



## Health service and psychotropic medication use for mental health conditions among healthcare workers active during the Spain Covid-19 Pandemic – A prospective cohort study using web-based surveys.



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## ABSTRACT

Little is known about healthcare workers' (HCW) use of healthcare services for mental disorders. This study presents data from a 16-month prospective cohort study of Spanish HCW ( $n = 4,809$ ), recruited shortly after the COVID-19 pandemic onset, and assessed at four timepoints using web-based surveys. Use of health services among HCW with mental health conditions (i.e., those having a positive screen for mental disorders and/or suicidal thoughts and behaviours [STB]) was initially low (i.e., 18.2 %) but increased to 29.6 % at 16-month follow-up. Service use was positively associated with pre-pandemic mental health treatment (OR=1.99), a positive screen for major depressive disorder (OR=1.50), panic attacks (OR=1.74), suicidal thoughts and behaviours (OR=1.22), and experiencing severe role impairment (OR=1.33), and negatively associated with being female (OR = 0.69) and a higher daily number of work hours (OR=0.95). Around 30 % of HCW with mental health conditions used anxiolytics (benzodiazepines), especially medical doctors. Four out of ten HCW (39.0 %) with mental health conditions indicated a need for (additional) help, with most important barriers for service use being too ashamed, long waiting lists, and professional treatment not being available. Our findings delineate a clear mental health treatment gap among Spanish HCW.

## 1. Introduction

Healthcare workers (HCW) represent an important occupational group at elevated risk for mental disorders (McFarland et al., 2019) compared to the general population (Petrie et al., 2019) and this risk increases during pandemics (Hill et al., 2022), including the COVID-19 pandemic (Dragioti et al., 2022). HCW often neglect to seek help for

mental disorders (Gold et al., 2016) due to concerns about stigma, confidentiality and professional retaliation (Dunn et al., 2009) and these delays in help-seeking lead to greater mental health (co)morbidity (Michel et al., 2018), impaired work functioning, general medical and medication errors, patient safety issues, and low patient satisfaction (Fahrenkopf et al., 2008; Gärtner et al., 2010; Anagnostopoulos et al., 2012).

While the COVID-19 pandemic has renewed scientific interest in HCW access to mental healthcare (She et al., 2021; Smallwood et al., 2021; Kang et al., 2020; Ménard et al., 2022; Weibelzahl et al., 2021; Richards et al., 2022), currently available studies are limited by cross-sectional study designs, non-random sampling methods, and small sample sizes. In addition, a number of these studies (Ménard et al., 2022; Kang et al., 2020; Richards et al., 2022) calculated service use rates independent from mental health status (i.e., including the entire HCW cohort in the denominator). This seriously hampers interpretability and comparability of these rates, especially given the high variability of mental disorders among HCW worldwide (Dragioti et al., 2022).

Here we investigated use of healthcare and medication for mental health problems among a large prospective cohort of Spanish healthcare workers (MINDCOVID) using a well-established conceptual framework (Andersen and Newman, 1973; Roberts et al., 2018). The HCW cohort was recruited just after the height of the first wave of the Spain COVID-19 pandemic and followed-up at three additional time points for a total observation period of 16 months.

## 2. Methods

### 2.1. Study design, population, and sampling

The study design consists of a multicentre, prospective, observational cohort study of Spanish HCW, representing a convenience sample of eighteen Spanish healthcare institutions (hospitals, primary care, and public healthcare centres) from 6 Autonomous Communities in Spain (i.e., Andalusia, the Basque Country, Castile and Leon, Catalonia, Madrid, and Valencia), and including all types of HCW, including medical

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doctors, nurses, auxiliary nurses, other professions involved in patient care and professions not directly involved in patient care. Institutions were selected to reflect the geographical and sociodemographic variability in Spain; most participating centres came from regions with high COVID-19 caseloads. The cohort was assessed at four timepoints using web-based self-report surveys. The first assessment (T1) was May 5th through September 7th 2020, i.e., just after the height of the first wave of the Spain COVID-19 pandemic. Follow-up assessments (T2-T4) were conducted 4 months (T2; mean=120.1 days [SD=22.2]), 9 months (T3; mean=269.6 days [SD=22.0]), and 16 months (T4; mean=480.5 days [SD=22.6]) after T1 assessment.

Recruitment for the T1 survey consisted of healthcare representatives contacting all employed HCW in each participating healthcare centre using administrative email distribution lists (i.e., census sampling). A total of  $n = 8996$  HCW participated at T1, representing a weighted (adjusted by achieved sample size) response rate of 11.7%. A total of  $n = 4809$  T1 participants also participated at T2 (i.e., 53.5%);  $n = 3919$  of T2 participants participated at T3 (i.e., 81.5%); and  $n = 3183$  of T3 participants participated at T4 (i.e., 81.2%). For all surveys, two reminder emails were sent within 2–4 weeks after the initial invitation. For the current study, we included data from  $n = 4809$  HCW described previously (Alonso et al., 2022; Mortier et al., 2022) that participated in both T1 and T2 assessments. This data is now complemented with T3 data from  $n = 3919$  HCW that participated in T1-T3 assessments, and with T4 data from  $n = 3183$  HCW that participated in T1-T4 assessments. Potential non-response and attrition bias is addressed to the maximum extent possible using state-of-the-art techniques (see Statistical Analysis section).

Informed consent was obtained from all participants. The study complies with the principles established by national and international regulations, including the Declaration of Helsinki and the Code of Ethics. The study was approved by the Research Integrity and Good Scientific Practices Committee of IMIM-Parc de Salut Mar, Barcelona, Spain (2020/9203/I), and by all participating centres' institutional review boards (IRBs).

## 2.2. Measures

### 2.2.1. Thirty-day healthcare use for mental health problems

An ad-hoc developed item was used to assess health service use for mental health problems (see Supplementary Document for a detailed description of the item used). At each timepoint, participants were asked how many times they used the following types of health services for mental health problems in the past 30 days (either in-person or through teleconsultation): hospital emergency department services, primary care emergency services, family physician, psychiatrist or psychologist, and occupational health services. Response options ranged from 0 to 10 times or more. A dichotomous variable for “any 30-day health service use for mental health problems” was created, indicating participants who had at least one contact in the past 30 days with any of the five health services under study.

### 2.2.2. Thirty-day psychotropic medication use for mental health problems

Ad-hoc developed items were used to assess psychotropic medication use for mental health problems (see Supplementary Document for a detailed description of the items used). At each timepoint, participants were asked if they used any medication (even if only once) for emotional problems, problems with concentration, sleep problems, or problems with handling stress in the past thirty days (yes/no), without specifying whether this use refers to prescription or off-label medication. Participants that responded affirmative were subsequently asked for the type of psychotropic medication they used: antidepressants, anxiolytics, hypnotics, stimulants, mood stabilizers, and antipsychotics. Between 4 to 12 examples of common psychotropic medication were given for each type of psychotropic medication (both generic and brand names). A dichotomous variable for “any 30-day psychotropic medication use” was

created, indicating participants who used at least one type of psychotropic medication in the past 30 days.

### 2.2.3. Predisposing, enabling, and need factors related to health service use

We included a wide range of variables potentially related to health service utilization (see Fig. 1), grouped into three categories according to Andersen and Newman's behavioural model of health services utilization: predisposing, enabling, and need factors (Andersen and Newman, 1973; Roberts et al., 2018).

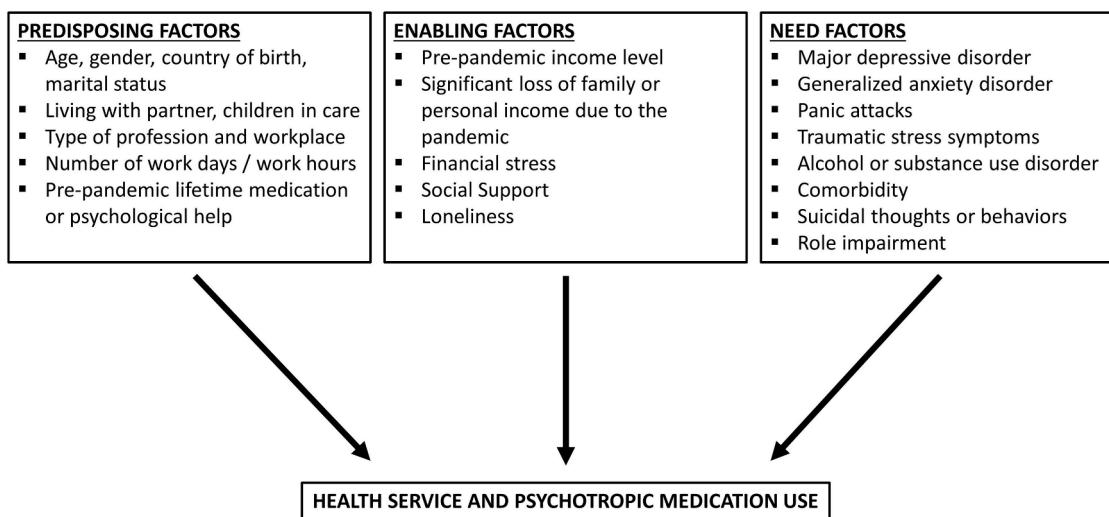
*Predisposing factors*, assessed at T1, included (1) age; (2) gender; (3) country of birth; (4) marital status; (5) living with partner; (6) having children in care; (7) type of profession; (8) type of workplace; (9) average weekly number of work days; and (10) average daily number of work hours and (11) pre-pandemic lifetime medication or psychological help for emotional or substance use problems (Kessler and Üstün, 2004).

*Enabling factors*, assessed at T1, included (1) pre-pandemic monthly income level; (2) having suffered a significant loss in personal or familial income due to the COVID-19 pandemic; (3) financial stress, a 0–4 summary score of two 5-level Likert type scales that assessed stress related to the respondent's financial situation and stress related to job loss or loss of income because of COVID-19; (4) social support, assessed using the Oslo Social Support Scale (score 3–14) (Dowrick et al., 1998), and categorized into strong social support (score 12–14), moderate social support (score 9–11), and poor social support (score 3–8) (Boen et al., 2012); (5) loneliness, assessed using the UCLA Three-Item Loneliness Scale (score 1–9) (Hughes et al., 2004);

*Need factors* were assessed at T1 through T4, and included: (1) a screen for major depressive disorder (MDD), using the Patient Health Questionnaire (PHQ-8; Kroenke et al., 2009), with a cut-off point = 10+ of the sum score to indicate current MDD (Wu et al., 2020); (2) a screen for generalized anxiety disorder (GAD), using the seven-item GAD scale (GAD-7; Spitzer et al., 2006), with a cut-off point of 10+ of the sum score to indicate current GAD (Plummer et al., 2016); (3) a screen for 30-day panic attacks, using an item from the World Mental Health-International College Student-WMH-ICS (Kessler et al., 2013); (4) a screen for traumatic stress symptoms, using the 4-item version (Zuromski et al., 2019) of the PTSD checklist for DSM-5 (PCL-5) (Blevins et al., 2015; Weathers et al., 2013), with a cut-off point of 7+ of the sum score to indicate presence of clinically relevant traumatic stress symptoms (Zuromski et al., 2019); (5) a screen for substance use disorder (i.e., alcohol or other substances), using the CAGE-AID (Brown and Rounds, 1995), with a cut-off point of 2+ of the sum score to indicate current substance use disorder (Mdege and Lang, 2011); (6) 30-day suicidal thoughts and behaviours (STB), assessed using adapted items from the Columbia Suicide Severity Rating Scale (Posner et al., 2011); and (7) severe role impairment, assessed using an adapted version of the Sheehan Disability Scale (Leon et al., 1997; Ormel et al., 2008). A 0–10 visual analogue scale was used to rate the degree of impairment for four domains: home management/chores, work, close personal relationships, and social life. The scale was labelled as no interference (0), mild (1–3), moderate (4–6), severe (7–9), and very severe (10) interference. Severe role impairment was defined as having a 7–10 rating (Kessler and Üstün, 2004).

### 2.2.4. Perceived need and barriers for treatment use

At T1, HCW were assessed for perceived need for (additional) psychological help or medication for any mental health or substance use problem. We also assessed an adapted version of the Stages of Change Readiness and Treatment Eagerness (SOCRATES) Scale (Miller and Tonigan, 1996) that rates the readiness or willingness to change any emotional or substance use problem. Finally, among those who indicated ongoing emotional or substance use problems on the SOCRATES scale, we assessed perceived importance of a set of six potential barriers for seeking help, using 5-point Likert type scales (response options “unimportant”, “of little importance”, “moderately important”, “important”, and “very important”). Perceiving a potential barrier was defined as



**Fig. 1.** Study variables grouped according to Andersen and Newman's behavioural model of health services utilization.

scoring “*important*” or “*very important*” on the corresponding 5-point Likert type scale.

### 2.3. Statistical analysis

Non-response (T1) and attrition bias (T2-T4) were tackled by calculating four separate sample weights (one for each time point T1-T4) through raking and inverse probability weighting procedures. These weights have two objectives: (1) to replicate the population distribution of Spanish HCW ( $n = 103,578$ ) at each time point (T1-T4) according to healthcare centre, and according to gender, age, and professional category; and (2) to account for loss to follow-up by matching the sample distribution at each time point to the distribution of survey variables assessed at the previous time points. Multivariable imputation by chained equations with 12 imputed datasets and 10 iterations per imputation was used to address the minimal problem of item-level missing data.

Main analyses were restricted to those HCW with any positive mental disorder screen or any 30-day STB (subsample T1  $n = 2185$ ; subsample T2  $n = 1931$ ; subsample T3  $n = 1512$ ; subsample T4  $n = 965$ ). These T1-T4 subsamples represent 45.4 %, 40.2 %, 38.5 %, and 30.3 % of the total T1-T4 samples, respectively. First, we estimated health service and psychotropic medication use in these subsamples and report these as weighted percentages with associated standard errors (SE). We also repeated these estimations among HCW without positive mental disorder screens or STB in order to provide a point of comparison. Next, Generalized Estimating Equations (GEE) models (binomial family with logistic link) were used to investigate the associations of service use predictors with health service and psychotropic medication use among HCW with positive mental disorder screens or STB, and were specified with an autoregressive working correlation structure to take into account the correlation of data within individuals across timepoints. We first estimated associations between each health service use predictor and the outcome using separate GEE models that each time adjusted for healthcare centre membership and time of survey. Next, following Andersen and Newman's behavioural model of health services utilization (Andersen and Newman, 1973; Roberts et al., 2018), we estimated a series of hierarchical multivariable GEE models, each time adjusting for healthcare centre membership and time of survey. A first model included all predisposing factors, a second model included all predisposing and enabling factors, a third model included all predisposing and need factors, and a final model included all types of healthcare use predictors. Results are reported as weighted odds-ratios with 95 % confidence intervals (OR [95 %CI]). Finally, we estimated perceived

need and barriers for treatment use among T1 participants with positive mental disorder screens or STB, and report them as weighted percentages with associated SE.

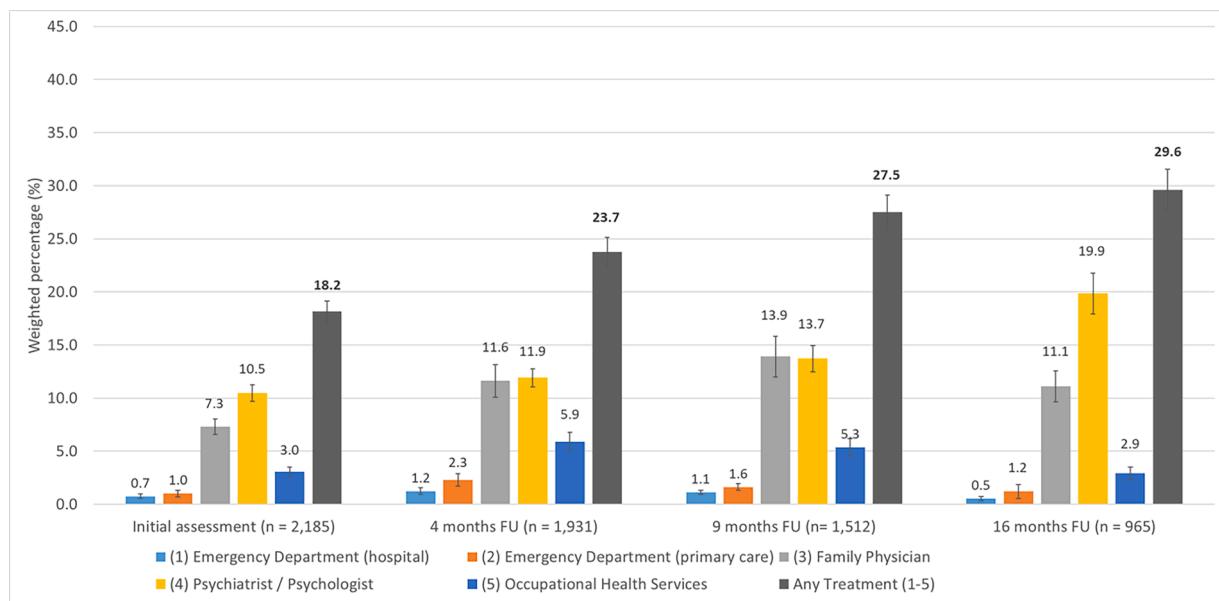
## 3. Results

### 3.1. Sample description

As outlined above, all main analyses were restricted to those HCW with any positive mental disorder screen or any 30-day STB. The majority of these HCW at T1 ( $n = 2185$ ) were women (80.5 %); median age was 45.2 (IQR 35.5–52.9). Half of the sample were nurses or auxiliary nurses (33.6 % and 16.8 %, respectively), 21.6 % were medical doctors, 8.1 % were other HCW directly involved in patient care, and 19.9 % were HCW not directly involved in patient care. Over two thirds (68.1 %) lived with a partner, and almost half (48.8 %) were married. Most worked in hospitals (13.1 % at the emergency department and 46.5 % in other hospital settings), while 35.3 % were active in primary care. About one third (35.9 %) had received medication or psychological help before the onset of the pandemic for emotional or substance use problems. A detailed sample description is provided in Supplementary Table 1, including sample distributions of all predisposing, enabling and need factors.

### 3.2. Health service use for mental health problems

Estimated health service use for mental health problems among those HCW with any positive mental disorder screen or any STB is shown in Fig. 2 and in Supplementary Table 2. Service use increased gradually over the 16-month follow-up period, from 18.2 % at T1 to 29.6 % at T4. The most often used types of services were a psychiatrist or psychologist (range 10.5–19.9 % across T1-T4), a family physician (range 7.3–13.9 %), followed by occupational health services (range 2.9–5.9 %), primary care emergency visits (range 1.0–2.3 %), and hospital emergency department visits (range 0.5–1.2 %). By comparison, health service use for mental health problems among those HCW without positive mental disorder screens or STB was in the range 7.1–11.4 % (Supplementary Figure 1 and Supplementary Table 4). Here too, most often used types of services were a psychiatrist or psychologist (range 3.2–6.9 %), a family physician (range 2.3–5.1 %), followed by occupational health services (range 0.9–3.8 %), primary care emergency visits (range 0.3–0.7 %), and hospital emergency department visits (range 0.1–0.6 %).



**Fig. 2.** Thirty-day health service use for mental health problems among HCW with mental disorders or STB.

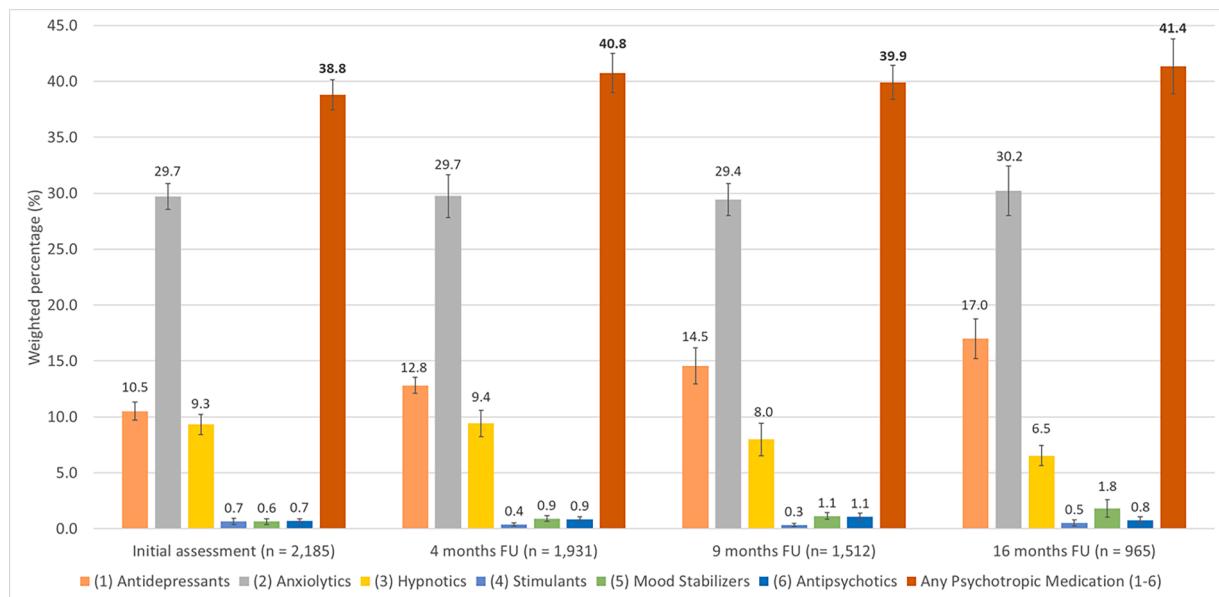
Abbreviations: FU = follow-up.

Note: percentages represent estimates of 30-day health service use for mental health problems at each of the four time points, each time among those HCW with any positive mental disorder screen or with any 30-day suicidal thoughts or behaviours (STB) at the corresponding time point. (n = 2185 [T1], n = 1931 [T2], n = 1512 [T3], and n = 965 [T4]). Separate estimates are provided for five types of health services and for any type of health services (labelled “Any Treatment (1-5)”). See Supplementary Table 2 for the Table presenting the data corresponding to Figure 2.

### 3.3. Psychotropic medication use for mental health problems

Estimated psychotropic medication use for mental health problems among HCW with any positive mental disorder screen or any STB is shown in Fig. 3 and in Supplementary Table 3. Use of psychotropic medication remained relatively stable at range 38.8–41.4 % during the observation period. The most often used type of psychotropic medication was anxiolytic medication (range 29.4–30.2 % across T1-T4). This

was followed by use of antidepressant medication, which increased from 10.5 % at T1 to 17.0 % at T4, and by use of hypnotic medication, which decreased from 9.3 % at T1 to 6.5 % at T4. Other types of psychotropic medication (i.e., stimulants, mood stabilizers, and antipsychotic medication) were infrequently used (range 0.3–1.8 %). By comparison, psychotropic medication use for mental health problems among HCW without positive mental disorder screens or STB was in the range 12.5–16.1 % (Supplementary Figure 2 and Supplementary Table 5).



**Fig. 3.** Thirty-day psychotropic medication use for mental health problems among HCW with mental disorders or STB.

Abbreviations: FU = follow-up.

Note: percentages represent estimates of 30-day psychotropic medication use for mental health problems at each of the four time points, each time among those HCW with any positive mental disorder screen or any 30-day suicidal thoughts or behaviours (STB) at the corresponding time point (n = 2185 [T1], n = 1931 [T2], n = 1512 [T3], and n = 965 [T4]). Separate estimates are provided for six types of psychotropic medication and for any type of psychotropic medication (labelled “Any Psychotropic Medication (1-6)”). See Supplementary Table 3 for the Table presenting the data corresponding to Figure 3.

**Table 1**

Factors associated with health service and psychotropic medication use for mental health problems among HCW with mental disorders or STB (16-month follow-up).

	Health service use		Psychotropic medication use	
	Bivariable models OR (95 % CI)	Multivariable model OR (95 % CI)	Bivariable models OR (95 % CI)	Multivariable model OR (95 % CI)
<b>Time points</b>				
- time point 4 (16 months)	<b>1.89 (1.50–2.39)*</b>	<b>2.07 (1.63–2.63)*</b>	1.02 (0.86–1.23)	1.08 (0.89–1.30)
- time point 3 (9 months)	<b>1.71 (1.41–2.07)*</b>	<b>1.86 (1.53–2.27)*</b>	1.04 (0.91–1.19)	1.08 (0.93–1.24)
- time point 2 (4 months)	<b>1.36 (1.13–1.63)*</b>	<b>1.47 (1.22–1.78)*</b>	1.10 (0.97–1.25)	<b>1.16 (1.02–1.32)*</b>
- time point 1 (June 2020)	(ref)	(ref)	(ref)	(ref)
<b>PREDISPOSING FACTORS (assessed at T1 June 2020)</b>				
Age				
- 50 years or more	0.76 (0.56–1.04)	0.82 (0.57–1.18)	<b>1.62 (1.18–2.24)*</b>	<b>1.82 (1.27–2.62)*</b>
- 30–49 years	0.82 (0.61–1.11)	0.96 (0.69–1.35)	1.35 (0.99–1.84)	<b>1.62 (1.16–2.26)*</b>
- 18–29 years	(ref)	(ref)	(ref)	(ref)
Gender (female vs male)	0.82 (0.64–1.05)	<b>0.69 (0.53–0.88)*</b>	1.00 (0.79–1.27)	0.96 (0.75–1.22)
Country of birth (other vs Spain)	1.27 (0.83–1.95)	1.08 (0.74–1.58)	1.07 (0.68–1.70)	0.91 (0.58–1.42)
Marital status				
- widowed	1.27 (0.53–3.06)	0.95 (0.34–2.60)	1.31 (0.58–2.96)	0.99 (0.40–2.41)
- divorced or legally separated	1.28 (0.97–1.70)	1.03 (0.73–1.44)	<b>1.46 (1.09–1.97)*</b>	1.27 (0.90–1.79)
- single	<b>1.39 (1.14–1.69)*</b>	1.07 (0.83–1.38)	1.01 (0.84–1.22)	0.98 (0.75–1.28)
- married	(ref)	(ref)	(ref)	(ref)
Living with partner (yes vs no)	<b>0.71 (0.59–0.86)*</b>	0.91 (0.71–1.17)	0.84 (0.69–1.02)	0.96 (0.74–1.24)
Children in care (yes vs no)	<b>0.71 (0.59–0.85)*</b>	0.83 (0.67–1.03)	<b>0.79 (0.67–0.95)*</b>	0.83 (0.67–1.02)
Type of profession				
- other profession not involved in patient care	<b>1.38 (1.03–1.84)*</b>	1.23 (0.91–1.66)	0.90 (0.69–1.17)	0.75 (0.56–1.01)
- other profession involved in patient care	1.20 (0.88–1.65)	1.04 (0.76–1.43)	<b>0.72 (0.53–0.97)*</b>	<b>0.62 (0.45–0.86)*</b>
- auxiliary nurse	1.33 (0.96–1.84)	1.11 (0.79–1.56)	0.97 (0.71–1.33)	0.81 (0.57–1.14)
- nurse	1.20 (0.95–1.52)	1.24 (0.97–1.59)	<b>0.78 (0.63–0.97)*</b>	<b>0.75 (0.59–0.96)*</b>
- medical doctor	(ref)	(ref)	(ref)	(ref)
Type of workplace				
- others	0.91 (0.56–1.49)	0.92 (0.57–1.47)	0.74 (0.48–1.17)	0.76 (0.47–1.23)
- primary care	1.01 (0.70–1.46)	1.02 (0.69–1.50)	1.14 (0.80–1.62)	0.99 (0.67–1.47)
- hospital (no ED)	1.02 (0.76–1.36)	0.99 (0.74–1.33)	1.08 (0.81–1.42)	1.03 (0.77–1.39)
- hospital (ED)	(ref)	(ref)	(ref)	(ref)
Average weekly number of work days	0.96 (0.88–1.04)	0.98 (0.90–1.05)	0.99 (0.92–1.07)	0.99 (0.91–1.08)
Average daily number of work hours	<b>0.94 (0.90–0.98)*</b>	<b>0.95 (0.92–0.99)*</b>	0.98 (0.95–1.02)	0.99 (0.96–1.03)
Pre-pandemic lifetime medication or psychological help for emotional or substance use problems (yes vs no)	<b>2.25 (1.87–2.70)*</b>	<b>1.99 (1.66–2.40)*</b>	<b>2.56 (2.13–3.08)*</b>	<b>2.31 (1.92–2.77)*</b>
<b>ENABLING FACTORS (assessed at T1 June 2020)</b>				
Pre-pandemic income level				
- more than 4500€	<b>0.65 (0.51–0.82)*</b>	0.91 (0.69–1.21)	0.99 (0.78–1.24)	1.14 (0.86–1.50)
- between 2200€ - 4500€	0.87 (0.70–1.08)	1.09 (0.86–1.37)	1.03 (0.83–1.26)	1.17 (0.94–1.46)
- less than 2200€	(ref)	(ref)	(ref)	(ref)
Significant loss of family or personal income due to the pandemic (yes vs no)	1.15 (0.93–1.43)	1.18 (0.94–1.47)	0.99 (0.80–1.23)	1.02 (0.80–1.29)
Financial stress scale	1.03 (0.99–1.07)	0.99 (0.94–1.03)	1.01 (0.96–1.05)	0.98 (0.94–1.03)
Oslo Social Support Scale				
- strong social support	0.79 (0.60–1.04)	1.11 (0.84–1.47)	<b>0.64 (0.49–0.83)*</b>	0.79 (0.60–1.04)
- moderate social support	<b>0.75 (0.60–0.94)*</b>	0.90 (0.72–1.12)	<b>0.72 (0.57–0.91)*</b>	0.82 (0.65–1.03)
- poor social support	(ref)	(ref)	(ref)	(ref)
UCLA Three-Item Loneliness Scale	<b>1.11 (1.05–1.17)*</b>	1.03 (0.97–1.09)	<b>1.09 (1.04–1.15)*</b>	1.03 (0.97–1.08)
<b>NEED FACTORS (time-varying)</b>				
Current mental disorder screens (time-varying)				
- major depressive disorder (yes vs no)	<b>1.58 (1.33–1.87)*</b>	<b>1.50 (1.16–1.94)*</b>	<b>1.38 (1.22–1.57)*</b>	<b>1.36 (1.11–1.66)*</b>
- generalized anxiety disorder (yes vs no)	<b>1.33 (1.13–1.56)*</b>	1.09 (0.84–1.41)	<b>1.49 (1.31–1.69)*</b>	<b>1.60 (1.31–1.95)*</b>
- panic attacks (yes vs no)	<b>1.77 (1.51–2.08)*</b>	<b>1.74 (1.41–2.14)*</b>	<b>1.40 (1.19–1.64)*</b>	<b>1.55 (1.29–1.88)*</b>
- traumatic stress symptoms (yes vs no)	<b>1.25 (1.06–1.47)*</b>	1.04 (0.81–1.34)	<b>1.16 (1.03–1.31)*</b>	1.12 (0.92–1.36)
- alcohol or substance use disorder (yes vs no)	1.10 (0.89–1.36)	1.16 (0.91–1.49)	<b>1.20 (1.02–1.40)*</b>	<b>1.47 (1.21–1.79)*</b>
Number of current mental disorder screens (time-varying)				
- three or more	<b>2.02 (1.25–3.27)*</b>	0.93 (0.55–1.56)	<b>1.88 (1.26–2.82)*</b>	0.69 (0.47–1.02)
- exactly two	1.26 (0.78–2.06)	0.87 (0.65–1.16)	1.46 (0.97–2.20)	0.89 (0.71–1.11)
- exactly one	1.08 (0.67–1.75)	(ref)	1.13 (0.77–1.66)	(ref)
- zero	(ref)	(ref)	(ref)	(ref)

(continued on next page)

**Table 1** (continued)

	Health service use		Psychotropic medication use	
	Bivariable models OR (95 % CI)	Multivariable model OR (95 % CI)	Bivariable models OR (95 % CI)	Multivariable model OR (95 % CI)*
Any suicidal thoughts or behaviours (yes vs no) (time-varying)	<b>1.53 (1.27–1.85)*</b>	<b>1.22 (1.00–1.48)*</b>	<b>1.45 (1.23–1.70)*</b>	<b>1.25 (1.04–1.49)*</b>
Severe role impairment (yes vs no) (time-varying)	<b>1.54 (1.28–1.84)*</b>	<b>1.33 (1.11–1.60)*</b>	<b>1.41 (1.23–1.61)*</b>	<b>1.33 (1.16–1.54)*</b>

Abbreviations: CI= confidence interval; OR = Odds Ratio. \* Indicate statistically significant results ( $\alpha=0.05$ ).

Note: Odds Ratios are estimated using generalized estimating equations (GEE) and represent measures of association between the outcome variables (i.e., health service and psychotropic medication use) and health service use predictors (i.e., predisposing, enabling, and need factors). GEE models included data from 4 time points, restricted at each time point to those HCW with any positive mental disorder screen or with any 30-day suicidal thoughts or behaviours at the respective time point ( $n = 2185$  [T1],  $n = 1931$  [T2],  $n = 1512$  [T3], and  $n = 965$  [T4]). Bivariable models represent separate GEE models for each separate health service use predictor, each time adjusting for healthcare centre membership and time of survey. Multivariable models includes all health service use predictors in one single GEE model, adjusting for healthcare centre membership and time of survey. See Supplementary Tables 6–7 for an overview of all hierarchical multivariable models according to Andersen and Newman's behavioural model of health services utilization.

Here too, most often used types of psychotropic medication were anxiolytic medication (range 7.8–10.6 %), followed by antidepressant medication (range 2.6–3.7 %), hypnotic medication (range 2.5–3.7 %), and stimulants, mood stabilizers, and antipsychotic medication (range 0.1–0.4 %).

### 3.4. Factors associated with health service use for mental health problems

Odds for service use more than doubled (OR = 2.07) over the 16-month follow-up period in the fully adjusted multivariable model (Table 1 - left pane). In this same model, service use was negatively associated with being female (OR = 0.69) and with higher daily number of work hours (OR = 0.95), and positively associated with pre-pandemic use of medication or psychological help (OR = 1.99), MDD (OR = 1.50), panic attacks (OR = 1.74), STB (OR = 1.22) and severe role impairment (OR = 1.33). Being single, living with a partner, having children in care, loneliness, pre-pandemic income level, social support, GAD, traumatic stress symptoms, and having three or more positive mental disorder screens were all associated with service use in bivariate models; however, these effects were no longer found in the fully adjusted model. See Supplementary Table 6 for an overview of all hierarchical multivariable GEE models.

### 3.5. Factors associated with use of psychotropic medication

Odds for psychotropic medication use slightly but significantly increased at T2 (vs T1; OR = 1.16) in the fully adjusted model. In this same model, psychotropic medication use was negatively associated with being a nurse (OR = 0.75) or having another profession involved in patient care (OR = 0.62; compared to medical doctors), and positively associated with having age 30+ (OR range 1.62–1.82), pre-pandemic use of medication or psychological help (OR = 2.31), and the need factors under study, especially GAD (OR = 1.60), panic attacks (OR = 1.55) and substance use disorders (OR = 1.47). Being divorced or legally separated HCW, having children in care, perceived loneliness, social support, traumatic stress symptoms, and having three or more positive mental disorder screens were all associated with psychotropic medication use in the bivariate models; however, these effects were no longer found in the fully adjusted model. See Supplementary Table 7 for an overview of all hierarchical multivariable GEE models.

### 3.6. Perceived need and barriers for treatment use at T1

Approximately four out of ten HCW (39.0 %) with mental disorders or STB indicated a need for help or additional help (see Table 2). In contrast, six out of ten HCW (60.3 %) indicated that they do not have a problem that needs change. The most prevalent perceived barrier to seek help among those HCW that were in stages of contemplation (5.4 %),

preparation (9.0 %) or actively addressing their mental health issues (14.6 %), was being too ashamed (65.5 %) followed by long waiting lists (51.6 %), with other barriers being slightly less prevalent (40.5–46.0 %).

## 4. Discussion

Our study documents an important unmet treatment need among those Spanish HCW with mental disorders active during the first 16 months of the COVID-19 pandemic, as service use for mental health conditions did not exceed 30 % at any timepoint, and one third of HCW use anxiolytics to deal with their mental health issues.

An important contribution from our prospective study is that we documented an increase in professional treatment use in the 16-month period following the first pandemic wave, from 18 to 30 %, with rates at the end of observation almost reaching documented pre-pandemic rates of 36–38 % among HCW (Gärtner et al., 2013; Jones et al., 2018; Rogoža et al., 2021), although a pre-pandemic point of comparison among Spanish HCW is lacking. This increase is in line with findings from HCW health programs in Spain, Canada and the UK (Braquehais et al., 2022; Gerada, 2021; Myran et al., 2022) and with a register-based study in the Canadian general population (Saunders et al., 2021) and provide further evidence for a serious disruption in access to adequate treatment for people with mental disorders during the initial pandemic (Dellazizzo et al., 2021). This is further substantiated by our finding that approximately 40 % of Spanish HCW indicated a need for (additional) treatment for mental health problems just after the first pandemic wave, and that an important perceived barrier among those that considered seeking help were long waiting lists and professional treatment not being available.

The low service use for mental health conditions among HCW that our study documented is in line with only 34.4 % of Spanish general population adults with 12-month mental disorders consulting formal health services (Evans-Lacko et al., 2018) and echoes previous concerns about a systematic problem of HCW timely accessing adequate mental health treatment (Buck et al., 2019). An important finding from our study is that treatment use declined with increasing numbers of daily work hours. This suggests that HCW with increased workloads are not only at risk for adverse mental health (e.g., Kim and Yang, 2023; Riaz et al., 2022; Marzo et al., 2022) but also for low service use for their mental health problems, and subsequent worsening of psychiatric outcomes (Kisely et al., 2006). This vicious circle is further reinforced by the fact that increasing workloads among HCW also leads to increased turnover intentions (Poon et al., 2022) which leaves the remaining workforce with even higher work pressure, disparate mental health burden, and unmet needs for care.

A concerning finding from our study are the high rates of anxiolytic medication use (29–30 %) among Spanish HCW with mental health problems during the COVID-19 pandemic. One previous study among

**Table 2**

Perceived need for care, stages of change, and perceived barriers for care among those with mental disorders or STB at initial assessment (T1 June 2020; n = 2185).

	n	% (w)	SE
Perceived need for (additional) psychological help or medication for an emotional or substance-related problem	847	39.00	1.83
Stages of Change Scale			
(1) I do not have a problem that I need to change	1345	60.25	1.14
(2) I have a problem, but I am not yet sure I want to take action to change it	118	5.42	0.69
(3) I have a problem and I intend to address it	187	9.01	0.90
(4) I have a problem and I already am working actively to change it	305	14.56	0.85
(5) I had a problem, but I have addressed it and things are better now	230	10.77	0.88
Perceived barriers for seeking treatment among those with Stages of Change Scale values 2–4			
long waiting lists (cut-off = 4)	330	51.59	2.77
professional treatment not being available (cut-off = 4)	304	46.00	2.78
not sure if available treatments are very effective (cut-off = 4)	270	40.53	2.54
too ashamed (cut-off = 4)	409	65.49	3.50
unsure of where to go or who to see (cut-off = 4)	288	44.47	3.38
problems with time, transportation, or scheduling (cut-off = 4)	275	45.93	3.15

Abbreviations: SE = Standard Error.

Note: The Stages of Change Scale assesses readiness or willingness to change any emotional or substance use problems. Potential barriers for seeking help were assessed among those HCW who indicated ongoing emotional or substance use problems on the Stages of change scale (i.e., values 2–4). Perceived importance of potential barriers for seeking help was assessed using 5-point Likert type scales with cut-off = 4 corresponding with perceiving the barrier as “important” or “very important”.

Brazilian HCW found use of hypnotics or sedatives to be 17.1 % (Gir et al., 2022) but no separate rates were reported for those HCW with mental disorders. Spain has the highest benzodiazepine use worldwide (United Nations - International Narcotics Control Board. (n.d.), 2023) and use has increased substantially during the pandemic (AEMPS, 2022). Benzodiazepine use is estimated at 14.2–15.4 % in the general Spanish population (Herrera-Gómez et al., 2018; Torres-Bondia et al., 2020), 32.7 % among Spanish adults with 12-month mental disorders (Codony et al., 2007), and up to 68 % among mental health patients (Simal-Aguado et al., 2021). Spain has also among the highest rates of benzodiazepine misuse in Europe (17.9 %; Novak et al., 2016). We speculate that the high use of benzodiazepine medication among HCW can be explained in part by self-medication, which is high in the medical professions (Montgomery et al., 2011; Andrés et al., 2021), and should be interpreted against the background of the low and delayed access to adequate mental healthcare in Spain (Wang et al., 2007), resulting in healthcare providers’ preference to prescribe fast-acting and short-term effective medication, over more durable time-intensive treatment strategies such as a carefully designed psychiatric treatment plan with frequent follow-up visits combined with psychotherapy sessions (Wang et al., 2002; APA, 2019).

Several limitations of our study are worth mentioning. First, the recall period for assessment of health service and psychotropic medication use was, in order to maximise recall, 30 days at each time point, and therefore does not cover the entire 16-month observation period. This may have led to underestimation of service and medication use. In addition, recall bias cannot be entirely ruled out, given the use of self-report surveys. Second, our data does not allow to determine whether the service or medication use was minimally adequate (e.g., if a minimum level of healthcare visits were reached or whether appropriate medication was prescribed for specific mental disorders [Wang et al., 2002]). In addition, we did not assess health service and psychotropic medication use separately for each of the included adverse mental health outcomes. Third, given the expansive scale of our study (18 large healthcare institutions) and the time constraints imposed by the unforeseen nature of the pandemic outbreak, assessment of mental health conditions in our study is based on self-report screening instrument and not on face-to-face clinical interviews. We addressed this by using well-validated screening measures. Fourth, survey participation was suboptimal, although in line with the pooled response rate of 13.0 % among HCW web-based surveys worldwide (Cho et al., 2013). State-of-the-art missing data handling techniques were used to maximally address non-response and attrition bias. Fifth, data come from a convenience sample of institutions and it is unclear to what extent these 18 institutions represent the entire population of Spanish HCW. It is

worth mentioning that all healthcare professionals from the participating institutions were invited to participate (census sampling), including all types of HCW.

## 5. Conclusions

Our study significantly contributed to the understanding of HCW access to treatment for mental health issues. Our longitudinal estimates of health service utilization suggest a significant disruption in care among HCW active after the onset of the Spanish pandemic, with a substantial proportion of HCW effectively reporting a need for treatment. The worrisome finding of low treatment utilization among HCW in our study is potentially linked to elevated daily work hours, suggesting a potential vicious cycle where increased workloads, adverse mental health, and insufficient treatment use may contribute to psychiatric comorbidity and the eventual dropout of HCW from the workforce. Notably, our study highlights a high prevalence of use of benzodiazepine medication among Spanish HCW, potentially signalling self-medication. Additional research is essential to compare the findings of our study with healthcare populations globally. Future studies should also start exploring the variations in treatment utilization across different healthcare regions or institutions.

Collectively, our study underscores a clear mental health treatment gap among Spanish HCW. One potential approach to this treatment gap could consist in investing more resources in the correct implementation of workers’ health surveillance in healthcare settings to enable timely interventions (Koh, 2003). Specific surveillance programs for HCW mental health have been developed (Gärtner et al., 2013), but despite being obligatory in most EU countries, in practice, they focus mostly on sickness absence and treatment (Harber et al., 2010; Los et al., 2022). The implementation of low-threshold HCW health programs should also be considered, although caution is warranted if these programs are restricted to mandatory treatment in case of malpractice issues, which may prevent voluntary help-seeking out of fear for legal implications (Braquehais et al., 2022; Buck et al., 2019). Innovative approaches such as stepped-care programmes (van Straten et al., 2015; Mediavilla et al., 2022) have been proposed, in line with the need for a precision public mental health care approach (Stein and Wessely, 2022) to relieve the mental health burden among HCW worldwide.

## Data availability

The de-identified participant data as well as the study protocol, statistical analysis plan and data dictionaries used for this study are available as from publication and upon reasonable request from the

corresponding author (PM; pmortier@researchmar.net) as long as the main objective of the data-sharing request is replicating the analysis and findings as reported in this paper (without

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#### Declaration of competing interest

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#### Supplementary materials

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