European Journal of Public Health, 2025, ckaf145

https://doi.org/10.1093/eurpub/ckaf145

Sickness absence with common mental disorders and antidepressant prescriptions across different employment branches during as compared to before the Covid-19 pandemic—an observational study covering the Swedish population aged 18–65 years

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Abstract

Few studies have examined the implications of the Covid-19 pandemic on mental health across different employment branches. This study investigated the impact of the pandemic on long-term sickness absence (SA) with common mental disorders (CMDs) and antidepressant prescriptions in different employment branches and age groups in Sweden. Using national registers, we observed the Swedish population (18–65 years) with gainful employment quarterly from 2018 to 2021. An interrupted time-series design was employed to examine changes in trends of incidence rates (IRs) for (i) long-term (>90 days) SA with CMDs and for (ii) antidepressant prescriptions across eight employment branches during versus pre-pandemic. Analyses were stratified by age group. There was no evidence of outcome changes in the entire working age population. However, compared to pre-pandemic levels, the IRs of long-term SA with CMD increased by 5.9% per quarter for those working in the cultural sector [95% confidence interval (CI): 2.2%–9.8%], 3.4% in trade and transportation (95% CI: 0.4%–6.4%), and 5.5% in manufacturing and services (95% CI: 1.5%–9.7%) as well as among individuals aged 56–64. Incident antidepressant prescription rates were marginally higher for workers in construction (1.1% annual increase; 95% CI: 0.1%–2.1%), culture (1.4%; 0.7%–2.0%), and trade and transportation (0.9%; 0.1%–1.7%). While the risk of CMD-related long-term SA or incident antidepressant prescription in Swedish workers did not appear to be impacted by the pandemic, certain employment branches and older individuals were negatively affected in terms of both outcomes. Targeted countermeasures and initiatives to improve well-being are necessary for vulnerable groups.

Introduction

The Covid-19 pandemic has resulted in a tremendous global public health crisis, affecting both physical and mental health [1–3]. Besides the mental health burden, the pandemic also had detrimental effects on the labour market followed by drastic economic crises, periodic high unemployment rates, and changes in working conditions for many [4, 5].

Worsening working conditions have previously been associated with an increased risk of depressive disorders, sickness absence (SA) with mental disorders, and suicidal behaviour [6–8]. During the Covid-19 pandemic, these changes were associated with higher rates of common mental health complaints such as psychological distress and higher rates of burnout, insomnia, depressive symptoms, or anxiety [9–12]. However, most of these findings are based on self-reported, cross-sectional studies, which limit the ability to assess long-term effects and are susceptible to recall bias.

Moreover, few studies have used longitudinal designs or objective measures of mental ill-health such as physician-diagnosed depressive and anxiety disorders (often summarized as common mental

disorders, CMDs) or physician-prescribed antidepressants (frequently prescribed for CMDs) [13, 14]. Such outcomes offer a more accurate measure of clinically significant mental health issues and their consequences, such as impaired work ability and social functioning [15]. Furthermore, focusing on long-term SA makes it possible to capture more severe forms of CMDs, that may result in long-lasting difficulties on the labour market [15–17].

When it comes to the effect of the pandemic, some studies have explored the impact on different employment branches. For example, people working in the healthcare sector were found to have experienced more mental ill-health during the pandemic [9–11, 18]. There is also some evidence that other employment branches such as transportation branches, but also essential workers in fields other than health, experienced higher levels of psychological distress and worse mental health, while people with a flexible home-office arrangement tended to report decreased levels of burnout and stress [19–22]. Still, evidence to date is limited to short-term consequences of the pandemic in specific employment branches.

Also, results might differ based on the measures that were put in place as a response to the spread of the pandemic. Containment measures were less strict in Sweden with working from home as well as physical distancing being encouraged, and therefore, people from the Swedish population might have been differently impacted by the pandemic as countries with stricter measures [23].

Finally, the effect of work-related changes due to the pandemic might also vary by sociodemographic factors. Some studies have found that related to the pandemic some age groups are particularly affected, with young people and people close to retirement being especially vulnerable to work-related disruptions [18, 19]. However, there is a lack of research examining the interaction between age and employment branch regarding long-term mental health outcomes during the pandemic.

With many studies examining the impact of the pandemic on specific employment branches only, and using self-reported outcome measures mostly spanning short-term effects, more comprehensive, population-level studies using objective health data are needed to understand branch-specific long-term impacts. To address these knowledge gaps, the present study aimed to (i) investigate trends in incidence rates (IRs) of long-term (>90 net days of) SA with CMDs and IRs of antidepressant prescription in eight different employment branches during as compared to before the Covid-19 pandemic in Sweden; and (ii) investigate whether the changes in IR differed according to age within the different employment branches.

Methods

Study populations

The study was based on de-identified linked register data of Sweden, which are available for each resident individual. Data were retrieved both retrospectively and prospectively from the following registers: (i) Longitudinal integrated database for health insurance and labour market studies (LISA, Statistics Sweden), containing information on: age, sex, country of birth, educational level, family situation, area of living, unemployment [24]; (ii) Micro Data for Analysis of the Social Insurance database (MIDAS, Social Insurance Agency): SA [25]; (iii) National Patient Register (NPR): date and diagnoses of in- and specialized outpatient care [26]; and (iv) Prescribed Drug Register: date of prescribed medication, all held by the National Board of Health and Welfare [27].

Quarterly observation periods were identified from the beginning of 2018 until the end of 2021 during the study observation period. At the start of each considered quarter, all individuals aged between 19 and 64 years with a gainful employment, residing in Sweden at the start of the quarter and at least for 1 year (365 days) preceding the beginning of the quarter, were included and formed the study population for that quarter. Time periods when an individual resided in Sweden were derived from information about registered residents as registered in LISA for December 31 every year.

Outcome measures

Long-term SA with CMDs, the first considered outcome measure, was defined as an incident SA spell exceeding 90 net days starting with one of the following diagnoses: depressive, neurotic, and stress-related disorders (International Classification of Diseases, ICD-10 codes F32-F34, F40-44, and F48).

Antidepressant prescription is measured as at least one purchase of antidepressants, which can only be prescribed by physicians (Anatomical Therapeutic Chemical classification, ATC-code N06A) [28]. Both outcomes were assessed for each quarter of the observation period.

The Swedish social insurance system

In Sweden, no compensation will be paid for employees on the first day of their sick leave, while their employers pay sick pay the following 14 days of sick leave. After this period, the employee needs to apply for sick leave benefit, which is paid by the Social Insurance Agency [24]. As a result of the pandemic, the regulations were adapted, and people already received sick pay from the first day, to prevent people from going to work sick because they cannot afford receiving no benefits on the first day. Furthermore, the government took over costs of sick leave for the first 2 months, so that employers were temporarily exempted from paying sick pay, while the system of applying for sickness benefits remained with the Social Insurance Agency [23]. In the current analyses, data from the Social Insurance Agency of sick-leave spells exceeding 14 days were used. For antidepressant prescription, no changes were made in the regulation during the pandemic.

Employment branches

Individuals in gainful employment (i.e. registered in LISA as receiving an income or work-related benefits) were categorized according to the branches in which they worked during the year preceding each observation year. In the analyses we used the Swedish Standard Industrial Classification (SNI), which is based on EU's recommended standard NACE Rev.2 (Nomenclature statistique des activités économiques dans la Communauté européenne), the European Classification of Economic Activities [29]. We applied groupings of the employment branches based on a previous study by the research team [30]. Based on this classification, we further collapsed IT services with administrative occupations (Supplementary Table S1 for list of employment branches). People belonging to the employment branch "Others" (i.e. forestry, public administration, and real estate) were included in the pooled estimates but not analysed as separate category due to the small sample size. Observations with missing values, and unknown occupation were excluded from the analyses.

Descriptive variables

The following sociodemographic time-fixed variables were assessed: sex (women, men); and country of birth (Swedish-born, foreign-born). Age group (19–25, 26–35, 36–45, 46–55, 56–64 years) was assessed every year. The other sociodemographic variables were measured at the end of the year preceding the respective observation year (i.e. 2017, 2018, 2019, and 2020) and contained the following: level of education (elementary ≤9 years, high school 10–12 years, university/college >12 years, missing information is included into the category "elementary"); family situation (married or cohabitant without children living at home, married or cohabitant with children living at home, single without children living at home, single with children living at home); area of living (densely populated—cities, intermediate density areas—towns and suburbs, sparsely

populated—rural areas); net days of SA with benefits from the Social Insurance Agency (0, 0–90, 91–180, 181–365) and disability pension (yes, no). We defined pre-existing mental disorders (ICD-10 codes F32-F34, F40-44, F48) using either psychiatric health care (yes/no) or antidepressant prescription (yes/no) during the 365 days preceding the start of the quarter of observation. We also used age group as stratification variable in our data analysis.

Data analysis

Using quarterly observations, we applied an interrupted time series design to examine differences in the IRs per 1000 person-years and 95% confidence intervals (CIs) of our outcome variables across the employment branches pre-pandemic versus during the pandemic. Based on the official declaration of the start of the Covid-19 pandemic on 11 March 2020 by the World Health Organization, we used the second quarter of 2020 (April–June) to mark the beginning of the Covid-19 pandemic (i.e. interruption in the time-series), resulting in nine quarters pre-pandemic and seven quarters during the pandemic [31].

We estimated and compared the changes in IRs pre-pandemic and during the pandemic through a log-linear Poisson regression using General Linear Models (GLM). We used two time variables in our model, where the first time variable describes all quarters of the observation period giving a trend estimate. The second time variable was created by the interruption and describes the quarters during the pandemic, thus enabling a change in direction of trends at the interruption. Each employment branch was analysed separately in a model, with the results presented as IRs (linear trends) and incidence rate ratios with their 95% CIs. The GLM's standard errors were adjusted using a sandwich estimator.

To adjust for potential seasonal variation, we added one quarter for each year as an indicator variable to the model (e.g. quarter 2 for 2018, 2019, 2020, and 2021). Using Quasi Likelihood Information Criterion (QIC), we found that the model with a seasonality component indicated a better fit than the model without. For the age-stratified analyses, we included an interaction term of pre- and pandemic periods (the exposure) with employment branches (our effect modifier) in the model to examine any differences in the IRs pre-pandemic and during the pandemic for the different age groups within the employment branches. Individuals with disability pension at baseline (i.e. at the start of the first quarter of the observation period) were excluded from the statistical analyses using SA as outcome measure. The data were aggregated using STATA v.17 and analysed using R v. 4.1.3.

Ethics

The project was approved by the Regional Ethical Review Board from Karolinska Institutet, Stockholm, Sweden (Dnr: 2007/762-31 and Dnr: 2021-06441-02).

Results

Table 1 summarizes the descriptive characteristics of the study population. A higher proportion of the study population was aged between 46 and 55 years ($n = 1\ 135\ 580$; 25.1%), had a high educational level ($n = 2\ 154\ 325$; 47.7%), and was single not living with children at home ($n = 1\ 936\ 152$; 42.8%). Regarding employment branches, most people were working in administration ($n = 1\ 330\ 154$; 29.4%), followed by trade and transportation ($n = 774\ 935$; 17.1%) and healthcare and social work ($n = 757\ 018$; 16.8%; Table 1).

Table 1. Sociodemographic characteristics of the Swedish study population (measured before the start of the first quarter of 2018)

Characteristics	Total ($N = 4\ 518\ 865$)
Sex, *n* (%)	
Women	2 186 307 (48.4)
Men	2 332 558 (51.6)
Age group, *n* (%)	
19–25	481 309 (10.7)
26–35	1 047 075 (23.2)
36–45	1 053 242 (23.3)
46–55	1 135 580 (25.1)
56–64	801 659 (17.7)
Level of education, *n* (%)[a]	
Elementary (≤9 years)	445 014 (9.8)
High school (10–12 years)	2 154 325 (47.7)
University/college (>12 years)	1 919 526 (42.5)
Family situation, *n* (%)[a]	
Married or cohabitant without children	835 151 (18.5)
Married or cohabitant with children	1 532 500 (33.9)
Single without children	1 936 152 (42.8)
Single with children	215 062 (4.8)
Area of living, *n* (%)[a]	
Cities	1 844 456 (40.8)
Towns and suburbs	1 845 328 (40.8)
Rural areas	829 081 (18.3)
Country of birth, *n* (%)	
Sweden	3 719 518 (82.3)
Other	799 347 (17.7)
Previous mental disorder, *n* (%)[b]	
No	4 388 801 (97.1)
Yes	130 064 (2.9)
Depressive disorder, *n* (%)[b]	
No	4 515 966 (99.9)
Yes	2899 (0.1)
Stress-related disorder, *n* (%)[b]	
No	4 513 533 (99.9)
Yes	5332 (0.1)
Neurotic disorder, *n* (%)[b]	
No	4 517 288 (99.97)
Yes	1577 (0.03)
Unemployment days, *n* (%)[c]	
None	4 254 577 (94.2)
1–180	232 385 (5.1)
181–365	31 903 (0.7)
Any disability pension, *n* (%)[a]	
No	4 458 734 (98.7)
Yes	60 131 (1.3)
Sick absence days, *n* (%)[a]	
None	4 007 935 (88.7)
1–90	382 812 (8.5)
91–180	75 250 (1.7)
181–365	52 868 (1.2)
Employment branch, *n* (%)	
Healthcare and social work	757 018 (16.8)
Administration	1 330 154 (29.4)
Construction	329 706 (7.3)
Culture	191 522 (4.2)
Hotel restaurant	158 343 (3.5)
Manufacturing and service	571 749 (12.7)
Trade and transportation	774 935 (17.1)
Others	405 438 (9.0)

a: Measured at the end of the year preceding the observation year (i.e. 2017, 2018, 2019, and 2020).
b: During the 365 days preceding the start of the quarter of observation.
c: Measured during the year preceding the observation year.

Main analyses

Supplementary Fig. S1 shows the IRs for long-term SA >90 days with CMDs, and Supplementary Fig. S2 shows the IRs of antidepressant prescription pooled across all employment branches, as well as for different employment branches separately. For all branches, the IRs of long-term SA >90 days with CMDs showed a slight decrease from 6.16 (95% CI: 5.68–6.67) per 1000 person-years in the first quarter of 2018 to 5.24 (95% CI: 4.90–5.59) in the first quarter of 2020 which remained stable at a level of 5.38 (95% CI: 5.02–5.77; fourth quarter 2021). For antidepressant prescriptions, rates

remained relatively stable from 27.06 (95% CI: 24.44–29.97) per 1000 person-years in Q1 2018 to 26.95 (95% CI: 25.15–28.91) in Q1 2020 and slightly increased to 28.46 (95% CI: 25.55–31.71) in Q4 2021 (Supplementary Figs S1 and S2). Overall, however, there was no evidence of a change in trends in IRs in both outcomes for all employment branches pooled when comparing the pre-pandemic time period versus the time period during the pandemic (Tables 2 and 3). In relation to the specific employment branches, the IRs of long-term SA with CMD increased for some branches during the Covid-19 pandemic compared to pre-pandemic trends. Specifically, trends in IRs were 5.9% higher for people working in culture (95% CI: 2.2%–9.8%; $P = .002$), 3.4% higher for those in the trade and transportation sector (95% CI: 0.4%–6.4%, $P = .026$), and 5.5% higher for those working in manufacturing and service (95% CI: 1.5%–9.7%, $P = .007$; Table 2).

With respect to the prescription of antidepressants, some branch-specific trends of IRs also increased during the pandemic as compared to the pre-pandemic period. For individuals working in the construction sector, the IRs was 1.1% higher (95% CI: 0.1%–2.1%; $P = .031$) per each quarter. For those working in culture, the rate increased by 1.4% (95% CI: 0.7%–2.0%; $P < .001$), and for individuals working in trade and transportation, the IR rose by 0.9% (95% CI: 0.1%–1.7%; $P = .036$; Table 3).

Stratified analyses

Analyses stratified by age revealed that people aged between 56 and 64 appeared to be particularly affected by the Covid-19 pandemic. Trends for IRs of long-term SA >90 days with CMD increased per quarter for this age group working in construction (6.5%; 95% CI: 1.7%–11.6%; $P = .008$) and trade and transportation (5.5%; 95% CI: 0.7%–10.5%; $P = .023$; see Supplementary Table S2 and Fig. S3) during the pandemic as compared to the pre-pandemic period. Furthermore, higher trends of IRs of long-term SA >90 days with CMDs were observed for the culture employment branch for people aged 46–55 (6.1% increase per quarter; 95% CI: 0.1%–12.4%; $P = .045$) and 56–64 (9.2%; 95% CI: 3.7%–15.0%; $P = .001$). Similarly, within the manufacturing and service sectors, the IR increased for individuals aged 46–55 (7.5%; 95% CI: 2.0%–13.2%; $P = .007$) and 56–64 years (13.0%; 95% CI: 3.3%–23.6%; $P = .008$; Supplementary Table S2). For people aged between 56 and 64 who were working in the healthcare sector, however, the difference in trends of IRs of long-term SA >90 days with CMDs was relatively lower during the pandemic as compared to pre-pandemic periods (3.3%; 95% CI: 0.3%–6.1%; $P = .031$; Supplementary Table S2). In terms of antidepressant prescriptions, no differences between the period before the Covid-19 pandemic and the time during the pandemic could be observed for different age groups within employment branches (see Supplementary Table S3 and Fig. S4).

Discussion

This study addressed knowledge gaps about the impact of the Covid-19 pandemic on long-term SA >90 days with CMDs and antidepressant prescriptions in different employment branches in Sweden. While no overall changes could be observed, some groups—particularly individuals working in culture, manufacturing and service or trade, and transportation—were particularly affected by relative increases in long-term SA >90 days with CMDs in the period during the pandemic as compared to pre-pandemic. The IRs of antidepressant prescriptions were higher during the pandemic as compared to the pre-pandemic period for people working in construction, culture or trade, and transportation, though to a lesser extent than the rise in SA with CMDs. In terms of age, older

Table 2. Change in slope incidence rates (IRs) and 95% confidence intervals (CIs) and slope incidence rate ratios (IRRs; during vs. before Covid-19 pandemic) of long-term sickness absence (SA) with common mental disorders (CMDs) per 1000 person-years for different employment branches in the time preceding the start of the Covid-19 pandemic ("pre-pandemic" period, indicated by quartiles starting from 2018) and the first quartiles after the onset of the pandemic ("Covid," indicated by quartiles starting from the second quartile of 2020), adjusted for seasonality

	Before Covid-19 pandemic		During Covid-19 pandemic		During vs. before Covid-19 pandemic	
Employment branches	**Slope IR (95% CI)**	***P* value**	**Slope IR (95% CI)**	***P* value**	**Slope IRR (95% CI)**	***P* value**
All occupations	0.980 (0.965–0.995)	.011	1.004 (0.989–1.019)	.606	1.024 (0.997–1.053)	.085
Health & social work	0.996 (0.985–1.007)	.496	0.993 (0.981–1.006)	.275	0.997 (0.977–1.018)	.770
Administration	0.977 (0.958–0.996)	.017	1.006 (0.988–1.024)	.531	1.030 (0.995–1.065)	.090
Construction	0.979 (0.964–0.994)	.007	0.991 (0.974–1.009)	.339	1.013 (0.985–1.042)	.374
Culture	0.960 (0.940–0.979)	<.001	1.016 (0.997–1.036)	.105	1.059 (1.022–1.098)	.002
Hotel restaurant	0.976 (0.950–1.003)	.077	0.963 (0.938–0.988)	.005	0.987 (0.939–1.037)	.603
Manufacturing and service	0.971 (0.953–0.989)	.002	1.024 (1.001–1.048)	.042	1.055 (1.015–1.097)	.007
Trade and transportation	0.975 (0.959–0.992)	.003	1.008 (0.992–1.024)	.315	1.034 (1.004–1.064)	.026

Table 3. Change in slope incidence rates (IRs) and 95% confidence intervals (CIs) and slope incidence rate ratios (IRRs; during vs. before Covid-19 pandemic) of antidepressant prescription per 1000 person-years for different employment branches in the time preceding the start of the Covid-19 pandemic ("pre-pandemic" period, indicated by quartiles starting from 2018) and the first quartiles after the onset of the pandemic ("Covid", indicated by quartiles starting from the second quartile of 2020), adjusted for seasonality

	Before Covid-19 pandemic		During Covid-19 pandemic		During vs. before Covid-19 pandemic	
Employment branches	**Slope IR (95% CI)**	***P* value**	**Slope IR (95% CI)**	***P* value**	**Slope IRR (95% CI)**	***P* value**
All occupations	0.999 (0.981–1.018)	.958	1.008 (0.986–1.030)	.487	1.008 (0.973–1.045)	.651
Health & social work	1.001 (0.997–1.005)	.547	1.008 (1.004–1.013)	<.001	1.007 (1.000–1.014)	.058
Administration	0.998 (0.993–1.004)	.530	1.006 (1.002–1.009)	.002	1.007 (0.999–1.016)	.085
Construction	0.997 (0.991–1.004)	.389	1.008 (1.002–1.014)	.010	1.011 (1.001–1.021)	.031
Culture	0.997 (0.994–1.001)	.108	1.011 (1.007–1.015)	<.001	1.014 (1.007–1.020)	<.001
Hotel restaurant	0.999 (0.992–1.006)	.788	1.000 (0.991–1.010)	.952	1.001 (0.987–1.016)	.863
Manufacturing and service	1.001 (0.995–1.007)	.686	1.009 (1.003–1.015)	.005	1.008 (0.997–1.019)	.149
Trade and transportation	1.001 (0.997–1.006)	.572	1.010 (1.005–1.015)	<.001	1.009 (1.001–1.017)	.036

employees aged 56–64 seemed to be impacted to a higher degree by the Covid-19 pandemic with respect to long-term SA >90 days with CMDs than their younger peers in regard to the above-mentioned employment branches.

Results show that the relative increases in IRs of antidepressant prescription in specific employment branches during as compared to before the pandemic were lower than the relative increase in IRs of long-term SA with CMDs. The latter might be a more medically severe measure of CMDs and, among other reasons, could be related to changes in the work environment at the workplace. In Sweden, working from home as well as physical distancing were encouraged, of which some subgroups might have benefitted [23]. Other explanations include specificities in the diagnostic profile: e.g. people might have been granted long-term SA with stress-related disorders such as exhaustion syndrome or posttraumatic stress disorder, which do not always necessarily include a prescription of antidepressants, and might partly explain the difference that was observed.

In line with previous studies, we have observed a varying impact on the different employment branches [19–22]. In our study, long-term SA >90 days with CMDs was higher during the pandemic as compared to before for people working in culture, trade and transportation, and manufacturing and service. These findings might reflect differences in the work-related stressors of employment branches which might have been particularly disrupted by the pandemic, e.g. through less income due to cancellation of events, precarious employment, or risk of organizations turning into bankruptcy [23]. Also, people considered essential workers (e.g. individuals working in healthcare or manufacturing and service), for who remote work was not possible, might have been more afraid of getting infected or might have experienced an increased work load due to the pandemic [32, 33].

The findings of our study have further shown age differences in trends in our outcome measures. In particular, people aged between 56 and 64 experienced an increase in long-term SA >90 days with CMDs in some branches during as compared to before the pandemic. Older people might be more likely to have existing health conditions and comorbidities and might be particularly worried about becoming infected or might have difficulties adapting to pandemic-related changes. For older individuals working in healthcare, however, a decrease in long-term SA could be observed, which is in contrast to a study by Van der Plaat *et al.* [18], who found that National Health Service (NHS) staff older than >60 years experienced the greatest increase in SA for mental ill-health during the pandemic. These findings might further reflect occupational cultures that emphasize the employee's responsibility at work, thus prioritizing work and their team over their own well-being [34].

While our study did not assess working conditions, our findings likely suggest that disruptions due to the pandemic, branch-specific demands as well as contextual factors, might have played a role in our observation. However, other explanations must also be considered such as differences in accessing healthcare or seeking treatment, or facing stigma about mental health in specific employment branches [35].

Long-term SA due to mental ill-health can have an impact on multiple levels such as economy, society, or personal health including higher healthcare costs, reduced productivity, but also staff shortages and chronic mental health problems. Therefore, interventions on an organizational level are needed to reduce SA spells. Improving conditions at work, such as interventions enhancing employees' job control while simultaneously managing job demands, as well as developing tailored interventions together with employees have been associated with a reduction in long-term SA spells [36, 37].

Strengths and limitations

As compared to other studies conducted in the same period, we used a longitudinal study design, with a longer-term follow-up and pre-pandemic data. We examined objective measures obtained from registers that have a high quality and were not reliant on measures based on self-reports. The use of register data of good quality guaranteed to investigate the entire working-age population in gainful employment in Sweden with practically no loss to follow-up. We could further apply two different outcomes of CMDs. A drawback of the examined outcome measures is that they are both dependent on healthcare seeking and how often or if people visited healthcare services at all. Especially during the pandemic, measures such as a change in the regulation of receiving sickness benefits as well as the implementation of telemedicine or advice on only seeing a doctor, if necessary, were introduced to prevent an overload of work for the healthcare system or having people come to work sick [23]. However, this might only impact the IRs in the short-term. In our analyses, we could not observe a strong effect that might indicate this drawback. Furthermore, the cut-off point was chosen based on the WHO declaring Covid-19 a pandemic [31]. The virus already spread before this time point and could have resulted in a change in working conditions before the cut-off point. It is not likely, however, that this definition might have impacted our findings due to the long-term nature of our outcome. Lastly, the findings might not be directly generalizable to settings in other countries. Sweden had a different strategy respecting the containment of the SARS-CoV-2 virus and, e.g. did not impose a lockdown on their population [23].

Conclusion

There seemed to be no overall impact of the Covid-19 pandemic on most employment branches with regard to the two measures of CMDs used in this study. Certain branches, notably, individuals working in trade, transportation, culture, manufacturing, and service sectors, showed increased rates of long-term SA with CMDs. Furthermore, people aged 56–64 were more negatively affected by the pandemic. The findings highlight the importance to monitor mental health outcomes across the different employment branches to investigate further explanatory factors such as working conditions or sector-specific stressors and help mitigate mental ill-health in employees.

Authors contributions

E.M.R., S.K., J.B., P.J., and K.G. conceptualized the study. E.M.R. obtained funding. J.B. and P.J. conducted data management and analyses. S.K. and E.M.R. drafted the report. All co-authors gave their methodological input, interpreted the data, critically revised the article, and approved the final manuscript.

Supplementary data

Supplementary data are available at *EURPUB* online.

Conflict of interest: E.M.R. has participated in research projects funded by Janssen outside of the submitted work. S.K. was funded by the Austrian Science Funds (FWF), grant number P36-388-G.

Funding

The work is part of the RESPOND-Consortium, funded by the EU's Horizon 2020 research and innovation programme Societal Challenges (No. 101016127), using data from the REWHARD consortium supported by the Swedish Research Council (No. 2017-00624).

Data availability

According to the General Data Protection Regulation, the Swedish law SFS 2018:218, the Swedish Data Protection Act, the Swedish Ethical Review Act, and the Public Access to Information and Secrecy Act, the data used for this study cannot be made publicly available. This type of sensitive data can only be made available for specific purposes (including research) that meets the criteria as determined by a legal review. Please contact Professor Kristina

Alexanderson (kristina.alexanderson@ki.se) for questions regarding the data.

Key points

- In Sweden, the Covid-19 pandemic led to some increases in long-term sickness absence (SA) with common mental disorders (CMDs) in specific employment branches, such as individuals working in culture, manufacturing, service, and transportation.
- Antidepressant prescription rates increased during the pandemic for individuals working in construction, culture, and trade sectors, albeit the increase was less pronounced as compared to long-term SA with CMDs.
- Older individuals seemed to be particularly affected by the pandemic in terms of long-term SA with CMDs.
- The observed patterns suggest that disruptions due to the pandemic together with other work-related and sociodemographic factors may have contributed to differences in mental health outcomes across the different employment branches.

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European Journal of Public Health, 2025, 00, 1–6
https://doi.org/10.1093/eurpub/ckaf145
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