% of all Europeans and 12% of all Belgians, and 33% of Europeans with a mental disorder, perceived some need for mental health care in a 12-month period (41). In a more recent Swedish community sample, more than one in three (36%) had perceived a need for mental health care at any time in their life (42). In a Canadian general population sample, about one in four (24%) of the subjects perceived a mental health need (43).

Psychiatric comorbidity and disability are a major determinants of perceived need (41, 44). As regards diagnosis, perceived needs are highest among those with an affective disorder and lowest among those with a substance disorder (44). More women than men report perceiving a need for mental health care (41, 42, 44). Perceiving a need for care is, logically, an important predictor of service use. Among Europeans with a disabling 12-month mental disorder, 82% of those with a perceived need as compared to 11% of those without a perceived need used some kind of professional help (41).

In Australia and the Netherlands, the extensive 'Perceived Need for Care Questionnaire' (PNCQ) was used in a primary care sample of patients with a current depressive or anxiety disorder to assess various subtypes of perceived mental health needs (45). It was found that 85% of Dutch people and 77% of Australian patients perceived a need for mental health care themselves, and that needs for counselling (e.g., psychotherapy) and needs for information were most often reported.

1.2.3 Expressed needs: health care use for mental health problems in the general population

Finally, expressed needs for mental health care are equal to estimates of health care use for mental health. However, the use of health services is predicted by more than needs alone. The Andersen health care utilization model presented in Figure 2 (from Gudleski et al. (46)) is one of the most used behavioral models to explain different types of health care use (46-48). According to the model, the use of health care services is determined by three dynamics: predisposing factors, enabling factors, and need factors (47). Predisposing factors include demographic characteristics and social factors, but also attitudes, health literacy and contextual factors such as cultural or political influences. Enabling factors concern financing factors such as income, and contextual and organizational factors such as cost of services, waiting times and the geographical distribution of health services. Finally, need factors can be divided into perceived need and assessed need for services. Altogether, these three factors lead to health behavior, both on a personal and a population level, which ultimately leads to health outcomes.

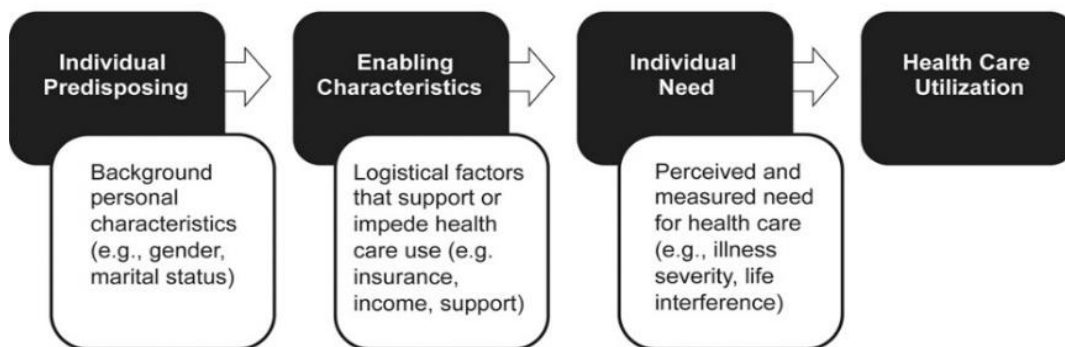


Figure 2. Andersen's Behavioral Model of Health Care Utilization.

Estimates of health care use for mental health reasons differ widely. The proportion of people using health services for mental health reasons is associated with the country's percentage of gross domestic product spent on health care, with numbers ranging from 1.6% in Nigeria up to 17.9% in the US (49). In the ESEMeD project, a total of 6.4% Europeans reported using formal health services for mental health reasons in a 12-month period (32). In a German sample, one in four reported ever using health services for mental health problems, and 8% used health services for mental health problems in the past year (50). In the US, 19.2% of adults received any mental health treatment in 2019 (51). A Canadian study suggests that mental health care use has increased from 7% to 13% between 2002 and 2014 (52). Numbers about the level of mental health care use in the Belgian general population are scarce. In the Belgian Health Interview Survey (BHIS) in 2018, it was found that 9.2% of Belgians consulted a psychologist, psychotherapist or psychiatrist; and 6.2% of Belgians used antidepressants (53).

In general, it is found that women and middle-aged people are more likely to use health services for their mental health as compared to men and younger or older people (32, 49, 54-59). Education level is positively associated with service use (49, 54, 56). Regarding needs characteristics, comorbidity and disorder severity are highly predictive of health care use (32, 49, 54, 55, 60). Moreover, parallel to perceived need, individuals with mood disorders are generally the most likely and individuals with substance abuse disorders the least likely to consult mental health services (54, 55). Indeed, health care use for mental health reasons strongly depends on need perception and the patients' own recognition that their problems have a mental health origin (61).

1.3 An 'unmet' need?

Moreover, mental health needs can be classified by whether they are met or unmet (17). Various definitions and operationalizations have been used by researchers worldwide to define '(un)met needs' for mental health care, but in general, people with met needs are those with a mental health problem who use health care for their mental health, and those with unmet need are people who meet the criteria for a disorder but do not use health care for their mental health. Unmet mental health needs are often referred to as the 'mental health treatment gap', as it describes how many those with a mental disorder remain untreated.

As depicted in Figure 3, Olsson et al. (2020) have proposed an extended definition of unmet mental health needs in which unmet need can occur at three stages on the pathway to adequate care: 1) not perceiving a need for care, 2) not seeking mental health care, and 3) not receiving (sufficient or adequate) care (42).

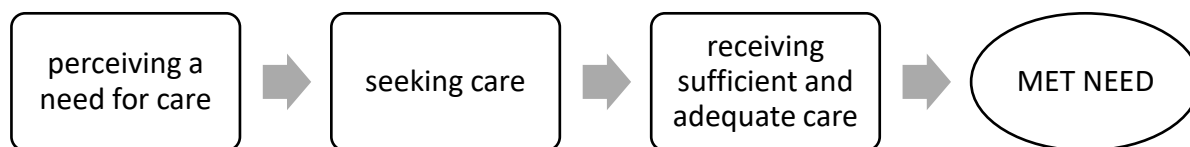


Figure 3. The pathway to met need for mental health care with three stages where unmet need may occur.

Three broad categories of operationalizations can be distinguished in research. A need can be considered unmet when there has been no contact with a professional for mental health reasons, when the care doesn't meet minimally adequate treatment (MAT) criteria, or when the patient perceives the need as unmet (i.e., subjective criterion). In what follows, the three categories will be briefly discussed.

1.3.1 Lack of formal (mental) health care use

The ESEMeD investigators define an unmet need for mental health care as the lack of use of any formal health care for mental health among individuals with a disabling mental health need (29). They then further distinguish between those who did consult a mental health specialist (psychologist, psychiatrist, social worker or counsellor) and those who did not (e.g., general practitioner). Among those with a disabling 12-month mental disorder, about half (52%) reported using any type of formal health care and one in four (25%) reported seeing a mental health specialist in the 12 months prior to the interview. At population level, this translates to 3% adults with an unmet mental health need. Unmet mental health needs were found to be highest among young people, retired people and people with a disorder onset of at least 15 years ago. Moreover, there is a relationship between disorder severity and health care use, such that clinically significant yet mild cases have a higher risk of having unmet needs (22, 49).

This is a high-threshold definition of unmet needs: the needs of people who discussed mental health problems with a professional only once are considered as met, as well as needs of patients who end up on a waiting list or who drop out of treatment. This operationalization does therefore not fully correspond to the reality of severe mental health needs, which often require more intensive treatment.

1.3.2 Minimally adequate treatment (MAT) criteria

A more rigorous but more ecologically valid definition of unmet mental health needs uses minimally adequate treatment (MAT) criteria, which are based on evidence-based guidelines for the treatment of mental disorders. The most commonly MAT criteria were first used in the WMH Surveys (49). Mental health treatment is said to be minimally adequate when one receives at least one month of pharmacotherapy with at least four visits to a medical doctor (e.g., psychiatrist or GP), or when one receives at least eight psychotherapy sessions. It was found that less than half of all treatments met MAT criteria, especially in lower-income countries (49). In Europe, the rate of the overall treatment adequacy was 57.4% in specialized care, as compared to 23.3% in the general medical care (62). In Belgium, one third (33.6%) of all cases received MAT, but being treated by a general practitioner (GP) was associated with a lower probability of receiving MAT (14.9%) (49, 62). However, receiving MAT was not found to be predictive of better outcomes in children with mental health problems, and it is unclear which impact MAT has on adults' clinical outcomes (63).

1.3.3 Perceived unmet mental health needs

Finally, the least complex method to measure unmet mental health needs is a fully subjective approach, based on the person's self-assessment. Perceived unmet mental health needs can be evaluated by asking individuals in the general population whether there was a time that they felt that they may have needed mental health care but did not get or seek it, or by asking mental health service users whether they thought the received care was sufficient. In 2018, 6.2% of US adults reported they perceived a need for mental health care in the past year for which no help was received (64). A Swedish population-based study found that 29% of people who perceive a need for mental health care did not seek care, and among those seeking care, 25% perceived the care as inadequate (42). Moreover, it was found that men are less likely to seek help when perceiving a need, and are less likely to perceive the mental health care as sufficient when receiving help (42).

1.4 Organization of mental health services

So far, the difference between assessed and perceived needs was discussed, and which factors are associated with seeking help. In a public mental health approach, it is essential that the offer of different mental health care services correctly reflects the level of care needs in society. In this section we describe how mental health is ideally organized according to the WHO, and how it currently is organized in Belgium.

In 2007, the WHO developed the 'optimal mix of services' pyramid framework, which describes the necessary components and optimal distribution of mental health services and provides guidance to countries on how to organize their mental health care (65, 66). As illustrated in Figure 4, the base of mental health care are informal services such as self-care and informal community care. The majority of mental health problems is mild, with no or limited clinical significance, so this requires a high level of informal support services, but these are associated with low costs. Formal services with more expertise are required for more severe but less common mental health problems. As one moves up the pyramid, severity and disability of problems and disorders rise, and the level of required specialization and cost increase. In ascending order, these are primary care mental health services, community mental health services and psychiatric services in general hospitals, and long stay facilities and specialist psychiatric services.

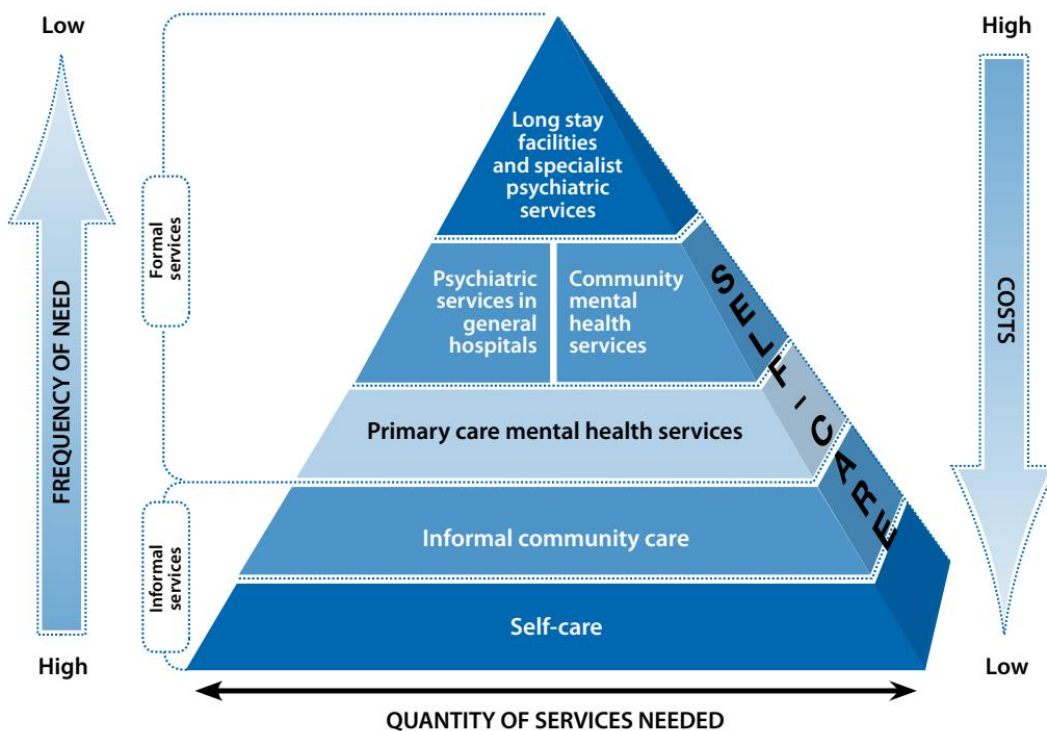


Figure 4. WHO Service Organization Pyramid for an Optimal Mix of Services for Mental Health.

Based upon this pyramid framework, the WHO made six key recommendations:

1. Promote self-care

In most cases, people can manage their mental health themselves and with support of their informal network such as family and friends. As shown in the right side of the pyramid, self-care must be facilitated throughout all services, as it is the core upon which all other care is based.

2. Build informal community care services

Informal community care consists of community services that are not part of the health and welfare system in strict sense, such as schools and services provided by nongovernmental organizations. This level is important for the prevention of mental health problems and for up-referral (i.e., referring people to formal care) and down-referral (i.e., supporting people who are discharged from formal care).

3. Integrate mental health services into primary health care

The first level of formal health care is mental health care provided within primary health services such as general practice. These services mainly include the prevention, identification and generalist treatment of common mental disorders. Primary mental health care is generally accessible, affordable and acceptable. Strong links are needed with other services up and down the care pyramid.

4. Build community mental health services

Community mental health services include day centers, rehabilitation services, community treatment teams, assistance to families, and other formal support services. Community mental health services are essential in the deinstitutionalization of mental health care and the prevention of hospitalization.

5. Develop mental health services in general hospitals

General hospitals provide inpatient medical care and day- and night supervision of people with acute worsening of mental disorders. Hospitalization in general hospitals can be required during acute episodes of mental disorders, but the length of stay should be limited and it is therefore less suitable for chronic mental disorders.

6. Limit psychiatric hospitals

Long-stay and specialist settings are required for patients with severe, complex or treatment-resistant mental disorders which cause considerable disability and require continuous monitoring. These services include specialized psychiatric centers for testing

and treatment, ongoing residential care facilities, forensic psychiatry and facilities for psychiatric patients with intellectual disabilities. In general, these services are costly but are targeted at a small minority of psychiatric patients. WHO recommends that traditional psychiatric hospitals should be limited and replaced by mental health services in general hospitals, community mental health services, and services integrated into primary health care.

Despite the WHO model being generally supported by experts worldwide, there is disagreement over the idea that psychiatric hospitals should be replaced by community mental health care. A review of systematic evidence by Thornicroft and Tansella (2004) supports a more nuanced approach, which led them to propose the 'balanced-care model': a comprehensive mental health system should include both community and hospital-based care (67, 68). They do however agree that inpatient care should be replaced by community alternatives where possible, for example in the form of ambulatory specialized clinics or day hospitals and community treatment teams. Nonetheless, they state that inpatient acute care cannot always be replaced by community alternatives, but that efforts should be made to reduce the length of stay. As for patients with very disabling, severe or chronic disorders such as schizophrenia, they argue that deinstitutionalization is highly dependent on which other services are available locally, such as the amount of family care. A systematic review showed that deinstitutionalization did not lead to increases in homelessness or imprisonment (69). Nonetheless, this should only be promoted if the community services are successfully implemented to avoid marginalization or 're-institutionalization'.

Belgium underwent some important evolutions in the organization of mental health care, gradually moving from predominantly residential toward community-oriented care (70). Only in the mid-20th century, asylums, whose main purpose was protection, were converted into treatment-focused psychiatric hospitals. The idea of de-institutionalization grew over the years, and the psychiatric hospitals were required to phase out a number of 'long-stay beds' and convert them to beds in new 'Psychiatric Care Homes' or 'Initiative Sheltered Living' in 1990.

Although the 'Belgian Association for Mental Hygiene' had been advocating outpatient psychiatric care since the 1930s and took the first steps in this direction, the real extension of community care did not occur until 1970s with the establishment of the 'services for mental health', which were the pioneers of the locally embedded and multidisciplinary 'community mental health centers' established in the late 1990s.

However, the most important reform in the history of the Belgian mental health care system occurred in 2011, as "Article 107" (www.psy107.be) was approved within the Belgian hospital law. Article 107 allows general and psychiatric hospitals to reduce their residential capacity in favor of other care types such as community outreach and home-based treatment teams. The ultimate goal of Article 107 is to provide differentiated care and continuity of care based on the needs of adults with mental health problems, preferably as close as possible to the living situation. In addition to intensive cooperation between inpatient and outpatient care, specific efforts are made to include mental health in other areas such as work, housing and the social sector.

A first important achievement was the development of regional mental health care networks and care circuits for specific target groups. There are currently 20 networks for mental health care in Belgium, in which the aim is to implement each of the following core functions:

- Prevention and promotion of mental health, early detection, screening and diagnosis.
- Outpatient 'mobile' community treatment teams for both acute and chronic mental health problems.
- Rehabilitation teams working around recovery and social inclusion.
- Intensive residential treatment units for both acute and chronic mental health issues.
- Specific residential care facilities in which care can be offered when the home environment is unable to organize the necessary care.

In 2015, the mental health care organization for children and youth was reformed as well, known as the "Guide to a New Mental Health Policy for Children and Youth" or psy0-18 (www.psy0-18.be). There is one mental health network for children and youth in each Belgian province, in which integrated and multidisciplinary mental health care is provided to children and adolescents between 0 to 23 years old.

Despite efforts to reduce residential beds in favor of alternative forms of care, the number of psychiatric beds remains high in Belgium. According to Eurostat, Belgium would even be the European leader in 2018 with 135 psychiatric beds per 100.000 inhabitants versus the EU-average of 73 beds (71). However, this should be interpreted with caution due to methodological differences in the count, and more beds have been phased out since then.

Even more recently, efforts were made to provide a more accessible range of mental health services. Since 2019, up to eight sessions of primary mental health care for people with mild to moderate common mental problems became reimbursed for adults between 18

and 65 years of age. An additional convention in 2021 further expanded reimbursement for both primary and specialized psychological care, irrespective of the patient's age, delivered by certified clinical psychologists and orthopedagogues. Though demands exceed supply, this measure reduces financial thresholds for an important share of the population (72).

A recent study examined the characteristics of the Belgian patient population of those who use reimbursed primary mental health care and found that almost nine in ten meets criteria of a mental disorder (73). Even a third reported suicidal thoughts or behavior. Problems were often long-lasting, with a median of six years between the onset of the disorder and the first contact with mental health services. Remarkably, for only half of the patients the start of the primary mental health care treatment was the first contact with mental health services. Given that the sample is potentially biased and only 350 patients were reached, which is estimated to be 2% of the total patient population in reimbursed primary mental health care, these findings should be interpreted with caution. Nonetheless, this study suggests that those reached by the Belgian primary mental health care convention may have more severe and chronic problems than initially intended, and that a large proportion already followed previous outpatient and residential care pathways.

1.5 Research aims and questions

The research described in this doctoral thesis involves an epidemiological and qualitative investigation of mental health needs in two PCZs in the province of Antwerp, including some in-depth and additional lines of research. Rather than a single focused research question or aim, the goal was to obtain a broad picture of the current situation regarding mental wellbeing and health care use for mental health in Antwerp. In order to do so, complementary studies using different methods were used. Concretely, it was decided to start with a qualitative explorative study about unmet mental health needs, followed by a population-based mental health needs assessment. An additional research objective was to develop a method that can be used to assess (unmet) mental health needs at the level of PCZs and to examine whether the rural and urban PCZs differ from each other.

Some primary and secondary research questions could be posed:

1. Which share of people in Antwerp has a need for mental health care?
 - For which type of mental health problem? (e.g., depressive disorder, substance abuse disorder,...)
 - Which groups are more likely to have a need for mental health care?

2. Which share and which groups of Antwerp people with a need for mental health care does not receive it? (= unmet need for mental health care)
 - Based on expert opinions?
 - *Assessed*: which groups are more likely to have a clinically assessed mental health need, but do not seek care?
 - *Perceived*: which share and which groups are more likely to perceive an unmet need for mental health care? Which share did not seek any care, and which share received some care but perceived it as insufficient?

3. What is needed to meet these unmet needs for mental health care in Antwerp?
 - On the basis of expert opinions?
 - On the basis of reported barriers by individuals with unmet needs?

4. *Additional line of research*: What is the impact of the COVID-19 pandemic on the mental wellbeing of the Flemish population (and additionally, on young people as a vulnerable group)?

5. *Additional in-depth line of research (waiting times as barrier to mental health care)*: What is the state of waiting times in Flemish mental health care?
 - How long are waiting times in different mental health care types?
 - How are waiting times experienced by patients and professionals?
 - What can and should be done to shorten waiting times?

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2. Mental health needs and mental health care use in Antwerp: an overview

This doctoral thesis explores the match between the mental health needs and mental health care provision in the region of Antwerp more in depth. Different information sources exist that give an indication of the prevalence of mental health needs and mental health care use in Antwerp. Some data are about the province of Antwerp, while others are limited to the city of Antwerp or allow for a more geographically specific analysis. In what follows, the supply of mental health care and the most important sources on mental health needs and mental health care use of which the data or findings are freely available online are described. A distinction is made between survey studies for research purposes and health care information containing routinely collected data.

2.1 Survey studies

The Belgian Health Interview Survey (BHIS) is a five-year representative population study about the mental and physical wellbeing, lifestyle and health care use of Belgians. The mental health component is surveyed using self-administered questionnaires (1). The data can be interpreted at a national, regional and provincial level. The most recent survey is from 2018 and all respondents are aged 15 years old or older. In what follows, the findings of the mental health component for the province of Antwerp will be described and compared to the findings of the Flemish region. The comparison is made with Flanders rather than Belgium since it is a general consistent finding that mental health needs are higher in Wallonia (1).

First, subjective wellbeing and psychological distress were assessed. Psychological distress is not always pathological but is indicative of reduced psychological wellbeing. It was measured using the validated GHQ-12 and it was found that 29.8% of Flemings and 31.2% of Antwerp people experience significant psychological distress (2, 3). Both Flemish and Antwerp people rated their life satisfaction 7.6 on a scale from 0 to 10.

Second, the prevalence of mental disorders is assessed using validated screening scales for depression, anxiety disorder and eating disorders. Using the PHQ-9, it was estimated that

6.4% of Flemish people and 6.3% of Antwerp people have any type of depressive disorder (4). Moreover, a single question about self-declared 12-month depression was included. A total of 6.6% Flemish people and 6.2% declared that they had a depression in the past year. Anxiety was assessed using the GAD-7, which showed that 8.6% Flemings and 9.7% Antwerp people had a probable generalized anxiety disorder (2). Finally, 5.7% Flemings and 6.1% Antwerp people had a possible eating disorder according to the SCOFF-screening (5). Alcohol consumption was assessed in the lifestyle module of the BHIS using the CAGE screening questionnaire (6, 7). A 12-month prevalence of problematic drinking of 6.3% Flemings and 6.7% Antwerp people was reported.

Among those reporting any 12-month depression, some follow-up questions were asked about the treatment. Almost two thirds (73.0%) of Flemish people consulted a health care professional for their depression. This number is remarkably higher in Antwerp, in which 84.5% consulted a professional. A majority of 61.7% Flemings and 68.8% Antwerp inhabitants were prescribed medicines, while a minority of 35.5% Flemings and 40.3% Antwerp people received psychotherapy for their depression.

Moreover, health care use for mental health reasons was assessed in the general population. A total of 8.4% Flemings and 8.7% Antwerp people consulted a psychologist, psychotherapist or psychiatrist in the past twelve months, although no distinction was made between the practitioners. As regards the use of psychotropic medicine, 6.6% Flemings and 7.0% Antwerp people reported using antidepressants in the past two weeks, and 12.4% Flemings and 10.7% Antwerp people reported using sedatives (tranquillizers or sleeping tablets) in the past two weeks (8).

Overall, it can be concluded that the province of Antwerp shows a similar picture to the rest of Flanders regarding the prevalence of mental health needs. There are however some differences regarding mental health care use, but it is unclear what underlies this.

Another source of survey research is the Antwerp Health Survey. The Antwerp Health Survey is a triennial survey of residents aged 16 and older of the city of Antwerp (9). The advantage is that a geographically detailed description is possible, down to the level of city districts. However, the available information on mental health is limited. A total of 21.4% residents of the city of Antwerp reported mental health problems in 2019. Approximately half of all respondents (53.9%) reported suffering from stress, and more than one in three (37.5%) reported sleeping troubles.

2.2 Healthcare data

2.2.1 Minimal Psychiatric Data

The federal government collects mandatory 'Minimal Psychiatric Data' (MPD) from all Belgian psychiatric hospitals and psychiatric units in general hospitals. MPD are meant to support the national health policy and to identify the needs in psychiatric facilities. MPD are recorded at the start and end of medical-psychiatric treatments. The recorded data include socio-demographic patient characteristics, diagnostic information and information about the admission and discharge from the facility. A drawback of MPD is that the lack of a unique patient identifier hinders the study of care trajectories and readmissions across facilities. This also means that re-admissions can only be studied within the same hospital.

In the MPD registration year of 2018, a total of 122 403 psychiatric stays were recorded in Belgium, of which half (54.0%) were in psychiatric hospitals (10). In the province of Antwerp, 14 628 psychiatric stays were recorded in the adult units, representing approximately 12% of all psychiatric stays in Belgium. Moreover, 868 stays were recorded in the children's units of hospitals.

Three mental health care networks for adults exist in the province of Antwerp, divided on the basis of provincial districts. PCZ Antwerpen-Oost is located in district Antwerp, and PCZ Baldemore is located in district Turnhout. More than half (54.9%) of all stays in adult psychiatric units were in the district Antwerp (Netwerk SaRA), followed by district Mechelen (33.7%; Netwerk Emergo) and finally district Turnhout (11.2%; Netwerk GGZ Kempen). Note that in essence this says very little about the number of mental health needs in the region, but rather about the regional distribution of psychiatric hospitals.

The most common diagnoses for adults in all Belgian psychiatric hospitals in 2018 were alcohol abuse (18.4%), depression (13.3%) and psychotic disorders (12.5%) (11). For children up to 17 years old, the most common diagnoses were adjustment disorders (15.7%), depression (14.5%) and autism spectrum disorder (13.6%).

In the hospitals in the district Antwerp (Netwerk SaRA), the most common diagnoses for adults are psychotic disorders (29.6%), drug abuse (20.1%) and alcohol abuse (10.8%). In the hospitals in the district Turnhout (Netwerk GGZ Kempen), the most common diagnoses are depression (15.9%), schizophrenia (11.8%) and adjustment disorders (9.4%). Finally, in the district Mechelen (Netwerk Emergo), the most common diagnoses are alcohol abuse

(15.9%), adjustment disorders (15.6%) and depression (13.5%). These differences can possibly be explained by differences in the treatment offerings of the hospitals.

2.2.2 Intermutualistic Agency: reimbursed health care and medication use

The Intermutualistic Agency's (IMA) freely available database, called the IMA Atlas, describes the use of reimbursed health care (12). A strength is that the database includes various socio-demographic characteristics, and that the data can be interpreted at a municipal level. The main disadvantage is that non-reimbursed care is not included. This includes, for example, psychotherapy provided by private psychologists and the use of benzodiazepines. In addition, antidepressants and antipsychotics are regularly prescribed off-label (i.e., prescribed for a condition other than that for which it has been officially approved) so that they are not always indicative of the treatment prevalence of the associated disorder. Finally, there is a lag of up to two years on the data.

In 2019, 2.8% of Flemings and 2.8% of Antwerp inhabitants had at least one consultation with a psychiatrist. Regarding the use of psychopharmaceutical drugs, 12.3% of the inhabitants of Flanders and 10.9% of the inhabitants of Antwerp were prescribed antidepressants, and 3.5% Flemings as compared to 2.9% inhabitants of Antwerp were prescribed antipsychotics in 2019. Finally, 2.6% of Antwerp inhabitants were prescribed stimulants and 0.2% were prescribed drugs against alcohol abuse such as Antabuse. The differences between the districts of the Antwerp province are negligible.

This chapter briefly highlighted some studies and findings on the level of mental health needs and mental health care use in Antwerp and Flanders. In general, it can be concluded that the level of mental health needs in Antwerp is similar to that of Flanders. In what follows, the studies conducted as part of this doctoral thesis are discussed. These studies assess (unmet) mental health needs in Antwerp using qualitative and quantitative methods. Specifically, the next chapter will discuss the qualitative exploration of mental health needs by Antwerp professionals, before moving on to Antwerp survey research in the general population. These studies both took place in two PCZs: Antwerpen-Oost and Baldemore.

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3. Qualitative research: exploring professionals' perspectives

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Background: An unmet mental health need exists when someone has a mental health problem but doesn't receive formal care, or when the care received is insufficient or inadequate. Epidemiological research has identified both structural and attitudinal barriers to care which lead to unmet mental health needs, but reviewed literature has shown gaps in qualitative research on unmet mental health needs. This study aimed to explore unmet mental health needs in the general population from the perspective of professionals working with vulnerable groups.

Methods: Four focus group discussions and two interviews with a total of 34 participants were conducted from October 2019 to January 2020. The participants work in social care, mental health care or primary care in Antwerp, Belgium. A topic guide was used to prompt discussions about which groups have a high level of unmet mental health needs and why. Transcripts were coded using thematic analysis.

Results: Five themes emerged, which are subdivided in subthemes: (1) socio-demographic determinants and disorder characteristics associated with unmet mental health needs; (2) demand-side barriers; (3) supply-side barriers; (4) consequences of unmet mental health needs; and (5) suggested improvements for meeting unmet mental health needs.

Conclusions: Findings of epidemiological research were largely corroborated. Some additional groups with high unmet needs were identified. Professionals argued that they are often confronted with cases which are too complex for regular psychiatric care and highlighted the problem of care avoidance. Important system-level factors include waiting times of subsidized services and cost of non-subsidized services. Feelings of burden and powerlessness are common among professionals who are often confronted with unmet needs. Professionals discussed future directions for an equitable mental health care provision, which should be accessible and targeted at those in the greatest need. Further research is needed to include the patients' perspective of unmet mental health needs.

3.1 Background

Approximately one in four people experiences a mental disorder at some time during one's life (1, 2). However, not everyone who needs mental health care receives it. First, the need for mental health care has to be perceived (3-5). Among those who recognize the need, a considerable amount seeks no professional help, and seeking help doesn't guarantee appropriate care will be received (3-7). The result of this cascade is a considerable care gap and unmet mental health needs (7-13).

The majority of epidemiological studies in the literature investigating unmet needs for mental health care used quantitative survey research. A first approach estimates 'objective' unmet mental health needs and assesses the use of health care among people with a diagnosed mental health condition. For example, the authors of the European Study of Epidemiology of Mental Disorders (ESEMeD) use a low-threshold definition and describe an unmet need as the lack of use of any formal health care among individuals with a diagnosed mental health or substance use disorder which leads to considerable disability (10). Following this definition, approximately 3% of the general population in high income countries have unmet mental health needs (10, 12). However, not all formal care may be sufficient or appropriate. Therefore, other studies have taken 'minimally adequate treatment' criteria into account, and found that more than half of the formal care received cannot be considered at least minimally adequate (14, 15). This suggests that simply considering a need as being met when there has been any contact with formal care leads to an underestimation of the true level of unmet mental health needs.

Another approach is to assess 'subjective' unmet mental health needs by asking subjects whether they 'felt a perceived need for mental health treatment in the past year that was not met'. This definition results in an estimated population level of unmet need of 7% (16). Among those with a diagnosed mental health disorder, most needs are perceived as unmet, and this is especially the case for counseling needs such as psychotherapy (17-19).

Vulnerable groups are generally more likely to underuse or experience access barriers to health care, resulting in high levels of unmet need (20). Groups with a high level of Unmet mental health needs include the young and the elderly, ethnic or cultural minorities, people with poorer health and people with lower income (11, 21-23). Also patients with more complex needs are less likely to receive appropriate care, such as those with a longer disease course, comorbidities and substance abuse (10, 11, 21, 22).

Previous studies identified several barriers that lead to unmet mental health needs. These barriers can be broadly divided into two groups: attitudinal barriers and structural barriers (24). Attitudinal barriers are demand-side barriers operating at the individual, household or community level and influence the demand for care (25, 26). In contrast, structural barriers are supply-side barriers operating at the system-level and are beyond the individuals' control (25, 26). Attitudinal barriers, such as preferring to manage problems on one's own, are mentioned more often as reasons for not seeking professional help than structural barriers (18, 24, 27, 28).

Not perceiving a mental health need is one of the most frequently cited reasons for not seeking professional help (27-30). As can be expected, people with less disabling symptoms are least likely to seek help, but more worrying is that also a considerable amount of people with a severe mental health disorder do not perceive any need for mental health care (27, 28, 30).

The more severe the disorder, the more likely one is to face structural barriers to mental health care (27, 29). Cost of services was the most often cited reason for unmet mental health needs in a recent large-scale study in the United States (11). In addition to increasing service provision, existing services therefore also have to be optimized in terms of access, use, effectiveness and efficiency (10).

Although it is clearly shown that unmet needs for mental health care are widespread, qualitative explorations of unmet need in the general population are sparse. Survey methods may hold the limitation that vulnerable groups, such as minorities or the poor, are hardest to reach for participation (31). Underrepresentation of vulnerable groups could give rise to a biased prevalence of mental health needs and non-valid correlates of other measures (32). Qualitative research with professionals working with vulnerable groups could identify correlates of unmet mental health needs that are overlooked in epidemiological surveys.

This study therefore aims to explore unmet need from the perspectives of primary care, mental health care and social care professionals. Specifically, the study intends to identify which people with mental health problems do not receive appropriate or sufficient mental health care and why. Moreover, a qualitative approach may serve an improved understanding of quantitative findings. Professionals' understanding of unmet mental health needs and associated determinants can ultimately support policy and strategies for optimally targeting those in the greatest need.

3.2 Methods

Exploratory qualitative research was chosen to allow a broad investigation of unmet mental health needs in the province of Antwerp, in the Flemish part of Belgium. Since 2018, new structures called primary care zones (PCZs) were developed, encompassing geographical entities covering approximately 100 000 inhabitants (33). These regions are aimed at strengthening collaboration and coordination between local primary care professionals, organizations and secondary health care. Unmet needs in one urban and one rural PCZ were investigated using focus group discussions (FGDs) from October 2019 to January 2020.

A purposive sample of local primary care, mental health and social care professionals was recruited. Recruitment was done via the coordinators of the PCZs and directly by e-mail by the researchers after an extensive online search. In addition, because no psychiatrist was able to attend the FGDs, psychiatrists were invited for an interview. Two heterogeneous FGDs took place in each PCZ. Two semi-structured interviews took place with psychiatrists working in the urban PCZ, as there was no available psychiatrist in the rural PCZ. After the four FGDs and two interviews with a total of 34 participants, no new information emerged, and the researchers concluded saturation was reached.

The FGDs were conducted by two researchers (ER and KVdB) with a background in psychology. A semi-structured topic guide was used and consisted of simple, open questions prompting discussion about the following topics: groups with high unmet need (e.g., Which people are hardest to reach?), reasons for unmet need (e.g., Which barriers lead to unmet needs?), the quality and quantity of local care provision (e.g., Are there enough services in this area? How is the collaboration in this area?) and future directions (e.g., What should be done to meet those unmet needs?). FGDs lasted between 90 and 120 minutes each. Similar questions were asked in the interviews, which both took 60 minutes and were conducted by ER. All participants gave written informed consent and were offered a transfer of €50 afterwards.

All contacts were audio recorded and fully transcribed. All transcripts were thematically analyzed using NVivo. Transcripts were first fully inductively coded, i.e., without a pre-set codebook. Related codes were merged into categories. Subsequently, categories were grouped into meaningful themes. A deductive approach was used in this step, as some themes are partly based on the literature about different types of barriers in mental health care.

The credibility of the initial set of themes and subthemes was explored through discussion amongst the researchers and member-checking. Participants received a short report and were given the opportunity to (dis)agree and to share additional thoughts and remarks. Five participants responded to the invitation to reflect on the initial theme set, of whom two agreed without remarks, and three gave some additional recommendations. This led to some small changes in the final theme set. The quotes in this paper were translated by ER. The study was approved by the medical ethics committee of Antwerp University Hospital (EC UZA 19/33/380).

3.3 Results

3.3.1 Participants

A total of 34 participants took part in the study, with a mean age of 43.5 years ($SD = 11.1$) and a mean of 14.0 years ($SD = 8.1$) of experience. Three categories of professionals participated: primary care workers (e.g. GP, home health nurse...), mental health workers (e.g., psychotherapist, psychiatrist...) and social workers (e.g., children and youth services, community services...). Sample characteristics are displayed in Table 3.

Table 3. Demographic characteristics of participants in the focus groups and interviews.

	Urban			Rural		Total
	FGD1	FGD2	Interviews	FGD3	FGD4	
Setting						
Primary care	1	1	0	1	4	7
Mental health	4	0	2	1	1	8
Social work	4	7	0	3	5	19
Characteristics						
Age (mean)	47.0	42.9	32.0	47.2	41.4	43.5
Female/Male	7/2	7/1	1/1	5/0	9/1	29/5
Total	9	8	2	5	10	34

3.3.2 Findings

Five themes were identified: (1) socio-demographic determinants and disorder characteristics associated with unmet mental health needs; (2) demand-side barriers associated with unmet mental health needs; (3) supply-side barriers associated with unmet mental health needs; (4) consequences of unmet mental health needs; and (5) suggested improvements for meeting unmet mental health needs.

3.3.2.1 Theme 1: Socio-demographic determinants and disorder characteristics associated with unmet mental health needs

Unmet mental health needs were considered overrepresented in some groups, due to several socio-demographic and disorder-related characteristics. A first major risk factor professionals mentioned was **poverty**. Non-reimbursed psychotherapy is expensive, while waiting times in reimbursed services are long. Professionals state that poverty hinders help-seeking because mental health needs are subordinate to basic needs such as housing and food. Difficulties were mentioned in distinguishing mental health needs from rather social needs, and the two are often intertwined.

“I don’t think it’s about certain groups, but more... across all groups, when there is not enough financial capacity. I don’t think there is more necessity for this or that problem. Once people lack financial resources, it transcends all groups.” (psychotherapist, FGD1)

Second, people with an **ethnic minority background** were seen as a hard-to-reach group for mental health care. Cultural differences in taboo and stigma and a lack of trust in professional care were identified as barriers for help-seeking in some minorities. People with a non-western background often present with indistinct somatic complaints actually underlying mental distress. Also language plays a major role. Several professionals expressed difficulties working with interpreters, and not speaking one of the national languages is often an exclusion criterion in mental health care. Finally, professionals voiced concerns about severe trauma amongst the increasing number of refugees.

“What we see in general practice is that people present with physical complaints that last very long because they have underlying psychological issues about which they cannot talk because of cultural differences, but also because no space is given to discuss those things, partly also because of language problems.” (GP, FGD1)

As regards disorder characteristics, professionals mentioned that the needs of psychiatric patients with **complex care needs** are often insufficiently met. Patients with comorbid mental or substance use disorders, or in whom a severe mental disorder is accompanied by problems in multiple life domains, were found difficult to get into treatment. They often do not fit the right criteria, and some tend to be excluded due to externalizing behavior. There is also a subgroup with complex needs who were pejoratively called ‘revolving door patients’ because they are often re-admitted to psychiatric wards or crisis units.

"We are often stuck with, uhm, revolving door patients as they say. Been admitted to all psychiatric institutions, not welcome anywhere anymore, drug problems on top. That is a particularly large group we can't get away with." (center for general wellbeing, FGD1)

Also **long-term care needs** are often unmet, professionals argued. Some patients suffering from severe chronic mental disorders requiring long-term or even lifelong care. Such care needs are currently often unmet due to capacity problems. Patient flow ceases due to limited outflow, causing saturated long-term care services. It was mentioned that long-term care can be low-intensive in stabilized conditions, as long as there is at least some follow-up of how a patient is living one's life.

"Trajectories that we start up today are not finished within two or three years, which also creates a waiting list. Because there are a lot of people with a need for long-term care. Sometimes it's just expressing one's feelings like 'today didn't went well'." (long-term care team, FGD3)

Finally, professionals mentioned unmet mental health needs are high in both young and old age. Waiting times in mental health care are a major problem in **children and youth** care. Generational problems are common, such that worrisome parenting situations lead to behavioral and emotional disorders in children. As regards youth, professionals noticed a gap in transition age. Protection of minors abruptly stops at the age of 18 and many vulnerable young people struggle with finding their place in society. Professionals in both PCZs mentioned the phenomenon of young 'couch surfers' living in hidden homelessness by continuously sleeping at other people's houses.

"In particular those young people, those 18-to-25-year old's who are left out everywhere and who actually need more care. They are excluded everywhere. They remain in special youth care or in foster care or disability care, then they turn 18 and everything stops and there they are." (children and youth services, FGD2)

As regards the **elderly**, professionals argued that it is mainly a demand-side problem, as the oldest generation is less familiar with mental health care. Moreover, vulnerable elderly in nursing homes often lack appropriate mental health care. For example, one participant worked in a nursing home as a moral counsellor but actually dealt with complex psychiatric needs requiring specialized staff.

"I can't refer my people, to no one. My day is filled with conversations with people who are almost all tired of life. I've got people with Korsakov, with psychoses, everything you can imagine. And I am actually the help, and that's where it stops. [...] So the philosopher is the one who has to have a little chat with them to fix it." (moral counsellor, FGD2)

3.3.2.2 Theme 2: Demand-side barriers associated with unmet mental health needs

Receiving mental health care is often a matter of seeking care, but many people do not actively seek help or prefer to deal with problems on their own. First, professionals argued that many people with mental health issues do not **perceive a need for mental health care**. Insight into one's needs is often a prerequisite for mental health care, especially for psychotherapy. Insight is in particular lacking in vulnerable groups with low mental health literacy. People often feel something is wrong but experience difficulties putting their concerns into words, or formulating an explicit request for help.

"And problem is also for those socially vulnerable: a screening is done or an intake, but those people should have a request for help, they have to be able to formulate it, where they are willing to work on, and that is so difficult for them." (psychotherapist, FGD4)

Some people with a mental disorder avoid or refuse any kind of professional help and are non-compliant with therapies offered. For these **care avoiders**, the situation may be so worrisome and urgent that assertive care is recommended, i.e., outreaching care aimed at protecting them.

"There is a long waiting list for the people who want to be helped, and there's an even longer waiting list for people who do not want to. And the people who don't want it, that's often the people where it's more urgent, where the problems are a lot more complex, where the most assertive care is needed because regular care won't work." (subsidized housing assistance, FGD2)

Finally, **taboo and stigma** hinder people from disclosing mental health problems and seeking help. Although a positive evolution took place in recent years according to professionals, taboo remains a major barrier in some groups, such as people from non-western cultures and the elderly.

“For us Belgians it’s still taboo, but in other countries it’s often even a much bigger taboo. You’re crazy, some people don’t want to talk with you anymore when you’re crazy, so then you actually can’t share it.”
(family center, FGD2)

3.3.2.3 Theme 3: Supply-side barriers associated with unmet mental health needs

Another theme emphasizes supply-side barriers in the health system that hinder access to adequate mental health care. First, **underfinancing of mental health care** resulting in the lack of structural resources was regularly mentioned as an important underlying factor for unmet needs. Yet, due to the creativity of health care providers, interesting local initiatives were installed, often financed by local organizations and authorities. This was particularly the case in the rural zone.

“The offer of TEJO [free therapy for youngsters], that’s fantastic. It works well and it reaches an enormous amount of young people, but at the same time it’s something to be ashamed of as a society that it has to run on volunteers.” (children and youth services, FGD4)

In addition to a lack of resources, professionals mentioned a **lack of time**. This is partly due to staff shortage and bureaucratic overload such as administrative burden, sharp targets, the overload of rules and complex procedures. The situation resulted in high work pressure, overtime, and reduced quality of care.

“So, we have to count like that: they have 36 hours of help on a yearly basis but making a report also counts, so that means about 3 hours per month. And this is how we, unfortunately, have to deal with it. And then I think, tailored care? There’s just no way to do it.” (children and youth services, FGD4)

Moreover, professionals argued that a **fragmentated and suboptimally distributed mental health sector** contributes to the level of unmet need in society. There are a variety of support initiatives, both in the public and private sector, but a comprehensive overview and coherence between the services are lacking. Ambiguity about the organizations' responsibilities and offer adds to discontinuity of care, inappropriate referrals and false expectations. Moreover, the concentration of services differs between regions. Mobility impedes access to mental health care in rural areas as it is mainly concentrated in the inner cities. Some organizations limit their services to inhabitants of a certain region.

“You get the runaround, in this region there are no specialized centers except for some ambulatory care [...]. You have to go outside the region, and what do those regions tell us, and that makes some sense as well: ‘we first look within our own region to be able to follow up the aftercare better.’” (center for general wellbeing, FGD3)

Also the **cost and limited reimbursement of primary mental health care** is an important factor according to professionals. In Belgium, primary mental health care is reimbursed for a maximum of eight sessions for mild to moderate psychological problems². Many people, and in particular those in the highest need, are excluded in the system. On the other hand, the cost is less of a barrier for psychiatric medication or for hospitalizations, because these services are reimbursed.

“The first thing that is cut is actually the paid psychological care, and then you notice very strongly in our trajectories that due to the fact that you can’t apply third party payment, that that’s simply the first criterium to cut something out.” (community work, FGD1)

Subsidized services provide affordable mental health care but **waiting times are long**, ranging from months to even several years. Not providing care at the right time was seen as an important factor adding to unmet mental health needs. Professionals argued that waiting lists are caused by insufficient capacity, but also result from suboptimal patient flows, including outflow problems.

“Then they’re on the waiting list of the center of mental health care, which is currently two years around here, so that’s actually not a solution. Those people, when they are called, can’t even remember why. [...] The problem has further developed in the meantime or has landed somewhere else.” (regional coordination, FGD4)

Another barrier is the use of **strict inclusion and exclusion criteria** in mental health care services. Facilities often have programs or wards focusing on delineated problems. This may however hinder access for people whose label is unclear or who do not fit into the

² Note that data-collection took place in 2019 and 2020. The reimbursement of psychological care has been extended since.

right criteria. Professionals referred to a limited number of treatment places for people with dual diagnoses.

“What I often notice in our target group is that we work a lot with people who fall somewhere in between. Those are very complex problems and a little bit of this and a little bit of that. In the hospitals, the crisis is often too heavy or not heavy enough, sometimes it’s too chronic or not chronic enough.” (children and youth services, FGD4)

3.3.2.4 Theme 4: Consequences of unmet mental health needs

Unmet mental health needs lead to negative emotions in both patients and care providers, what can eventually make the situation even worse. **Crises** are often the result of an escalation of unmet need. Professionals talked about ‘downward spirals’ caused by lack of care. Two extreme expressions of crises which were mentioned are involuntary commitments and suicides.

“When involuntary commitments are used for which they were intended, then it’s a good system. But if there’s so much need and so much crisis that an involuntary commitment has to be used, then you will always be too late to prevent the damage being done.” (center for general wellbeing, FGD3)

Participants often expressed **feelings of frustration and powerlessness** because of the high level of unmet needs in society which they sometimes can do little about. They felt as if they have no impact on the length of waiting times, the access to mental health care for vulnerable groups and so on.

“It’s also the powerlessness we feel as care providers. I think GP’s frustrations are often about this, also my frustrations or anyone working with those difficult cases who can’t get in anywhere because of waiting lists, but also because they burned many bridges and caused trouble and that other care providers tell them: ‘No, he can no longer come to us’.” (psychiatrist in center for mental health care, interview)

Finally, all **involved services become overburdened**. Because of an excess demand of mental health care and limited access to specialized services, people with complex mental health needs often linger in primary care and social services. This is in particular a problem

when the front-line is overloaded with people who fall through the gaps of the mental health care system but who actually need more than generalist care. Primary care services then become not only the first, but also the last resort.

“There is a full waiting list, we are backed into a corner. And this way it’s having the conversations yourself, keeping contact, ... But you know you’re not the right person at the right place, and I also lack knowledge. But not doing anything is no option at all. That’s very difficult, because our team suffers a lot from it.” (public social welfare center, FGD3)

3.3.2.5 Theme 5: Suggested improvements for meeting unmet mental health needs

Several improvements were suggested for optimal and more equitable mental health care. Some professionals argued that a redistribution of resources is needed in the Belgian mental health care sector. To begin with, a **redistribution between regions** should increase service provision in disadvantaged rural areas.

“I notice that there are money flows to primary and secondary care and that there are nice initiatives, but that doesn’t count for all regions, and not for all target groups.” (psychotherapist, FGD1)

Secondly, increasing resources for **low-threshold and outpatient mental health services** is needed to overcome the gap in accessible care. Mental health care was considered accessible when it’s affordable, when waiting time is limited and when referral is no prerequisite. As regards affordability, extension of the reimbursement of psychotherapy was considered an important step.

“I think that there is a large gap for that group of people who need an accessible place to just talk, which first was the intention of the community mental health centers, to be the house in the street in which you can always walk in to talk.” (psychiatrist in center for mental health care, interview)

Professionals and patients also need a **comprehensive overview** of the available services, their target groups and organization type. Professionals suggested that a central referring instance could help, which is in contact with all regional services and has knowledge of criteria, procedures, etc.

“What I think would be helpful is that we don’t have to call around to know where a patient can go, or who has an available bed, or ‘this is a difficult case and I don’t really know what to do with him’. [...] Someone who can guide us, because I lose a lot of time with it.” (GP, FGD1)

Professionals argued that more **outreaching care** is needed. Outreach in mental health care means that the care provider takes the initiative and reaches out to the vulnerable person instead of the other way around. Professionals mentioned a high need for outreach in worrisome care avoiders and ethnic minorities.

“Street psychiatrists. People are referred from various organizations, public social welfare or subsidized housing services report it and then the psychiatric sector will visit those people without them having a care request themselves.” (psychiatrist in hospital, interview)

Investments should be made in **multidisciplinary and intersectoral collaborations and coordination**. People with severe mental disorders often need support in multiple life domains, but it became clear that collaboration is currently not optimal. Professionals mentioned a need for case management, in particular for complex cases or people with a social vulnerability.

“That’s why I think multidisciplinary teams are so important. You can make sure his psychotic complaints are under control with pills, but you have not treated someone that way, I think. You have to socially support him, that he has a network, hopefully a job but otherwise daily activities, that his house stays in order a bit and the bills paid and so on.” (psychiatrist in hospital, interview)

Related to multidisciplinary is the importance of **continuity of care**, which refers to how care is connected over time and services. Follow-up care should be optimized, especially after a hospital stay. It was argued that it benefits the patient if one can rely on the same services and care providers over time.

“I think a great need is continuity of care. [...] Everyone tries short-term, to finish as quick as possible, but often little continuity of care. [...]. People feel safer if there’s still a door ajar somewhere.” (psychotherapist, FGD4)

A need for **tailored care** was mentioned as well, providing adequate care at the right time in the right context, thereby following stepped care principles. It was mentioned that currently some procedures or rules hinder quick and flexible care, such as a fixed number of sessions per client.

“Intensive when it’s not going well, and when people say they feel secure about themselves again, okay, the frequency simply goes down again, and we’ll see what’s needed. And then you also empower people.” (children and youth care, FGD4)

Increased attention is needed for **cultural-sensitive care**, for example during professional’s education. Moreover, the use of interpreters in mental health care should be better supported.

“You have to know what a djinn is. It’s about, how can you connect with people in your neighborhood, with the audience you work with? I guarantee, when I would do quality research [about cultural sensitivity], that we would be appalled.” (center for general wellbeing, FGD1)

Professionals argue that a **stronger focus on prevention** will benefit the mental health of the population in the long run. Today, the emphasis is on curative care. It was argued that preventive actions are a hard sell because their impact is less visible and measurable.

“I think a lot is still possible in terms of prevention. Often when something happens you immediately have a crisis or situations that are suddenly very urgent. We notice that by making it possible to talk about psychological complaints in the form of recognizable symptoms, that it also lowers the barrier to seek help.” (Agency for Integration and Civic Integration, FGD4)

Finally, the importance of **recovery-oriented care and informal supportive networks** for people with mental health problems was stressed. Good practices such as buddy systems, support groups and investing in neighborhood cohesion were mentioned.

“I am thinking of working more with people’s network and people’s own strength. [...] Because assistance is not forever, right. When people have significant others, professional or not professional, you notice they are also helped in the long term.” (subsidized housing assistance, FGD2)

3.4 Discussion

In this study, Belgian professionals with a background in social work, mental health and primary care discussed unmet mental health needs in the general population through four FGDs and two interviews. The findings should be interpreted in the context of the following limitations. First, the participants were predominantly female, and it's unclear whether and how this influenced the findings. Second, the sample did only include care providers and the findings are therefore not confirmed from a care perceiver perspective. We believe professionals have a good idea of the unmet needs and barriers in their PCZ, but their perspectives still contain assumptions about their patients' and clients' motives. This is especially true for attitudinal barriers people with mental health problems are confronted with, as these barriers are less visible to professionals. Future research will examine whether patients' perspectives correspond to those of professionals.

At the same time, the variety of professional backgrounds and settings of the professionals is a strength of the study. The inclusion of non-mental health professionals stems from the idea that many vulnerable people with mental health problems don't reach mental health care services but remain in social and primary care services.

It is important to take the rather complex Belgian context into account. The governance of mental health is fragmented over federal and regional authorities. Health care is generally financially accessible as health insurance is compulsory, but large out-of-pocket payment and limited coverage of certain ambulatory mental health care services remain a concern in Belgium. The findings should therefore not be generalized to other countries. Finally, analyses were performed by two psychologists (ER and KVdB). However, member checking and discussion of the themes with a psychiatrist (GD), a sociologist (JM), and a general practitioner (RR) add to the study's credibility.

Despite these limitations and contextual remarks, we can conclude that our findings are in line with those of epidemiological studies. Unmet needs are most prevalent in vulnerable groups such as people living in poverty, ethnic minorities, and in the young and old age groups (11, 21, 22). These are groups for which multiple barriers are often present, both on the supply- and demand-sides. For example, professionals argued ethnic minorities are often hindered by attitudinal factors such as taboo and stigma, but system-level barriers such as language also hinder access. A specific group with high unmet need which was mentioned in both PCZs, but which is not mentioned in the literature, is the group of young sofa surfers. Interestingly, a recent study in Flanders confirms that homelessness is often hidden, especially in rural areas and among young people (34).

Regarding disorder characteristics, those with more complex or chronic psychiatric needs were mentioned as groups with insufficiently met needs, and this was mainly attributed to structural factors such as strict criteria and capacity of long-term care facilities. This is in line with previous findings reporting that structural barriers dominated for severe cases, but not for mild or moderate cases (27). Professionals working with people with co-occurring substance abuse disorders indicated that it's difficult to find appropriate care for this group, especially as mental health treatment is often refused when substance abuse is present. This access barrier may partly explain why approximately half of the people with a co-occurring mental health and substance use disorder receive neither mental health care nor substance abuse treatment (13).

This study confirms that attitudinal barriers and not recognizing a need for care play a major role in the development of unmet mental health needs. Interventions focusing on mental health literacy and de-stigmatization of mental health problems may help to recognize needs and to overcome attitudinal barriers (6, 11, 35). 'Worrisome care avoiders' were particularly mentioned in this context as a group with high unmet needs for which specialized outreach interventions are needed. Related to this finding, a review of 'difficult patients' in mental health care identified 'unwilling care avoiders' as one of the three difficult groups and suggests psychotic disorders are common among this group (36).

Several types of structural barriers were identified, both on a higher health system level (e.g., distribution of services) and on a lower organizational level (e.g., strict criteria). Cost of non-subsidized services and waiting times of subsidized services were mentioned as two important factors impeding access to care. It was argued that vulnerable groups are disproportionately affected by structural barriers and that this introduces inequities in mental health care. For example, people with insufficient financial resources are unable to bridge long waiting lists by consulting non-reimbursed psychologists.

An important finding is that feelings of frustration and powerlessness are common among professionals. The workload is high in all settings involved, and an increasing demand for efficiency within organizations means that professionals sometimes have to make decisions that go against their ideals. This relates to the phenomenon of 'moral distress', which occurs when health providers cannot carry out what they believe to be the right thing to do (37). Moreover, some vulnerable people with complex mental health needs circulate in the social work or primary care circuit without being able to access specialized mental health care. As a result, non-mental health professionals felt as if they had to go beyond their core responsibilities to meet their client's mental health needs. This phenomenon of 'last-line care' for the most vulnerable needs further investigation.

Professionals were asked what should be changed in order to meet the needs that are currently unmet. Professionals made several recommendations for the broader mental health system. Most of the responsibility is borne by the top of the hierarchy, such as governmental decisions on the reimbursement of psychotherapy and the allocation of resources among regions and sectors.

Services were considered accessible by professionals when the cost is low, no referral is needed and when one can be helped quickly. However, access can also be interpreted more broadly, with the inclusion of demand-side factors. For example, Levesque et al. (2013) define access from a multi-level perspective as “the opportunity to identify health care needs, to seek health care services, to reach, to obtain or use health care services and to actually have the need for services fulfilled” (38). Little is known about interactions between barriers, but there is a possibility that changes in supply-side barriers are able to modify demand-side barriers. This idea requires further research.

Furthermore, professionals stressed the need for multidisciplinary teams and intersectoral collaboration. Some patients receive care from multiple sources that are often not coordinated, which can be confusing for both the patient and the care providers. Mental health care should also be tailored to a patient's needs, but professionals admitted that in practice they are too often bound by non-flexible procedures and trajectories. Professionals believe that currently far too little is done about prevention, partly because the need for curative care is high and budgets and time are limited. Also needs for continuity of care, cultural sensitivity of care and recovery-oriented care were stressed. For those who are hardest to reach or avoid mental health care, professionals believe more outreaching and in some cases assertive care is needed.

Perspectives of professionals are similar in the rural and urban PCZ, although there is a greater focus on the regional distribution of services and a lack of resources in the rural zone. Professionals in the rural PCZ argue that the area is historically disadvantaged compared to others. Creative collaborations were created to meet this shortage.

As part of the Belgian mental health reform, several of the recommendations have already been put to practice in the form of ‘mobile teams’. Mobile teams or community treatment teams are based on the Assertive Community Treatment (ACT) model and are multidisciplinary teams that either provide outreaching recovery-oriented care in the community or home environment for people with long-term severe mental health conditions, or short-term crisis care for people with acute psychiatric problems (39, 40). It was cited as a good practice which needs further capacity expansion.

Overall, the findings add to a better understanding of the prevalence and determinants unmet needs for mental health care in Belgium from the perspectives of professionals. Insight into unmet mental health needs in the general population is highly relevant for realizing an equitable access to mental health care, in which all mental health needs are timely recognized and cared for. Future qualitative studies should include people with mental health problems, and especially those who have difficulty accessing mental health care services. Triangulation of the care provider perspective with the care receiver perspective will add to credibility and give a more balanced picture of the situation.

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4. Survey research: mental health needs assessment in Antwerp

Following the qualitative exploration of unmet mental health needs in Antwerp described in the previous chapter, a population study was conducted using a questionnaire that was targeted at a representative sample of residents of the PCZs Antwerpen-Oost and Baldemore. This chapter describes the main results.

First, a peer-reviewed and published research paper is featured. This paper describes the (unmet) clinical and perceived needs, with a focus on ‘common mental health needs’: depression, anxiety and alcohol disorders. However, the full scope of findings could not be included in the research paper. Therefore, an additional section was added with unpublished analyses, providing an even more detailed picture of the mental health needs and associated care use in Antwerp.

4.1 Research Paper: Assessed and perceived unmet mental health needs, health care use and barriers to care for mental health

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Abstract:

Background: Mental health problems often remain undetected and untreated. The aim of this study is to examine unmet mental health needs using both a clinically assessed and a self-perceived approach in the province of Antwerp.

Methods: A cross-sectional survey study with a weighted representative sample of 1208 individuals aged 15 – 80 years old was carried out in 2021. Mental health needs were defined as a positive symptom screening for depression (PHQ-9), anxiety (GAD-7) or alcohol abuse (AUDIT-C and CAGE), combined with significant dysfunction. Also 12-month health care use for mental health problems, perceived unmet mental health needs and reasons for not seeking (extra) help were assessed. Logistic regression analyses explored the predictors of mental health problems, service use, and unmet mental health needs.

Results: One in five participants had a positive screening on one of the scales, of whom half experienced dysfunction, leading to a prevalence of 10.4% clinical mental health needs. Among those, only half used health care for their mental health, resulting in a population prevalence of 5.5% clinically assessed unmet mental health needs. Fourteen percent of the total sample perceived an unmet mental health need. More women and younger people perceived unmet needs, while clinically assessed unmet needs were higher among men and older people. One in six of the total sample used health care for their mental health, most of whom did not have a clinically assessed mental health need. Motivational reasons were most often endorsed for not seeking any help, while a financial barrier was the most important reason for not seeking extra help.

Conclusions: The prevalence of unmet mental health needs is high. Assessed and perceived (unmet) mental health needs are both relevant and complementary but are predicted by different factors. More research is needed on this discrepancy.

4.1.1 Background

Public mental health looks into mental health problems at the population level. Besides mental health promotion and prevention of mental disorders, one of the main aims of public mental health policies is to reduce mental health inequalities (1). Mental health inequalities in the population are often described in terms of unmet mental health needs. An unmet mental health need is present when someone has a mental health problem but does not seek or receive mental health care (2-5). Classically, this is operationalized as having a mental disorder, as assessed with validated instruments or a diagnostic assessment, in combination with the absence of any formal health care use for mental health related reasons (2). For example, in the European Study of the Epidemiology of Mental Disorders (ESEMeD) in the early 2000s, it was found that about half (48%) of those with a disabling 12-month mental disorder reported not using any type of formal health care and only one in four (25%) reported seeing a mental health specialist in the 12 months prior to the interview (2). At population level, 3% of adults in Europe have an unmet mental health need. Moreover, Demyttenaere et al. (2004) estimated that at least half of serious cases receive no treatment while the majority of people in treatment are subthreshold cases (5).

A shortcoming of clinically assessed approaches (i.e., approaches using validated instruments with population norm scores to distinguish cases from non-cases) is that they do not take the subjective perception of the individual into account, while perceiving a need for mental health care is a major explanatory factor of help seeking (6-8). Olsson et al. (2020) have therefore proposed an extended definition of unmet mental health needs, in which unmet needs can occur at three stages of the pathway to adequate care: 1) not perceiving a need for care, 2) not seeking care, and 3) not receiving (sufficient or adequate) care (9). Applying this definition in a Swedish population sample, they found that more than one in three (36%) had perceived a need for mental health care at any time in life (9). Among these 'need-perceivers', 71% sought care, and one in four care-seekers did not experience the care as sufficient (9).

In Europe, 9% percent of the general population and 33% of those with a mental disorder perceived some need for mental health care (10). Among those with a disabling 12-month mental disorder, 82% of those with a perceived need as compared to 11% of those without a perceived need used some kind of professional help, highlighting the relevance of need perception as a major predictor of help-seeking behavior (10). In the US, a total of 6% adults reported they felt a 'perceived need for mental health care in the past year (2018) that was not received' (11).

Some studies have used the more extensive Perceived Need for Care Questionnaire (PNCQ) which assesses whether mental health needs are fully met, partially met or unmet for specific health care services (12). Using the PNCQ, it was found that only a minority of all mental health needs of Dutch and Australian people with a mental disorder are fully met (13). In a Canadian general population sample, it was found that 18% reported that all their care needs were unmet, and this was especially the case for counselling needs (14).

Besides not perceiving a need for care, several other barriers to mental health care exist. Previous research has shown that attitudinal and motivational barriers, such as preferring to manage problem on one's own, are more often reported than structural barriers such as the availability of services (4, 7, 15). The cost of services is a particularly important barrier in the US, as compared to European countries with universal health coverage (15).

In the present cross-sectional study, the prevalence and predictors of mental health problems, assessed and self-perceived needs for mental health care as well as health care use for mental health problems and barriers to care are investigated in the province of Antwerp, Belgium. Prior explorative qualitative research in the region suggested that unmet mental health needs are high, especially among people living in poverty, ethnic

minorities, and in the young and oldest age groups (16). We use the terms clinical or assessed needs when (unmet) mental health needs are assessed using scales and clinically relevant criteria. The term subjective or perceived (unmet) needs is used for self-perceived mental health needs as reported by the individual.

4.1.2 Methods

4.1.2.1 *Design and survey sample*

The study is part of a research project which aims to assess the (unmet) mental health needs of the Antwerp Province in Flanders, Belgium. The study was carried out in one rural and one urban primary care zone (PCZ). PCZs are regional structures consisting of approximately 100 000 inhabitants and designed to improve the collaboration between local authorities and care providers. The rural PCZ (the region of Mol) provides a less extensive range of mental health care in the area, while the urban PCZ (the east region of Antwerp city) is highly multicultural and has a more extensive range of mental health care.

A sample of 5000 inhabitants aged 15 to 80 years was invited to participate in a mental health survey. The sample was randomly drawn from the national register and was stratified by gender, municipality, age and nationality (Belgian versus non-Belgian). Non-Belgians were oversampled as a lower response rate was expected in this group, based on previous research. Invited individuals received two postal invitations between May and July 2021. The first letter included a link and QR-code to the online questionnaire, and the second invitation also included a Dutch paper questionnaire that could be returned free of charge. The online questionnaire was available in six languages: Dutch, French, English, German, Polish and Arabic. The questionnaire consisted of 94 questions in total, but the vast majority of participants did not have to answer all questions due to skip logic. Forced response was implemented in the online questionnaire to avoid missing data, but participants could still indicate 'I don't know' or 'not applicable' on most questions. The completion time was estimated at ten minutes. Informed consent was obtained from all subjects and/or their legal guardian. All methods were carried out in accordance with relevant guidelines and regulations.

4.1.2.2 *Variables and instruments*

The questionnaire was fully self-report and consisted of socio-demographic questions, screening scales for common mental health problems, and questions about perceived unmet mental health needs. Depending on the answers given, additional questions about the number and type of professional health care providers which were consulted for mental health problems or the barriers to care were presented.

The following socio-demographic information was included in the current study: age category (15 – 25y old, 26 – 39y old, 40 – 64y old, 65 – 80y old), gender (M, F), origin (geographic region of Europe, non-Europe), educational attainment (primary education, secondary education, higher education i.e. college or university), financial distress (self-reported financial difficulties or not) and urbanicity of the residence (urban, rural).

4.1.2.2.1 Mental health problems

Short screening questionnaires were used for depression, anxiety disorder and alcohol disorder. The presence of depression was assessed using the Patient Health Questionnaire-9 (PHQ-9 (17, 18)) and the diagnostic DSM-IV algorithm was used to distinguish people with and without any type of probable depressive disorder (both major depressive and other depressive syndrome). This scoring method was chosen as it yields a higher specificity, but the 'other depressive syndrome' scoring (positive screening when at least two symptoms are indicated at least at more than half the days and one of the symptoms is depressed mood or anhedonia) was included as well to compensate for lower sensitivity (19).

The presence of clinical anxiety was assessed using the Generalized Anxiety Disorder-7 (GAD-7 (20)), which has good validity and reliability for screening in the general population (21). A score of 10 or higher meets the criteria of a generalized anxiety disorder.

Two short questionnaires were used to assess alcohol abuse. The AUDIT-C assesses frequencies and quantities of alcohol consumption, and a cut-off point of ≥ 5 for men and ≥ 4 for women was used (22). The four CAGE questions examined alcoholism and a score of ≥ 2 was used as a cut-off point (23). The presence of an alcohol disorder was defined as a positive screening on both the AUDIT-C and the CAGE.

Next, dysfunction in daily life due to psychological problems was examined using a short version of the Sheehan disability scale (24). All respondents indicated the extent to which their social and leisure life, work or study, and family life were affected by psychological problems on a scale from zero to ten. A score of at least six on one of the scales reflects moderate dysfunction and was considered a significant level of dysfunction.

A 'clinical' mental health problem is then defined as the presence of at least one positive screening on one of the mental health scales in combination with the presence of significant dysfunction.

4.1.2.2.2 Health care use for mental health problems

All participants answering 'yes' on the question "In the past 12 months, have you been in contact with a professional care provider (e.g., GP, psychologist...) because of psychological problems, your emotions, or alcohol or drug use?" were asked to specify whether they had contact with a GP, a psychologist or psychotherapist, a psychiatrist, and whether they were prescribed medication for mental health problems.

4.1.2.2.3 Clinically assessed unmet mental health needs

A clinically assessed unmet mental health need is defined as the presence of any clinical mental health need together with the absence of health care use for mental health problems in the past 12 months. No distinction was made between the type of care provider or the number of contacts.

4.1.2.2.4 Perceived unmet mental health needs and barriers

Participants without any twelve-month professional contact for mental health problems were asked "During the past 12 months, have you thought you might need help for psychological problems, your emotional problems, or alcohol or drug use?". Those replying 'yes', are considered those with 'perceived fully unmet needs', and those replying 'no' as those with 'no perceived need'. On the other hand, participants reporting health care use for mental health problems in the past twelve months were asked whether they thought the received care was sufficient. Respondents replying with 'yes', are considered as those with 'met needs', whereas those replying with 'no' are considered as those with 'perceived partially unmet needs'.

All subjects who responded that they thought they might have needed help but did not seek it, or that they did not receive sufficient help, were asked to endorse all the reasons that were applicable from a list of nine reasons. This list was self-constructed and based on common barriers reported in other studies (6, 7).

4.1.2.3 Statistical analyses

The individual observations were weighed using inverse probability weighting to correct for differences in response rate between age categories, gender and nationality. Missing data were very low (< 1% for every variable) because of the forced response implementation in the online questionnaire, and therefore it was decided to use available case analysis. Participants who returned the paper questionnaire and had a high level of missing data or missing demographic information were excluded from the analysis (n = 14). All analyses were conducted in IBM SPSS Statistics version 28.

Descriptive characteristics of the sample and the prevalence of mental health needs, health care use for mental health problems, perceived and assessed unmet mental health needs, and barriers to care are reported using weighted percentages. Logistic regression analyses were carried out to assess the likelihood of having a mental health problem, using health services for mental health problems, having an assessed unmet mental health need, and having a perceived unmet mental health need. The logistic regression models of the presence of a mental health problem, health care use and perceived unmet needs consider the full sample, while the logistic regression modelling assessed unmet needs considers only those with any mental health problem. All multivariable models include all sociodemographic factors. The multivariable models of health care use and perceived unmet needs also include the presence of any assessed mental health need.

Unadjusted odds ratios (UOR) and adjusted odds ratios (AOR) are reported with their 95% confidence intervals (CI). P-values of the comparisons to the reference and the overall significance of the factor in the multivariable model are indicated by asterisks. Interactions were not included. A significance level of $p < .05$ was established for all analyses.

4.1.3 Results

4.1.3.1 Participants

A total of 1208 people (24.2% response rate) fully participated, most of them (79.2%) online. The vast majority (93.5%) completed the questionnaire in Dutch, 3.2% in English, 1.4% in French, 1.3% in Arabic and 0.5% in Polish. Non-response was higher among men, younger people and people with a birthplace outside Europe.

In the weighted sample, 49.8% were women. The mean age was 45.5 years old ($SD = 17.8$), with 16.5% people aged 25 or younger, 32.4% aged between 26 and 44 years old, 33.7% aged between 45 and 64 years old and 17.3% aged 65 or older. One in nine (11.1%) participants was born outside of Europe, and 55.6% lived in an urban region. As regards education, 13.9% did not have a secondary education degree and 41.1% had a higher education degree. A total of 17.5% reported financial distress in the past twelve months.

4.1.3.2 Prevalence and predictors of mental health problems

Approximately one in five (21.5%) had a positive screening on one or more of the mental health scales: 10.2% had a possible depressive disorder, 10.0% a possible anxiety disorder, and 8.8% a possible alcohol disorder. A total of 20.3% of the sample experienced significant dysfunction in daily life due to psychological problems, but this does not completely overlap with the group of people with a mental health need as assessed by the screening questionnaires. Approximately half (49.6%) of those with a positive screening experienced dysfunction in daily life due to their mental health, as opposed to 12.4% of those without a positive screening. A clinical mental health problem (i.e., the presence of both a positive screening and dysfunction) is present in 10.4% of the sample.

Logistic regression analysis was used to assess the likelihood of having a clinical mental health problem (Table 4). There was no significant gender effect. Age was a significant predictor of the presence of a mental health need. Specifically, compared to people aged 25 or less, mental health problems were less common among people between the ages of 45 and 64 (OR = .37, 95% CI = .21 - .66) and people aged 65 or older (OR = .17, 95% CI = .07 - .40). Compared to people with a primary education degree, the likelihood of having a mental health problem was lower among people with a secondary education degree (OR = .56, 95% CI = .33 - .95) or a higher education degree (OR = .50, 95% CI = .27 - .91). Financial distress was strongly predictive of mental health problems (OR = 3.67, 95% CI = 2.35 – 5.72). Finally, mental health problems were more common in people living in an urban residence, but this effect was not significant when other factors were taken into account.

Table 4. Logistic regression analysis modelling the likelihood of having a clinical mental health problem in the general population (N = 1208).

		Clinical mental health problem				
		%	UOR	UOR 95% CI	AOR	AOR 95% CI
Gender	Male (ref.)	10.1				
	Female	10.8	1.08	.75 - 1.57	.122	.82 - 1.80
Age***	15-25 (ref.)	18.7				
	26-44	13.2	.66	.42 - 1.05	.78	.45 - 1.34
	45-64	7.2	.34***	.20 - .57	.37***	.21 - .66
	65-80	3.5	.16***	.07 - .36	.17***	.07 - .40
Education*	Primary (ref.)	20.6				
	Secondary	9.5	.40***	.25 - .65	.56*	.33 - .95
	Higher	8.1	.34***	.21 - .56	.50*	.27 - .91
Financial distress***	No (ref)	7.7				
	Yes	23.4	3.67***	2.47 - 5.44	3.67***	2.35 - 5.72
Birthplace	Europe (ref.)	9.8				
	Non-Europe	15.3	1.65	.99 - 2.76	.74	.41 - 1.32
Urbanicity	Urban (ref.)	12.6				
	Rural	7.7	.58**	.39 - .86	.67	.44 - 1.01

UOR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio (adjusted for all variables)

*p < .05 **p < .01 ***p < .001

Asterisks after the variable name represent significance of the factor in the multivariable model.

4.1.3.3 Prevalence and predictors of health care use for mental health problems

Considering the total sample, one in six (17.6%) reported health care use for mental health in the past twelve months. Psychologists (11.4%) and GPs (11.3%) were more often consulted compared to psychiatrists (3.6%), and 6.4% was prescribed medication for mental health problems. Results of the logistic regression analysis examining the predictors of health care use for mental health in the total sample are shown in Table 5.

A significant difference in the likelihood of using health services for mental health problems was found, with 21.4% women as compared to 12.9% men consulting a health professional for their mental health (OR = 1.91, 95% CI = 1.37 – 2.66). Age is a significant predictor of health care use, with people aged 65 and older being less likely to consult a professional for mental health problems compared to the reference of 15 – 25-year old's (OR = .31, 95% CI = .15 - .65). Origin and financial distress are significant predictors well. Individuals with financial distress were significantly more likely to consult a health care professional for mental health problems (OR = 1.81, 95% CI = 1.19 – 2.75). Individuals with a non-European origin were less likely to use health services for their mental health in the multivariable

model only (OR = .41, 95% CI = .22 - .75). Besides the sociodemographic predictors, the presence of a clinical mental health problem was also included. As expected, this was highly predictive of using health care for mental health problems, with 13.6% of those without as compared to 47.6% of those with a mental health problem using health care for their mental health (OR = 5.31, 95% CI = 3.44 – 8.19).

Table 5. Logistic regression analysis modelling the likelihood of using health care services for mental health in the general population (N = 1208).

		Health care use for mental health				
		%	UOR	UOR 95% CI	AOR	AOR 95% CI
Gender***	Male (ref.)	12.9				
	Female	21.4	1.84***	1.35 - 2.50	1.91***	1.37 - 2.66
Age**	15-25 (ref.)	16.5				
	26-44	23.1	1.52	.97 - 2.36	1.37	.81 - 2.32
	45-64	17.6	1.08	.69 - 1.69	1.14	.68 - 1.92
	65-80	5.7	.31***	.15 - .61	.31**	.15 - .65
Education	Primary (ref.)	14.1				
	Secondary	15.9	1.16	.71 - 1.90	1.47	.82 - 2.61
	Higher	19.4	1.47	.90 - 2.41	1.75	.95 - 3.22
Financial distress**	No (ref)	15.4				
	Yes	25.7	1.91***	1.34 - 2.72	1.81**	1.19 – 2.75
Birthplace**	Europe (ref.)	17.6				
	Non-Europe	13.4	.73	.43 - 1.22	.41**	.22 - .75
Urbanicity	Urban (ref.)	18.9				
	Rural	14.9	.75	.55 - 1.02	.80	.57 - 1.12
Mental health need***	No (ref)	13.6				
	Yes	47.6	5.74***	3.88 – 8.48	5.31***	3.44 – 8.19

UOR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio (adjusted for all variables)

*p < .05 **p < .01 ***p < .001

Asterisks after the variable name represent significance of the factor in the multivariable model.

4.1.3.4 Prevalence and predictors of clinically assessed unmet mental health needs

The classification and population distribution of assessed unmet mental health needs is shown in Figure 5. In the total sample, 5.5% presents a clinical unmet need for mental health care. Moreover, only 29.0% of all people who used health services for mental health reasons has a clinical mental health problem.

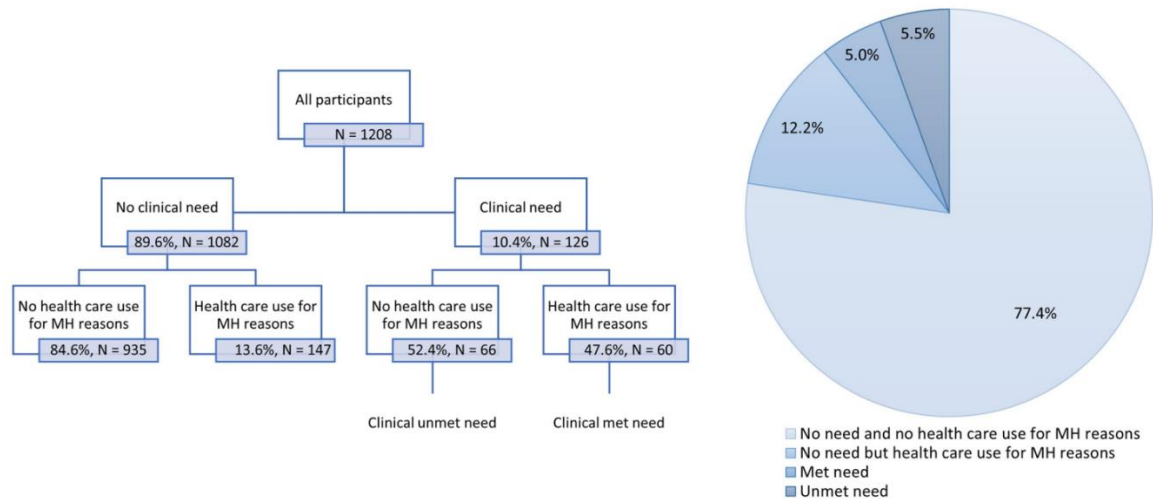


Figure 5. Classification and population distribution of clinical (unmet) needs for mental health care.

Table 6 shows the distribution and logistic regression analysis of clinical unmet mental health needs. Note that both the percentage within the total group is shown, as well as the percentage within those with a mental health need, as the former is highly dependent on the prevalence of mental health problems in that group. The logistic regression results therefore apply to the subsample of people with a mental health problem (N = 126). Due to the lower sample size and low incidence of unmet need in some subgroups, wide confidence intervals arise, and the findings should be interpreted with caution.

An estimated 6.8% of all men have a clinical unmet need as compared to 4.2% of all women. Among women with a mental health need, 38.6% did not use health services, which is significantly less than the 67.6% men with a mental health need (OR = .20, 95% CI = .08 - .49). Age is not a significant predictor. However, as the prevalence of mental health problems among individuals aged 65 or older is very low (N = 7), and none of them used health services for their mental health, this leads to a 100% prevalence of unmet need in this subgroup. Individuals with a mental health need experiencing financial distress are significantly less likely to have an unmet mental health need as compared to those without financial distress (OR = .22, 95% CI = .08 - .57). Those with a non-European birthplace had a higher likelihood of having an unmet mental health need, but only in the multivariable model (OR = 3.96, 95% CI = 1.13 - 13.89).

Table 6. Logistic regression analysis modelling the likelihood of having a clinical unmet need, i.e., not using health care for mental health among participants with a mental health problem (N = 126).

		Clinical unmet need					
		total %	%	UOR	UOR 95% CI	AOR	AOR 95% CI
Gender***	Male (ref.)	6.8	67.6				
	Female	4.2	38.6	.30**	.15 - .63	.20***	.08 - .49
Age	15-25 (ref.)	10.5	56.2				
	26-44	6.1	46.2	.67	.29 - 1.56	1.14	.36 - 3.64
	45-64	3.4	47.0	.69	.26 - 1.82	.97	.30 - 3.12
	65-80	3.5	100.0	-	-	-	-
Education	Primary (ref.)	11.1	54.1				
	Secondary	5.4	57.4	1.14	.48 - 2.73	1.19	.44 - 3.42
	Higher	3.8	46.2	.73	.29 - 1.82	.50	.14 - 1.81
Financial distress**	No (ref)	4.8	62.7				
	Yes	8.6	36.8	0.35**	.17 - .73	.22**	.08 - .57
Birthplace*	Europe (ref.)	9.8	52.0				
	Non-Europe	15.3	55.1	1.13	.44 - 2.93	3.96*	1.13 - 13.89
Urbanicity	Urban (ref.)	12.6	52.0				
	Rural	7.7	53.5	1.06	.50 - 2.24	1.24	.47 - 3.28

UOR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio (adjusted for all variables)

*p < .05 **p < .01 ***p < .001

Asterisks after the variable name represent significance of the factor in the multivariable model.

4.1.3.5 Prevalence and predictors of perceived unmet mental health needs

Figure 6 shows the classification and population distribution of perceived unmet needs. A minority of 12.1% non-care-seekers indicated that they felt a need for mental health care but did not seek help. In the general population, this translates to one in ten (10.0%) 'perceived fully unmet needs'. Among the care-seekers, the majority (76.6%) thought the help was sufficient, resulting in 4.0% 'perceived partially unmet needs' in the population. Altogether, 14.0% of the population perceives a mental health need that is either fully or partially unmet.

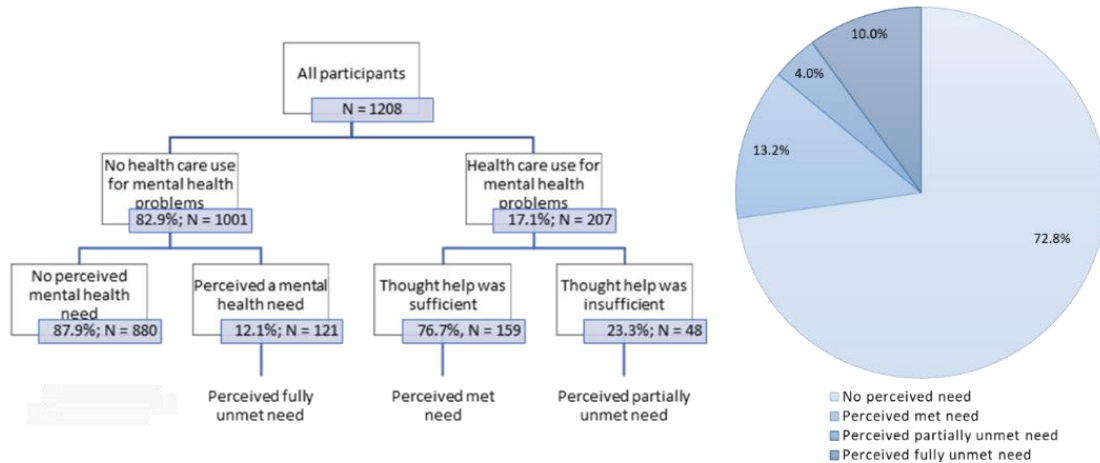


Figure 6. Classification and population distribution of perceived (unmet) needs for mental health care.

Predictors of perceiving an unmet need for mental health care (both partially and fully) were assessed using logistic regression analysis, shown in Table 7. Women were more likely to perceive an unmet need for mental health care (OR = 1.73, 85% CI = 1.20 – 2.50). Age is a significant predictor of perceived unmet needs, as there is a trend towards more perceived unmet needs in the youngest age groups as compared to the oldest age groups. For example, 20.7% of the 26 – 44-year-olds perceived an unmet mental health need, in contrast to 11.0% of 45 – 64-year-olds and 2.8% of participants aged 65 and older. In the multivariable model, individuals aged 65 and older were significantly less likely to perceive an unmet mental health need as compared to the youngest age group (OR = .14, 95% CI = .05 - .37). Individuals experiencing financial distress had a higher likelihood to perceive an unmet mental health need (OR = 2.06, 95% CI = 1.31 – 3.25). Individuals born outside Europe were significantly less likely to perceive an unmet mental health need (OR = .51, 95% CI = .28 - .95).

The presence of a clinical mental health problem was taken into account as well. Approximately one in ten (10.4%) individuals without a mental health problem perceived an unmet mental health need, compared to 46.0% individuals with a mental health problem, making the presence of a mental health need highly predictive of perceived unmet needs (OR = 5.92, 95% CI = 3.81 – 9.20).

Table 7. Logistic regression analysis modelling the likelihood of perceiving a fully or partially unmet need for mental health care in the general population (N = 1208).

		Any perceived unmet need				
		%	UOR	UOR 95% CI	AOR	AOR 95% CI
Gender**	Male (ref.)	11.2				
	Female	16.8	1.61**	1.15 - 2.24	1.73**	1.20 - 2.50
Age***	15-25 (ref.)	18.8				
	26-44	20.7	1.13	.73 - 1.74	1.18	.69 - 2.02
	45-64	11.0	.54**	.33 - .86	.61	.35 - 1.06
	65-80	2.8	.13***	.05 - .31	.14***	.05 - .37
Education	Primary (ref.)	16.5				
	Secondary	11.6	.66	.41 - 1.08	.95	.53 - 1.71
	Higher	15.8	.95	.59 - 1.53	1.28	.69 - 2.39
Financial distress**	No (ref)	12.0				
	Yes	22.9	2.17***	1.50 - 3.16	2.06**	1.31 - 3.25
Birthplace*	Europe (ref.)	14.0				
	Non-Europe	13.7	.98	.58 - 1.64	.51*	.28 - .95
Urbanicity	Urban (ref.)	15.4				
	Rural	12.2	.76	.55 - 1.06	.87	.60 - 1.27
Mental health need***	No	10.4				
	Yes	46.0	7.30***	4.87 - 10.91	5.92***	3.81 - 9.20

UOR = Unadjusted Odds Ratio

AOR = Adjusted Odds Ratio (adjusted for all variables)

*p < .05 **p < .01 ***p < .001

Asterisks after the variable name represent significance in the multivariable model

4.1.3.6 Barriers to mental health care

Participants who perceived an unmet mental health need were asked to indicate the reasons why they did not seek or receive (sufficient) help. The prevalence of the reported barriers to mental health care is shown in Table 8. For those who did not seek care, the most often cited reason is that they prefer to handle problems on their own (65.6%), followed by thinking it wouldn't help (30.1%) and time constraints (27.5%). One in four (24.5%) reported the cost as a barrier. For those with partially unmet needs, cost was the most often cited barrier (43.0%), followed by a preference to handle problems on their own (38.6%). Both among those with fully unmet needs and those with partially unmet needs, about one in five people reported other barriers, for example, an expected waiting time and bad experiences in the past.

Table 8. Prevalence of endorsed reasons for not seeking or receiving (extra) help among participants who perceived an unmet need for mental health care.

Reason	Fully unmet need (N = 121)	Partially unmet need (N = 48)
I prefer to handle problems on my own	65.6%	38.6%
I don't think it would help	30.1%	24.1%
I don't have time for it	27.5%	9.0%
I worry about the costs	24.5%	43.0%
I don't know where to go for (extra) help	21.8%	26.3%
I'm afraid others would think bad of me	10.7%	22.5%
I don't speak the language well	6.7%	7.1%
I asked for it, but didn't get (extra) help	2.3%	16.0%
I cannot get there (e.g. no transport)	1.9%	4.8%
Another reason	20.4%	20.1%

4.1.4 Discussion

This cross-sectional survey study evaluated common mental health needs (depression, anxiety and alcohol problems) in a representative general population sample in Antwerp, Belgium. A major advantage of the study is the public mental health perspective. Other strengths of the study are the use of a representative probability sample and the inclusive nature of the study. For example, participation was possible both online and offline, online participation was possible in six languages, and the wider age range allowed 15 to 80-years old to participate.

A total of 1208 people participated in the study. It was found that about one in five (21.5%) had a positive symptom screening for depression, anxiety and/or alcohol disorder. Half of them also experienced functional problems in their daily life because of mental health problems. Notably, also 12% of those without a positive screening on one of the screening scales indicate that their daily life is at least moderately impacted by psychological problems. A clinical mental health need was defined as the presence of both a positive symptom screening and dysfunction, and was present in one-tenth (10.4%) of the sample. Mental health problems were found to be more common among younger age groups, people with a lower education level and people with financial difficulties.

Furthermore, only half of the people with a clinical mental health problem consulted a health care professional for their mental health, resulting in a population prevalence of 5.5% clinical unmet mental health needs. Because the quantity and quality of care were not taken into account, this approach may even lead to an underestimation of the actual clinical unmet mental health needs. In prior research it was suggested that approximately half of treatments in high-income countries do not meet minimally adequate treatment (MAT) criteria (i.e., eight or more psychotherapy visits or four or more visits to a doctor with pharmacotherapy) (25-27).

Overall, one in six people discussed mental health related issues with a health care professional within the past year, especially with a psychologist and/or GP. Men, people aged 65 and older, and people born outside of Europe were less likely to use health care for their mental health. Health care use for mental health problems in the general population is higher than generally reported in other studies, where approximately one in ten people use formal health services for their mental health (28-30). This may be due to the broader definition of health care use, namely any contact with a health professional for mental health reasons (incl. emotional problems or substance abuse).

Clinically assessed unmet mental health needs are on a population level more common among young people, but this can be explained by their higher level of mental health problems. In contrast, only 3.5% of people aged 65 and older have a mental health problem according to screening scales, but none of these participants received any form of care for mental health problems. Consistent with previous research, older people with a mental disorder are less likely to seek help when needed, especially because they tend to underestimate their own needs (31-34). Also a remarkable gender effect is present, with 67.6% of men versus 38.6% of women with a clinical mental health problem who did not seek help.

The population share of people with financial problems with unmet mental health needs was higher than the population proportion of people without financial problems with unmet mental health needs because of their higher prevalence of mental health problems. However, individuals with financial distress with a mental health problem more often sought help. In line with this finding, a longitudinal study in the UK reported higher levels of treatment with medication and psychological therapy among people from disadvantaged backgrounds (35). Other studies reported an increased risk of unmet needs among people with lower income (4, 36), or reported no clear association (37, 38). Firstly, it must be noted that financial distress was self-reported in this study, and people might differ in the way they define financial difficulties. Secondly, people with more financial

resources might have more possibilities for self-care, a larger informal support network or other alternatives such that professional help is less needed. Finally, the design doesn't allow to draw causal conclusions, and the interpretation is especially difficult because of the reciprocal relationship between mental illness and poverty (39).

Another remarkable finding is that almost two thirds (71.0%) of those who discussed mental health related problems with a professional had no current clinical mental health need. Several reasons can account for this finding. First, these individuals may be subthreshold cases, or may experience little dysfunction in daily life, or may have a different mental health problem than those assessed in the study. Second, mental health needs were assessed at point-prevalence, while health care contacts for mental health reasons were surveyed at 12-month prevalence. It may therefore be possible that some people have had a mental health problem that is already resolved. Finally, this may also be an expression of 'overmet need'. Research has shown that people without a mental disorder account for a significant proportion of health care users, but that these individuals often have other need indicators, and generally have fewer visits and use less specialist services (5, 28, 40). People with mental distress receiving some professional help should therefore not be regarded as having 'overmet need', as this can alleviate mild mental health problems and prevent problems from worsening. However, it is problematic when mild cases use specialist services, but the use of specialist care was low in the sample, and this was not further examined.

Unmet mental health needs were also assessed from a subjective perspective. A perceived unmet mental health need is present when someone did not seek care but perceived a need for mental health care (= fully perceived unmet need), or when someone did seek care but felt that this was not sufficient (= partially perceived unmet need). In total, 14.0% perceived an unmet mental health need, of which the majority are fully unmet. When help was received, 23% felt that they were insufficiently helped. In line with previous research, men and older people were less likely to perceive an unmet need for mental health care (9, 14, 41). Contrary to assessed unmet needs, individuals experiencing financial distress more often perceived an unmet mental health need, but this can be attributed to the different sample studied (subsample with mental health problem vs. total sample).

When an unmet mental health need was perceived, participants were asked to endorse all reasons for not seeking (extra) help. As expected from the literature, the most frequently reported barriers for not getting help are motivational or attitudinal barriers (4, 15). Two-thirds cited self-reliance as the reason for not seeking help, and nearly a third thought it wouldn't help. A quarter of the people who did not seek help mentioned cost as a barrier.

However, among individuals who received help but felt this was insufficient, financial reasons were most often endorsed. This suggests that the cost of mental health care in Belgium is primarily an obstacle in obtaining adequate care as long as needed (e.g., the majority of psychotherapy was not reimbursed at the time of data-collection). Importantly, the questions about barriers to care were only asked to need-perceivers, but low perceived need is also an important factor hindering help-seeking for mental health problems. Prior research suggested that a lack of need-perception is one of the major causes of unmet mental health needs (6, 7). In our study, 3.9% of the 880 respondents without a perceived need do have a clinically assessed need. However, considering the 66 respondents with a clinically assessed need who did not consult a professional for their mental health, half (51.5%) did not report perceiving a need for mental health care, so low need perception plays an important role in this study as well.

It must be noted that the data collection took place between May and August 2021, which means some COVID-19 related freedom-restrictions were still implemented and may have influenced the findings. Prior research showed no statistical difference between met and unmet need for mental health care, but point estimates were suggestive of higher unmet needs among those with a current mental disorder after the lock-down period (42). Comparison with the province of Antwerp in the Belgian Health Interview survey suggests that the prevalence of mental health problems has risen substantially since 2018: the prevalence of depressive symptoms rose from 6% to 10%, anxiety disorder symptoms remained the same (11%), and alcohol abuse (based on the CAGE questionnaire only) doubled from 6% to 13% (43, 44). However, no comparable Antwerp data are available on perceived or unmet needs.

Additionally, though validated instruments were used, the exclusive use of symptom screening questionnaires may be considered a limitation. These measures are indicative of mental disorders but tend to overestimate the true prevalence in the population (45, 46). The dysfunction criterion was therefore added, leading to a more rigorous operationalization of clinically relevant mental health needs. On the other hand, this may have led to a higher proportion of false negatives. As a test, the regression analyses were also performed without dysfunction criterion, and the conclusions remained largely the same. The disorder type, comorbidity and severity were not considered when studying unmet needs. This may be relevant, as previous research suggests that men may be more likely than women to delay using health care for minor mental health concerns, but that gender effects diminish when problems are more serious (47). Also, people with a substance use disorder tend to be less likely to perceive a need for care and seek treatment (48, 49).

As a final remark, we outline that only one quarter of the invited sample participated, despite two postal invitations and the possibility to participate online and offline. However, this response-rate was anticipated, and the data were weighted to match the population distribution, also correcting for minor inequalities in non-response across strata. The forced response implementation may have caused some drop-out or reactance, although the “I don’t know” options prevented forced choice.

An important finding is that unmet mental health needs are high, with a population prevalence of 14.0% and 5.5% for perceived and clinical unmet needs, respectively. It should be noted that without the dysfunction criterion that was added to the operationalization of clinical mental health needs, the population prevalence of clinical unmet needs would be 14% as well (analysis available on request). This is higher than most estimates reported elsewhere, but different definitions and operationalizations complicate comparisons (2, 4). However, the overlap between perceived and clinical unmet needs is small and are explained by different factors. Especially, more women perceived an unmet need for mental health care, but more men with a probable mental disorder did not seek care. Despite the higher prevalence of mental health problems in urban areas and among the less educated, little differences were found in unmet needs as regards education and urbanicity.

It must be noted that the relation between clinically assessed and perceived (unmet) needs and its associated factors is not fully addressed in this paper. Especially, further research should assess which people have both an assessed and perceived need, which people have a perceived or assessed need only, and in which way these subgroups differ. A combination of both approaches allows researchers and policymakers to assess the (unmet) need for mental health care on a population level with special attention to the individual perspective. Need perception is more related to help seeking, while assessed needs are more standardized and ‘objective’, although some degree of subjectivity is inevitably present to some degree in symptom scales as well.

Further efforts should be made to make mental health care more accessible for everyone. Insights into the barriers to care can lead to more targeted interventions in guiding people with mental problems to mental health care. Information and awareness campaigns are important to ensure that people recognize their own mental health needs and feel more confident and motivated to seek professional care. Familiarity with mental health services needs to be addressed, given that a lack of trust is a common barrier. Financial accessibility remains important, not only for seeking care, but also for obtaining sufficient care. To ensure that every individual with a mental health need receives adequate care, matched

care principles should be respected such that people with mild needs are helped in generalist or primary care services, and people with more severe needs in specialist services. Based on insights into the prevalence and distribution of unmet mental needs in the general population, a targeted health policy can be implemented, focusing on individuals with the highest (unmet) need. The nature of the present study where we collected data in particular regions, allows mental health services in the region to better tailor their care programs to the local needs. We believe that our findings, which apply to the general population in Antwerp, can to some degree be translated to other regions with a similar population structure and mental health care system, especially in Western Europe. This is especially true for the associated factors of (unmet) mental health needs. Finally, the totality of health and social care needs of people with mental health problems should be addressed as well, so that not only the ‘treatment gap’ but the whole mental health ‘care gap’ can be reduced (3).

4.1.5 Conclusions

This cross-sectional survey study evaluated common mental health needs (depression, anxiety and alcohol problems) in a representative general population sample in Antwerp, Belgium. Both self-reported perceived unmet needs and clinically assessed mental health needs measured by validated symptom screening scales were examined. One in five had a positive screening on one of the scales, but a dysfunction criterion was added to ensure clinical relevance, leading to a prevalence of 10.4% mental health needs in the population. One in six participants discussed their mental health with a professional in the past year. Among those with a mental health problem, about half (47.6%) had contact with a health professional for their mental health. In the general population, 5.5% had a clinically assessed unmet mental health need. More men and people without financial distress had an unmet mental health need.

Regarding perceived unmet needs, one in ten people thought they needed some help for their mental health but did not seek any, and 4.0% received some care but thought this was insufficient, resulting in a total population prevalence of 14.0% perceived unmet needs. As opposed to clinically assessed unmet needs, perceived unmet needs were more common among women, younger people, people with financial distress or a non-European background, and those with a mental health problem. Motivational and attitudinal barriers, especially the preference to handle problems on their own, are generally most often endorsed. However, cost is a main barrier to obtaining extra help.

4.2 Additional results not included in the research paper

It was not possible to incorporate all findings of the survey study in the research paper published in *BMJ Psychiatry*. The research paper focused on common mental health disorders (depression, anxiety and alcohol disorder), but our survey also screened for posttraumatic stress disorder (PTSD) and suicidal ideation. It was found that 26.4% of all people had a positive screening for depression, anxiety, alcohol disorder, PTSD or suicide. One in eight (12.5%) people had a positive screening in combination with at least moderate dysfunction in their daily life. Some extra analyses and additional findings that may add to a more complete picture of the mental health needs of the investigated regions are reported in this section. For the sake of brevity, only descriptive statistics and univariate analyses are reported.

4.2.1 Depression severity and population distribution

Depression was measured with the PHQ-9 scale, which yields a score between 0 and 27 and allows a severity classification: 5–9 is classified as mild (subthreshold) depression; 10–14 as moderate depression; 15–19 as moderately severe depression; and ≥ 20 as severe depression (18). The severity distribution of the total sample is shown in Figure 7. Two thirds had no depression, one in five had mild (subthreshold) depression and 13.3% had at least moderate depression.

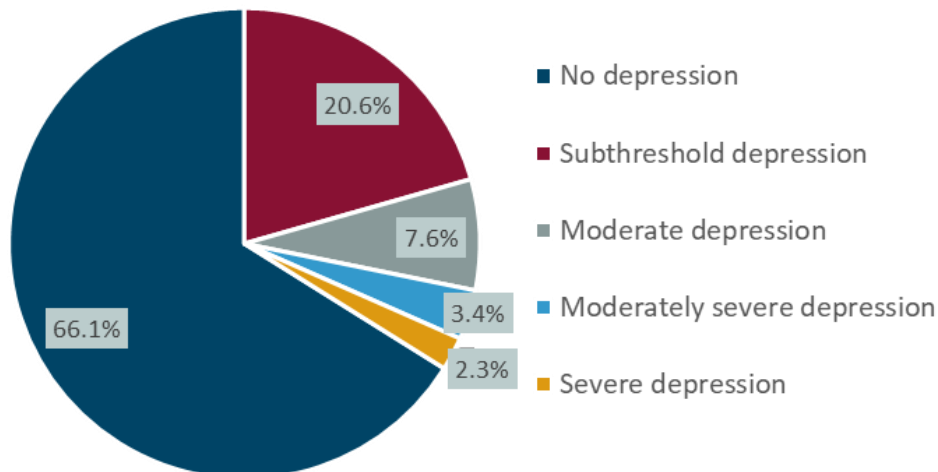


Figure 7. The distribution of depression severity.

Another way to define the presence of depression using the PHQ-9 is through diagnostic algorithms (18), as was the case in the aforementioned research paper. A total of 5.5% had major depression and 4.8% had other (non-major) depression, leading to a prevalence of 10.2% in the population. Comorbidity is high, as only 3.7% of the total population had a depressive disorder only (i.e., no positive screening for anxiety disorder, alcohol disorder or posttraumatic stress disorder).

The sociodemographic distribution of the presence of any depressive disorder (major or other) is shown in Table 9. No gender effect was found. This is rather surprising, given that meta-analyses including nationally representative samples found evidence for a strong gender gap (OR = 1.95) with more women than men having major depression, especially in younger age (50). A clear age effect is present in our sample, with younger age groups showing higher rates of depression. Remarkably, this is consistent with some studies investigating the relationship between age and depression, although some studies report a U-shaped pattern of depressive symptoms in which depressive symptoms are highest in young adulthood, decrease in middle adulthood and increase again in older adulthood (51, 52). Participants with a non-European birthplace are more than twice as likely than European participants (20.6% and 8.9% resp.) to have a positive depression screening. Finally, those with a primary education level have a higher risk of depression.

Table 9. The sociodemographic distribution of the presence of a depressive disorder.

Gender	Men	10.3%	Birthplace***	Europe	8.9%
	Women	10.0%		Non-Europe	20.6%
Age***	15 - 25	17.6%	Education***	Primary	19.5%
	26 - 44	13.6%		Secondary	10.3%
	45 - 64	6.4%		Higher	7.2%
	65 - 80	3.9%	PCZ	Antwerpen-Oost	10.5%
		Baldemore		9.8%	

4.2.2 Anxiety severity and population distribution

The presence of anxiety was assessed using the GAD-7 scale, yielding a score from 0 to 21. Cut-off points of 5, 10, and 15 can be interpreted as representing mild (subthreshold), moderate, and severe levels of anxiety (20). In the study sample, 22.0% experienced subthreshold anxiety, and 6.0% and 4.0% experienced a moderate or severe anxiety disorder, respectively (Figure 8). Again, comorbidity with depression, alcohol disorder or posttraumatic stress disorder is high, as 2.7% had only an anxiety disorder.

As shown in Table 10, women have a slightly increased risk of having an anxiety disorder as compared to men, which is consistent with the literature (53). Again, strong effects of age and educational level are present with a higher prevalence of anxiety disorders among the younger age groups and the less educated. Anxiety disorders typically arise in adolescence or young adulthood, follow a chronic course and decrease in older age (54, 55). In contrast with depression, people with a European and non-European birthplace had a similar prevalence of anxiety.

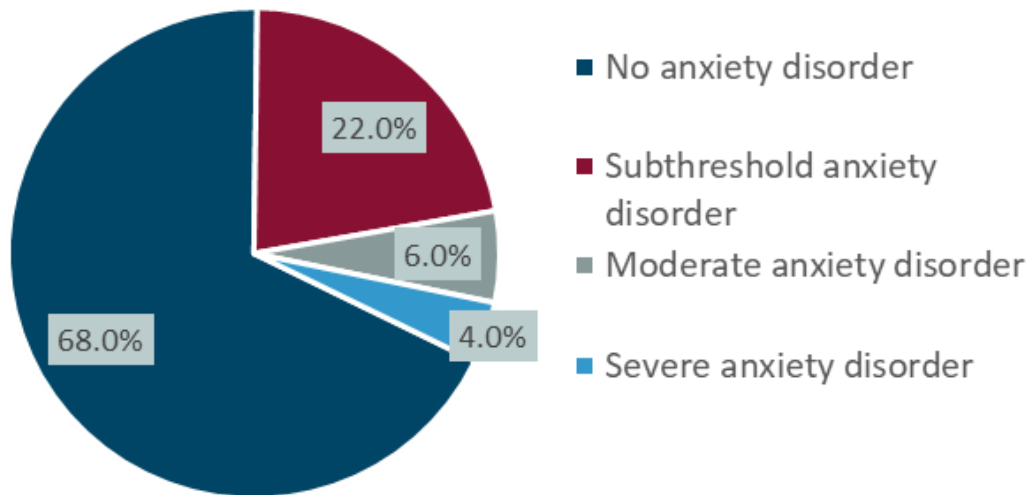


Figure 8. The distribution of anxiety disorder severity.

Table 10. The sociodemographic distribution of the presence of an anxiety disorder.

Gender*	Men	8.1%	Birthplace	Europe	9.9%
	Women	11.9%		Non-Europe	11.2%
Age***	15 - 25	16.0%	Education***	Primary	19.9%
	26 - 44	13.3%		Secondary	9.1%
	45 - 64	7.6%		Higher	8.0%
	65 - 80	3.3%	PCZ	Antwerpen-Oost	10.9%
				Baldemore	9.0%

4.2.3 Alcohol abuse

Alcohol use was assessed using both the AUDIT-C scale and the CAGE questions. AUDIT-C assesses alcohol drinking frequencies and amounts (22). It was found that 26% of women and 35 % of men of the sample were at risk for hazardous drinking. Although this seems very high, 19% women and 33% men screened positive during the original validation study (22). However, it should be noted that some studies suggest a higher cut-off point to guarantee a sufficiently high specificity (56, 57). As regards the CAGE questions about thoughts and habits linked to addiction, 8% of women and 17% of men screened positive. This is remarkably lower than numbers reported elsewhere, where 10% of women and 27% of men screened positive (58).

As in the research paper, it was decided to define alcohol abuse as the presence of a positive screening on both questionnaires, which was the case in 8.8% of the sample. The majority, 6.4% of the total sample, had an alcohol disorder without comorbid depression, anxiety disorder or PTSD.

Table 11 presents the sociodemographic differences for the prevalence of an alcohol disorder (defined as a positive screening on both alcohol screeners). Almost twice as many men as women have an alcohol disorder. This gender difference is a consistent international finding (59, 60). More middle-aged people (aged 26 to 64 years old) have an alcohol disorder as compared to youngsters and the oldest age group. No significant effect of birthplace was found, but 9% of people with an European background as compared to 6% of people with a non-European background have an alcohol disorder.

Table 11. The sociodemographic distribution of the presence of an alcohol disorder.

Gender***	Men	11.3%	Birthplace	Europe	9.2%
	Women	6.1%		Non-Europe	6.0%
Age***	15 - 25	2.0%	Education**	Primary	3.6%
	26 - 44	12.3%		Secondary	8.2%
	45 - 64	10.1%		Higher	11.4%
	65 - 80	6.3%	PCZ*	Antwerpen-Oost	10.6%
		Baldemore		6.6%	

Surprisingly, there is a clear trend towards a higher prevalence of alcohol disorders as the education level increases. This is in stark contrast with the literature, as lower educational attainment is typically linked to a higher risk of hazardous drinking and alcohol addiction (61, 62). A large study found a causal relationship between educational attainment and drinking patterns: while higher educational attainment reduces binge drinking and the

amount of alcohol, it increases the frequency of alcohol drinking (63). Moreover, even after controlling for drinking patterns, those with a lower educational attainment are more likely to report negative alcohol-related consequences (64). Finally, there is an effect of PCZ, as more people living in Antwerpen-Oost than people in Baldemore have an alcohol disorder.

Substance abuse was briefly questioned as well: 3.4% of the sample used cannabis and 1.0% used hard drugs (e.g., cocaine, speed...) at least once per month.

4.2.4 Posttraumatic stress disorder (PTSD)

The Primary Care PTSD Screen for DSM-5 (PC-PTSD-5) was used to detect possible posttraumatic stress disorders (PTSD) (65). If a respondent reports a lifetime exposure to a traumatic event, five yes/no questions are presented, asking for its impact over the past month (e.g., the presence of nightmares, hypervigilance and avoidance). A positive PTSD-screening means that at least four symptoms are present. Note that this screener is not included in the research paper, as PTSD is not considered a common mental disorder.

More than one in four (28.2%) of the sample reported having experienced a traumatic event in their life. Among these people, about one in five (21.6%) had probable PTSD. This concerns 6.1% of people with probable PTSD in the total general population, which is somewhat higher than the estimated past-year prevalence of 4.7% in the US (66). A total of 2.2% of the general population had only PTSD without depression, anxiety or alcohol disorder, indicating a high comorbidity in this group.

The distribution of PTSD in the sample is shown in Table 12. Men and women had a similar prevalence of PTSD, although other studies reported higher rates in women (66, 67). Consistent with the literature, PTSD was found to be more common in younger age: people aged 15 to 25 years old had a remarkably high prevalence (13.0%) of PTSD, while people aged 65 or older had a remarkably low prevalence (1.4%) of PTSD. Moreover, those with a non-European background had twice as much probable PTSD as those with an European background, with a prevalence of 11.9% and 5.3% respectively. Finally, the prevalence of PTSD was strongly related to education, with an increasing prevalence of PTSD as educational attainment decreases.

Table 12. The sociodemographic distribution of the presence of PTSD.

Gender	Men	5.5%	Birthplace**	Europe	5.3%
	Women	6.6%		Non-Europe	11.9%
Age***	15 - 25	13.0%	Education***	Primary	13.8%
	26 - 44	5.4%		Secondary	5.8%
	45 - 64	5.7%		Higher	3.7%
	65 - 80	1.4%		PCZ	Antwerpen-Oost 6.7%
				Baldemore	5.2%

4.2.5 Suicidal ideation

Suicidal ideation was assessed using the four-item Ask Suicide-Screen questions, which is a validated suicide screener for primary care (68). It was found that 5.6% of the respondents had thoughts about suicide in the past weeks, and 0.9% had actual suicide plans. Suicidal ideation is present when one of the four items (i.e., wishing you were dead, thinking it would be better if you were dead, having thoughts about suicide or having suicide plans) is positive, as was the case for 8.6% of the total sample.

The prevalence of suicidal ideation is presented in Table 13. Notably, only the effect of age is significant. Suicidal ideation strongly increases as age decreases. More than one in seven (15.0%) people aged between 15 and 25 years old experienced suicidal ideation, while this number is only 3.4% in the oldest age group.

Moreover, it was found that about half (45.6%) of those with current suicidal thoughts or plans consulted a professional for their mental health in the past twelve months. A total of 22.8% of all people who used health care for their mental health reported suicidal thoughts. Two thirds (66.3%) had a positive screening on one of the scales: 51.9% met criteria for PTSD, 46.2% for depression, 44.7% for anxiety disorder and 19.4% for alcohol disorder.

Approximately one in fifteen people (6.5%) ever attempted suicide in their life. Of these people, a majority of 63.1% did not experience suicidal ideation anymore. More women (7.8%) than men (5.4%) attempted suicide. Moreover, suicide attempts were most often reported by the youngest age group (8.5%) and least by the oldest age group (3.3%). Finally, educational level is a major predictor of lifetime suicide attempts: as many as 13.6% of the lower educated reported an attempt in their life, compared to 6.7% and 3.9% of the middle and higher educated, respectively.

Table 13. The sociodemographic distribution of the presence of suicidal ideation.

Gender	Men	8.5%	Birthplace	Europe	8.8%
	Women	8.8%		Non-Europe	7.7%
Age***	15 - 25	15.0%	Education	Primary	12.3%
	26 - 44	10.3%		Secondary	8.0%
	45 - 64	6.4%		Higher	8.0%
	65 - 80	3.4%	PCZ	Antwerpen-Oost	8.9%
		Baldemore		8.1%	

It must be noted that suicidal ideation and reports of lifetime attempts are not necessarily linked to deaths of suicide. According to Belgian numbers, men and older people are less likely to report that they consider attempting suicide, while the mortality rate from suicide increases with age and more than twice as many men as women die from suicide (69). However, it is an internationally consistent finding that suicidal ideation and suicide attempts are more common among women (70). Male suicide attempts are more often classified under 'serious attempts' where there is a clear intent to die, while women tend to use less lethal methods and attempts are more often classified under parasuicidal behavior (i.e., suicidal gestures or deliberate self-harm that may or may not be intended to result in death) (71). This contradiction is often referred to as the 'suicide paradox'.

4.2.6 Lifetime prevalence of a mental disorder as diagnosed by a health care professional

Participants were asked if a professional care provider (e.g., GP, psychologist...) ever told them that they have a mental health disorder. A total of 22.0% reported a mental health disorder as established by a professional. Additional questions were then asked about the mental health disorder(s) they were diagnosed with and the age that this happened. The mean age was 29.9 years old. On a population level, a total of 8.2% was ever diagnosed with a mood disorder, followed by burnout³ (5.7%) and anxiety disorders (2.7%).

The population distribution is shown in Table 14. More women than men were ever diagnosed with a mental health disorder by a professional. The effect of age is strongly significant. Middle aged people (aged between 26 and 64 years old) were more likely to

³ Note that burnout is not an official DSM-5 diagnosis, but it is generally considered a specific adjustment disorder. However, the WHO recognizes burnout as a syndrome resulting from chronic work-related stress under the category of work-related phenomena (not a medical condition) in the ICD-11.

report a mental health disorder as established by a professional during their life. This number is especially low among the oldest age group, as only 11.5% of people aged 65 or older were ever told by a professional that they (have) had a mental health disorder. The effect of birthplace is strongly significant as well, as 26.6% of those with and 9.7% of those without an European background ever received a mental health diagnosis. Overall, these findings are consistent with a study reporting an underdetection of mental health problems among ethnic minorities, men and younger people in primary care (72). Finally, the effect of educational level is insignificant but there is a trend towards a higher level of lifetime mental health diagnoses among those with a higher educational level.

Table 14. The sociodemographic distribution of the presence of a lifetime mental disorder as diagnosed by a care provider.

Gender*	Men	19.6%	Birthplace***	Europe	23.6%
	Women	24.4%		Non-Europe	9.7%
Age***	15 – 25	18.0%	Education	Primary	18.7%
	26 – 44	27.0%		Secondary	20.9%
	45 – 64	24.8%		Higher	24.2%
	65 – 80	11.5%	PCZ	Antwerpen-Oost	21.6%
		Baldemore		22.6%	

4.2.7 Mental health care use

In the mental health care use section of the survey, more detailed questions were asked about the contacts with health care professionals for mental health related reasons. The general population prevalence of the different types of mental health care use is presented in Figure 9. Among the 17.1% of people who consulted a professional for their mental health during the last twelve months, almost two in three consulted a GP (66.2%) and/or a psychologist (66.5%). About half of these consulted both a GP and a psychologist (33.2%), 19.8% only a GP and 18.4% only a psychologist. One in five care users consulted a psychiatrist (21.0%), almost always in combination with another care professional. Approximately one in ten (9.6%) of those who used health care for mental health reasons consulted both a GP, a psychologist and a psychiatrist in the past year.

Of the people who had a 12-month contact with a psychologist, the vast majority consulted a private practice psychologist (70.0%), followed by psychologists working in a community mental health center (9.3%) and psychologists working in a psychiatric hospital (9.3%). As regards psychiatrists, private practice psychiatrists were most often consulted (38.4%), followed by psychiatrists working in a psychiatric hospital (29.7%) and in a community mental health center (18.7%).

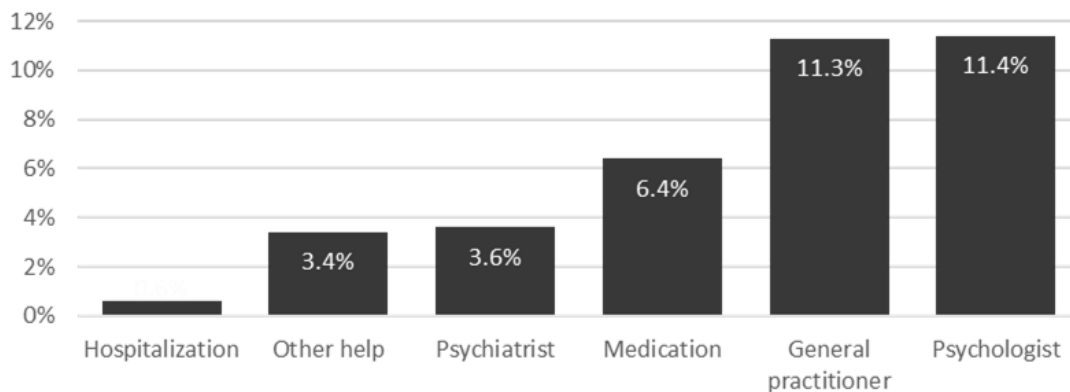


Figure 9. Health care use for mental health problems in the general population.

Only 3.3% of health care users had a hospitalization for mental health problems, which is less than one percent in the total population. Moreover, 19.7% reported receiving other help (e.g., coaching, social services). More than one in three were prescribed medication for mental health problems (37.4%). We did not directly ask participants who prescribed the medication, but we can assume that this is most often the GP, given that the combination of a GP consultation and medication use is more common than the combination of a psychiatrist and medication use (3.2% vs 0.8%). Moreover, 1.6% consulted a GP, a psychiatrist and received medication. In the general population, 4.1% was prescribed antidepressants, 2.9% was described benzodiazepines, 1.0% was prescribed antipsychotics and 0.6% was prescribed mood stabilizers.

Additional analyses investigated which variables are associated with perceived partially unmet mental health needs, i.e., when there is health care use for mental health reasons but this was perceived as insufficient. Overall, this was the case in 23.3% of care users. It must be noted that these analyses may be less reliable, as they are done on the rather small subgroup of health care users (n = 207). The results are presented in Table 15.

It was found that there are no differences in men and women in perceived partially unmet needs. Differences between the age groups are not significant, but there is a clear trend such that the oldest and youngest age groups are less likely to perceive the care as insufficient. People with a non-European background are twice as likely to perceive the received care as insufficient. Educational level is insignificant, but there is a trend towards more perceived partially unmet needs in people with a lower educational level.

Additionally, a significant difference was found for financial distress, as respectively 38.2% and 18.3% of those with and without financial distress believed the care was not enough to be sufficiently helpful. Finally, it was found that 15.6% of those without a clinical mental health need as compared to 41.7% of those with a clinical mental health need perceived the care as insufficient.

Table 15. Sociodemographic distribution of perceiving the received care as insufficient to be adequately helped.

Gender	Men	24.4%	Education	Primary	39.1%
	Women	23.1%		Secondary	22.1%
Age	15 - 25	12.1%	PCZ	Higher	18.9%
	26 - 44	27.8%		Antwerpen-Oost	24.2%
	45 - 64	25.0%	Baldemore	22.5%	
	65 - 80	8.3%	Clinical need***	No	15.6
Birthplace*	Europe	21.2%		Yes	41.7
	Non-Europe	44.4%	Financial distress**	No	18.3
				Yes	38.2

4.2.8 Extra: youth in transition age

Given the high prevalence of mental health problems in the age group between 15 to 25 years old, it was decided to conduct some in-depth analysis in the group of younger people. Specifically, I investigated whether there are differences between the groups of 15 to 19-year old's (n = 84) and 20 to 25-year old's (n = 86).

Differences in clinical needs were generally insignificant. Only the prevalence of anxiety disorder differed significantly, with 22.6% of those under 20 years old as compared to 9.3% of those between 20- and 15-years old meeting criteria for generalized anxiety disorder. No notable differences were found for depression and PTSD. As regards suicide, it was found that 17.9% of the 15-19 year olds and 12.8% of the 20–25-year-olds reported suicidal ideation, but this difference was insignificant. Overall, 36.9% of young people under 20 and 27.9% of those between 20 and 25 had a positive screening on one of the scales. When dysfunction in daily life is included, a total of 23.8% and 17.4% respectively have a clinical mental health need. Although these differences are not statistically significant (possibly because of the low sample sizes in this age group), there is a clear trend towards a higher level of mental health problems among the youngest group.

There was no difference in health care use between the groups, as respectively 20.2% and 17.4% of those aged between 15 and 19 years old and between 20 and 25 years old

reported seeing a professional for their mental health. A total of 23.8% of the first and 16.3% of the second group had a positive screening on one of the scales but did not see a professional. When significant dysfunction is taken into account, 11.9% and 7.3% of respectively 15–19-year old's and 20–25-year-old's had a clinical unmet mental health need.

4.2.9 Conclusion

In general, based on the additional analyses, we can state that the mental health needs in the rural and urban PCZ are similar, except for the higher prevalence of alcohol disorders in the urban region Antwerpen-Oost. However, there is no difference in terms of unmet needs. The analyses also show that comorbidity between all mental disorders is high. A general tendency is again the higher need for mental health care among younger age groups, especially teenagers, and persons with a lower educational attainment. Persons of non-European origin have a markedly higher prevalence of depression and PTSD, while the prevalence for the rest of the assessed mental health problems is similar for Europeans and non-Europeans. However, when looking at the proportion of persons in whom a health care provider ever diagnosed a mental disorder, Europeans are twice as likely to have ever received a diagnosis.

In terms of mental health care utilization, we can conclude that GPs and private practice psychologists are consulted most often, and especially in combination. Finally, it is remarkable that non-Europeans and people with financial difficulties more often consider the help as insufficient and the reasons for this need further investigation.

The next chapter describes the final component of the 'Chair Public Mental Health' research project, namely the concept of the database on psychiatric care in the province of Antwerp.

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5. iPSYcare: Linkage of electronic health records of Antwerp inpatient psychiatric care

Published as a 'research note': Rens E, Michielsen J, Dom G, Remmen R, Van den Broeck K. iPSYcare: the development of a linked electronic medical records database to study and optimize psychiatric care in Antwerp. BMC Res Notes. 2021;14(1):377.

Abstract:

IPSYcare is a close collaboration between the University of Antwerp and hospitals in the province of Antwerp. This paper describes the development of the database, how privacy and ethical issues will be handled, and how the governance of the database will be organized. The study of care trajectories of psychiatric patients across hospitals is currently not possible in Belgium as each hospital stores its data autonomously, and government-related registrations do not contain a unique identifier or are incomplete. A new longitudinal database called iPSYcare (Improved Psychiatric Care and Research) will therefore be constructed, and links the electronic medical records of patients in psychiatric units of eight hospitals in the Antwerp Province, Belgium. The database provides a wide range of information on patients, care trajectories and delivered care in the region. In a first phase, the database will only contain information about adult patients who were admitted to a hospital or treated by an outreach team and who gave explicit consent. In the future, the database may be expanded to other regions and additional data on outpatient care may be added.

5.1 Introduction

Psychiatric case registers systematically and longitudinally collect patient data from mental health services. The richness of the information makes them of interest to researchers and policymakers in mental health care (1). Digitalization in health care services strongly facilitates the routine collection and storage of patient data, such that the distinction between psychiatric case registers and mental health care administrations has largely faded away (2). Several psychiatric case registers exist today, both on national (e.g., Israel (3), Denmark (4)) and regional level (e.g. London (5), The Middle Netherlands (6)). Some

registers contain information on psychiatric inpatients only (3, 4), whereas others cover community mental health services as well (5, 6).

Psychiatric health care data are highly relevant for service planning and the evaluation of clinical activities (7). Linked hospital data can be used to investigate care patterns and patient flows, and to describe the patient population of a region to a granular level. While cohort studies conventionally assess the prevalence of both treated and untreated common mental disorders in the general population, psychiatric health care data are an important source of epidemiological information about severe mental disorders with a lower prevalence such as psychotic disorders, as these patients are less likely to participate in survey studies and to acknowledge their symptoms (8). Moreover, health care data may provide additional information on outcomes (e.g., readmissions) and follow-up of care (e.g. (9, 10)).

However, these benefits come with some challenges. Diagnostic information may be less valid compared to research projects in which extensive structured diagnostic instruments are used (11, 12). Also, according to the current European General Data Protection Regulation (GDPR), patient data may not be used unless patients give explicit informed consent. Finally, a longitudinal and multi-layer database requires extensive expertise in statistics and IT.

There is currently no database in Belgium that includes complete information on service use and psychiatric diagnosis and which allows to reconstruct patient care trajectories over facilities. Yet, electronic medical records (EMRs) are nowadays implemented in all hospitals and contain a wealth of information but are managed autonomously by the hospitals. EMRs contain the national identification number (NIN) as a unique identifier, as well as relevant patient, diagnostic and care information. It is therefore possible to build a new database which combines the EMRs of different hospitals and links patients through their NIN, which can then ultimately serve as a psychiatric case register. A drawback of using EMRs is the lack of uniformity across hospitals. The availability and format of data differ across hospitals, or other definitions or classification systems may be used. Moreover, different software is used to store the EMRs.

This paper describes the development of the iPSYcare (Improved Psychiatric Care and Research) database. The iPSYcare database will combine the data from EMRs of five psychiatric hospitals and three psychiatric units in general hospitals in the Antwerp Province (Belgium). The database is governed by the Academic Chair Public Mental Health at the University of Antwerp, which was established in 2019 and funded by the participating

hospitals. A consortium was constructed, bringing health care providers and researchers together in order to realize a data-driven mental health care. While conducting other relevant research regarding the population's (un)met mental health needs, this steering committee gave direction to the course of the current project. Special attention is paid to the confidentiality of the data and the privacy of the patients and physicians. The database will be used for scientific research and to optimize mental health care planning in the region.

5.2 Coverage and content

All five psychiatric hospitals (Multiversum , OPZ Geel, UPC Duffel, PC Bethaniënhus, ZNA Stuivenberg) and three general hospitals with a psychiatric unit (GZA, AZ Klina, HHZH Lier) in the province of Antwerp will be included in the database. Together, these organizations cover about 90% of the psychiatric beds available for this region. The Antwerp province consists of an area of 2876 km² and a population of approximately 1.8 million inhabitants of which 79.9% are adults (13). One in eight (12.4%) Antwerp people have a non-Belgian nationality and more than one in four (28.6%) is of non-Belgian origin, especially from the Netherlands and Morocco. In the year 2018, a total of 14592 psychiatric care episodes were recorded in the hospitals in the province of Antwerp (14).

For the inclusion in the iPSYcare database, all adult patients who are admitted to any psychiatric department of the participating hospitals after May 2021 are asked for informed consent for the secondary processing of the data for research purposes. The database includes full-time inpatients, partial inpatients in day admission as well as outpatients that are treated by a FACT-team (flexible assertive community-based outreach team), but not outpatients who only occasionally come for consultations.

Based on an inventory of the available and relevant data in the EMRs of the participating hospitals, the hospitals and the researchers collectively decided on the content of the new combined database. We aim to record the following data from each adult patient that gave consent:

- hospital and unit information (e.g., hospital identifier, unit target group, capacity)
- medical admission information (e.g., date, referrer, planned vs unplanned)
- sociodemographic patient information (e.g., NIN, postal code, year of birth)
- diagnostic information (e.g., main diagnosis, secondary diagnosis)
- care information (e.g., prescribed medication, freedom-restricting measures)
- medical discharge information (e.g., date, type of discharge, suggested follow-up)

5.3 Working method

The process of setting up the database and reviewing all associated processes was done in close collaboration with the ethical committees, data protection officers and legal advisors from the participating hospitals and the University of Antwerp.

An SQL-database, consisting of different linked tables, is built and stored on a secure server. A technical workgroup was installed, with representatives of the health care facilities involved and researchers to finetune the layout of the file. Before the first data transfer, the hospitals implement an informed consent procedure in which every patient is informed about the research and is asked for explicit consent for the secondary processing of their medical data. Only data of patients and practitioners who give explicit consent will be included in the database. All the information about the study and participation will also be made available on the websites of the hospitals. Patients are clearly informed about how they can exercise their right of access, rectification, deletion or objection. An opting-out procedure is available for patients who wish to withdraw after giving consent. Patients can then contact the administrative services and data protection officer of the hospital so that they can maintain their anonymity for the researchers.

Hospitals will send all the available data of the patients that consented and are treated in any of their wards to the secure SQL-server of the University of Antwerp. Data transfers take place every three months and will only include data of patients that gave consent and were discharged since the previous data transfer.

5.4 Privacy and legal considerations

To ensure that the hospital data can be transferred to the researchers while respecting the privacy of the patients and physicians, 'eHealth' – the Belgian government agency which supports secure information exchange in the healthcare sector – will function as a trusted third party (TTP). This process of data transmission is visualized in Figure 10 and includes the following steps:

1. The hospitals retrieve data from their EMR, saving data in a csv-file
2. The hospitals run a program which encrypts all the information in the csv-file, except the personal data of the patient and the physicians involved (i.e., national identification number of the patients and NIHDI identification number of the healthcare professionals)

3. Using a secure connection, the file is sent to the TTP (i.e., eHealth)
4. The TTP runs an algorithm to encode personal data. Matching personal data will receive a matching code, so that the data of the same person can be linked across facilities. As medical data are encrypted, the TTP staff is unable to access medical data.
5. Using a secure connection, the TTP sends the files to the server of the University of Antwerp
6. The researchers are able to decrypt the medical information and the files are loaded into the database. As the personal data are now encoded, the identity of the patient and the physicians involved are unknown for the researchers. However, they are able to link data from one patient that has been admitted in several wards or hospitals by the encoded personal data.

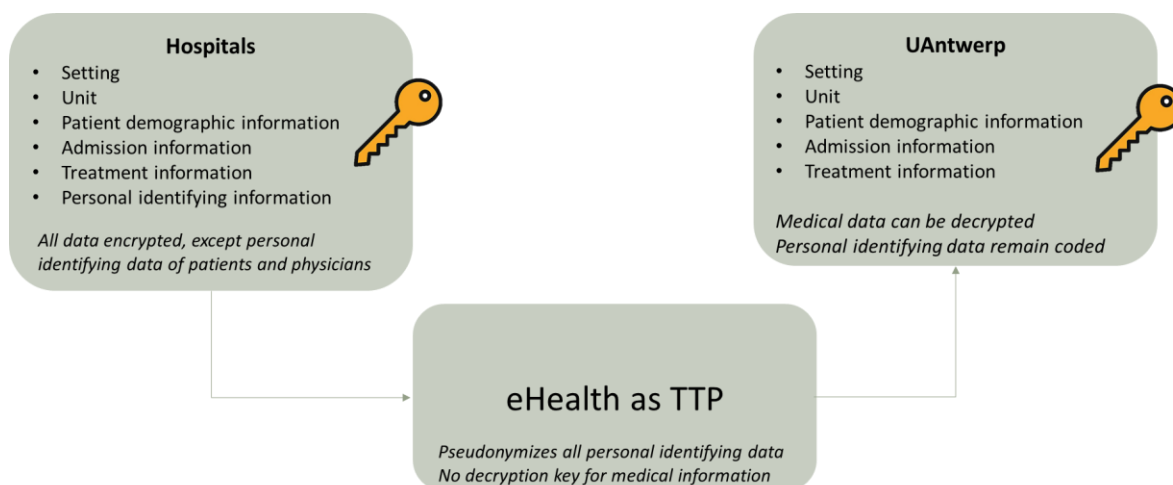


Figure 10. Process of data transmission from the hospitals to the University of Antwerp with eHealth as a Trusted Third Party (TTP).

The database is only accessible for the researchers involved and only via a network connection with the University of Antwerp. The database is locked with a password and any use of the database is logged. All researchers sign a confidentiality contract. The aggregated data will later be made public via an online dashboard, which allows interested parties to run some basic descriptive analyses themselves.

This method is also used by the iCAREdata project (i.e., another research project at the University of Antwerp which uses clinical routine data on out-of-hours care), where it has proven efficacy and ethical soundness (15). Moreover, the concept and method have been approved by the ethical committees of the University of Antwerp and all involved hospitals (nr. B3002020000157) and by the Belgian National Information Security Committee,

guaranteeing a safe method that respects both ethical and juridical regulations. The recommendations of a “small cell risk analysis” will be followed to increase safety of the data and secure patient’s privacy.

5.5 Governance

The database is governed by a steering committee, consisting of the researchers and representatives of the participating hospitals. A collaboration agreement was developed in close collaboration with the legal office and the data protection officer (DPO) of the University of Antwerp, and the DPO’s, ethical representatives and legal experts of the involved hospitals, including agreements on the usage rights on the data and future analyses, the output, and liability and dispute resolution. The steering committee ranks and prioritizes the research questions that will be investigated using the database. For each research question, the researchers will develop a protocol summarizing the variables of interest and the analyses that will be conducted, that will be submitted to the different ethical committees. Hospital representatives have the right to decide whether or not the researchers may use the data from their hospital to investigate the research question. The output of the analyses will be first presented to the members of the steering committee. Efforts will be made to actively involve patients, for example through patient advocates in the steering committee.

5.6 Limitations

A drawback is that the database is limited to inpatient care and does not provide national level information. However, the possibility of including outpatient care and psychiatric care in other regions will be considered at a later phase. In the future, record linkage with other registers (e.g., IMA) would be possible as well. It is a technical challenge that the availability and format of the data in the EMRs are not the same across hospitals, but the data will be standardized if possible. A possible bottleneck is the requirement for explicit patient consent. Given the target group, it is likely that a significant proportion of patients will not give consent or will not be able to give informed consent at the time of admission.

Nevertheless, at the request of some ethical committees of the psychiatric hospitals, the decision was made to start the project with an opt-in procedure. If it turns out later that the number of refusals is high, a new ethical application will be submitted on the grounds that explicit consent poses a threat to the validity and reliability of the research. In that case, an opt-out procedure will be requested: all patients are still actively informed but are automatically included unless they actively invoke their right of objection or deletion.

5.7 Update and conclusion in 2023

The published note in this chapter described the plans for iPSYcare as they stood in 2021. We had anticipated achieving an operational database throughout the past few years. However, due to additional legal, technical and practical challenges, the database is not yet operational at the time of writing this thesis. There is already a framework in place so that the database is in principle set to receive data, including a software application 'iPSYcare Encryptor' designed by Afternoon Software Solutions. This allows that the hospitals can encrypt their data before sending the files to eHealth, and that the researchers can decrypt the pseudonymized files, load them into the data file, and ultimately filter and select part of the data for further processing in statistical programs.

However, prior to the data transfer, a data extraction and recoding interface is required per hospital to ensure a smooth transmission and uniformity. This workload for the hospitals was underestimated and requires additional resources. To better meet these challenges, a technical working group was set up, consisting of researchers, an external IT expert and a data or IT representative per hospital.

Moreover, the approach with explicit patient consent did not prove successful after initial piloting. Inquiries among the participating hospitals showed that this way of working is on the one hand unpragmatic and time-consuming for the employees of the institutions, and on the other hand that the acceptance rate is low (approx. 25% - 50%) which would strongly affect validity and reliability. Therefore, by mutual agreement with the DPOs of the university and the healthcare institutions, it was decided to have an additional professional advisory note prepared by a legal firm to arrive at a new approach where it is argued that it would be disproportionately difficult to request explicit permissions from every patient, and that the social relevance exceeds this requirement. To date, this advisory note is still under discussion by the hospital's ethical committees.

Not asking for explicit consent is justified and in line with the GDPR. There are several legal grounds for processing personal health data, of which patient consent takes precedence. However, the argument of social relevance and public interest can overrule the requirement of consent. This legal ground requires a social necessity, a gain in knowledge and an explicit task for this assigned to the data processor, as is the case with a university. An additional argument in this case is that the presence of some psychiatric conditions raises uncertainty about the validity of the informed consent. However, patients still have the right to receive information regarding the collecting of their data, for example, by

publicly publishing the information regarding processing of personal data on the websites of healthcare facilities or including it in patient leaflets.

Finally, another important question that arises is what the governance of such a project should be so that those in charge have a delineated role within their own expertise. There is a need for the structural inclusion of expertise on legal and technical aspects associated with such a large project. It can be cautiously stated that this was underestimated at the start of the Chair Public Mental Health, resulting in considerable delays. However, this is not to say that the promising concept is being discarded. Currently, experts in the necessary fields are involved, and further steps are being taken to achieve smooth data transfer, and there will be further investment in this in the near future.

In conclusion, iPSYcare is 'to be continued' and therefore unexpectedly does not form a major part of this doctoral thesis. Nevertheless, this project has given us important insights on the complexity of data re-use and linkage. On the other hand, the lack of actual data output or research findings freed up time and space for a few research side lines that are closely related to the theme of 'public mental health' as well, namely waiting times in mental health care and the impact of COVID-19 on mental health. These studies are described in the following chapters.

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6. **Waiting times in Flemish mental health care**

Since 2019, a few months after starting the PhD, I became an active member of the waiting times working group of the 'Staten-Generaal van de Geestelijke Gezondheid' (SGGG). The SGGG is an umbrella organization which includes all parties concerned in mental health care: professionals, patients and family organizations, academics, health care organizations, networks... The goal of the SGGG is to come to a shared vision, resulting in policy recommendations and priorities across settings. There are four working groups on key bottlenecks in the mental health system, one of which is waiting times.

To this end, I conducted two studies between 2019 and 2021. One focused on patients (and parents in the case of children with mental health problems) seeking help, and one focused on mental health professionals with a private practice. I led the studies (e.g., design, analyses, reporting), but of course everything was done in close consultation with the working group. The output and findings were processed into reports, which were also widely shared in the media, highlighting the social importance of the issue. Waiting times are a relevant topic that has received more and more attention in recent years. It is therefore remarkable how little is known about it, precisely because complete and reliable data are lacking.

This chapter argues that waiting times in mental health care are a major challenge in public mental health care, as it hinders access to (timely) care, interacts with financial accessibility and creates inefficiencies in the mental health care system. The topic therefore fits within this doctoral thesis, as we contributed to a better understanding of an important reason for reduced access to mental health care.

First, a peer-reviewed published essay on the dynamics of waiting times is discussed. Herein, the results of the patient survey are discussed as well. Given the regional focus, it was decided to publish the article in the Dutch-Flemish *Tijdschrift voor Psychiatrie*. Next, the quantitative and qualitative findings of the waiting times survey among private practice mental health professionals are presented.

6.1 Essay paper: Towards a joint approach of waiting times in Flemish mental health care

Adapted and translated from: E. Rens, J. De Grave, G. Dom, I. Glazemakers, K. Van den Broeck. Genoeg gewacht: naar een gezamenlijke aanpak van wachttijden in de Vlaamse geestelijke gezondheidszorg. Tijdschrift voor Psychiatrie. 2021;63(12):875-882

Abstract:

English title: Tired of waiting: towards a joint approach of waiting times in Flemish mental health care

Waiting times are an important barrier to timely obtaining appropriate mental health care in Flanders, but structural data is limited. This essay briefly describes the waiting time problem in Flanders and proposes some causal hypotheses and possible interventions. The available waiting time data are explored and supplemented with literature and insights based on the results of some Flemish Community Mental Health Centers. Waiting times are especially problematic for subsidized outpatient care and care for children and youth, although the current data provide an incomplete picture. Besides capacity, important factors are the organization of the intake (e.g. assessment) and flow parameters (e.g. mean treatment duration - and intensity). Eliminating waiting lists is one of the greatest challenges for Flemish mental health care. There is a need to expand capacity as well as the smarter use of existing capacity and resources. A joint multi-level approach is required.

6.1.1 Introduction

Accessibility of mental health care is a necessary condition for eliminating health inequities. Accessibility includes the availability, affordability, acceptability and timeliness of care (1). Despite various efforts to achieve accessible mental health care, long waiting times remain a major barrier in obtaining appropriate care in a timely manner both in Flanders and internationally. For example, a British paper dating from 2021 concluded that while reducing waiting times is a national priority, it is a major "blind spot" given that waiting times are not recorded in the vast majority of mental health services (2).

The period between the emergence of a mental health need and help seeking can take quite some time: Belgians with a mood disorder wait about one year before seeking help, while there is a median delay of 18 years among Belgians with an alcohol disorder (3). However, the actual 'waiting time' starts once a professional care provider is contacted.

This waiting time can vary greatly across mental health needs and types of mental health care. However, the available figures in Flanders are limited both quantitatively and qualitatively and do not provide a sufficient basis for a proper scientific analysis. In the Netherlands, on the other hand, waiting times are systematically monitored and analyzed, making the pain points and necessary actions clear (4). In this essay, we therefore try to make a broad analysis of waiting times in the Flemish mental health care system and argue for more data-driven knowledge building through the registration of waiting times. We describe the urgency of the problem, namely the consequences of waiting times for patients, caregivers and the health care system. We then address some concrete causes with accompanying advice. We argue here that there is a chain of responsibilities underlying waiting times and a multi-level approach is therefore required.

6.1.2 Waiting times in Flanders

Within the Flemish mental health care system, the waiting times of outpatient Community Mental Health Centers (CGG) are systematically monitored. In registration year 2018, the average registration and treatment waiting time was 50 and 53 days respectively, with a total waiting time of about three and a half months (105 days) across patient groups (5). In 2021, the waiting time for an intake was on average between two and three months (6). For the effective start of treatment, the majority of patients had to wait about four and a half months, and even more than half a year in a third of CGGs. This demonstrates an upward trend in waiting times in Flemish secondary mental health care.

Hospitals and health care providers in private practices independently monitor their waiting lists and are not required to register waiting times. Because of the lack of data on waiting times at these important mental health care actors, the Staten-Generaal van de Geestelijke Gezondheid (SGGG) and the Chair of Public Mental Health conducted an online survey in 2020, aimed at people who sought help for themselves or a minor in the past two years. The questionnaire asked which help they sought, whether they received this help, and how long they waited for it. A request for help is considered met when the person asked for help and received it.

A total of 1597 people participated. The median waiting time, the proportion of participants who received help, the proportion of requests for help that were met, and the proportion of participants who waited at least one month are listed by type of mental health care in Table 16. Despite the limitations of the method, the study confirmed expectations of professionals (7).

Table 16. Results of the patient survey about waiting times. The proportion of received help, met help requests, median waiting times and proportion of patients who had to wait at least one month for mental health care types in Flanders.

	received help	met help requests	waiting times (median)	waiting times > 1 month
Adults (N = 1156)				
Private psychologist (N = 877)	75.6%	91.6%	2 weeks to 1 month	32.8%
Private psychiatrist (N = 378)	32.6%	81.3%	2 weeks to 1 month	46.2%
CGG (N = 170)	14.5%	53.1%	1 to 3 monts	60.1%
Psychiatric hospital (N = 151)	12.9%	77.2%	2 weeks to 1 month	43.6%
Crisis admission (N = 93)	8.0%	73.4%	less than 1 week	8.6%
PAAZ (N = 115)	9.8%	74.8%	less than 1 week	8.0%
Mobile acute care (N = 87)	7.5%	57.7%	less than 1 week	13.8%
Mobile chronic care (N = 42)	3.6%	39.6%	2 weeks to 1 month	47.6%
Children and youth (N = 441)				
Private psychologist (N = 260)	59.0%	73.7%	1 to 3 months	56.5%
Private psychiatrist (N = 174)	39.5%	72.9%	1 to 3 monts	73.6%
CGG (N = 60)	13.6%	39.4%	3 to 6 months	81.7%
COS (N = 42)	9.5%	41.1%	3 to 6 months	90.5%
CAR (N = 65)	14.7%	50.7%	1 to 2 years	96.9%
Psychiatric hospital (N = 39)	8.8%	49.2%	3 to 6 months	79.5%
Crisis admission (N = 36)	8.2%	50.0%	2 weeks to 1 month	33.3%
Mobile acute care (N = 41)	9.3%	57.1%	1 to 2 weeks	24.4%
Home support autism (N = 61)	13.8%	42.9%	6 months to 1 year	86.9%

CGG = Community Mental Health Center; PAAZ = psychiatric unit in general hospital; COS = Center for Developmental Disorders; CAR = Center for Ambulatory Rehabilitation

In general, it can be concluded that waiting times are omnipresent in the subsidized mental health care sector. Waiting times are longer for children and adolescents, even in crisis care and in the private sector. Waiting times can amount to six months and longer, with peaks of years in the diagnostics and care for children with a (presumption of) developmental disorder, i.e., in the Centers for Developmental Disorders (COS) and the Centers for Ambulatory Rehabilitation (CAR). Especially children and adolescents are often on multiple waiting lists at the same time and regularly encounter patient stops. Another finding is that waiting times are longer in reimbursed outpatient mental health care (e.g., CGG) compared to (semi-)residential mental health care. While most adult patients can be admitted within one month to a psychiatric hospital or psychiatric unit in a general hospital, only half of the people who seek help in CGG can be helped and the median waiting time is up to three months.

However, the current figures by no means provide a complete picture. For example, it is unclear whether there are major differences between diagnostic groups and regions. The lack of waiting time registrations in Flanders is not surprising, given the general shortcomings in data about mental health needs and care trajectories in Belgium (8).

6.1.3 The urgency of the problem

Waiting times first and foremost affect the patients themselves. A longer waiting period generally means a longer period of suffering. The waiting times survey by the SGGG revealed that many people feel desperate during the waiting period, lose motivation to solve the mental health disorder, and lose confidence in the mental health care system. About half reported that their symptoms worsened during the waiting period. Crisis hospitalizations and suicide attempts were frequently mentioned in this context. It has indeed been found that improved timely access to care leads to reduced emergency psychiatric hospitalizations (9).

The patient may also suffer functionally and financially as a result of the waiting period, for example because of a longer period of invalidity or by consulting more expensive alternatives during the waiting period. The patient's environment is impacted as well. This is particularly true for the coping capacity of parents and siblings when a child is waiting for help (7).

Waiting for mental health care can also have long-term consequences for the patient's recovery. According to the kindling hypothesis, longer periods of untreated disorder are predictive of a higher degree of chronicity (10). Even after one year, the functioning of psychotic patients who had to wait longer for treatment is more severely impaired, mainly for waiting periods of at least three months (11).

Health care providers also see waiting times as a major source of frustration. In the 2020 Psychiatrist's Thermometer, 816 Flemish and Dutch psychiatrists were surveyed about their profession and 88% felt that waiting lists were too long. Partly because of these long waiting lists and the high pressure it brings, 30% of psychiatrists felt that they were emotionally exhausted (12). Health care providers have to deal with cries for help from waiting patients and their environment that cannot always be met. On top of the high workload, this can cause them to experience powerlessness in the face of unmet mental health needs in patients (13). 'Moral stress' occurs when a care professional knows what a patient needs, but due to systemic constraints cannot provide this care, resulting in decreased job satisfaction (14).

Finally, wait times affect the efficiency of the healthcare system as a whole. Waiting time has been found to be a significant predictor of canceling or not showing up for appointments and thus leads to a significant degree of wasted time and resources (2, 15-17). The probability of not showing up to the appointment increases slightly per day of waiting, and this is not moderated by urgency (17). The first few days after the first contact are especially crucial: in a study of 5900 patients who received an initial appointment at an outpatient center in the US, almost 4 in 10 patients canceled or missed the appointment if it was scheduled at least a week after contact (16). In line with these results, an enrollment waiting time of more than 24 hours is the only significant predictor of not showing up at the intake interview for addiction treatment (15).

On the other hand, a recent study found no effect of treatment waiting time on dropout for individuals with severe psychiatric disorders, nor a clear distinction between patients who completed therapy and those who did not, even when the average wait time was two years (2). This suggests that the waiting effect on "no-shows" occurs primarily in the enrollment waiting period. The result is a vicious cycle: missed consultations perpetuate waiting times, and waiting times perpetuate missed consultations.

Although the effects of waiting times are predominantly negative, a waiting period can also act as a buffer against overtreatment. During the waiting period, spontaneous remission of symptoms may occur, preventing over-specialized treatment of mild or self-limiting mental health problems (18). On the other hand, cancellation of care should not automatically be interpreted as no longer needing care.

6.1.4 “Every system is perfectly designed to get the results it gets”

With this quote, statistician Edwards Deming points out that the outcomes (e.g., waiting times) of a system are the result of how the system is structured at the macro level (financial, political, legal, and socioeconomic; e.g., health policy), meso level (within an organization or local network; e.g., mental health network or hospitals), and micro level (at the level of individuals; e.g. patient-provider interactions).

The dynamics of waiting times in health care can be compared, somewhat simplified, to those of logistical processes using queuing theory (19). A concrete example is the queue at the checkout of a supermarket. The queue grows longer when there are people who merely want product information, when scanning is slower on average, when the shopping carts are more full on average, when there are too few checkouts open, etc.

In what follows, we compare each of these problems with the organization of mental health care and its processes.

6.1.4.1 Intake and indication

The customers in the supermarket looking for product information can be helped more easily by an information point, and represent the patients seeking mental health care. The intake and indication can thus have an impact on the waiting time at meso level. The introduction of a centralized information and intake point for related services in the same region ensures that the care capacity is saved and that patients do not have to tell their story all over again. Such contact points are realized in some Flemish regions, for example, in the form of Kruispunten (www.kruispunten.be).

In addition, a rapid establishment of the mental health need indication is important as well. Providing a first consultation as soon as possible is crucial to avoid a 'backlog' or an accumulation of patients. Also when people seek help at the 'wrong' type of mental health care, a referral to a more appropriate mental health care type is important. A 'clean' waiting list reduces overall waiting times and prevents patients from waiting unnecessarily 'in the wrong queue'. For example, an optimisation of the indication process reduced the average waiting time for adults in a Flemish CGG from 24 to 7 weeks.

6.1.4.2 Average treatment duration

At the micro level, the duration of scanning at the checkout can be compared with the treatment duration. The average treatment duration determines the flow-through: the rate at which new treatments can be initiated. Not delaying completion of treatment when a sufficiently durable result has been achieved is essential.

To support care programming from a purely logistical point of view, Little's law can be used (20). This means that the average number of patients present in a system divided by the average time these patients spend in the system equals the number of patients who can complete a full treatment course within a given time frame. Intensifying treatment, i.e., shortening the time between treatment sessions, leads to a better flow-through. The number of people who can be helped in the long term is then higher while treatment providers have a lower active caseload. Care managers, team leaders, clinicians and patients should join forces to manage the average length of treatment. Ultimately, care should not be reduced to a product, and there should always be a focus on individual patients and their care needs. It is therefore questionable to determine a fixed or maximum number of sessions a priori. The impact of setting a limit on the number of sessions can

produce both positive (e.g., more productive focus) and negative (e.g., dissatisfaction) effects (21).

This also debunks the misconception that reducing session frequency in favor of a higher caseload would lead to shorter wait times. Lower treatment intensity has been associated with slower improvement and reduced recovery, thereby increasing wait times (22). If care providers gain insight into these factors and are made aware that more intensive treatment leads to more helped patients in the long run, this will have a beneficial impact on the efficiency and moral stress. The lower caseload also allows for better focus on the patients in treatment.

Finally, both therapist and patient expectations play a role as well. One study found that compared to therapists, patients expect a relatively low number of sessions, but patient expectations best predict the actual number of sessions. Treatment that is too short can also be detrimental, given that a lower number of sessions than expected results in lower satisfaction (23).

6.1.4.3 Case mix

An equally long queue with fuller shopping carts will shorten more slowly, and customers with small purchases may be helped by a quick checkout. The degree to which the shopping cart is filled represents the severity and complexity of patients' problems in the mental health system. The case mix and the distribution of treatment times for different target groups should be taken into account when studying waiting times. By segmenting at the meso level the capacity for basic care and highly specialized care, specialized care does not delay basic care. Some CGG have therefore applied the Choice and Partnership Approach (CAPA) principles, distinguishing at the level of an organization or care network between an accessible basic offer (core care) that every patient can receive from every practitioner, and an additional specialized offer (specific care) for which more limited capacity is provided. CAPA implementation is found to be associated with more patients served, decreased waiting time to first appointment and higher productivity (24).

6.1.4.4 Capacity

The number of supermarkets and open cash registers represent the available capacity and resources in the mental health sector, as a result of policies translated into budgets at the macro level. In Flanders, the distribution of mental health resources does not sufficiently reflect the prevalence and severity of mental health needs. Due to inaccessible primary and secondary mental health care for common mild to moderate mental health needs, there is not only under-treatment, but there is also some overly specialized treatment: people can

sometimes receive hospital-based care more quickly and less costly than they can obtain affordable outpatient treatment. The responsibility for this lies with the authorities. In the subsidized mental health care sector, structural lack of capacity and chronically long waiting times are unacceptable. When patient stops are needed and people even have to wait in crisis situations, as is the case in child and adolescent psychiatry, it has to be acknowledged that there is a fundamental mismatch between need and supply. Whereas in the supermarket example the customer can choose to go to another store with shorter queues, this is not always possible in the mental health care sector.

A limited group of patients with chronic psychiatric conditions need long-term (often lifelong) low-frequency support rather than intensive treatment. For long-term care, capacity is crucial. Current funding for subsidized outpatient mental health services is insufficient to provide long-term support to patients. Without a strictly defined capacity, this leads to a clogging of the treatment system in the long run. Given their limited resources, namely 5% of the total budget for the specialized mental health care, the CGG can better focus on treatment rather than long-term support. There is a need for capacity within the outreaching community mental health care teams for long-term care, or a broader supportive outpatient mental health offer by psychiatrists, psychologists and social psychiatric nurses in the context of deinstitutionalization of mental health care.

6.1.4.5 Other factors

The need for care and the supply of mental health services, and therefore the waiting times, are also influenced by factors that are more difficult to control. For example, the population need for mental health care is determined by an interplay of demographic factors, health literacy, the extent to which preventive policies are implemented, etc. The mental health care offer is driven by political and economic factors, the number of health care providers in the labor market, geographic distributions, etc. Scientific developments with implications for clinical practice can also have a positive impact on waiting times.

Furthermore, there are differences in the individual financial possibilities to make use of the available services. Tailored care is not only prevented by waiting time, but also in interaction with its cost. The recent federal agreement on the expansion of the reimbursement of psychological care in 2022 is a huge step forward in this regard. In the long term, this could relieve the pressure on specialized mental health care services and thus contribute to a more accessible and efficient mental health care system in Belgium.

6.1.5 Discussion and conclusion

Long waiting times in mental health care are a major source of suffering and frustration. Especially the patients, but also their environment and care providers feel powerlessness. Waiting times create inefficiency: long waits increase the odds of missed appointments, which in turn contribute to longer waiting times. Improvements in timely access to mental health care are therefore associated with a more efficient system, with less time wasted in no-shows, higher staff morale and higher quality care.

In Flanders, a first challenge is the identification of the problem. Waiting times are not monitored in several important mental health care types, such as hospitals and private-practice care providers. This contrasts with the Netherlands, where average waiting times are monitored quarterly within regions and patient groups, and can be publicly consulted online. For an extensive analysis of the Dutch waiting time issue, where among other things the financial incentives for health care providers play an important role, we refer to the report of the Algemene Rekenkamer (2020). The length of waiting times does not seem to differ drastically between Belgium and the Netherlands, although Belgium can certainly learn something from the Netherlands in terms of data collection and reporting. It is incomprehensible that in Belgium currently a quasi-blind policy is pursued. The establishment of norms and the registration of waiting times will not directly lead to improvement, but can contribute to transparency and knowledge building and thus be a driver for change.

Although some interventions may reduce waiting times, there is no miracle solution. Ultimately, there are also limits to triaging patients, segmenting capacity and intensifying treatments. Some patients need a long-term trajectory and sometimes there is simply insufficient capacity, be it in terms of beds, staff, resources, etc. At no time should the quality and patient-focused nature of care be sacrificed for the sake of reducing waiting times. While some waiting times can be reduced by using the available capacity more efficiently, some bottlenecks require action at the macro level. Expanding capacity in child and adolescent psychiatry and subsidized mental health care is priority.

In conclusion, a chain of responsibilities exists at different levels, starting with political leaders, over mental health care network coordinators and organizations to individual practitioners and patients. An overview of the most important guidelines for avoiding and eliminating waiting lists, and which actors bear the greatest responsibility for this, is given in Table 17. The joint approach also consists of having a shared insight into the prevalence and course of mental disorders, so that the networks, mental health care facilities and care

providers have a well-founded vision of how much and what kind of care (modalities, average duration and intensity) is needed to work efficiently, and that these insights are taken into account when determining budgets and capacity. The various actors should join forces and arrive at common strategic objectives, of course in consultation with patients and experts.

When a patient is nevertheless forced to wait for a longer period of time for treatment, a final intervention lies in offering waiting support. This allows the patient to maintain the motivation to overcome the waiting period. However, offering waiting time support is rather "harm reduction" and not a solution for long waiting times, nor an alternative to full treatment. This support can, for example, take the form of telephone follow-up, group sessions with a waiting group, or through trained ex-patients. A good example of this is the 'Wachtverzachter', a Dutch initiative in which an ex-patient is paired with a waiting person (www.wachtverzachter.nu).

Table 17. Overview of the requirements for preventing and eliminating waiting lists, and which actors bear the main responsibility for this.

Requirements for preventing and eliminating waiting lists	care provider	institution	regional network	policy makers
Preventing the emergence and exacerbation of mental health problems				
Mental health in all policies				X
Developing a preventive mental health policy				X
Guaranteeing the financial accessibility of the mental health services				X
Waiting times support	X	X	X	X
Developing knowledge on the (dynamics of) waiting times				
Structural monitoring of waiting times		X	X	X
Optimizing the patient inflow				
Central information and registration points		X	X	
Working with rapid telephone screening		X	X	
Working with an indication setting team		X	X	
A first appointment with substantiated advice as quickly as possible	X	X		
Avoid backlogs by flexible use of capacity	X	X		
Networking and coordinating regional care provision		X	X	X
Optimizing efficiency				
Expert therapeutic interaction	X			
Not delaying completion of treatment	X			
Monitoring of average treatment duration and intensity	X	X	X	
Working with treatment plans	X			
Monitor case mix and care segmentation		X		
Matching the care offer to the care needs		X	X	X
Matching capacity to needs (care programming)				X
Stimulating innovation				
Funding scientific (practical) research in the mental health sector				X
Follow up and valorize scientific developments	X	X	X	X

6.2 Waiting times in Flemish private practices

Adapted and translated from: Report “Wachttijden in Vlaamse privépraktijken: een bevraging bij psychologen, psychotherapeuten, orthopedagogen en psychiaters. Werkgroep Wachttijden -Staten Generaal Geestelijke Gezondheid & Leerstoel Public Mental Health. 2021. <https://www.statengeneraalqz.be/wp-content/uploads/2021/06/Wachttijden-in-Vlaamse-privépraktijken-DEF.pdf>”.

6.2.1 Background

In February 2021, the SGGG and the Chair Public Mental Health launched a survey aimed at private practice mental health professionals. Concretely, these are psychologists, psychiatrists, orthopedagogues and psychotherapists who work at least part of their time in a Flemish private practice. Professionals were asked to complete a brief online questionnaire about waiting times and the use of waiting lists and/or patient stops in their private practice. At the end, an open field asked what would help them in reducing or dealing with wait times and allowed for further comments.

Notably, the topic of waiting lists regularly appeared in the media in the context of the coronavirus during that period, as the pandemic seemed to exacerbate the problem. There was already a sense in the field that waiting times were increasing, and the Flemish public news agency (VRT) reported in February 2021: *“Psychologists are no longer pulling it off: waiting lists are even closing due to abundance of people seeking help.”*

6.2.2 Results

A total of 1305 professionals fully completed the questionnaire. The vast majority (87%) is female and participants are on average 40 years old. About four in five (79%) are clinical psychologists, 11% psychotherapists, 7% psychiatrists and 3% orthopedagogues. Overall, 45% of participants work in a solo practice, 45% in a group psychotherapy/psychiatry practice and 18% in a multidisciplinary practice (e.g., incl. GP). A minority (41%) works in the private practice only, compared to 59% who also work elsewhere (e.g., hospital). People work an average of 19.1 hours per week in the private practice, although this varies widely.

The majority of participants (79%) have adults as their target group. About half (50%) have adolescents (13 - 18y) as their target group, a third (33%) provides mental health care for children (< 12y), and 29% have older people (65+ y) as their target group. Note that the majority indicated more than one age group.

The main findings regarding waiting times are described here. This is about the waiting time between getting contacted and the intake session. In about half of the practices (48%), people can be helped within a month. In 29%, the waiting time is one to three months, and in 15% between three and six months. For 8%, the waiting time is at least six months. In the vast majority of practices (86%), people do not have to wait for the start of treatment after the intake, and this thus marks the beginning of a treatment period.

There are marked differences between professions. About half of psychologists (49%), psychotherapists (58%) and orthopedagogues (53%) can be consulted within a month. For psychiatrists, this is only the case for 14%. While waiting times of more than six months are very exceptional among psychologists (8%), psychotherapists (8%) and orthopedagogues (3%), this is the reality for 43% of participating psychiatrists.

The 574 participants using a waiting list were asked how many people are currently on the waiting list. On average, there are 11 people on the waiting list (median = 5). However, the differences are large, mainly because group practices often have a larger shared waiting list rather than a waiting list by provider, which greatly raises the average here. The sum of all waiters across all responses is 6009.

Participants were asked if they are currently accepting new patients. More than one-third of all participants (38%) indicated that they do not currently accept new patients. The distribution within professional groups was assessed: 38% of clinical psychologists, 61% of psychiatrists, 28% of orthopedagogues and 33% of psychotherapists had a patient stop. The distribution within target groups (ages) was examined as well, but note that there is an overlap of participants here. In total, 40% of health care providers with target group children, 37% with target group adolescents, 37% with target group adults and 30% with target group elderly had a patient stop.

A question was added asking what alternatives the professionals themselves suggest if a patient is informed that there is a long waiting period or patient stop. Only 6% indicated that they did not propose an alternative. Nine out of ten (91%) refer to other care providers in the region and 9% offer interim waiting time support themselves (e.g., telephone follow-up).

Finally, there was a question that probed the impact of the coronavirus on the number of patients seeking help. Overall, 35% noticed a slight and 37% a strong increase in the number of patients seeking help. A small minority of 4% noticed a decrease and 15% noticed no difference.

To the open-ended question "Is there anything that could help you as an independent mental health care provider to reduce waiting times in your practice?" came more than 400 responses. The responses were thematically analyzed and categorized. The following themes occurred frequently:

- **Make the status of self-employment more attractive through psychotherapy reimbursement**

More than 100 participants indicated that the current status of self-employed mental health care provider is not attractive enough. This prevents many from working more hours as a self-employed care provider or to do this as their main profession. Currently, one generally earns more in employment unless one would charge very high rates for patients.

"It's financially unattractive because you can't charge patients enough per hour because of the limited reimbursement. Otherwise, it would become too expensive for the already relatively well-off patient who consults in the private sector."

- **Promote collaboration and networking**

Participants see collaboration and networking as an important solution in dealing with waiting lists. Many indicate that an overview of available mental health care providers in the region would help with targeted referrals, with information about the target group and visibility of current waiting times. Especially finding available psychiatrists is difficult. Cooperation between psychologists, psychiatrists and others in the mental health and primary care system is crucial.

"A platform where one can see which colleagues still have open spots would be nice. More clarity for clients and professionals for who can go where for which problems."

- **Capacity expansion within the subsidized mental health system**

For all subsidized mental health services, demand exceeds capacity, resulting in long waiting times. Consequently, private practices are often consulted by patients who need a more multidisciplinary or specialized approach, e.g., by a CGG. This increases the complexity of patient needs in private practices, which in turn leads to longer care trajectories and thus an increase in waiting times.

"The more complex cases end up in the private sector because of the far too long waiting times in specialized care. The complexity of problems is constantly increasing, which also necessitates lengthy care pathways. This, however, is clogging up the agenda so that no new patients can be helped in our practice."

- **Reduce the unreimbursed administrative burden**

A significant portion of private practice health care providers' time goes to administration (e.g., reporting and appointment management) and these necessary administrative tasks are not always, or limitedly, reimbursed. Limiting administration would free up time and space for patient contacts.

"Less reporting work. For a psychiatrist, a lot of time goes into administration, as care is linked to the availability of a report or diagnosis, but this is not paid or paid little."

- **Facilitate therapy during daytime hours**

There is a high demand for therapy outside of school/work hours so these hours fill up quickly. Therefore, participants indicate that flexibility from schools and employers is important.

"Currently, it is not evident that psychological counseling is allowed during school hours. This requires schools to give special approval. Even for parents, it is often quite a negotiation with their employer to be allowed to make time for their child's necessary treatment."

Other comments related to waiting times in mental health care included:

- **Shortage of ambulatory (child) psychiatrists**

There is a shortage of independent psychiatrists, and in particular child and adolescent psychiatrists. In some regions, finding an available child psychiatrist is mentioned to be quasi-impossible. There is no quick solution to the shortage, but there is a need for a long-term plan whereby the bottleneck profession should be made more attractive during medical school. Psychiatrists also refer to the distribution of salaries, where psychiatry does not rank favorably.

"Training more child and adolescent psychiatrists, but then the financial picture will also have to be taken into account, since our discipline dangles along at the bottom if you look at the wages of all specialties."

- **Expanding child and adolescent psychiatry**

Current capacity within child and adolescent psychiatry does not meet the needs. Waiting times within child and adolescent psychiatry are unacceptably long: even in crisis situations there is often a waiting time. Children's development is undermined in the process.

"Because of the problematic flows to child psychiatry in hospitals and home support, patients remain too long in the private system without appropriate help and we as child psychiatrists are faced with chronic crisis situations and visibly escalating situations where our help is inadequate."

- **Further investments in prevention**

Several participants indicated that preventing mental health problems is the most important step in reducing waiting times. Prevention (e.g., psychoeducation, detection, basic help) should be integrated within the school and workplace.

"What could be helpful is linking mental health care provision with the educational system. Teachers often see things going wrong for a long time. Providing accessible tools and in collaboration with parents and teachers, could be a great support through which a lot can be done preventively."

- **Influences of the coronavirus**

Of course, the impact of the coronavirus was also frequently mentioned. Many participants indicate that requests for help have increased in severity and notice an increase in re-admissions from ex-patients, often because of a crisis. Young people are also frequently mentioned as a group where there is a significant increase.

"We get a lot of applications from adolescents. The help requests are increasing slightly but the problems are much worse. I also see many clients returning where counseling was completed months ago."

6.2.3 Conclusion

Some general conclusions can be drawn. However, the results should be interpreted with some caution, as the response rate in some professions is low, and the self-selection and self-report method may cause some bias. Nonetheless, it is clearly demonstrated that patient stops are common in private practices, and waiting lists are no longer just a problem of subsidized services. This is primarily the case for psychiatrists. The situation is less pressing for psychologists, psychotherapists and orthopedagogues, but it is still worrisome.

The issue of waiting times and patient stops is most pronounced for children and adolescents. As many as 15.3% of caregivers with target group children have a waiting time of more than six months. Also the open fields cited the shortage of child psychiatrists and the capacity shortage within child and adolescent psychiatry. There is therefore a need to prioritize subsidizing and expanding child and adolescent psychiatry.

Overall, this chapter highlighted the problem of waiting times in mental health care based on the first Flemish studies on the subject and made it clear that there is still a long way to go in the field of waiting times research. The next chapter highlights a completely different theme, yet it is not entirely unrelated: it was already briefly mentioned in this chapter that mental health care providers saw an increase of mental health problems during the COVID-19 pandemic. The impact of COVID-19 on the general population's mental wellbeing is examined in more detail in chapter 7.

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7. COVID-19 and mental health

The research described in this thesis was conducted between 2019 and 2022. However, in early 2020, the COVID-19 pandemic unexpectedly broke out. Globally, measures were taken to 'flatten the curve': avoid an overburdened health care and further spreading of the virus (1). Social distancing strategies led to stay-at-home orders, closing of non-essential businesses and schools, and cancelling of events. By the first week of April, half of the world was in 'lockdown' (2).

It quickly became clear that the pandemic and its associated social restrictions were a threat to the psychosocial wellbeing of the general population. Numerous studies were conducted worldwide to measure this impact. In what follows, the findings and conclusions of two studies in which the Chair Public Mental Health participated are described. Specifically, this chapter begins with a peer-reviewed paper on the impact of COVID-19 on mental distress in Belgian youth, followed by a study which investigates the impact of COVID-19 on depressive symptoms among residents of the city of Antwerp.

7.1 Mental distress in Belgian youth during the first COVID-19 wave

Published and adapted from: Rens E, Smith P, Nicaise P, Lorant V, Van den Broeck K. Mental Distress and Its Contributing Factors Among Young People During the First Wave of COVID-19: A Belgian Survey Study. Front Psychiatry. 2021;12:575553. Published 2021 Jan 28

7.1.1 Background

Researchers hypothesized that children and young people could be disproportionately affected during the pandemic because of several reasons, such as increased pressure on families, decreased peer contact, decreased social activities, and closure of schools, universities and support services (3, 4). Several studies indicate that young age is indeed a risk factor for a wide range of mild to severe mental health problems during disease outbreaks, such as depressive disorders and anxiety-related disorders (5-16). While the level of mental distress is even under normal circumstances generally high among young people, a longitudinal study demonstrated that young people even experienced the steepest increase of mental distress during the COVID-19 pandemic (12). One explanation is that adolescents are highly affected by social deprivation because of a heightened need for peer interaction and an increased risk of perceived social isolation (17, 18). While the use of digital technologies might mitigate some of the negative effects of social distancing, young people's affinity with social media might also pose a threat to their wellbeing when they are confronted with information overload and "fake news", which is especially detrimental during global crises (19, 20).

Besides young age, some other risk factors related to mental health problems during the COVID-19 pandemic. Most of these are factors are pre-existing factors, such as female gender, lower socio-economic status and low social support (5, 12, 13, 15, 16, 21-25). Other risk factors are specifically linked to the COVID-19 pandemic, such as having an infected relative (5, 16, 22, 23).

This survey study aimed to contribute to a better understanding of the associated factors of mental distress among 16 to 25-year-olds during the beginning of the first wave of the COVID-19 pandemic in Belgium. Specially, we were interested in the impact of lockdown-related changes in various life domains which are relevant for youth, such as changes in social media use, time spent at home and the frequency of several social and leisure activities. We hypothesized that those reporting the highest impact on their everyday life would also be the ones experiencing the most mental distress. Moreover, we expected

young people from vulnerable groups to be highly affected, such as those with a chronic disease or who consulted a professional for mental health problems in the past. Finally, we also expected loneliness and a lack of social support to contribute to mental distress.

7.1.2 Methods

7.1.2.1 Study design

An online web survey was distributed in Belgium through social media and national news outlets during the beginning of the first wave of the COVID-19 pandemic in 2020. The Belgian government took the first restriction measures on March 13th, as schools, bars and restaurants were closed. Five days later, a lockdown was declared and non-essential journeys and social gatherings were prohibited. The survey was opened two days after the start of the lockdown, on March 20th. The survey was named “Covid and I”, was aimed at the general population and was available in English, French and Dutch.

After three weeks, 21 734 respondents filled in the survey. For our research question, all 2085 respondents aged between 16 and 25 years old were selected. All 77 cases with missing data were filtered out, resulting in a total of 2008 respondents. Informed consent was obtained from all participants. The Belgian Law does not require an approval from an Ethical Board for an online survey with the general population.

7.1.2.2 Measures

7.1.2.2.1 Mental distress.

The 12-item General Health Questionnaire (GHQ-12) was used for the assessment of mental distress. The GHQ-12 is a short, validated scale for detecting non-specific mental disturbance in the general population and is suitable for young people (26-28). We used the GHQ-scoring method (i.e., 0 0 1 1) which yields an overall score ranging from 0 to 12, with higher scores indicating higher mental distress. We used a threshold of ≥ 4 to discriminate mental distress cases from non-cases, based on prior research indicating discriminant validity is optimal at this cut-off point (29).

7.1.2.2.2 Predictor variables

Demographic characteristics included age, gender, student status and living alone or not. Respondents were asked if they have a chronic condition and whether or not they consulted a professional for mental health reasons in the last twelve months.

Social support was measured using the 3-item Oslo Social Support Scale (OSSS-3) and sum scores were operationalized into three categories: poor support (3 – 8), moderate support

(9 – 11) and strong support (12 – 14) (30). Loneliness was measured using an adapted version of the UCLA 3-item Loneliness scale with a four-point Likert scale ('never', 'once in a while', 'fairly often' and 'very often'), yielding a score from 0 to 9 (31, 32). Respondents with a score ≥ 6 were categorized as experiencing a high level of loneliness.

Exposure to COVID-19 was considered present when someone reported having a current or past COVID-19 infection, or when one has a family member who has a current or past COVID-19 infection. As for the change in time spent at home, respondents indicated their usual (i.e., before the outbreak of COVID-19) and current time at home, dichotomized as 'part of the day' versus 'whole day' and a variable was constructed expressing whether there was a change in time at home or not.

Respondents indicated their usual and current daily social media use, categorized as 'less than 3 hours', 'between 3 and 6 hours' and 'more than 6 hours'. Then, three categories were distinguished based on the difference between usual and current use: no increase, small increase (change of one category) and large increase (change of two categories) in social media use.

Finally, change in everyday life was measured by assessing the impact on the following activity types: visiting relatives and friends, going out for drinks or food (to a pub, party,...), practicing sports or hobbies, and doing home activities (reading a book, watching a movie,...). Respondents indicated their usual and current activity level for the separate activities ('never / 0 times a week', 'once a week', '2 to 3 times a week' and 'more than 4 times a week'), and responses were scored from 1 to 4 respectively. Per activity type, the current level score was subtracted from the usual level score, resulting in variables representing the difference between the pre-COVID-19 and current activity level. For 'visiting friends and relatives' and 'going out for drinks and food', three categories were distinguished: no decrease, small decrease (i.e., one category change) and large decrease (i.e., more than one category change), as an increase of these activities doesn't make sense in light of the social distancing measures. For the variables 'practicing sports or hobbies' and 'doing home activities', both directions of change were included: no change, a decrease or an increase of the activity.

7.1.2.3 Statistical analyses

Sample characteristics and the prevalence of mental distress are described using percentages and means. Cross tabulations were used to explore associations between GHQ caseness and demographics. No weights were applied to the data set. This decision was

made because the weights for male respondents would be large (> 2) when striving for a balanced data set, resulting in highly reduced accuracy and possibly even more bias.

Logistic regressions were used to predict the odds of experiencing significant mental distress, i.e., to discriminate between GHQ-cases and non-cases. First, bivariate associations were assessed between each potential predictor and mental distress, expressed as crude odds ratios (COR) and corresponding 99% confidence intervals (99% CI). Second, variables with a Wald test $p < .100$ in bivariate analyses were included in a multivariable logistic regression model and adjusted odds ratios (AOR) with a 99% CI were estimated. No interactions were included because we wanted to focus on the main effects and the model already included a substantial amount of predictors. Collinearity diagnostics were assessed using VIFs in a linear regression model with the total GHQ-score as the dependent variable and revealed no collinearity. In all analyses, independent variables with a Wald test $p < 0.010$ were taken as significant predictors of mental distress.

7.1.3 Results

7.1.3.1 *Sample characteristics*

Table 18 shows the demographic sample characteristics and descriptive data of all predictors and the outcome. A total of 2008 respondents aged 16 to 25 years old completed the survey, with a mean age of 22.27 years old ($SD = 2.29$). Most of the respondents filled in the questionnaire in French (84.76%), which suggests that the majority of the participants are from the Walloon part of Belgium or from Brussels. 12.35% of the respondents filled in the questionnaire in Dutch and 2.9% in English. The majority of the sample is female (78.09%), student (66.83%) and lives together with others (92.78%). Only 4 respondents (0.20%) were infected with COVID-19, but about one in ten (10.71%) reported having an infected relative. 23.16% consulted a professional in the last twelve months for mental health reasons, and 12.70% reports having a chronic condition. The mean GHQ-12 score was 5.38 ($SD = 3.45$) and approximately two thirds (65.49%) of the respondents scored 4 or higher, indicating that the level of mental distress is generally high in the sample.

Table 18. Demographics and descriptive characteristics of the predictors (N = 2008).

Variable	%
Mental distress	65.49
Age	
16 - 21	33.12
22 - 25	66.88
Female	78.09
Student	66.82
Living alone	7.22
Chronic condition	12.70
Prior mental health consultation	23.16
Social support	
High	17.18
Moderate	53.34
Low	29.48
Experiencing loneliness	32.42
Exposure to COVID-19	11.30
Increase in time at home	83.52
Social media use	
No increase	34.96
Small increase	55.23
Large increase	9.81
Visiting friends and relatives	
No decrease	13.94
Small decrease	20.27
Large decrease	65.79
Going out	
No decrease	11.35
Small decrease	48.16
Large decrease	40.49
Sports or hobbies	
Decrease	44.67
No change	35.86
Increase	19.47
Home activities	
Decrease	5.58
No change	60.91
Increase	33.52

Before the lockdown, only 3.48% of the respondents report being at home the whole day, whereas this is the case for 87.00% of the respondents during the lockdown. There was an increase in time at home for 83.52% of the sample. Before the lockdown, 53.19% of respondents used social media less than three hours a day, 42.48% between three and six hours a day, and only 4.33% for more than six hours a day. During the lockdown, only 13.99% of respondents used social media less than three hours a day, 47.61% between three and six hours a day and 38.40% for more than six hours a day. Overall, there was no increase in social media use for 34.96% of the sample (only 1.59% reported a small decrease), a small increase for 54.23% of the sample and a large increase for 9.81% of the sample. Frequency distributions of the four activity types before and during the lockdown are presented in Table 19.

Table 19. Percentual distribution of frequency levels for different activity types before and during the COVID-19 pandemic (N = 2008).

	Visits	Going out	Sports or hobbies	Home activities
Before lockdown				
0 times / week	1.69	10.31	10.31	1.29
1 time / week	9.51	48.66	31.62	12.10
2 – 3 times / week	32.82	34.91	41.33	27.09
≥ 4 times / week	55.98	6.13	16.73	59.51
During lockdown				
0 times / week	59.76	98.46	37.05	1.49
1 time / week	25.20	1.15	19.02	1.84
2 – 3 times / week	7.52	0.35	25.45	10.91
≥ 4 times / week	7.52	0.05	18.48	85.76

7.1.3.2 Predictors of mental distress

Prevalence estimates of mental distress within each predictor category together with the results of the logistic regression analyses are presented in Table 20 (Supplementary Material). Risk factors found to be significantly associated with being a GHQ-case in bivariate analyses included the female gender (OR = 1.61, 99% CI 1.21 – 2.14), having had a mental health consultation in the last twelve months (OR = 1.63, 99% CI 1.20 - 2.21), experiencing moderate (OR = 1.55, 99% CI 1.12 - 2.13) or low social support (OR = 2.97, 99% CI 2.05 - 4.33), experiencing loneliness (OR = 6.41, 99% CI 4.54 - 9.06), experiencing a change in one’s daily time at home (OR = 1.58, 99% CI 1.15 - 2.17), experiencing a small (OR = 1.94, 99%CI 1.50 - 2.51) or large (OR = 4.97, 99% 2.86 - 8.64) increase in one’s social media use, a large decrease in the frequency of going out for drinks or food (OR = 1.82, 99% 1.23

- 2.71), a decrease in practicing sports or hobbies (OR = 1.50, 99% CI 1.14 - 1.98) and a decrease in doing home activities (OR = 2.89, 99% CI 1.51 - 5.88).

Variables with $p < .100$ in the crude analyses were fitted in the multivariable logistic regression model, resulting in a model with 12 predictors: gender, chronic condition, prior mental health consultation, social support, loneliness, exposure to COVID-19, change in time at home, change in social media use, change in going out for drinks or food and change in frequency of practicing sports or hobbies and home activities. The results indicated the adjusted odds of experiencing mental distress were higher among women (OR = 1.78, 99% CI 1.29 - 2.46), among those experiencing loneliness (OR = 5.17, 99% CI 3.60 - 7.44) or low social support (OR = 2.17, 99% CI 1.42 - 3.29), and among those with a small (OR = 1.63, 99% CI 1.22 - 2.17) or large (OR = 3.08, 99% CI 1.70 - 5.61) increase in social media use, a small (OR = 1.63, 99% CI 1.04 - 2.52) or large (OR = 2.17, 99% CI 1.35 - 3.48) decrease in going out for drinks or food and a decrease in doing home activities (OR = 2.72, 99% CI 1.30 - 5.67).

7.1.4 Discussion

This study describes mental distress and its associated factors among 16 to 25-year-olds during the beginning of the COVID-19 pandemic in Belgium. An internet survey was widely distributed from mid-March to early April 2020, while the country was in lockdown. A first observation is that the prevalence of mental distress in the sample was very high, as approximately two thirds (65.49%) had a GHQ-12 score of 4 or higher.

As a comparison, only about one in three (36.7%) young people aged 16 to 24 experienced significant mental distress ($\text{GHQ} \geq 4$) during the first wave of the COVID-19 pandemic in a probability sample of the UK general population (12). So, either Belgian youth is remarkably more distressed than UK youth, or the use of a non-probability sample caused a large bias. Another explanation for the extreme level of mental distress in Belgian youth is that the survey was completed at the early beginning of the pandemic which may have caused an emotional 'spike', while the UK survey was taken from mid- to late April.

As a pre-COVID-19 reference, 17% of Belgian 15 to 24-year-olds experienced significant mental distress in 2018, and a meta-analysis estimated that one in four adolescents (defined as 10 to 19 years old) had a score of 4 or higher on the GHQ-12 worldwide (33, 34). This suggests that approximately a threefold increase of mental distress in Belgian transition age youth occurred during the outbreak of COVID-19. A similar conclusion was reached in another study on mental health during the beginning of the COVID-19 pandemic

in Belgium, in which an online survey sample was used and weighted to match the Belgian population: the authors found that the prevalence of anxiety disorders has doubled among 16 to 24-year-old boys and tripled among girls, and that the prevalence of depressive disorders has tripled among girls and even quadrupled among boys in that age group (35). These are very alarming findings, but caution is needed in interpreting the increase in mental health problems, as non-probability samples were used during the COVID-19 pandemic.

Pierce et al. (2020) warned against the use of non-probability sampling in mental health surveys during the COVID-19 pandemic, as it inevitably introduces bias that cannot be fully controlled (36). Several of the following limitations can explain the extreme level of mental distress in the study. First, it is possible that the level of mental distress was already higher in the sample, even before the outbreak of COVID-19. Indeed, almost one in four participants reported past mental health problems and the majority of the participants were female. Importantly, late adolescent and young adult girls were found to experience more mental health problems in Belgium compared to boys (37). The overrepresentation of girls in the sample may therefore give an overestimation of the true prevalence of mental distress among young people. We acknowledge that an internet-based sample is in general less representative, for example because of self-selection bias and because the most vulnerable may not be reached. Moreover, we have no reliable information about the place of residence, the ethnic group and the socio-economic status of the participants. We also emphasize that a screening is not equal to a diagnosis, and that mental distress describes a wide range of troubling symptoms but is not equal to a clinical mental disorder. Notwithstanding these limitations, the level of mental distress in Belgian youth as reported in this study is striking and the study provides valuable insights into the contributing factors of mental distress among youth in transition age.

Ten percent more girls compared to boys were found to experience significant mental distress, and female gender was predictive for mental distress in both crude and multivariable analyses. This is in line with previous studies reporting the female gender as a risk factor for low psychological wellbeing during the COVID-19 pandemic (21, 24, 25, 38). Notably, women report lower mental health compared to men even in normal conditions, but the pandemic is contributing to an even growing gender inequality (12).

Previous research suggested that mental wellbeing is low among students and that the mental health effects of the pandemic are high in this group, but our findings indicate that student status is not predictive for mental distress (16, 23). The high levels of mental health problems in student samples can therefore possibly be better explained by young age,

rather than student status in itself. Moreover, little differences were found between 16 to 21-year-olds and 22 to 25-year-olds, and no effect of living alone was found.

We expected that vulnerable young people with a chronic condition or people who consulted a professional for mental health problems in the last twelve months would be highly affected by the pandemic, as previously demonstrated in a Turkish and Italian sample of the general population (5, 24). However, both variables were no significant predictors at $p < .01$ in the multivariable model. One possible explanation for the lack of association between the presence of a chronic condition and mental distress is that the young people with a chronic condition in our sample may not be heavily impaired or are not at increased risk for developing complications when infected with COVID-19.

A history of mental health problems was significant in bivariate analysis but was only marginally significant ($p = .026$) when covariates were included. This is surprising, given that the majority of a sample of UK youth with mental health needs reported that the pandemic made their condition worse, and many mental health support services were unavailable during the pandemic (3). A longitudinal case-control study found that the mental health of patients with a psychiatric disorder remained worse than those without a psychiatric disorder, but that the COVID-19 pandemic did not increase the symptom-severity (39). A possible explanation for the lack of a strong association in our study is that the mental health problems for which they consulted a professional in the last 12 months are rather mild, or that these problems are already resolved or treated adequately. Moreover, there may be a high proportion of young people with pre-existing mental health problems who did not consult a professional for mental health reasons in the last twelve months.

As expected, young people who feel lonely or with low social support experience high mental distress. Social distancing rules should therefore go together with increased attention for social support and connectedness, especially as this can be an important buffer in times of adversity (40). It is assumed that loneliness and a lack of social support cause mental distress, but the direction of the association is however unclear due to the cross-sectional design. Some factors, such as having an infected relative or experiencing lockdown-related changes in one's daily life, are factors that are uniquely linked to the COVID-19 situation. Inconsistent findings have been reported as regards to the link between having an infected relative and mental distress (5, 16, 23, 24). In this study, being infected with the virus or having an infected family member is not a predictor of mental distress.

Few studies have explored the role of changes in one's daily life, but a mobile app study suggested that it is not the quarantine in itself, but rather the impact it has on one's regular daily life that predicts mental health problems (41). To our knowledge, this is the first study that examines the impact of changes in several everyday activities on youth mental health. The results indicate that some lifestyle changes contribute to mental distress in young people, while other changes are less relevant. Specifically, we found that an increase in the frequency of social media use, a decrease in going out for drinks or food and a decrease in doing home activities significantly predicted mental distress, while changes in time spent at home, visiting friends and relatives, and practicing sports or hobbies did not.

While previous research identified high social media use as a risk factor for anxiety and depression, the relationship may be more complex than initially thought (16, 42, 43). It is possible that excessive use of social media only affects those who, under regular circumstances, do not use social media that often. This idea is supported by the finding that the odds of mental distress were threefold greater among those with a large (i.e., more than three hours) increase in social media use compared to before the pandemic. Further research is needed to confirm this hypothesis and to examine whether the type and content of the social media exposure matters. For example, social media use can even be beneficial in some cases, as previous findings indicated that social media can also provide informational, emotional, and peer support (43).

The significant effect of a large decrease in going out for food or drinks can be explained by the importance of this activity for some young people. Transition age is often a period of freedom and leisure before taking up adult responsibilities. For example, nightlife is important for some young people. The findings indicate that mental distress is highest among those who usually go out to meet peers more than once a week. It can be assumed that this subgroup of outgoing young people is characterized by high sensation-seeking, and that the lack of sensation causes distressing boredom. This idea is supported by research which found that the COVID-19 measures feel more unnatural for extravert people, leading to higher decreases in mental wellbeing and social connectedness as compared to introvert people (44, 45).

Finally, a decrease in home activities was present for only a small minority of the sample and significantly predicted mental distress. The mechanisms remain unclear, but the fear and stress may be paralyzing for some people, causing them to stop doing relaxing activities. A decrease in practicing sports or hobbies was only marginally significantly contributing to mental distress, while other studies found an association between an increase of sedentary behaviour and poorer mental health (46, 47). It is possible that the

association was less pronounced in this study because not all hobbies entail physical activity, and not all physical activity is categorized as sport (e.g., going for a walk). Nevertheless, governments should allow and facilitate physical activity in times of adversity, as sedentary behaviour threatens both physical and mental health.

In conclusion, Belgian youth is clearly troubled by the COVID-19 pandemic and the associated social distancing measures. Mental distress among Belgian 16 to 25-year-olds was very high during the first wave of the pandemic. Female gender, low social support, high loneliness and changes in social media use, going out for drinks or food and doing home activities were found to be contributing to mental distress. Fortunately, the mental health consequences of the pandemic are widely recognized and studied. Young people were however an often-forgotten group in the COVID-19 pandemic, because most attention went in the first place to the elderly at risk. While young people are at low risk for the physical effects of COVID-19, young age is an important correlate of reduced mental health during the pandemic. We call for increased attention to the psychological needs of young people, for whom the effects of social deprivation and the disruption of everyday life are particularly detrimental. Authorities should therefore aim to reduce the impact on public and personal life as much as is safely possible. Young people are a broad group and should be treated accordingly, for example by not only focusing on students. While it might be unethical to give young people certain privileges in complying with the measures, governments must allow self-development and peer contact in safe conditions. Some concrete decisions that can be made are to leave schools and universities open and to provide safe spaces for young people in unstable home environments. Those in the greatest need, such as young people with no supportive network, should be targeted for counselling and social support. Studies investigating the aftermath of the COVID-19 pandemic should further contribute to the understanding of the long-term psychological effects of such a global disaster.

7.2 Depressive symptoms of Antwerp citizens in 2020 versus 2017

Adapted from report: Hoe heeft de Antwerpenaar de coronapandemie ervaren in de periode april tot half augustus 2020? Een blik op de bevindingen uit verschillende onderzoeken van stad Antwerpen, Atlas, het Instituut voor Tropische Geneeskunde, Samenlevingsopbouw en UAntwerpen.

In collaboration with the researchers of the Chair Public Mental Health, the city of Antwerp decided to add some questions about mental wellbeing to the “Antwerp Monitor” (AMON) to assess the mental wellbeing of Antwerp citizens during the COVID-19 pandemic. The AMON is an ongoing weekly survey of the city of Antwerp in which 500 Antwerp residents between the ages of 16 and 80 are invited to complete a survey. The sample is drawn from the population register and the survey can be completed on paper or online. The questions about mental health were included from April 6th until August 17th 2020. A total of 642 individuals participated, of which 57% are women and with a mean age of 37 years.

Mental wellbeing was measured using the 8-item Center for Epidemiologic Studies - Depression Scale (CES-D8). The CES-D8 questionnaire measures depressive symptoms in the past week. The questionnaire yields a total score from 0 to 24, with a higher score reflecting a higher frequency of depressive symptoms. Previous research indicated good reliability and factorial validity of the scale for research in the general Belgian population (48). A reliability analysis of the CES-D8 in the AMON sample also showed that the scale has high reliability and internal consistency: Cronbach's Alpha is equal to 0.85 and all corrected item-total correlations are higher than 0.30.

The CES-D8 was also used by the Antwerp City Monitor in 2017. This allows for a comparison between the prevalence of depressive symptoms before and during the pandemic. The City Monitor used a categorical division of the CES-D8 scores for pragmatic reasons. Based on the average item scores, people are classified into three categories: low, moderate or high frequency of depressive symptoms.

The CES-D8 scores of the Antwerp Monitor in 2020 were compared with the scores of the city of Antwerp in the 2017 City Monitor. The CES-D8 score is significantly higher in 2020 ($M = 6.63$, $SD = 4.26$) compared to 2017 ($M = 6.24$, $SD = 4.21$), $t(4420) = -3.00$, $p = .003$. However, Cohen's effect size $d (-.09)$ suggested a very small practical significance.

Figure 11 plots the evolution of the CES-D score for the four different age groups by gender. An increase in depressive symptoms is mainly seen in the youngest age groups. Among men, there is a general increase in symptoms, especially in the youngest group (16 to 24 years). Among women the effect depends on the age group, with an increase among the youngest groups (16 to 39 years) only, and a steep increase in the youngest group.

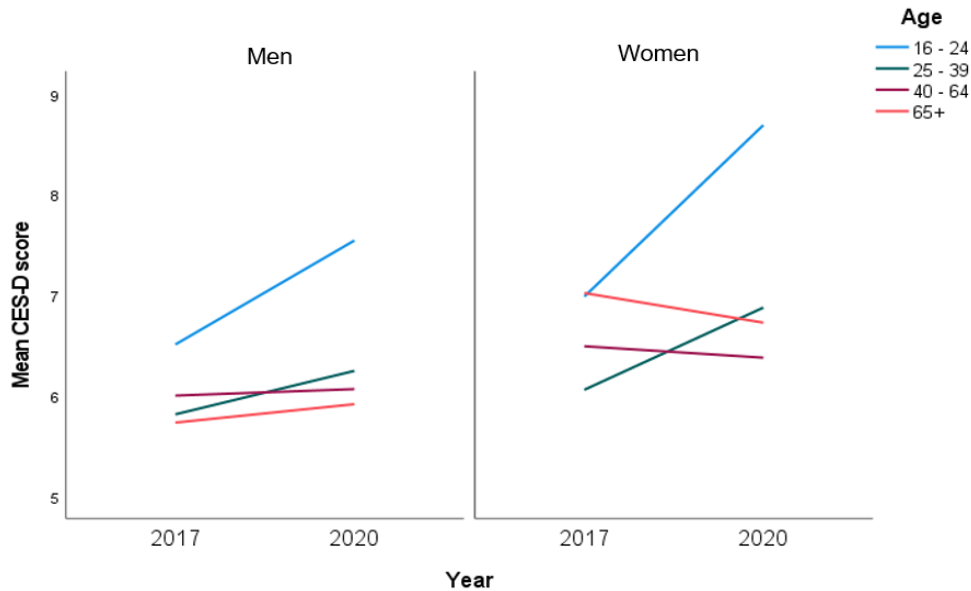


Figure 11. Comparison between depressive symptom level in 2017 and 2020.

Consequently, if one looks at the categorical classification of depressive symptoms, there is also a slight increase in the proportion of Antwerp residents with a moderate or high frequency of depressive symptoms. In 2020, 35.1% of the participants have a low frequency of depressive complaints, 47.8% a moderate frequency of depressive complaints and 17.1% a high frequency of depressive complaints. In 2017, 39.0% of Antwerp residents had a low frequency of depressive symptoms, 45.5% a moderate frequency and 15.5% a high frequency of depressive symptoms.

In conclusion, depressive symptoms are prevalent among Antwerp people during the pandemic and have increased slightly yet significantly compared to 2017. It is important to interpret the findings in light of the following shortcomings. First, it is difficult to ascertain the extent to which this increase is due to the corona pandemic. The COVID-19 outbreak and accompanying measures have undoubtedly had an impact on the mental well-being of the population, but during three years, different factors can affect mental wellbeing.

Secondly, the comparison is not based on longitudinal research where the same persons are surveyed over time, so no statement about causality can be made. Third, the validity of the categorical classification of depressive symptoms, which was first used in the City Monitor, is unclear. Despite these shortcomings, it can be concluded that the level of depressive complaints was remarkably high both before and during the corona pandemic, and that the increase in depressive symptoms was most pronounced for young people and particularly for young women.

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Supplementary Material

Table 20. Prevalence of mental distress in each predictor category and the odds ratios and confidence intervals of mental distress in logistic regression analyses (N = 2008).

Predictor	% distress	COR	99% CI	p	AOR	99% CI	p
Age							
16 - 21	66.62	1					
22 - 25	64.93	0.93	0.72 - 1.20	0.454			
Gender							
Male	56.82	1			1		
Female	67.92	1.61	1.21 - 2.14	< .001	1.78	1.29 - 2.46	< .001
Student status							
No student	64.11	1					
Student	66.17	1.09	0.85 - 1.41	0.362			
Living alone							
No	65.32	1					
Yes	67.59	1.11	0.69 - 1.78	0.581			
Chronic condition							
No	64.8	1			1		
Yes	70.2	1.28	0.88 - 1.86	0.091	1.16	0.76 - 1.76	0.379
Past mental health care consultation							
No	63.06	1			1		
Yes	73.55	1.63	1.20 - 2.21	< .001	1.34	0.96 - 1.89	
Social support							
High	52.75	1			1		
Moderate	63.31	1.55	1.12 - 2.13	0.001	1.40	0.99 - 1.99	0.014
Low	76.86	2.97	2.05 - 4.33	< .001	2.17	1.42 - 3.29	< .001
Loneliness							
No	54.46	1			1		
Yes	88.46	6.41	4.54 - 9.06	< .001	5.17	3.60 - 7.44	< .001
Exposure COVID-19							
No	64.74	1			1		
Yes	71.37	1.36	0.91 - 2.02	0.049	1.28	0.82 - 1.99	0.148
Increase time at home							
No	56.50	1			1		
Yes	67.27	1.58	1.15 - 2.17	< .001	1.20	0.84 - 1.71	0.197
Social media use							
No increase	53.85	1			1		
Small increase	69.34	1.94	1.50 - 2.51	< .001	1.63	1.22 - 2.17	< .001
Large increase	85.28	4.97	2.86 - 8.64	< .001	3.08	1.70 - 5.61	< .001
Visiting friends and relatives							
No decrease	61.07	1			1		

COVID-19 and mental health

Small decrease	61.18	1.00	0.67 - 1.51	0.977	0.94	0.59 - 1.50	0.738
Large decrease	67.75	1.34	0.94 - 1.90	0.032	1.09	0.73 - 1.64	0.579
Going out							
No decrease	55.70	1			1		
Small decrease	64.32	1.43	0.98 - 2.11	0.016	1.63	1.04 - 2.52	0.005
Large decrease	69.62	1.82	1.23 - 2.71	< .001	2.17	1.35 - 3.48	< .001
Sports or hobbies							
No change	62.22	1					
Decrease	71.24	1.50	1.14 - 1.98	< .001	1.32	0.97 - 1.80	0.019
Increase	58.31	0.85	0.61 - 1.18	0.202	0.89	0.62 - 1.28	0.394
Home activities							
No change	63.70						
Decrease	83.93	2.98	1.51 - 5.88	< .001	2.72	1.30 - 5.67	< .001
Increase	65.68	1.09	0.84 - 1.41	0.389	0.84	0.62 - 1.12	0.116

COR = Crude Odds Ratio in bivariate analysis

AOR = Adjusted Odds Ratio in multivariable analysis

99% CI = 99% Confidence Interval

8. General discussion

The studies discussed in this dissertation add to the insight into the epidemiology of mental health needs, and the mental health treatment gap and its causes in Belgium, and more specifically in the province of Antwerp. The introduction outlined in Chapter 1 emphasized why public mental health research is so important. There is a need for quality data on the mental health of the population to guide policy and care programming based on that information. It became clear that there are several approaches in the literature to investigate the prevalence of mental disorders and care needs, each with its strengths and weaknesses. A distinction can be made between assessed needs, felt or perceived needs and needs expressed as the use of care.

Starting from this, several studies using different methods were conducted between 2019 and 2022 to investigate to what extent the different assessed and perceived population needs for mental health care are fulfilled, and which factors can explain unmet needs. Note that when referring to qualitative research or focus group discussions and interviews with Antwerp professionals, this refers to the study described in Chapter 3. When the quantitative population survey in Antwerp research is mentioned, this refers to the study in Chapter 4. When the waiting times studies are mentioned, this refers to Chapter 5.

In this final chapter, I will discuss the most important findings and conclusions, the strengths and limitations of the research, clinical implications, some future research opportunities and general recommendations.

First, I will outline nine main findings of the research described in this dissertation:

1. At least one in ten Antwerp people needs mental health care, but only half of them seek care
2. About one in six people uses professional health care for their mental health, of which the majority has no clinical mental health need
3. Fourteen percent of Antwerp people perceive a fully or partially unmet need for mental health care
4. Mental health problems and unmet mental health needs are at population level especially prevalent among transition age youth
5. Men, older people and ethnic minorities are less likely to perceive a need for mental health care and to seek help

6. Low perceived need and attitudinal barriers are major reasons for not seeking care
7. Financial accessibility and waiting lists are important structural barriers in receiving adequate mental health care
8. The operationalization of mental health needs matters
9. The consequences of unmet mental health needs are serious and widespread

8.1 Main findings

1. At least one in ten Antwerp people needs mental health care, but only half of them seek care

It was found that, based on our Antwerp population survey study, about one in ten people has a current common mental health problem that significantly affects their daily life (1). This number is even higher when dysfunction is not taken into account, as about one in five Antwerp people screened positive on one of the screening scales for depression, anxiety or alcohol abuse. A total of 22% of the sample reported that a health professional ever told them that they have a mental health problem, especially mood disorders and burn-out. One in twenty Antwerp people reported having suicidal thoughts in the past few weeks. Given that only common mental health problems were assessed, the true prevalence of people who need mental health care might even be higher.

Mental health problems in Antwerp are most common among young people, people with a lower education, and those with financial problems. Mental health problems were more prevalent in the urban PCZ compared to the rural PCZ, and these effects are explained by the higher presence of the high-risk groups in Antwerpen-Oost. Studies have shown that mental health disorders are more prevalent in cities compared to rural areas, at least partly due to the higher concentrations of people with a low socio-economic status and people with a minority status in urban neighborhoods (2). However, it is unclear whether this relationship is causal or correlational, as factors such as low rent in socially deprived areas may also attract people from vulnerable social groups.

According to the Belgian Health Interview Survey (BHIS), three in ten Antwerp people experience reduced mental wellbeing (3). According to the Antwerp Health survey of the City of Antwerp, even half of all citizens report feeling stressed (4). Altogether, these numbers illustrate the high prevalence of mental health problems in Antwerp. However, the majority of mental health problems are mild and do not necessarily require extensive or specialized mental health care.

In the Antwerp population survey, among the people with a probable common mental disorder that is at least moderately disabling, about half seek professional help for their mental health. This is in line with findings of the ESEMeD project, in which was found that 48% of Europeans with a disabling 12-month mental disorder did not use formal care (5). When a need for mental health care was defined as the mere presence of a mental disorder (i.e., meeting the criteria of a screening scale for mental disorders but not necessarily meeting criteria for dysfunction), only one in four used formal health care for a mental disorder (6). A meta-analysis of 27 European studies found that only 26% of adults with a mental disorder in a 12-month period sought help, but this lower number can partly be explained by the fact that no extra clinical significance requirement was added and that less common disorders such as eating disorders and somatoform disorders were included as well (7). Overall, service utilization is generally highest among people with more severe disorders, comorbidities and mood disorders (6, 7).

It must be noted that only formal health care use was examined in the Antwerp population survey. However, prior research suggests that formal help seeking is generally low because many people seek informal support, usually from friends or family. For example, a community mental health survey in London showed that although only 40% of those with a mental health problem had sought formal help, a total of 60% had sought informal help and only 26% had sought no help (8). Formal help seeking was more common among those with more severe or chronic mental illness. This illustrates that not seeking professional help for mental health problems does not always mean that the mental health need is completely unmet. It may be that someone with mild problems is sufficiently resilient to recover from a mental health problem on their own through self-care and informal support.

The treatment gap was equally high in Antwerpen-Oost and Baldemore. However, because of the higher level of mental health problems in Antwerpen-Oost, the population level of unmet needs is 5% higher in the urban region. On the other hand, rural professionals indicated in the focus group discussions that many mental health needs in their PCZ remain unmet due to the relative lack of resources and mental health care provision in the region as compared to more urban zones. Some studies report higher levels of unmet need and less mental health service utilization in rural areas, but a systematic review did not support an association with rural residence (9-12). Finally, it should be noted that the urban-rural disparity between the city of Antwerp and the rural part of Antwerp is much less pronounced than in other studies which compare metropolitan areas with rural 'countryside' areas which are geographically far away from health care facilities.

2. About one in six people uses professional health care for their mental health, of which the majority has no clinical mental health need

Overall, 17.1% of our sample had a mental health related care contact, of whom two thirds consulted a psychologist or a GP, and a fifth a psychiatrist. Multiple health care professionals were consulted in the majority of cases. The most often reported combination was a GP together with a clinical psychologist, which was reported by a total of 5.7% of cases.

Given that 11.2% consulted a psychologist, the level of mental health care use is higher than the 8.7% Antwerp people in the most recent BHIS who consulted a psychologist, psychotherapist or psychiatrist (13). It is unclear what the reason is for this, but a possible explanation is that mental health care use has risen since 2018. According to the BHIS, only 2.4% Belgians consulted a psychologist or psychotherapist in 2001, which doubled by 2013. Comparisons are difficult as the psychiatrist was not included in the years before and the BHIS makes no distinctions between practitioners, but there seems to be a general evolution towards an increase of mental health care use in the general population (13). Moreover, there is a trend towards an increase in psychotherapeutic care at the expense of pharmaceutical treatment: the treatment of depression using psychotherapy has risen from 19% in 2004 to 43% in 2018, while the treatment with medication has decreased from 84% to 67% during that period (3). A total of six percent of the Antwerp general population reported using medication for mental health problems, which were mainly antidepressants and/or benzodiazepines, but Belgian data of reimbursed health care has shown that at least one in ten people in Antwerp uses antidepressants (14). The six percent psychotropic medication users in our sample is therefore an underestimation.

Notably, there are in total more people without than with a clinical mental health need who consulted a professional for their mental health during a 12-month period. This is mostly due to the higher baseline prevalence of people without a clinical need in the general population. Among those without a clinical need, 13.6% used services for their mental health, translating to a population prevalence of 12.2%. In contrast, only 5.0% of people in the total population are service users with a clinical mental health need. Therefore, 71.0% of those who used health care for their mental health do not have a clinical mental health need according to our criteria. This number is higher than reported elsewhere. An Australian nationwide survey in 2007 found that 43% of mental health care users did not fit criteria for a mental health disorder (15). In the World Mental Health Surveys in the early 2000s, it was found that 52% of the people who received mental health care met the criteria for a mental disorder (16).

The phenomenon that a large proportion of mental health care users do not meet criteria for a mental health disorder is often referred to as 'overmet need' or 'met un-need' (17, 18). However, the concept of overmet need has been challenged. Almost all people who use health care for their mental health have elevated levels of general distress or disability, and those with lower levels of need do generally not make heavy use of health services and use less specialized mental health services (15). Worldwide, almost one in five mental health care users without a current mental disorder had a mental disorder in the past, and 13% have other need indicators such as the presence of a subthreshold disorder or recent life stressors (16). These findings suggest that the use of mental health care by individuals without a mental health disorder does not necessarily reflect an unneeded (over)consumption of mental health care. Therefore, the use of mental health care by people without a mental disorder should not be regarded a structural problem or a waste of resources for mental health care in the population. The vast majority of people who use formal health services for their mental health are expected to benefit from it, either in a curative way for those who already have a mental health problem, or in a preventive or supportive way for those who experience subclinical mental stress or reduced well-being.

3. Fourteen percent of Antwerp people perceive a fully or partially unmet need for mental health care

Besides clinically assessing unmet mental health needs through validated instruments, another approach is to examine them from the own perception of the individual. Fully unmet perceived needs mean that there is a self-perceived care need among non-health care users and provide important information about the demand for services among non-health care users. On the other hand, partially unmet perceived needs mean that health care users think the received care was insufficient and constitute an important dimension of the views of adequacy and quality of treatments.

In the Antwerp survey study, the population prevalence of partially and fully unmet perceived needs is 14.0% in total, and is associated with being female, younger, experiencing financial distress and having a European origin. Also in other studies, perceived unmet needs are higher in women and younger people (19, 20). In the Antwerp sample, ten percent of people perceived a fully unmet and four percent perceived a partially unmet mental health need. A total of twelve percent of Antwerp people who did not use health care for their mental health perceived a fully unmet mental health need, while one in four of those who did use health care perceived a partially unmet need.

No distinction was made between the types of help (e.g., need for medication, need for counseling, need for information...) as is the case in the Perceived Need for Care Questionnaire (21). However, Mojtabai et al. found that different variables are associated with different unmet needs (20). Enabling factors (e.g., income) were strongly associated with perceived unmet need for information, while clinical need factors were more strongly associated with unmet need for medication, and predisposing demographic factors with unmet needs for information and medication. Moreover, an Australian study found that needs for medication were most likely to be rated as met at 84%, needs for counselling and information were met at a rate of between 50% and 60%, while only 25% of social intervention needs were perceived as met (22).

In our study, among the people who used health care for their mental health, almost one fourth (23.3%) found this insufficient to be adequately helped, which concerns 4.0% in the total population. Additional analyses showed that people with a clinical need, a non-European background and financial distress are especially likely to perceive the care as insufficient. Another study reported no differences in perceived partially unmet needs as regards country of birth (23). Given the small sample of this subgroup, it is unclear why minorities who used mental health care in our sample more often perceived their needs as unmet. Possibly, mental health care for minorities and people with a lower socio-economic status is less adequate. A systematic review concluded that there are indications that socioeconomic deprivation is linked with poorer treatment outcomes (24). However, other studies found that socioeconomic status is not an important predictor of adequate care, suggesting that other factors unrelated to quality of care could counteract effective treatments, such as the presence of life stressors (25, 26).

No difference was found between men and women in partially unmet perceived needs, while a Swedish study found that men are less likely to perceive care as sufficient (23). Other studies found that young people who use mental health care are the most likely to report that their needs are unmet (27-29). However, in our study, the age groups between 26 and 64 years old perceived the most partially unmet needs.

4. Mental health problems and unmet mental health needs are at population level especially prevalent among transition age youth

Transition age represents a developmental period in which the transition from adolescence to adulthood takes place, typically between ages 16 to 25 years. It is a critical period characterized by many psychosocial transitions and social role changes, but also regarding the onset of mental health disorders: about half of all lifetime mental disorders start in

adolescence and three quarters have their onset by the mid-20s (30-32). It is worth noting that besides age effects, birth-cohort effects may be at play as well. Previous research found that more recent birth cohorts experience more psychological distress and have a higher projected lifetime risk (i.e., the risk of having experienced a mental disorder by age 75) (33, 34).

However, treatment for mental health problems during transition age often has a large delay. One of the reasons for this gap is the schism between adult and child mental health services at age 18. Mental health care systems are generally designed for treating traditional pediatric and adult patients but are not ideally suited to meet the needs of transition age youth. There is therefore a high need for mental health promotion and early prevention and intervention starting in adolescence, as well as the construction of new streams of mental health care for young people in transition to adulthood (31, 32, 35). For example, qualitative research with transition age youth identified preparation, flexible transition timing, individualized transition plans and informational and relational continuity as positive factors during the transition from child to adult mental health services (36). On the other hand, waiting times are in Flanders especially pronounced for children and youth across all mental health care levels, which presents another barrier to adequate and timely treatment (37-39).

Our population study also demonstrated that mental health problems are more common among transition age youth as compared with older age groups. It was found that 18.7% of Antwerp people aged 15 to 25 years old had a clinical mental health problem. While young people were as likely as middle-aged adults to seek help, unmet need in the population is remarkably high among adolescents and transition-youth because of their higher baseline level of mental health problems. Overall, as many as one in ten adolescents had a clinically assessed unmet mental health need. Additional analysis suggested that the high level of (unmet) mental health needs is especially pronounced in adolescents under 20 years old. Especially for anxiety disorders, it was found that 22.6% of those between 15- and 19-year-old meet criteria for anxiety disorder, which is twice as much as the prevalence for 20- to 25-year-olds.

As regards suicide, a clear age effect was found as well. A striking number of 15.0% of Antwerp transition youth experienced suicidal ideation and 8.5% reported a suicide attempt during their life. In contrast, about six percent of middle-aged adults reported recent suicidal thoughts or a lifetime suicide attempt. It is known that suicide is one of the leading causes of death in young age, especially because of their lower probability of dying of other leading fatal causes such as heart failure or cancer. However, young age is in itself

not a predictor of death by suicide because more middle-aged and older adults commit suicide. When compared to other ages, suicide in Flanders is even the least common among younger age groups (40). Nonetheless, the numbers demonstrate the high need for suicide prevention in young people.

The Antwerp professionals in the qualitative studies noticed a specific group with high unmet need, which are vulnerable transition age youth who exit from home or from special youth care services and are often left on their own as a result. One of the consequences is that many then have no permanent shelter, and this is intertwined with an unmet need for psychological as well as social services. This homelessness is often disguised because these youth do typically not sleep in public places. This finding also recently emerged in a study of the King Baudouin Foundation in which homeless people were counted in nine Belgian regions (41). It revealed that as many as one in five homeless adults is younger than 26 years old. The researchers note that three major groups can be distinguished among young homeless people: new immigrants and refugees, youth care leavers, and young adults with no history of assistance. Moreover, it was found that homelessness is indeed hidden in half of the cases in this age group as they spend the night with friends or family, while this is only the case in a third of people aged 26 or older. In addition to preventive support for vulnerable youth and families, there is therefore a need for a specific approach to the transition to adulthood that ensures continuity between youth and adult care. This closely relates to targeting unmet mental health needs, as a systematic review found that the largest evidence base on the effectiveness of interventions for youth homelessness relates to interventions that address mental health and health risk behaviors (42).

Finally, it must be noted that youth was also an especially vulnerable group during the COVID-19 pandemic. As reported in the research paper on Belgian young people which was conducted in 2020 (Chapter 7), about two in three youngsters between 16 and 25 years old experienced mental distress in the beginning of the pandemic. These were especially girls, those experiencing loneliness or low social support, and those with a larger level of change in their everyday life (43).

5. Men, older people and ethnic minorities are less likely to perceive a need for mental health care and to seek help

Men

More than a fifth (21.4%) of women in the Antwerp general population used health care for their mental health in the Antwerp population survey, which is in stark contrast with the 12.9% among men. However, the prevalence of mental health problems is equally high in both genders, although alcohol disorders are more common among men. In our study, 11.3% men as compared to 6.1% women met criteria for an alcohol disorder. This gender difference is consistently reported, as well as for alcohol-related burden and mortality, although studies show that this gender gap is decreasing (44, 45). Unmet needs are generally high among people with an alcohol disorder, mostly due to a low need perception in this group (46, 47).

The lower use of mental health services and higher level of unmet needs among men is a consistent finding in the literature (12, 23, 48-50). Men are less likely to perceive a need for mental health care, even when taking into account mental wellbeing (23, 51). In general, men have less favorable attitudes towards psychological openness and help-seeking for mental health problems (49). This can be explained by conformity to traditional masculine norms such as social dominance, emotional control and toughness (50, 52). For example, men who score higher on measures of traditional masculine ideology, alexithymia (i.e., inability to identify and describe emotions) and fear of intimacy reported more negative attitudes towards seeking professional psychological help (53). These traditional masculinity norms also lead to the under-evaluation and denial of symptoms, and a higher likelihood of externalizing mental health problems by expressing anger and aggression (50). This underutilization of mental health care can have serious consequences. For example, a study found that three quarters of people who died by suicide in the UK were not in contact with mental health services a year before dying, and these 'no contact suicides' were significantly more likely to be male (54).

Elderly

Regarding the elderly, who were defined as people aged 65 and older in our population survey, the situation is complex. The level of mental health care problems in our sample is very low in this group, as only 3.5% is defined as having a clinical need for mental health care and 5.7% of the total age group uses health care for their mental health. However, none of those with a mental health need used health care, leading to an artificial situation

of 100% unmet needs in the sample. Only 2.8% reported a perceived unmet need for mental health care in our study. Another study found that perceived need is lowest among older adults, but when a need is perceived, they are also the most likely to have their needs met (27). This suggests that low perceived need is a major reason for not seeking care among elderly with a mental health problem.

Professionals in the focus group discussions and interviews argued that the oldest generation is less likely to seek help for psychological problems because they are less familiar with mental health care provision. Correspondingly, a survey study found that depressed older adults endorse a high level of stigma and have less intentions to seek mental health treatment (55). However, research in the general population suggests that attitudes towards mental health care are not more negative in older age (49). It was even found that American adults of 55 to 74 years of age were approximately two to three times more likely to report positive help-seeking attitudes than younger adults (56). Mackenzie et al. argue that older adults' underutilization of mental health services can therefore probably be better explained by enabling resources, such as access to trained geriatric mental health professionals, as well as perceived and assessed need indicators. Indeed, perceived need is typically lowest among the oldest age groups (1, 57). Among older adults with psychiatric disorders, almost half did not perceive a need for professional help in an American study (57). Likewise, a recent Canadian study found that low perceived need and a lack of mental health literacy are major barriers to mental health care in older adults (58). Even when a mental health need is perceived, rates of non-utilization of mental health care are high in the oldest age categories (59).

Given the aging world's population together with the fact that older people are more likely to have disabling disorders and multimorbidities, there is a high need for multidisciplinary care, family-centered care and coordination of mental, physical and social health services (60). Meeting the totality of care needs is crucial, as unmet health care needs are even directly linked to depression in old age (61). Moreover, positive elements of aging, such as resilience and wisdom, need to be highlighted to combat ageism (60).

It should be noted that only people with a maximum age of 80 years were included in our study, and many epidemiological studies use a maximum age cut-off as well. However, this excludes the 'oldest old', who often live in a nursing home or need assistance with their daily activities and might even be the most vulnerable. This was also mentioned by the Antwerp professionals, who argued that mental health needs are high among institutionalized elderly due to a lack of specialized services for this group. A review concluded that the quality of care for elderly with mental illness is indeed often poor (62).

People with a non-European background

In the Antwerp population study, 9.8% of those born within and 15.3% of those born outside Europe had a mental health need. These numbers are in stark contrast with health care use, as respectively 17.6% and 13.4% of Europeans and non-Europeans reported using formal care for their mental health. Consequently, clinical unmet mental health needs were higher among non-European people. It must be noted that the decision was made to distinguish on the basis of European versus non-European birthplace, but that this does not capture all ethnic and racial differences in mental health care and second- and third-generation migrants with non-European roots. Different indicators of ethnic or racial minority status are used in the literature, such as immigrant status or skin color.

The higher prevalence of unmet mental health needs among ethnic-racial minority groups and people with a migrant background is a robust finding. A systematic review has shown that immigrants use mental health services at lower rates than non-immigrants despite a greater need, and this is even more pronounced among men (63). For example, a US study found that non-white people have less initiation of mental health care, less adequate care and shorter care periods (64). No reduction in disparities between white people and racial-ethnic minorities were found in the US between 2004 and 2012, and the disparity between black and white people regards any use of mental health care even increased from 8% to 11% during this period (65).

Remarkably, the prevalence of perceived unmet needs is similar in our population survey, but when other factors are taken into account in the multivariable model (e.g., financial distress and the presence of a clinical mental health need), those with a non-European origin were significantly less likely to report a perceived unmet need. Other studies have previously found that perceived mental health needs are lower among ethnic and racial minorities, ranging from those with no mental health problem to those with severe mental illness (66). Moreover, qualitative discussions with people from ethnic minority populations showed that the inability to recognize and accept mental health problems is an important barrier (67). Therefore, there is a need for improving information about mental health and the pathways on how to access care specifically targeted to this group, preferably in their own language.

Disparities in mental health care for ethnic minorities represent a serious public health concern, but its nature is complex. As argued by the Antwerp professionals in the focus group discussions and interviews, ethnic minorities often face additional barriers such as language, cultural differences and greater stigma. Other survey studies also found that

ethnic minorities more often report financial reasons, language and stigma as barriers to mental health care (63, 68). Internal stigma is especially high among depressed African elderly, resulting in an especially low intention to seek mental health services (55). Finally, clinicians' prejudiced perceptions or lack of cultural sensitivity may also play a role. This is particularly the case when social identities are not shared between patient and clinician, which can lead to unease or distrust in ethnic minorities (67, 69).

6. Low perceived need and attitudinal barriers are major reasons for not seeking care

Limited need perception was the most common barrier to care in the WMH surveys, especially for mild cases, men and older people (70). Overall, as much as two thirds of those who fulfill the criteria for a mental disorder do not perceive a mental health problem that needs care (51). These numbers are even worse in alcohol disorders, as even less than one in nine of those with an alcohol disorder perceives a need for treatment (46). Respondents with a perceived mental disorder had an eightfold higher prevalence of help seeking than those without a perceived need (51).

However, even when a need for mental health care is perceived, a third does not seek it (46, 51, 71). This is in line with the results of our study, if we assume that all health care users in our samples perceived a need for mental health care. The total level of need-perceivers is then 27.1%, constituted of 17.1% health care users and 10.0% non-health care users who perceived an unmet need. Thus, it can be said that 63.1% of need-perceivers sought health care for their mental health.

Low perceived need can reflect a lack of insight, called 'anosognosia', but on the other hand, some people with mental health problems can find a way to cope effectively with their symptoms. A study found that both treated and untreated depressed individuals with a perceived mental health need showed more rapid symptom decline but greater symptom severity at follow-up than those untreated without a self-perceived mental health need (72). This implies that untreated people with an unperceived mental health problem can often make an adequate estimation of their need for care: they had less severe symptoms at baseline and had mostly favorable clinical outcomes at one-year follow-up. Perceived needs are linked to symptom severity, so patients with a perceived need for care had a poorer outcome regardless of whether they were treated or not (51, 72).

Nonetheless, it should be alarming when someone with a disabling and severe mental health disorder does not perceive a need for care. It was found that low perceived need is the major barrier for not seeking treatment in all levels of disorder severity in the WMH

surveys, which illustrates that low need perception is common for people with a severe mental health disorder as well (70).

Besides low perceived need, the most important reasons why people do not seek professional mental health care are demand-side barriers (70, 73-78), such as negative attitudes, stigma, low motivation or a lack of trust or knowledge concerning mental health care. In the WMH surveys, almost all people (96%) who perceived a need but did not seek care reported at least one attitudinal barrier, and in two-thirds of cases this included a desire to handle the problem on their own (70). This was also found in both the qualitative and quantitative study in Antwerp. A French qualitative study came to largely the same conclusions as our studies, and found that lack of insight, fear of stigma, former negative experiences and lack of literacy are main barriers to mental health care (79). During the qualitative discussions, Antwerp professionals mentioned that many people with a worrisome mental health state, often in combination with a social vulnerability, are reluctant to professional care.

In our population survey study, more than six in ten people with a perceived fully unmet mental health need reported that they did not seek care because they simply preferred to solve their personal problems themselves (1). Three in ten people lacked trust in professional mental health care and two in five did not know where to seek help. This relates to mental health literacy, which encompasses knowledge and beliefs about mental health care. It was previously found that better knowledge about mental health problems is predictive of help-seeking (80). Lack of need perception or problem recognition is reflective of a limited mental health literacy as well.

Shame about mental health care was endorsed by a tenth of the sample. Shame is an emotional proxy of self-stigma and is also associated with limited mental health literacy (81). There are mixed findings about evolutions in stigmatic attitudes towards mental health. Most studies report that attitudes around mental illness have changed in recent decades for depression but not for severe mental illness such as schizophrenia, and that the public's readiness to seek mental health care has clearly increased (82-84). Moreover, younger people and women generally hold more favorable mental health beliefs, which partly explains the underutilization of services among men and older people (49, 83-85). The professionals in the focus groups argued that stigma and taboo are primarily important barriers in certain populations, such as ethnic or cultural minorities, as is confirmed by a meta-analysis investigating the link between stigma and racial group (86).

7. Financial accessibility and waiting lists are important structural barriers in receiving adequate mental health care

Besides demand-side barriers, also system-level or structural barriers hinder access to adequate mental health care. In the WMH surveys, it was found that structural barriers are more commonly reported by severe cases as compared to moderate and mild cases, with more than two-thirds of severe cases reporting at least one structural barrier (70).

One structural barrier for unmet mental health needs relates to financial accessibility. One in four people in the Antwerp population survey study reported that they did not seek help because they worry about the costs. When looking at the group of people who received some help for their mental health but perceived this as insufficient, the cost of services was even cited by more than two in five, making it the most important reason for partially unmet needs. Possibly, many people are unaware of the offer of reimbursed mental health care in Belgium. Moreover, research has shown that financial barriers are even more pronounced in regions without mandatory health insurance such as the US, where cost barriers dominate and are reported by 46% of those who did not seek care (76, 87).

During the focus groups and interviews, professionals also argued that cost of psychotherapy is a major issue in Belgium. Private practice psychologists are one of the most consulted mental health care providers, but this is limitedly reimbursed in Belgium. However, it should be noted that the reimbursement of psychological services has been extended since the qualitative data-collection between 2019 and early 2020. During that time, reimbursed primary mental health care was limited to eight sessions for adults (18 to 65 years old) only. In July 2021, the NIHDI/RIZIV Committee approved an agreement with mental health care networks regarding the funding of psychological functions in primary care provided by psychologists and orthopedagogues who participate in the convention (88). Psychological services are now available for all ages for €11 per session or €4 in case of increased reimbursement for people with low financial capacity. This holds for conventional mental health care providers, and as long as the budget is available. People can receive primary mental health care for general psychological wellbeing and mild to moderate symptoms, or up to 20 sessions of more specialized care for more severe mental health problems. Furthermore, group therapy is encouraged if possible. It may therefore be said that the affordable mental health offer has substantially improved recently, although future research should further examine to what extent and how it is used and what the effects on public mental health are.

Cost of services interact with waiting times. There are some specialized mental health services in Belgium with lower out-of-pocket costs, such as psychiatrists, the community mental health centers and psychiatric hospitals. However, the Flemish waiting times study found that waiting times are generally longer for subsidized care (39). During the qualitative exploration, Antwerp professionals mentioned that waiting times are an important factor hindering access to mental health care, especially for people with lower financial capacity, people requiring long-term care and children and youth. The same conclusions could be drawn from the waiting times survey, as there were remarkably longer waiting lists and more patient stops in children and youth mental health care, with extreme situations of waiting times of more than a year for children with developmental disorders such as autism spectrum disorder.

Also, Flemish private-practice mental health care providers argued that because of long waiting lists in subsidized care, people with more complex mental health needs consult the private mental health care sector that often lacks the necessary multidisciplinary, and requiring longer and more intensive care pathways that in turn contribute to longer waiting times. Also, some patients choose the most reimbursed option, such as a psychiatrist instead of a psychologist, when this does not always match their care needs. However, waiting times will in many cases not be eliminated by increasing capacity alone, as they are a complex interplay of a mismatch between capacity and demand, a suboptimal patient flow and case mix, and result from organizational constraints and lack of monitoring of waiting times parameters within organizations.

8. The operationalization of (unmet) mental health needs matters

Estimates of met and unmet mental health needs are complex given the diversity of operationalizations of different levels of need. Perceived needs are felt by the individual, while normative needs are based on assessments, and expressed needs are based on health care use for mental health (89). As found in the Antwerp population survey, the predictors of normative and perceived unmet needs are different. Women, younger people and Europeans are more likely to perceive an unmet need, while men, older people and non-Europeans more often have a normative unmet need. Moreover, other contextually based assessments of mental health needs are represented by systematic audits of outcomes, such as suicide.

As argued by Andrews, normative approaches typically overestimate both unmet and met need because some people who meet diagnostic criteria for a disorder will not be significantly disabled or distressed so as to seek treatment, while many who seek

professional care will not be correctly diagnosed or will not receive appropriate treatment (18). The decision to include a disability criterion in the Antwerp population study thus reduces the typical overestimation of unmet need in epidemiological studies. Finally, Andrews also argues that epidemiological surveys typically overestimate 'overmet need' as some may not currently meet criteria simply because of the good treatment they are receiving, and some people with a need for mental health care may present a more diffuse range of symptoms and therefore do not fit criteria for a certain mental health diagnosis.

Another drawback of normative approaches is that surveys rarely cover all disorders, and other need indicators may be present in the absence of a mental disorder, such as general distress or suicidal ideation (15-17). Although it is pragmatic to categorize people on whether or not they have a mental health need, as was done in the Antwerp population study, it should be said that the need for mental health care is more of a continuum. Indeed, a large meta-analysis concluded that the great majority of psychiatric problems are continuous (90). Cut-off points of diagnostic instruments and screening scales pay little attention to this dimensional nature. For example, the PHQ-9 diagnostic algorithm requires that at least five depression symptoms are present, but it is still possible that someone with four symptoms experiences similar or even more distress or disability than someone with five symptoms. Transdiagnostic dimensional approaches have therefore gained considerable attention recently, and pose that a broad array of clinical presentations shares some common dimensions (e.g., negative affect is high in many mental disorders) (91). Therefore, the normative binary distinction between met and unmet need is inherently ill-defined as well.

The distinction between perceived versus assessed cannot be reduced to subjective versus objective, although it is commonly referred to for simplification. The research field of mental health assessment is inherently subjective. Thoits et al. argue that the belief that diagnosed disorders are objective phenomena is grounded in the medical model of disease that underlies most epidemiological research (71). As the medical model posits that that experts' judgements are superior to individuals' self-assessments and treatment decisions, and that professional treatment is necessary when there is an assessed disorder, people who have a clinical mental disorder but have not sought care are defined as having 'unmet needs'. However, as argued earlier, people with a clinical mental health need who do not perceive a need for care might actually make an accurate self-assessment of their own ability to cope with the mental distress rather than a 'failure' to perceive a need for professional mental health care. Therefore, individuals' need perceptions might provide alternative estimates of unmet population mental health needs, neither overestimated by counting any disorder as clinical need, nor underestimated by counting only persons with

serious disorder. The assessment of perceived need could also be useful when it is not feasible to fund and conduct lengthy interviews or surveys assessing mental disorders.

Finally, international longitudinal research has found that while clinically assessed mental health needs remained stable over time, perceived mental health needs have increased between 2002 and 2014 (92). The use of mental health care increased as well, and can therefore better be attributed to an increase in perceived poor wellbeing rather than an increase in psychiatric symptoms. Due to the increase in mental health care use, both objective and subjective unmet mental health needs have declined over time (92, 93). However, it should be noted that these conclusions are based on international research, but it is unclear whether met mental health needs have risen in Belgium.

Therefore, as concluded by Lesage, *“precaution should be exercised to avoid giving priority to [standardized] populational assessments to plan services, the top–down approach; while health care needs can only be established by a dialectic of individual and populational perspectives”* (94).

9. The consequences of unmet mental health needs are serious and widespread

When someone has a need for mental health care but is not or inadequately treated, the consequences can act on different levels. Antwerp professionals argued that effects of unmet needs are present at patient-level (e.g., acute worsening of symptoms), care provider-level (e.g., feelings of powerlessness) and system-level (e.g., suboptimal case-load distribution).

In the first place, the presence of an unmet need for mental health care affects the individual concerned. Longer periods of untreated disorder are linked to worse psychiatric outcomes (95). This topic was often mentioned in the waiting time studies, where in half of the cases the situation worsened during the waiting period, regularly turning into acute situations. Moreover, this often means that there is an extended period of functional and social impairment, often with financial consequences.

However, it should be noted that spontaneous remission is commonly reported as well and people may be resilient enough to cope with the mental disorder themselves or through informal support, so untreated disorders do not always have negative consequences. About half of those with a mental disorder no longer meet criteria after a follow-up period of one year (71, 96, 97). Especially when the patient perceives a need for mental health care, there are little differences in the course of anxiety or depressive disorders between

treated and untreated patients (98). However, untreated patients with a depressive disorder who expressed a need for care showed the least improvement. Nonetheless, given that half of adults who recover from a clinical disorder do so naturally without treatment, again suggests that normative approaches often lead to overestimations of true (unmet) mental health treatment needs (71).

In addition to the people with unmet needs for mental health care themselves, their direct environment may be affected as well. In the waiting times study, this was most often mentioned by parents of children awaiting mental health care. An American study found that unmet needs were reported for 30% of children with emotional, behavioral or developmental problems; and for 10% of family members of these children (99). This stresses the importance of also paying attention to family needs.

Also, health care providers can feel overwhelmed by unmet mental health needs, for example when patients seek care but have to be waitlisted. Moral distress arises when health professionals know what the right thing is to do, but are unable to do so because of institutional or organizational barriers, and this negatively affects wellbeing and job retention (100). As argued in the Antwerp qualitative study, some primary care settings encounter many people with an untreated psychiatric disorder and may become overburdened because of this group with often complex care needs requiring specialized and multidisciplinary mental health care.

8.2 Strengths, limitations and contextual remarks

An important strength of the research conducted in this doctoral thesis is the multi-methods approach with complementary quantitative and qualitative studies. To get a deep understanding of a population's needs, assessments should tap into different levels of information. By combining quantitative and qualitative approaches, we can get a complete picture of the mental health in two Antwerp PCZs. By conducting quantitative research in a representative sample of the general population, reliable estimates can be made of the regions' met and unmet mental health needs.

It is known that the most vulnerable people in society are less likely to participate in scientific research, despite efforts to be as inclusive as possible (101). The qualitative research with professionals who often work with vulnerable people therefore contributes to the understanding of the unmet needs in this group.

Similarly, the waiting times studies examined both quantitative and qualitative data. Although the studies focused on the quantitative survey items, the inclusion and qualitative analysis of the open text fields in the survey allows a better understanding of the experience of the waiting period for patients and parents, as well as professionals facing waiting times.

Country-level data often lack (sub)regional specificity and are limited in their comprehensiveness. While public mental health studies are most often conducted at a national level, the need for mental health care can differ substantially across regional areas due to variations in population composition, social-economic factors, available care resources and trained professionals, ... (102) Therefore, needs assessments in regional structures such as PCZs, also representing local health care collaboration patterns, have an added value above nationally representative data. Such an in-depth investigation helps the care organizations involved in the regions, together with local authorities and other sectors, to adapt care provision to the specific needs of their citizens.

In the population survey study and the qualitative study in this dissertation, only two contrasting (i.e., rather rural and rather urban) PCZs were examined. However, further local in-depth research is needed to get a complete picture of the province of Antwerp, and by extension, Flanders and Belgium. Due to the local nature of the research, it is therefore unclear to what extent the findings can be generalized to other regions. A broader roll-out has the potential to inform national policy makers about differences in regional needs to guarantee an equitable distribution of the available resources.

Another strength is the effort made to reach vulnerable subgroups in the general population survey study. The questionnaire in the population survey study was professionally translated into six languages, which is unique for population studies. Also, the questionnaire was piloted by former psychiatric patients to ensure that the language and questions were acceptable, clear and unambiguous. Finally, the possibility of offline participation allowed individuals without access to the internet to participate. Possibly partly due to this possibility, a large group of elderly people participated, as these were even overrepresented in the unweighted sample. Online research is gaining tremendous popularity lately because of its practicality, but it should not be forgotten that this still leaves a large group of individuals unreached, especially older people and people from more vulnerable socio-economic groups.

The studies conducted also have some limitations that must be acknowledged. A first limitation of the survey research is that it focuses on common mental disorders such as unipolar depression, general anxiety disorder and alcohol abuse in adults. This was done so for pragmatical reasons. First, validated brief screening scales are not available for the whole range of mental disorders, such as psychotic disorders and personality disorders, and would lead to a very lengthy assessment, which could in turn lead to a lower response rate. Also, given the lower base rate of these disorders in the general population, this would result in more false-positives (103).

Participation in the population survey was possible from the age of 15. Screening for mental health problems in children is more complex, would require a very different approach (e.g., parent interviews or school-based screening), and would pose additional ethical challenges. Moreover, our sampling frame was based on the national register and did therefore not include some especially vulnerable settings such as prisons, residential youth care centers, asylum centers and nursing homes. The discussions with professionals working in Antwerp affirmed that (unmet) mental health needs are especially high in these settings. A more targeted strategy is indicated for research in these populations, even more so because the lack of a personal address would complicate the method of contacting.

A necessary contextual remark is that some studies conducted and described in this dissertation took place during the COVID-19 pandemic. The totality of fear for the virus, reduced social contact and restriction of freedom and recreational opportunities, undoubtedly had an impact on the mental wellbeing of the population. For example, the study of the Antwerp Monitor described in Chapter 7 found a slight increase in depressive symptoms since 2017, mainly among young people. This also emerged in the waiting times study of private practice mental health professionals: as many as seven out of ten saw an increase in the number of patients seeking care, and half of them even a strong increase.

Sciensano's COVID-19 surveys also collected a variety of information to assess how the Belgian population experienced the pandemic, and found that the public mental health has generally deteriorated since the start of the COVID-19 pandemic, with higher levels of anxiety and depression, worrying rates of suicidal thoughts, limited social support and lower life satisfaction. In addition to the direct impact on mental wellbeing, one fifth of Belgians indicated that their financial situation deteriorated during the corona crisis, which can in turn have an impact on general wellbeing. However, the June 2021 survey of Sciensano, which roughly corresponds with the timing of the data collection of the quantitative population study in the two Antwerp PCZ, indicated an improvement in mental health as compared to the periods before. Nonetheless, the findings of the population

survey and the waiting times studies must be placed in the light of the context of COVID-19, and it is unclear whether and to what extent the findings would be different outside this context.

8.3 Implications and recommendations

The findings of the studies conducted and described in this dissertation demonstrate that many improvements can still be made in mental health care. In what follows, I will outline four major implications and recommendations to optimize the access to and quality of care for people with a need for mental health care. Note that these recommendations hold internationally as well, especially in regions with a similar health organization and population structure such as Western-European countries, but are highlighted here mainly within the Belgian context.

1. High-quality data about mental health care needs and use
2. Further data-driven investments in mental health care
3. Promotion of mental wellbeing and prevention and early intervention of mental health problems
4. Further efforts to make mental health care more accessible and integrate it into other sectors

1. There is a need for high-quality data about mental health care needs and use

As part of this dissertation, data were collected and interpreted which are relevant for estimating population mental health needs in Antwerp. Epidemiological data on different mental health needs and use of mental health services are lacking in Belgium, as the Belgian Health Care Knowledge (KCE) researchers also concluded in their comprehensive report 'Organization of mental health care for adults in Belgium' (104). They argue that the mental health data that are available today are too limited to make reliable estimations of mental health needs in terms of care need and severity. As regards data on mental health care use, an additional challenge is that data availability and accessibility are not equivalent across service categories, and there is no harmonization in data collection between regions, sectors and indicators. The lack of data makes it difficult to clearly situate the mental health care offer in Belgium in relation to WHO recommendations in terms of the distribution of care between residential and community care services.

Likewise, the Belgian Superior Health Council (*'Hoge Gezondheidsraad'*) recommends bridging the knowledge gap in Belgian mental health by building a national mental health

research agenda, developing quality indicators in mental health care and research, and creating a platform to make mental health knowledge and expertise more accessible (105). This is especially important given that mental health data collection and research is less conducted as compared to physical health research.

The same is true for the lack of data about waiting times in Belgian mental health care. Besides the registration by the community mental health centers (CGG), there is no structural or uniform monitoring of waiting times in the private sector and hospital settings. It should be further explored whether and how this could be implemented in the future. This would not only provide insights relevant for policymakers and care programming but would also improve the transparency for individuals and professionals who seek timely mental health care.

While the conducted studies provide insight in how many Antwerp adults need care and which proportion uses it, it is still complicated to draw strong conclusions about the match with the mental health care offer. If concrete estimates of mental health care users' needs and the adequacy between the type and severity of those needs and the mental health care offer are required, deeper research in the population of care users is needed in addition to population-based research. Finally, it would be unreliable to assess trajectories within the mental health care system based on self-report and cross-sectional survey research in the general population. Questioning specific care pathways was therefore not included in the survey research. Registration-based data is highly recommended for this purpose.

This was one of the aims of iPSYcare described in Chapter 5, but unfortunately, we did not yet succeed in operationalizing this database. iPSYcare would link the electronic patient records of the funding Antwerp psychiatric hospitals in order to investigate patient flows and care trajectories. This is an innovative research project but requires multidisciplinary expertise on informatics, hospital data and legal aspects. It would have been interesting to get a detailed view on the Antwerp psychiatric inpatient population and care trajectories, and to investigate regional differences. However, lessons have been learned from the steps already taken, such as the legal preconditions and technical challenges, and this work will be continued in the future.

iPSYcare focuses on the inpatient population, but future research should also dig deeper into the mental health care users' population at different care levels. For example, to what extent do people in primary mental health care services differ from people in secondary or inpatient mental health services, and is there a good fit in this in terms of severity and

complexity of the care need and used care? In our sample, a total of 207 people reported discussing mental health problems with a professional in the past twelve months. Given that only a very small minority received inpatient psychiatric care, our data do not allow detailed analyses about the differences in needs between care users across care levels. However, one of the long-term visions of iPSYcare is that it can be expanded to include additional data on outpatient mental health care as well. In conclusion, while the population-based research conducted is relevant particularly to capture assessed and perceived unmet needs at a local level, more targeted research is needed to make sound statements about patient needs and the match between need and supply.

This also raises the question of who should finance and conduct such research. The research described in this thesis was conducted by academic researchers funded by (psychiatric) hospitals, but it can be debated whether governments and policy makers also bear responsibility for this, considering it is their responsibility to ultimately distribute the mental health budgets. This is also true for the iPSYcare database. Ideally, there would already be a psychiatric register which can ethically and securely link individuals across psychiatric units of Belgian hospitals, and ideally other mental health care settings. The Minimally Psychiatric Data being collected by the federal government today do not allow this due to the lack of the unique identifier, making the examination of patient flows impossible.

Another obstacle in the secondary use of health data is that the data quality is often low and that there is little knowledge about exactly what data is available in what format. One of the key principles is that data must be "FAIR": findable, accessible, interoperable and reusable (www.go-fair.org/fair-principles). Recent steps are being taken to support this objective. Beginning in 2023, a new Belgian 'Health Data Agency' will be established as an autonomous service within the federal public health department, with the goal of making health data more accessible. The Health Data Agency will not collect data itself but aims to facilitate the findability and use of secondary data, in part by unifying and encrypting source data. To date, this federal service is still under development.

The next aspect concerns the further expansion of local needs assessments. The qualitative exploration with professionals and the population survey described in this dissertation were carried out at the level of two PCZs. A future perspective is the broader roll-out of these studies to other regions, allowing detailed regional comparisons. However, given that there are 60 PCZs in Flanders and Brussels, this would be a time-consuming and also expensive investment. Also, PCZs are not yet implemented in Wallonia. An even more ambitious option is to conduct the research at the municipal and district level. One

advantage is that these structures are all over Belgium, and that needs can be assessed even more locally, and municipal authorities are able to respond to them. However, this would require significant resources, as a sufficiently large sample would have to be recruited for each municipality. A more feasible option compared to PCZs would be to conduct similar population needs research at the level of mental health care networks. A total of twenty networks exists for adults in whole Belgium (www.psy107.be). Herein, psychiatric hospitals and outpatient services enter into collaborations. A drawback is that this may cause specific local information to be lost. PCZs are therefore an acceptable middle ground.

Many questions also remain unanswered in the field of health economics. While estimates of the cost of mental health problems can be made for e.g., absenteeism and sickness benefits, it is unclear what the role of unmet needs is in this. For example, longer waiting times lead in some cases to longer periods of absenteeism, and may in this way contribute to a greater economic cost. However, it is up to date not possible to make any reliable statements about this.

2. Further data-driven investments are needed in mental health care

The mental health system is still underfunded and suboptimally distributed, leading to several barriers that prevent some people with a need for care from receiving sufficient and adequate mental health care. As argued in the focus groups and interviews with professionals, mental health care is still insufficiently financed to meet the population's needs, which prevents organizations and individual professionals from providing mental health care the way they would ideally do.

It is estimated that only 4.5% to 6% of the Belgian health budget flows to mental health whereas according to OECD it should be at least a tenth, which means that at least a billion more is needed (106, 107). Moreover, the Belgian KCE report concluded that despite all initiatives taken, still more than 80% of mental health care funding goes to hospital-based care and Belgium still has one of the highest shares of psychiatric hospital beds in Europe (104). Even though hospital care is inherently more expensive, community-based care requires sufficient resources as most mental health needs are mild to moderate, and these services can often avoid hospitalizations.

However, there are recent positive trends to promote community care. A Flemish action plan was launched in 2020, in particular following the corona crisis, to boost the general mental wellbeing of the Flemish population. This €25 million investment focuses, among

other things, on initiatives around caring neighborhoods, self-care promotion and support for vulnerable families. The Flemish government has also invested an additional €4.8 million in the CGGs since 2021 on top of the existing funding of €72 million, with an additional €2.1 million to come by 2024. Also, the mental health care networks and projects for early intervention in children and adolescents both received an additional subsidy of 2 million euros in 2021 (108). Finally, there is historical improvement on the horizon: the federal parliament approved a resolution in 2020 that envisions doubling the budget for mental health by 2030 (109).

Besides the lost health and human suffering the current underfinancing of mental health care may cause, there are also enormous economic consequences. A global return on investment analysis found that the net present value of investment needed over the period from 2016 to 2030 to substantially scale up effective treatment coverage for depression and anxiety disorders is estimated to be €147 billion (110). This would lead to 43 million extra healthy life-years, which would in turn lead to a decrease in overall health care costs with a net present value of €310 billion, with additional economic productivity gains of approximately €400 billion.

This lack of financial resources also holds for research, as mental health research is globally underfunded as compared to somatic and physical disease research. As an example, only 2.3% of calls to mental health were addressed in Horizon 2020 (i.e., EU's largest research program running from 2014-2020) even though a greater investment in mental health research was claimed by the European commission (111).

3. There is a need for promotion of mental wellbeing and prevention and early intervention of mental health problems

Despite substantial increases in the provision of mental health care in high-income countries, the impact on public mental health is limited (112). This means that reducing the treatment gap requires more than the expansion and optimisation of treatment services. As argued by Jorm et al., the need for mental health care can be seen as continuum ranging from no need for mental health care to a high need for mental health care (17). Targeting mental health problems in the general population therefore requires consideration of a broader range of interventions than treatment alone. There should also be public mental health actions that are appropriate to the rest of the continuum, such as people without significant mental health problems or people with reduced mental wellbeing. These interventions can include the promotion of good mental wellbeing and the prevention of the onset and aggravation of mental disorders.

Prevention and promotion of mental health are essential in reducing (unmet) mental health needs in the population. Mental health promotion refers to positive mental health and is related to improving general wellbeing and the quality of life (113). Health promotion conceptually is concerned with the determinants of health, and prevention with the causes of ill health, but actions that promote mental health and prevent mental illness are complementary and may overlap (114). Promotion and prevention of mental health are not only the responsibility of mental health professionals and should also take place outside the typical health care sector (113). For example, schools have been identified as an appropriate setting for mental health promotion (115).

There are three levels of mental health prevention (116). Primary prevention acts before the onset of the mental illness and is therefore most closely related to mental health promotion. This prevention can be universal (e.g., promoting an active and substance-free lifestyle), selective (e.g., targeting risk groups such as people in poverty) or indicated (e.g., targeting specific individuals at risk such as people showing signs of low mental wellbeing). Secondary prevention includes early diagnosis and intervention, and tertiary prevention is aimed at reducing impairment and relapse among those with a known mental disorder. In what follows, some concrete Belgian good practices will be discussed.

Regarding primary prevention, there are universal interventions aimed at the entire Belgian population that seek to promote mental wellbeing and resilience. For example, there is the 'happiness triangle' (*'geluksdriehoek'*), which emphasizes competencies that foster social relationships, emotion regulation and self-acceptance (www.geluksdriehoek.be). An example of selective primary prevention is Mind-Spring, a psycho-educational group program for refugees, asylum seekers and migrants with the goal of increasing resilience and breaking down mental illness taboos in this vulnerable group.

Project #CAVAasa can also be seen as a combination of indicative primary prevention and early detection and intervention (www.cavasa.be). In #CAVAasa, community pharmacists are trained to detect patients with low mental wellbeing and some social risk factors such as poverty or family problems. The pharmacists can then inform these people about psychosocial help, and directly refer them to a center for general wellbeing (CAW) if needed. By promoting timely and low-threshold psychosocial care in individuals who are either at risk or already have a psychosocial need, mental health problems can be prevented or addressed early.

An example of indicated secondary prevention is early detection and intervention of psychosis, targeted at adolescents and young adults experiencing pre-psychotic clinical

symptoms and those with a known familial genetic risk, together with a deterioration in functioning. It has been shown that patients suffering from prodromal psychotic syndromes can be successfully treated and onset of psychosis can be prevented or delayed (117). In Belgium, VDIP (*'Vroegdetectie en Interventie bij Psychose'*) teams are used to prevent vulnerable young people from (further) developing psychosis, as well as to support the recovery and prevent relapse among those who recently experienced a first-episode psychosis. The latter can be seen as a form of tertiary prevention as it is the aim to help them to cope and live with a psychiatric vulnerability, and to maintain a good quality of life.

Besides actions related to the promotion and prevention of mental health, some interventions aim to promote help-seeking in individuals with mental health problems. These interventions generally improve the attitudes, intentions and behaviors to seek formal help. A meta-analysis found that strategies to improve mental health literacy and destigmatisation led to short-term benefits, while motivational enhancement was only effective at long-term follow up (118). Interestingly, interventions only improved help-seeking if they were targeted at individuals with or at risk of mental health problems, but not the general public.

4. Further efforts should be made to make mental health care more accessible and integrate it in other sectors

Several investments have been made in the past decades to make the Belgian mental health system more accessible. These initiatives can indirectly contribute to the reduction of waiting lists as well, as some people may seek and receive mental health care more easily and in an earlier stage, reducing the need for longer or more intensive care pathways. For example, there was the more extensive reimbursement of psychological care in Belgium to improve financial accessibility. Moreover, centralized mental health care collaborations between local organizations from different sectors were installed in various regions to simplify the search for adequate psychological help for patients and primary care professionals, and to ensure that patients receive the most adequate care. In some regions this is known as *'Kruispunten'* (www.kruispunten.be). However, despite these efforts, cost of services and lack of clarity in the help offer remain important barriers.

Given that mental disorders are associated with socioeconomical deprivation, access to mental health services has to be as concentrated at lower income levels as the level of mental health care needs to be equitably distributed (119). Note that there is a difference between equality and equity: equality means that each individual or group is given the same resources, while equity recognizes that each person has different circumstances and

allocates the resources and opportunities needed to reach an equal outcome. A dual focus is thus needed, to both lift the average levels of access across the population and to reduce disparities between groups. Without making equity a clear objective, there is a risk that efforts to improve access across the population may even widen the gap. Socio-economic inequalities also have a major impact on child mental health care, as health inequalities already emerge early in life (120, 121). Moreover, poverty-aware practice should be embedded in all mental, social and general health care settings (120). Finally, a good practice is a reduced fee, or even free of charge, for mental health care for socioeconomically vulnerable groups. Figures from the Flemish CGG show that these are well represented in reimbursed mental health care: as many as 58% of all consultations were at reduced rates or free of charge in 2021 (122). This concession is available to people in poverty, young people in problematic situations and refugees. This again illustrates the high prevalence of social needs related to mental disorders.

Besides accessing mental health care, also being able to receive sufficient care is crucial. As shown in the Antwerp population study, financial barriers are the main reason why people perceive the care received as insufficient. This can imply that they received some help from a financially accessible provider such as a GP but were unaware of the reimbursed mental health care offer, or that they could not afford the frequency of psychotherapy sessions that they needed. There is debate about whether or not to limit the number of reimbursed sessions, out of fear that patients will remain in care longer than necessary, resulting in the inequitable and inefficient use of resources. However, as outlined by Luyten, the fear of 'overconsumption' of reimbursed psychological care is not justified: extensive research has shown that psychological care proceeds through a responsive regulation model, which entails that patients finish their treatment when they are sufficiently recovered (123). This usually happens in 4 to 26 sessions. Structural and financial restrictions often even reduce the (cost-)effectiveness of psychotherapy.

A second issue hindering access to mental health care relates to fragmentation between the mental health care and other sectors, and the low visibility of the mental health care offer. As reported by both the professionals of the Antwerp focus groups and interviews, as well as stated in the report of the Belgian Health Care Knowledge Center (KCE) on the organization of Belgian mental health care, the mental health care system is too complex (104). This holds not only for patients, but also for professionals it is often unclear how and where to find the most suitable help for some patients. Fortunately, several mental health networks now offer counselling and coaching to primary care workers so that they can correctly refer their patients or consult them on difficult cases.

A key lever in increasing the accessibility of mental health care is by integrating it into social and generic medical services, as well as settings outside the traditional care sector such as schools and work (124). For instance, there is a growing outreach of psychological care to the social welfare sector. Multidisciplinary community health centers (*'wijkgezondheidscentra'*) also respond to this. Also for child mental health care, there is a growing consensus that integrating mental health services into existing service settings such as primary pediatric care is the most promising means of increasing access to mental health care, particularly for children from low-income families (121). An important prerequisite of this integrated approach is that non-mental health professionals receive sufficient training to enhance the knowledge, attitude and practice related to mental health (124, 125).

Also #CAVA, in which pharmacists are trained to detect unmet mental health and psychosocial needs and to refer these people to psychosocial care, is a great example on how professionals who are not directly involved in mental health care can still take a role in it. A survey study with Flemish pharmacists showed that almost all pharmacists already pay extra attention to patients with a psychosocial vulnerability and regularly refer patients to the GP or a mental health professional if they have a gut feeling that the patient needs additional mental health support (126).

This integrated approach is also crucial to meet the whole biopsychosocial spectrum of needs of individuals with a mental health problem. It is known that morbidity and mortality are significantly higher among those with a mental disorder, which illustrates the poor physical health associated with mental illness (7, 127, 128). Research has shown that approximately one-fifth of primary care visits relate to mental health, and that GPs consider collaboration with mental health professionals as key to good management of mental disorders (129). Also, a systematic review reported that proactive consultation-liaison mental health care with screening and integrated care in general hospitals can even reduce the length of stay (130). This stresses the requirement for medical services to participate in a more integrated approach to managing those with mental disorders, in order to reduce the whole 'care gap' and not only the mental health treatment gap (131).

8.4 Overall conclusion

Mental health problems are one of the leading causes of cost, burden and suffering worldwide. This is true for the patients who suffer from mental illness and their relatives, but also for society as a whole. It is therefore high time that public mental health is considered a priority. The importance of public health was once again evident during the COVID-19 pandemic. Where attention was first focused on mortality and physical hazards, a focus on the psychological impact of COVID-19, social isolation and the accompanying aftermath also quickly grew. Moreover, the COVID-19 crisis also called attention to the inequality ingrained in society: we were in the same storm, but not the same boat.

The multi-methods research described in this doctoral thesis demonstrates that many mental health disorders are not or insufficiently cared for because of structural barriers, a low rate of help-seeking and a lack of resources in the health care system. Meeting unmet mental health needs is complex, and there is no 'golden bullet'. There are however several short-term interventions and long-term directions that all together can make a difference. Ultimately, it all starts with the basics: promoting healthy living and preventing problems before they arise. Yet, a large portion of the population will someday experience a mental health problem and possibly need mental health care to overcome this. There is consensus that mental health care should be distributed based on the prevalence of population needs: a wide range of primary mental health care services that are easily accessible to anyone with mild mental health needs or psychosocial issues, a more specialized offer for those who need treatment for mental disorders, and an inpatient offer for those in need of intensive support or where there is a need for a safe and structured environment.

Accessibility and equitability of mental health care are key to minimizing the level of unmet needs and to ensure that every person can receive quality care. More attention should be paid to vulnerable groups, both in mental health care and research. Mental health, somatic health and social needs often go hand in hand. People in poverty and minority groups deserve special attention. Multidisciplinary and integrated care is therefore crucial so that the totality of needs can be addressed using a whole-person approach and continuity of care is ensured. One group with particularly high (unmet) need, where the greatest health gains are possible, are children and adolescents. Moreover, a dedicated offer of mental health care is needed for transition age youth, who have their own challenges and for which the care gap still proves too large. Unfortunately, we know that the mental health care for these groups is inadequate and insufficiently expanded today, which manifests itself in long waiting times, patient stops, and escalating situations with sometimes long-term consequences.

As regards research, there is a need for more and better data about how mental health care is used. For example, too little is known about care trajectories and waiting times in Flemish mental health care. The promising yet challenging iPSYcare database will be able to answer some of these questions in the future by linking patients across clinical settings. Moreover, future research should dig deeper into the group of people with severe and disabling mental health needs who are insufficiently captured with population-based approaches. Finally, paying attention to perceived needs besides solely focusing on clinically assessed mental health disorders guarantees attention to the individual patient perspective. While screening scales and diagnostic criteria undoubtedly have their uses in epidemiology and care provision, we must not forget that with them comes a certain degree of arbitrariness. In addition to mere mental health needs, other stressors and need indicators also determine the need for mental health care. It is often a balancing act: does this person have no understanding of their own mental health care needs, or does this person just makes a valid assessment of their own care need better than a screening questionnaire can do?

Our current mental health system is suboptimal, but it is fair to say that gigantic strides have been made in recent decades. The implementation of community outreach and home-based treatment teams and the recent reimbursement of psychological care show that mental health is less and less seen as inferior. The de-institutionalisation of mental health care continues and stigmatic beliefs seem to be increasingly breaking down because of this. These are favorable evolutions, but investments remain necessary for mental health to truly be on par with physical health care. Research demonstrated that investments are worth it, with highly needed benefits for not only the patients, but also our healthcare system and the overall society and economy. In conclusion, it is time to continue the catch-up of mental health care: there is no health without mental health.

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List of abbreviations

AMON	Antwerp Monitor survey
BHIS	Belgian Health Interview Survey
CES-D8	8-item Center for Epidemiologic Studies Depression Scale
CGG	Community mental health center ('centrum voor geestelijke gezondheidszorg')
EMR	Electronic medical record
ESEMeD	European Study of Epidemiology of Mental Disorders
FGD	Focus group discussion
GAD-7 screener	General Anxiety Disorder-7 (anxiety disorder screening)
GDPR	General Data Protection Regulation
GHQ-12 screener	General Health Questionnaire-12 (general wellbeing screening)
GP	General practitioner
IMA	Intermutualistic Agency
iPSYcare	Improved Psychiatric Care and Research database
MAT	Minimally adequate treatment
MPD	Minimal psychiatric data
NIHDI	National Institute for Health and Disability Insurance
OECD	Organization for Economic Co-Operation and Development
PCZ	Primary care zone
PHQ-9	Patient Health Questionnaire-9 (depressive disorder screening)
PNCQ	Perceived Need for Care Questionnaire
PTSD	Posttraumatic stress disorder
SGGG	Staten-Generaal Geestelijke Gezondheid
TTP	Trusted third party
WHO	World Health Organization
WHO-WMH Surveys	WHO World Mental Health Surveys

Overview of reports and conferences

2020

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- Rens E, Dom G, Remmen R, Michielsens J, Van den Broeck K. Unmet mental health needs in the general population: perspectives of Belgian health and social care professionals. *Int J Equity Health*. 2020;19(1):169. Published 2020 Sep 29. doi:10.1186/s12939-020-01287-0

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Conferences

- Onvervulde psychische noden in Antwerpen: Kwalitatieve exploratie met professionals in de eerste lijn, de GGZ en het sociaal werk [oral presentation]. GGZ-congres, February 2021, online

2022

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- Rens E, Michiels J, Dom G, Remmen R, Van den Broeck K. Clinically assessed and perceived unmet mental health needs, health care use and barriers to care for mental health problems in a Belgian general population sample. *BMC Psychiatry*. 2022;22(1):455. Published 2022 Jul 7. doi:10.1186/s12888-022-04094-9

Conferences

- Perceived versus assessed unmet needs for mental health care in the general population in Antwerp (BE) [oral presentation]. European Congress of Psychology (ECP), July 2022, Ljubljana
- Bevolkingsonderzoek: psychisch welzijn en ggz-gebruik in Antwerpen [oral presentation]. GGZ-congres, September 2022, Antwerp
- Building bridges between community pharmacy and psychosocial care: findings from a Flemish project [oral presentation]. European Forum for Primary Care (EFPC), September 2022, Ghent
- Building bridges between community pharmacy and psychosocial care: findings from a Flemish project [oral presentation]. European General Practice Network (EGPRN), October 2022, Antwerp

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