Assocations of Common Mental Disorder Severity With Treatment Contact and Treatment Intensity, and Its Changes Over Twelve Years

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Abstract

Purpose. To guide formal healthcare resource allocation for common mental disorders (CMDs), this study updates and expands earlier findings on the associations of CMD severity with treatment contact and treatment intensity.

Methods. Baseline data (2019–2022) of NEMESIS-3, a prospective study of a representative cohort of Dutch adults (18–75 years), were used. Severity of 12-month CMDs was assessed with the CIDI 3.0. Using multivariate analyses, its associations with 12-month treatment contact and treatment intensity for emotional/substance-use problems were examined, both for general medical care (GMC) only and mental health care (MHC). Changes over time were identified by making comparisons with baseline data (2007–2009) of NEMESIS-2.

Results. Persons with severe CMDs were more likely to have made contact with GMC only or MHC compared to persons without CMDs. Between 2007–2009 and 2019–2022 the contact rate with GMC only increased stronger for moderate cases, while the increasing contact rate with MHC did not differ across CMD severity levels. Both among users of GMC only and MHC, severe cases had a higher likelihood of receiving treatment of the highest intensity level compared to persons without CMDs. Between 2007–2009 and 2019–2022 the rate of highest treatment intensity increased stronger for severe cases using GMC only, while a trend towards a stronger decrease in this rate was found for severe cases using MHC.

Conclusion. Evidence was found that treatment of CMDs in GMC has been strengthened in the past twelve years. No indications were found that allocation of MHC resources to severe cases has improved.

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Introduction

Findings from population-based surveys in high-income countries have raised the concern that formal healthcare resources for common mental disorders (CMDs; e.g. mood, anxiety and substance-use disorders) are allocated suboptimal. First, there is evidence of underuse of formal services by persons with severe CMDs, i.e. those with the greatest clinical need (Demyttenaere et al., 2004; Wang et al., 2007a). For instance, surveys carried out in the early 2000s in the context of the World Mental Health (WMH) Survey Initiative found that in the USA 47% of the persons with severe CMDs in the past 12 months did not access general medical care (GMC) and/or mental health care (MHC) in that 12-month period, while in six Western European countries this rate varied between 35.5% and 50.3% [1]. Second, other findings from WMH surveys indicate overuse of formal services for emotional/substance-use problems by presumably low-need cases [3, 4]. For instance, Bruffaerts et al. (2014) found that 13.6% of service users in high-income countries neither met criteria for a 12-month or lifetime CMD nor had any other measured indicator of possible treatment need, and that the vast majority (66.9%) received formal services (GMC or MHC). Third, WMH surveys have also indicated that high proportions (58.7%-87.3%) of

GMC users with 12-month CMDs receive treatment that may be considered inadequate according to recommendations from available evidence-based guidelines [5–7]. Although rates of potentially inadequate treatment were substantially lower among MHC users with 12-month CMDs, these were still considerable (35.7%-51.7%), even among severe cases (e.g. 36.5%) [5].

A Dutch study using baseline data (2007–2009) of the second Netherlands Mental Health Survey and Incidence Study (NEMESIS-2) [8] found largely similar indications of suboptimal resource allocation as the earlier WMH surveys. More severe 12-month CMDs were associated with a higher probability of having made contact with GMC and/or MHC for emotional/substance-use problems. However, 41.3% of severe cases did not receive care in either sector in the past year. The vast majority of MHC users had either a 12-month CMD (59.7%) or had a lifetime CMD and/or functional impairment (31.6%); the remaining 8.7% was without any of these indicators of possible clinical need. Increasing levels of treatment intensity ranged from 51.6–13.0% in GMC only users, and from 81.4–51.1% in MHC users. While CMD severity was related to treatment intensity among MHC users, it was not among GMC only users.

Importantly, the results discussed above are based on research in the first decade of the twenty-first century. To address the low rates of service use by people with mental disorders, the 2001 World Mental Health Report made ten recommendations, including making mental health treatment more accessible in GMC, making psychotropic drugs more available, educating the public more about mental health, and increasing and improving the training of MHC professionals [9]. As this call for action has been widely adopted [10, 11], it is unsurprising that increasing treatment rates for CMDs have been found since [12, 13]. However, studies providing up-to-date and more in-depth information on the associations of CMD severity with treatment contact and treatment intensity are lacking, while this knowledge is essential to guide resource allocation.

To help fill this knowledge gap, the current study involves repeating the study by Ten Have et al. [8] by using baseline data (2019–2022) of the third NEMESIS-study [14]. It also examines changes in the associations of CMD severity with treatment contact and treatment intensity between the baseline wave of NEMESIS-2 (2007–2009) and of NEMESIS-3. Different results are expected in 2019–2022 because the Dutch government introduced in 2014 measures to strengthen MHC in general practice. As a result, the proportion of practices employing a general practice mental health professional (GP-MHP), a function introduced in 2008, has substantially increased to 78% in 2021 [15]. The GP-MHP supports the general practitioner (GP) in the care for people with common mental health problems, and acts together with the GP as the gatekeeper to MHC facilities. Additionally, since 2014 the GP may only refer people to MHC when they meet standard classification criteria for a ‘full-blown’ mental disorder. Given these changes, it is expected that in 2019–2022 relatively more persons with more severe CMDs have used GMC only, and that CMD severity is now also associated with treatment intensity among users of GMC only users.

Methods

Study design

The current study was set in NEMESIS-3, a psychiatric cohort study of the Dutch general population aged 18–75 years [14], which used a multistage, stratified random sampling procedure. The fieldwork for the baseline wave was performed from November 2019 to March 2022, resulting in a sample of 6,194 respondents (response rate 54.6%). The data was collected by interviews (average duration 91 min), mostly held at the respondent's home. The following groups were somewhat under-represented: younger people, higher secondary educated people, those not living with a partner, people living in bigger towns, and people of non-Dutch origin [14]. To allow generalization of the data to the Dutch population, based on post-stratification, a weighting factor was constructed. After weighting, the distribution of the sociodemographic characteristics of the study sample came very close to that of the Dutch population.

A Medical Research Ethics Committee (METC Utrecht) assessed that NEMESIS-3 did not require official approval under the Dutch Medical Research Involving Human Subjects Act (WMO) (reference number: WAG/mb/19/017126; May 15, 2019). The field procedures, information for respondents and informed consent forms were assessed positively by the local ethical review committee. For a more comprehensive description of the design and fieldwork, see ten Have at al. [14].

Measures

CMDs and their severity

A slightly modified version of the CIDI 3.0 was utilized to be able to determine 12-month CMDs according to DSM-5 criteria. The CIDI 3.0 is a fully structured lay-administered diagnostic interview, initially developed for use in the WMH Survey Initiative [16, 17].The following CMDs were considered: mood disorders (major depression, persistent depressive disorder, bipolar disorder), anxiety disorders (panic disorder, agoraphobia, social anxiety disorder [social phobia], specific phobia, generalized anxiety disorder), substance use disorders (alcohol and drug use disorders) and attention-deficit hyperactivity disorder (ADHD).

Persons meeting 12-month criteria for at least one CMD were classified in terms of severity, consistent with previous research [1]. Persons rated as severe had at least one of the following: bipolar I disorder, moderate or severe substance use disorder with physiological dependence syndrome, a suicide attempt in the past 12 months, or severe self-reported impairment in at least two areas of role functioning, as assessed with the Sheehan Disability Scales (SDS) [18]). The SDS is a widely used self-report measure of condition-specific disability and is incorporated in all diagnostic CIDI sections. It consists of four questions, each asking the respondent to rate (range 0–10) the extent to which a particular disorder 'interfered with' activities in one of four role domains (home, work, social, close relationships) during the month in the past year when the disorder was most severe. Persons not classified as severe were classified as moderate if the individual had moderate or severe substance use disorder without a physiological dependence syndrome, or at least moderate role impairment in any SDS domain. All other cases of 12-month CMD were classified as mild.

Treatment contact and treatment intensity

Treatment contact refers to at least one contact made in GMC or MHC for emotional/substance-use problems in the past 12 months, as assessed with the question: 'In the past 12 months, did you visit any of the following professionals or institutions because of emotional or alcohol or drugs problems of your own?'. Included were general medical professionals (GPs, GP-MHPs, company doctors, social workers, home care or district nurses, physiotherapists or haptonomists, medical specialists or other professionals working within the GMC sector) and mental health services (psychiatrists, psychologists, psychotherapists, part-time or full-time psychiatric treatment).

Respondents who reported contact with one of these professionals or services were asked what type of treatment they received from each (psychotherapy, pharmacotherapy, referral, practical assistance; other). When psychotherapy was received, follow-up questions for each provider consulted concerned the number and duration of visits. When pharmacotherapy was received, questions on type and duration of medication prescribed by each provider were asked. Based on previous research [2, 5, 7, 8] three non-overlapping levels of treatment intensity were distinguished according to the number and type of contacts with any professional and duration of pharmacotherapy received for emotional/substance-use problems in the past 12 months in GMC only or MHC:

1. One contact with any professional and/or less than 0.5 month of any medication.
2. Two to seven psychotherapy consultations with any professional, or at least 0.5 month of any medication plus two or three contacts with a physician or MHC professional.
3. At least eight psychotherapy consultations with any professional, or at least 1 month of any medication plus at least four contacts with a physician or MHC professional.

Other indicators of possible treatment need

These included meeting criteria for a lifetime CMD (according to the CIDI 3.0) and impaired social functioning or role limitations due to emotional problems in the past four weeks (according to the MOS short-form general health survey [19], which was administered during the interview).

Potential confounders

In the interview, participants self-reported on sex, age, education, living situation, employment situation, household income, urbanicity of residence, and having any physical disorder (≥ 1 of 17 chronic physical disorders treated or monitored by a medical doctor in the past 12 months).

Statistical analysis

First, rates of any 12-month treatment contact with GMC only and MHC were calculated for respondents with different levels of CMD severity. Next, multinomial logistic regression analyses were used to examine the association of CMD severity with 12-month contact rate. In these analyses, users of GMC only users and MHC users (regardless of whether they also used GMC) were compared to the respondents who did not access either sector. Results were adjusted for sex and age (model 1) and all

measured potential confounders (model 2). Second, the distribution of CMD severity was calculated among users of GMC only and MHC respectively. For service users without 12-month CMDs it was determined to what extent other indicators of possible treatment need (a lifetime CMD and/or functional/role impairments) were present. Third, rates of 12-month treatment intensity received by GMC only users and MHC users were calculated for different CMD severity levels. Subsequently, logistic regression analyses were performed to examine the association of CMD severity with having received the highest level of treatment intensity (level 3) in both groups (reference group: treatment received according to the two lower intensity levels 1 and 2). Again, results were adjusted for sex and age (model 1) and all measured potential confounders (model 2).

Finally, to identify possible changes over time, comparisons were made between the first waves of NEMESIS-2 (2007–2009) and NEMESIS-3 (2019–2022) for the same age range of respondents (18–64 years). The methods of the two studies are highly comparable [14, 20]. The baseline of NEMESIS-2 was performed from November 2007 to July 2009, resulting in a total sample of 6,646 respondents aged 18–64 years (response rate 65.1%). Presence of 12-month CMDs was ascertained according to DSM-IV criteria applicable at the time, using the original CIDI 3.0. As described above, in NEMESIS-3 a slightly modified version of the CIDI 3.0 was used to enable assessment of DSM-5 CMDs. It was shown that 12-month prevalence rates of CMDs within NEMESIS-2 hardly changed when using the original or adapted CIDI 3.0 [14]. To examine changes over time, service use of respondents in NEMESIS-3 and NEMESIS-2 were combined in one dataset, with study as independent variable. Changes in the 12-month rates of treatment contact and treatment intensity were calculated for GMC only and MHC, and were analyzed using logistic regression analyses. To examine whether changes were the same for respondents with different levels of CMD severity, interaction effects were estimated between study and CMD severity using generalized linear models with a binomial distribution and an identity link function.

Analyses were performed with STATA version 16.1. Robust standard errors were calculated to obtain correct 95% confidence intervals (95% CI) and p-values. Two-tailed testing procedures were used with 0.05 alpha levels.

Results

Supplementary table 1 shows the characteristics of the NEMESIS-3 sample. The 12-month prevalence of any CMD was 25.9%, and among respondents with CMDs, 32.6% were classified as mild, 33.1% as moderate and 34.3% as severe.

Association of CMD severity with treatment contact

Respondents with severe 12-month CMDs most often had at least one contact with GMC only (20.6%) or MHC (38.3%) in the past 12 months for emotional/substance-use problems (Table 1). After adjustment for all potential confounders (model 2), respondents with moderate or severe 12-month CMDs were more likely to have made contact in GMC only compared to respondents without 12-mont CMDs. In

model 2 all three levels of CMD severity were associated with the probability of having had contact with MHC.

Table 1 CMD severity and treatment contact

Left part: rates of any treatment contact with general medical care (GMC) only and mental health care (MHC) in the past 12 months for emotional/substance-use problems among respondents aged 18-75 years with different levels of common mental disorder (CMD) severity in the past 12 months, in weighted percentages.

Right part: results of multivariate multinomial logistic regression analyses estimating the association of CMD severity with any treatment contact with GMC only and MHC, in weighted adjusted relative risk ratios (aRRR) with 95% confidence intervals (95% CI)

		Any treatment contact (reference: no treatment contact in GMC and MHC)	
	Any treatment contact	Model 1	Model 2
	% (95% CI)	aRRR (95% CI)	aRRR (95% CI)
GMC only			
Severe CMD	20.6 (15.9, 25.4)	12.24*** (8.38, 17.86)	10.91*** (7.26, 16.38)
Moderate CMD	17.4 (13.4, 21.4)	6.27*** (4.60, 8.56)	6.05*** (4.32, 8.47)
Mild CMD	6.0 (3.7, 8.3)	1.69* (1.12, 2.55)	1.52 (1.00, 2.32)
No CMD	3.9 (3.2, 4.6)	Reference	Reference
MHC			
Severe CMD	38.3 (33.5, 43.1)	21.04*** (16.84, 26.29)	17.20*** (13.49, 21.94)
Moderate CMD	18.2 (14.9, 21.5)	6.29*** (4.81, 8.22)	5.34*** (4.01, 7.12)
Mild CMD	11.6 (8.1, 15.2)	3.15*** (2.20, 4.53)	2.86*** (2.00, 4.09)
No CMD	3.9 (3.3, 4.6)	Reference	Reference

Model 1: adjusted for sex and age. Model 2: adjusted for sex, age, education, living situation, employment situation, household income, urbanicity of residence, and having any physical disorder.

*p<0.05; **p<0.01; ***p<0.001

Distribution of service users by CMD severity

Severe 12-month CMDs or not having any 12-month CMD were most common in GMC only users and MHC users (Table 2). Most service users without CMDs met criteria for a lifetime CMD and/or had impaired social functioning or role limitations due to emotional problems in the past four weeks.

Accordingly, 9.1% of GMC only users and 8.8% of MHC users were without an indicator of possible treatment need.

Table 2
CMD severity among service users

Distribution of levels of common mental disorder (CMD) severity in the past 12 months among users of general medical care (GMC) only and users of mental health care (MHC) in the past 12 months for emotional/substance-use problems, in weighted percentages. Also shown is the distribution of lifetime CMD and impaired social functioning and/or role limitations due to emotional problems in the past four weeks among service users without 12-month CMDs.

	Service users	
	GMC only	**MHC**
	% (95% CI)	**% (95% CI)**
Severe 12-month CMD	27.2 (20.9, 33.5)	38.4 (34.3, 42.5)
Moderate 12-month CMD	22.2 (17.8, 26.7)	17.7 (14.2, 21.1)
Mild 12-month CMD	7.6 (4.8, 10.4)	11.1 (7.9, 14.4)
No 12-month CMD	43.0 (37.1, 48.8)	32.8 (28.8, 36.8)
Lifetime CMD, impaired social functioning and/or role limitations due to emotional problems	12.1	10.6
Lifetime CMD, no impaired social functioning and no role limitations due to emotional problems	8.3	6.4
No lifetime CMD, impaired social functioning and/or role limitations due to emotional problems	13.5	7.0
No lifetime CMD, no impaired social functioning and no role limitations due to emotional problems	9.1	8.8

Association of CMD severity with treatment intensity

Receiving the highest level of treatment intensity (level 3) was most common (36.3%) among GMC only users with severe 12-month CMDs, followed by moderate cases (27.8%) and mild cases (17.5%) (Table 3). Among MHC users, those with moderate 12-month CMDs most often (60.8%) received treatment of the highest intensity, followed by severe (51.4%) and mild (51.3%) cases. A considerable portion of service users without 12-month CMDs received treatment of the highest intensity, in GMC only (18.2%), but especially in MHC (37.0%). After adjustment for all potential confounders (model 2), GMC only users with severe CMDs were more likely to have received treatment according to the highest level compared to those without 12-month CMDs. Among MHC users, all three levels of CMD severity were associated with the probability of having received the highest level of treatment intensity in model 2.

Table 3 CMD severity and treatment intensity

Left part: rates of treatment intensity level in general medical care (GMC) only and mental health care (MHC) in the past 12 months for emotional/substance-use problems among service users aged 18-75 years with different levels of common mental disorder (CMD) severity in the past 12 months, in weighted percentages.

Right part: results of logistic regression analyses estimating the association of CMD severity with having received the highest level of treatment intensity (level 3) in GMC only and MHC, in weighted adjusted odds ratios (aOR) with 95% confidence intervals (95% CI)

	Treatment intensity level			Treatment intensity level 3 (reference: levels 1 and 2)	
	Level 1	Level 2	Level 3	Model 1	Model 2
	% (95% CI)	% (95% CI)	% (95% CI)	aOR (95% CI)	aOR (95% CI)
GMC only					
Severe CMD	31.3 (20.5, 42.2)	32.3 (22.2, 42.5)	36.3 (28.3, 44.4)	2.72*** (1.56, 4.74)	2.45** (1.29, 4.65)
Moderate CMD	24.6 (13.6, 35.5)	47.7 (36.3, 59.1)	27.8 (17.4, 38.1)	1.81 (0.87, 3.78)	1.69 (0.75, 3.79)
Mild CMD	54.4 (36.4, 72.4)	28.1 (14.0, 42.3)	17.5 (4.3, 30.7)	0.96 (0.34, 2.73)	1.00 (0.35, 2.82)
No CMD	40.0 (33.3, 46.8)	41.8 (34.5, 49.1)	18.2 (11.9, 24.4)	Reference	Reference
MHC					
Severe CMD	18.8 (11.2, 26.5)	29.8 (23.1, 36.5)	51.4 (42.6, 60.2)	1.83* (1.10, 3.06)	2.10** (1.25, 3.55)
Moderate CMD	17.7 (9.1, 26.2)	21.5 (13.4, 29.6)	60.8 (52.4, 69.2)	2.62*** (1.65, 4.18)	3.03*** (1.84, 5.00)
Mild CMD	12.9 (4.9, 20.8)	35.8 (22.7, 48.9)	51.3 (38.1, 64.5)	1.74 (0.87, 3.47)	2.17* (1.04, 4.55)
No CMD	22.0 (15.2, 28.7)	41.1 (33.3, 48.8)	37.0 (29.5, 44.5)	Reference	Reference

Level 1: 1 contact (psychotherapy, pharmacotherapy, referral or practical assistance) with any professional and/or <0.5 month of any medication.

Level 2: 2-7 psychotherapy consultations with any professional, or ≥0.5 month of any medication plus 2 or 3 contacts with a physician or MHC professional.

Level 3: ≥8 psychotherapy consultations with any professional, or ≥1 month of any medication plus ≥4 contacts with a physician or MHC professional.

Model 1: adjusted for sex and age. Model 2: adjusted for sex, age, education, living situation, employment situation, household income, urbanicity of residence, and having any physical disorder.

*p<0.05; **p<0.01; ***p<0.001

Changes between 2007–2009 and 2019–2022

Treatment contact

The rates of any 12-month contact with GMC only and MHC for emotional/substance-use problems both increased between 2007–2009 and 2019–2022 (GMC only: from 4.5–7.3%, p < 0.001; MHC: from 6.2–10.0%, p < 0.001). A stronger increase in the contact rate with GMC only was found for respondents with moderate 12-month CMDs (from 10.6–17.6%) compared to those without 12-month CMDs (from 3.0–4.1%) (β = 0.074, 95% CI: 0.008–0.140, p < 0.05) (Fig. 1a). No interaction effects were found for mild and severe CMDs. Regarding MHC use no interaction effects between study and CMD severity were found, indicating that the increasing contact rate with MHC over time was similar for severe, moderate and mild cases (Fig. 1b).

Treatment intensity

The rate of having received the highest level of 12-month treatment intensity increased from 15.6% in 2007–2009 to 25.8% in 2019–2022 among GMC only users (p = 0.001), while this rate decreased in the 12-year period from 55.6–48.2% among MHC users (p = 0.038). A stronger increase in the rate of highest treatment intensity was found for GMC only users with severe CMDs (from 15.8–37.3%) compared to those without 12-month CMDs (from 16.4–19.3%) (β = 0.19, 95% CI: 0.041–0.33, p = 0.012) (Fig. 2a). Among MHC users this interaction effect showed a trend towards a significantly stronger decrease in the rate of highest treatment intensity for severe cases (from 67.1–50.0%) compared to cases without 12-month CMDs (from 40.9% to 37u.7%) (β=-0.11, 95% CI: -0.25-0.015, p = 0.083) (Fig. 2b). No significant interaction effects were found for mild and moderate CMDs, both among users of GMC only and MHC.

Discussion

This study updates findings from population-based surveys conducted in high-income countries in the first decade of this century on the associations of CMD severity with treatment contact and treatment intensity. Furthermore, to the best of our knowledge, this is the first study to provide insight into whether these associations have changed in the past twelve years. Before discussing the results, study limitations are considered.

Limitations

First, although the NEMESIS-3 sample was representative of the Dutch adult population on most parameters, those with insufficient mastery of Dutch, those with no permanent residential address, and those who were long-term institutionalized were excluded from participation. Therefore, the findings are not generalizable to these particular categories. Second, by focusing on recent service use of prevalent cases, possible effects of episodes of care and disease course prior to the 12-month measurement period were not examined. Third, recall problems might have hampered the accuracy of self-reported service use, especially regarding the intensity of treatment received in the past year. Yet, it is difficult to gauge how this might have influenced the results of our study. Fourth, the generalizability of the results across healthcare systems outside of the Netherlands is unknown, as patterns of service use for emotional/substance-use problems may be associated with inter-country differences in healthcare systems [21, 22].

GMC only

Consistent with our previous study using NEMESIS-2 data [8], this study using recent NEMESIS-3 data found that persons with moderate or severe 12-month CMDs were more likely to have contact with GMC only in the past 12 months for emotional/substance-use problems compared to cases without 12-month CMDs. Furthermore, a stronger increase in the contact rate with GMC only in the 12-year period between NEMESIS-2 and NEMESIS-3 was found for moderate cases (from 10.6–17.6%) compared to those without 12-month CMDs (from 3.0–4.1%). A likely explanation for this finding is that the deployment of GP-MHPs in general practice has been strongly stimulated as part of the reform of the Dutch MHC system in 2014, resulting in 78% of general practices employing a GP-MHP in 2021 [15]. The wide availability of GP-MHPs might have brought about that in 2019–2022 in particular more persons with moderate CMDs entered general practice and subsequently received treatment for their emotional/substance-use problems without further referral to MHC.

Among GMC only users, it was found that persons with severe CMDs were more likely to have received the highest level of 12-month treatment intensity (i.e., ≥ 8 psychotherapy consultations, or ≥ 1 month of pharmacotherapy including ≥ 4 professional contacts) compared to those without 12-month CMDs. Previous studies [5, 8] failed to find such a relationship in this setting. Probably, the broad presence of GP-MHPs in recent years made it possible to provide more intensive treatment to severe cases in Dutch general practice. Consistent with this interpretation is the finding that between 2007–2009 and 2019–2022 the proportion of GMC only users who received treatment of the highest intensity increased stronger among severe cases (from 15.8–37.3%) compared to those without CMDs (from 16.4–19.3%). As integrating treatment for CMDs in GMC has been a policy objective globally for decades [9, 10], future studies will have to inform us if similar changes over time have occurred in other countries.

GMC will generally be a less appropriate setting for treating severe CMDs. Hence, is it notable that 20.6% of all severe cases received treatment in GMC only in the past year, and that among the severe cases using GMC only, the majority (63.7%) did not receive the highest level of treatment intensity. Like in other high-income countries (e.g. [23]) Dutch MHC is struggling with long waiting lists in recent years [24].

Future research has to determine to what extent GMC was an appropriate setting for treating persons with severe CMDs, or was used to bridge waiting times for MHC.

MHC

Consistent with our previous study [8] and other earlier studies in high-income countries [1, 2], the present study found that CMD severity was clearly associated with the probability of having made contact with MHC in the past year. However, only 38.3% of the persons with severe CMDs made contact with MHC. Furthermore, although the contact rate with MHC increased in the Dutch adult population between 2007–2009 and 2019–2022, this increase did not differ between severe cases and those without 12-month CMDs. Further research is needed to elucidate the reasons why access to MHC has not improved for persons with severe CMDs. A contributing factor could be that waiting lists for MHC are currently a larger problem in the Netherlands than in 2007–2009 [24, 25], and that prioritization of patients on waiting lists according to the severity of their condition seems suboptimal [26].

Among MHC users, those with mild, moderate and severe 12-month CMDs were more likely to have received the highest level of 12-month treatment intensity compared to those without 12-month CMDs. This finding is largely consistent with previous literature [2, 5, 8]. Notably, the rate of receiving treatment of the highest intensity level decreased between 2007–2009 and 2019–2022 in the total group of MHC users. This may reflect treatments in MHC being terminated earlier than before because of more targeted decision making about treatment discontinuation when appropriate and to free up treatment capacity for new patients, but further research is needed. Regardless of the reasons, it is noticeable that the change towards less intensive treatment in MHC was not more pronounced for cases with less severe emotional/substance-use problems. On the contrary, there was a trend towards a more marked decline in the rate of receiving treatment of the highest intensity level for MHC users with severe CMDs (from 67.1–50.0%) compared to those without 12-month CMDs (from 40.9–37.7%). Possibly, the interaction effect did not reach statistical significance due to the small number of cases. Further research is needed to determine whether the less intensive MHC treatment provided to persons with severe CMDs hampered treatment effectiveness or not.

Persons with severe CMDs not receiving treatment

In the current study 20.6% of the persons with severe CMDs received GMC only and 38.3% received MHC, leaving a substantial 41.1% of severe cases who did not access either type of service in the past year. This percentage falls in the range of earlier studies (35.5%-50.3%) [1, 8]. Note that this group exists of those who will have received treatment at a later time, who no longer have sought care after previous treatment or who will never seek treatment [27, 28]. In some cases delayed or no treatment might be appropriate, as CMDs can be self-limiting or solved without professional help [29]. However, delays in making treatment contact have also been associated with adverse outcomes, such as greater severity, negative social and occupational functioning, and worse treatment outcomes [28, 30, 31]. Therefore further research is warranted to identify individual, provider and/or system factors that explain why a

large portion of the persons with severe CMDs receive no treatment in GMC and/or MHC, and for which severe cases stimulating earlier receipt of care may have positive impacts.

Service users without CMDs

It was found that only 3.9% of the persons without 12-month CMDs had contact with GMC only for emotional/substance use problems in the past year, while an additional similar percentage of 3.9% attended MHC. However, because persons without CMDs form the vast majority of the general adult population, they comprised large proportions of GMC only users (43.0%) and MHC users (32.8%) respectively. This might seem to continue raising the concern that meaningful portions of the limited MHC resources might be devoted to persons without apparent clinical needs [1, 2]. However, our study confirms previous research that deemed this interpretation too simplistic [3, 4], as most service users without CMDs had other indicators of potential clinical need. Relatively small percentages of GMC only users (9.1%) and MHC users (8.8%) neither met criteria for 12-month or past CMDs nor had functional/role impairments. Potentially, these percentages are even lower because some of these persons might have had an unmeasured need indicator. Probably, the cases without CMDs used formal services in the past year for various clinical needs, which may have included completing ongoing treatment to achieve full recovery, preventive treatment of subthreshold symptoms, and maintenance treatment to prevent relapse or recurrence of CMDs. Further research is needed to ascertain for what reasons persons without CMDs use GMC or MHC, and to what extent the care they receive is effective and efficient. This information is important to determine whether there is room to divert formal healthcare resources away from these persons to those who do meet full criteria for CMDs, in particular to those with severe CMDs.

Conclusions

Evidence was found that treatment of CMDs in GMC has been strengthened in the past twelve years. No indications were found that allocation of MHC resources to persons with severe CMDs has improved. In 2019–2022 the majority of severe cases did not receive treatment in the past year (41.1%) or received GMC only (20.6%). Moreover, between 2007–2009 and 2019–2022 no stronger increase in the 12-month contact rate with MHC was found for severe cases, while a change towards receiving less intensive 12-month treatment was observed for the severe cases using MHC. A more thorough understanding of these findings is needed to guide improvement of formal healthcare resource allocation for CMDs.

Declarations

Author contributions JN wrote the main manuscript text and prepared tables and figures with specific contributions of SvD, AL and MtH. SvD cleaned the data, re-categorised variables and analysed the data. JN, SvD, AL and MtH contributed to the conceptualization and design of the study. All authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Conflict of interests The author(s) declare none.

Ethics approval For NEMESIS-3, the Medical Research Ethics Committee (METC Utrecht) stated that the Dutch Medical Research Involving Human Subjects Act (WMO) did not apply (reference number: WAG/mb/19/017126; May 15, 2019). Therefore, no official approval was required under the WMO. The field procedures, information for respondents and informed consent forms were

assessed positively by the local ethical review committee. NEMESIS-2 was approved by a medical ethics committee (the Medical Ethics Review Committee for Institutions on Mental Health Care,

METiGG; reference number: CCMO/NL18210.097.07), since it included saliva collection. In both studies, respondents provided written informed consent, after full written and verbal information

about the study was given before and at the start of the interview.

Data availability The data on which this manuscript is based are not publicly available. However, data from NEMESIS-3 and NEMESIS-2 are available upon request. The Dutch Ministry of Health, Welfare and Sport financed the data and the agreement is that these data can be used freely under certain restrictions and always under supervision of the Principal Investigator (PI) of the study. Thus, some access restrictions do apply to the data. The PI of the study is last author of this paper and can at all times be contacted to request data. At any time, researchers can contact the PI and submit a research plan, describing its background, research questions, variables to be used in the analyses, and an outline of the analyses. If a request for data sharing is approved, a written agreement will be signed stating that the data will only be used for addressing the agreed research questions described and not for other purposes.

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Figures

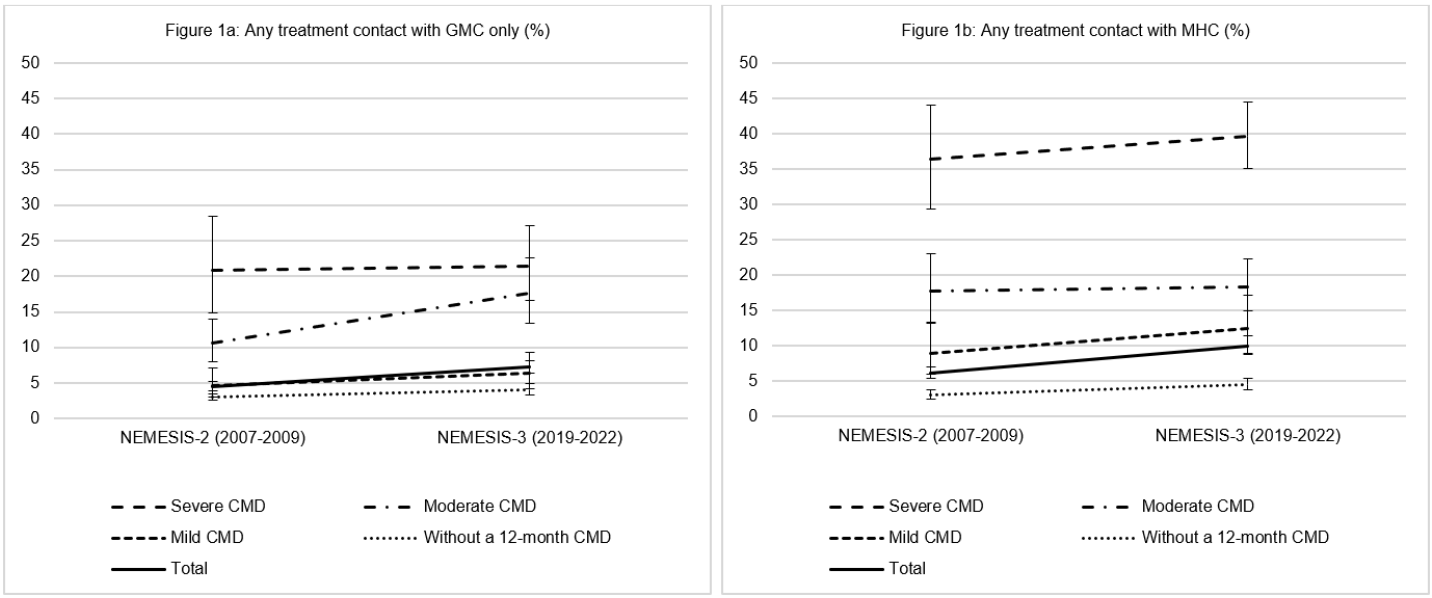
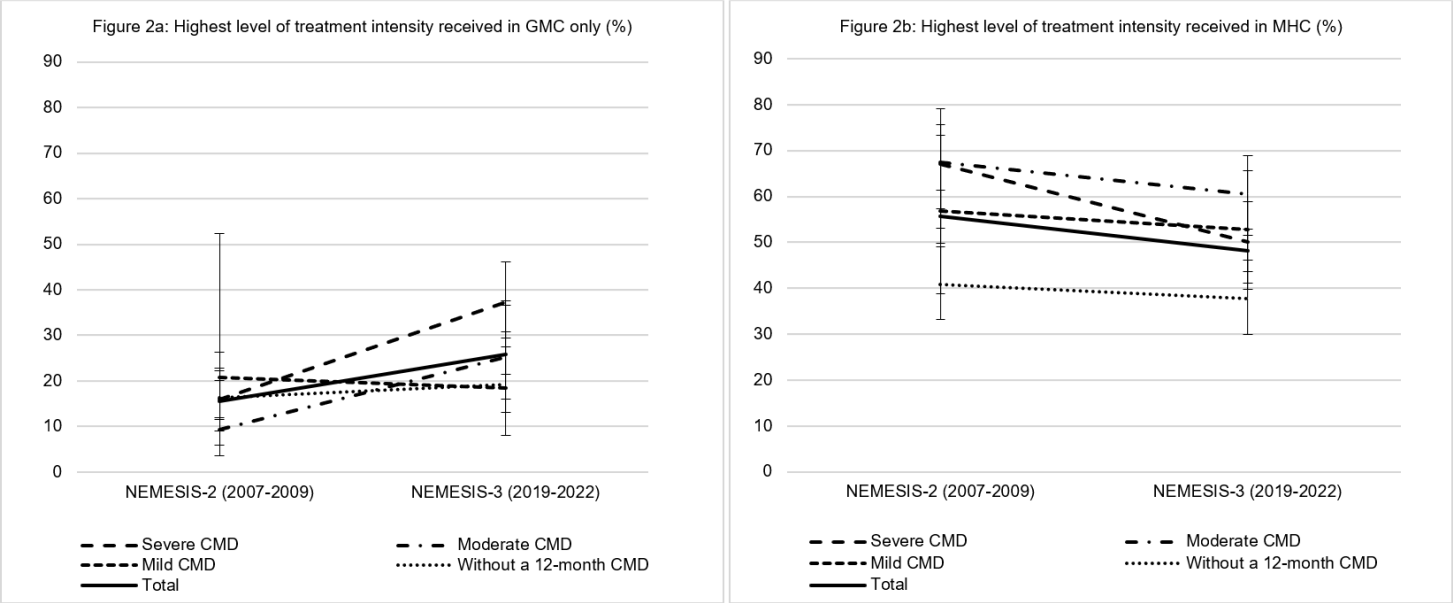


Figure 1

a&b Changes over time in the association of CMD severity with treatment contact

Changes between the first waves of NEMESIS-2 (2007-2009) and NEMESIS-3 (2019-2002) in the rates of any treatment contact with general medical care (GMC) only (Figure 1a) and mental health care (MHC) (Figure 1b) in the past 12 months for emotional/substance-use problems among adults aged 18-64 years, in total and across different levels of common mental disorder (CMD) severity in the past 12 months



Level 3: ≥8 psychotherapy consultations or ≥1 month of pharmacotherapy including ≥4 professional contacts

Figure 2

a&b Changes over time in the association of CMD severity with treatment intensity

Changes between the first waves of NEMESIS-2 (2007-2009) and NEMESIS-3 (2019-2002) in the rates of having received the highest level of treatment intensity (level 3) in general medical care (GMC) only (Figure 2a) and mental health care (MHC) (Figure 2b) in the past 12 months for emotional/substance-use problems among service users aged 18-64 years, in total and across different levels of common mental disorder (CMD) severity in the past 12 months.

Supplementary Files

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