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Private sector service workers' well-being before and during the COVID-19 pandemic

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ABSTRACT

Background: Workers attending to the essential functions of society have been most affected by COVID-19, but the well-being of workers outside the health care sector has scarcely been documented. We describe well-being profiles of Finnish blue-collar workers in private sector services and changes in their well-being during the COVID-19 pandemic.

Methods: Altogether 6345 members of the Service Union United provided cross-sectional pre-COVID data in April-June 2019, and 2702 provided follow-up data on health-related indicators in November 2020. Job industry-specific profiles (retail, hospitality, and property maintenance) and change patterns were analysed. Regression models appropriate for different response types with a random intercept and time component were used.

Results: Before COVID-19, the well-being profile – food security, body mass index, alcohol use, smoking, and self-perceived health, and adequacy of income – was worse among service workers than the population average and it varied by industry sector. During the first year of COVID-19 self-perceived health deteriorated (adjusted OR 0.78, 95% confidence interval 0.70-0.87). The proportion of severely food insecure fell from a third to a quarter (OR for improvement 2.66, 95% CI 2.37-2.99). Slight improvements were observed in heavy episodic drinking, smoking, and self-perceived adequacy of income. Employees in property maintenance were the most vulnerable regarding well-being profile and COVID-19-related changes.

Conclusions: COVID-19 caused divergent changes, including improved food security and deteriorated self-perceived health. Workers with the lowest socioeconomic position and those facing job uncertainty were the most vulnerable to adverse outcomes. Provision of support to these groups is essential in welfare policy considerations.

1. Introduction

During the COVID-19 pandemic, in line with health care work, some blue-collar jobs, such as those in retail and property services, were classified as essential work (Kane & Tomer, 2021). Most essential workers have not been able to enjoy the benefits of remote working (Sostero, Milasi, Hurley, Fernández-Macías, & Bisello, 2020). Thus, most service workers continued to work on site and with a higher risk of COVID-19 infection. At the same time, millions of people in the hospitality sector worldwide lost their jobs and fell into poverty, while others

were experiencing extreme job insecurity (Bajrami et al., 2021). Socio-economic differences have been linked to possibilities to work remotely (Selden & Berdahl, 2020; Sostero et al., 2020): only one in 20 individuals in the lowest income group has had the opportunity to work remotely in Europe. Similarly, the positive effects of the new remote work style during the pandemic on subjective well-being have been observed only in societally advantaged employees (Sudo, 2022; Tušl, Brauchli, Kersieck, & Bauer, 2021). This has contributed to social inequality in subjective well-being, which has been exacerbated by the COVID-19 pandemic (Recchi et al., 2020; Selden & Berdahl, 2020).

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There is a call for more evidence on the impact of COVID-19 among essential workers, including a diverse range of employees (Quigley, Qureshi, Gahlon, & Gidengil, 2022). Our study focuses on workers in private sector services that belong to group 5 “Service and sales workers” in the International Standard Classification of Occupations (International Labour Office, n.d.). In this study, private service sector work covers the retail (ISCO-08 522), hospitality (512, 513), security (5414), and property maintenance (including cleaning) sectors (515) as well as some smaller industries (514). In Finland, about 60% of all salary earners and the unemployed have union membership (Jonker-Hoffrén, 2019). The Finnish Service Union United (PAM) represents approximately 200 000 workers in the private service sector. The union membership rates vary by industry, being lowest in property maintenance (~55%), highest in hospitality (~70%), and somewhere in between (~65%) in the retail sector (Service Union United PAM, n.d.). Finnish service sector workers have rarely worked remotely during the pandemic; compared with 90% of upper white-collar and 48% of lower white-collar employees, only 4% of blue-collar workers worked remotely (Sutela & Pärnänen, 2021).

Before the COVID-19 pandemic, we found widespread severe food insecurity among Finnish private sector service workers (Walsh et al., 2022). In Finland, charitable food aid has traditionally been distributed by an unregulated sector with unclear conditions. There is no regular national monitoring for food insecurity and, therefore, it is of importance to monitor the situation through the most extensive datasets.

Previous studies indicate that several unhealthy lifestyle behaviours tend to be more common among blue-collar compared to white-collar workers (Damen, Detaille, Robroek, Engels, & de Lange, 2023; Väisänen et al., 2020). In this study, we took a more multidimensional look at the well-being of the private sector service workers before and during the COVID-19 pandemic covering food security, body mass index (BMI), substance use, self-perceived health, and adequacy of income. The concern was that the prevalence of food insecurity would have increased during the COVID-19 pandemic, particularly among economically vulnerable households and people who had lost income (Dondi et al., 2020; Kent et al., 2022; Lamarche et al., 2021; Niles et al., 2021). In a recent scoping review of 12 studies, inconsistent changes in BMI due to COVID-19 were found (Shimpo, Akamatsu, & Kojima, 2022). Regarding alcohol, previous studies were somewhat contradictory; the patterns of change varied according to age, gender, and past-year substance use (Jääskeläinen, Härkänen, Haario, Isosaari, & Lundqvist, 2022; Kilian et al., 2021; Roberts et al., 2021).

Thus, we aimed to i) describe well-being profiles of Finnish private sector service workers and ii) identify changes in their well-being during the first wave of the COVID-19 pandemic. The follow-up data supplemented with register data enabled assessment of the effects of the first COVID-19 outbreak year on a vulnerable employee group characterised by low salaries, part-time and temporary work contracts, and physically demanding shift work. The socioecological model provided a framework for our research; society and workplaces constitute central macro- and meso-level environments that either enable or hinder the well-being of service sector workers (Green & Kreuter, 2005). Our hypothesis was that the COVID-19 pandemic worsened the levels of well-being factors among this vulnerable group of low-paid service workers.

2. Methods

2.1. Study design and surveys

The data for the present study are derived from two distinct types of cross-sectional surveys: i) a well-being survey designed by the research team and conducted in April–May 2019 (referred to as the PAMEL study survey), and ii) the annual member surveys conducted by PAM Service Union United for monitoring work-related indicators among union members in May–June 2019 and in November 2020 (referred to as the PAM member surveys).

The PAMEL study survey consisted of 34 questions regarding health behaviours and background characteristics. All questions were mandatory. The online questionnaire was piloted among a group of working-age adults, and feedback on the questions was also received from PAM service union united employees. The PAM member survey comprised 57 work-related questions that have been employed in PAM’s yearly member surveys. In 2020, the annual survey was longer (74 questions) as it was attached with follow-up questions on well-being (food security, BMI, substance use, self-perceived health, and adequacy of income). For both PAM member surveys, only questions that affected the branching of the question path were mandatory. All surveys were conducted using the Questback software and it took approximately 10–20 min to complete the questionnaire. Willing participants were entered into a drawing for a small set of 100 € gift cards, and in 2020, in addition, there was a mobile phone draw.

2.2. Baseline and follow-up samples

Baseline in 2019: The respondents were contacted through the Finnish Service Union United (PAM), which represents approximately 200 000 workers in the private service sector, thus, all respondents were union members. All Finnish-speaking employed, unemployed, and retired members, excluding student members, with a valid email address available in the PAM member register were contacted. In April–May 2019, an invitation to “The life and work of the PAM workers” (PAMEL) study with a link to an online study form was sent to 111 850 PAM members (Supplementary Fig. 1). After this, in May–June 2019, an annual PAM member survey was sent to 110 833 PAM members via email. Both invitations were followed by two reminder messages. The response rate for both baseline surveys was 6.5%. After removing those who denied the use of data for research purposes and those with erroneous or missing ID numbers, the final sample size for the PAMEL study survey was 6435, and for the PAM member survey, it was 6375. Participants were asked for permission to link their PAM member survey answers to the PAMEL study survey and to the national register data provided by Statistics Finland for the years 2018–2019.

Follow-up in 2020: A year and a half later, in November 2020, an annual PAM member survey with five follow-up questions on well-being was sent via email to those who responded to either of the surveys in 2019 ($n = 7956$). The response rate was 43%. A total of 2702 PAM members responded to all three surveys used in this study. The respondents were asked for permission to link their 2020 survey answers to the 2019 surveys. Details of the recruitment are presented in a flow chart (Supplementary Fig. 1). The quality check of the datasets were performed by the research team.

2.3. Sociodemographic characteristics

Variables obtained from the PAMEL study survey (see Table 1 for response categories) included the highest obtained education level, marital status, household size, the number of children in the household, self-perceived adequacy of income, and employment status. Self-perceived adequacy of income was derived with the question: “How well can household cover expenses with income?”. The industry of employment (retail, hospitality, property maintenance, other) was obtained from the PAM member survey. Variables obtained from national register data provided by Statistics Finland included gender, year of birth, from which age was later categorized into four age groups, individual earned income in state taxation, and received income transfers in 2018. Besides annual individual income, household disposable income was calculated (OECD, n.d.).

2.4. Health-related indicators

Health-related indicators obtained from the PAMEL study survey in 2019 included self-perceived health, self-reported height and weight

Table 1
Distribution of sociodemographic characteristics overall and for the three most frequent job industry sectors in 2019.

	Overall (n = 6435)	Retail (n = 1393)	Hospitality ^a (n = 570)	Property maintenance (n = 345)	Job industry difference ^b
Gender		240 (17%)	76 (13%)	85 (25%)	<0.0001
male	1301 (20%)	1152 (83%)	493 (87%)	260 (75%)	
female	5120 (80%)				
missing	14				
Age (years)		183 (13%)	103 (18%)	33 (10%)	0.003
17–29	987 (15%)	478 (34%)	204 (36%)	116 (34%)	
30–44	2214 (34%)	602 (43%)	215 (38%)	168 (49%)	
45–59	2381 (37%)	129 (9%)	47 (8%)	28 (8%)	
60+	839 (13%)				
missing	14				
Highest education					<0.0001
Obligatory education or less	708 (11%)	121 (7%)	33 (6%)	44 (13%)	
Upper secondary school or vocational	4649 (72%)	1041 (75%)	413 (72%)	258 (75%)	
Lower-level tertiary	964 (15%)	214 (15%)	115 (20%)	33 (10%)	
Higher-level tertiary	104 (2%)	15 (1%)	9 (2%)	9 (3%)	
Other	10 (0.02%)	2 (0.1%)	0	1 (0.3%)	
Marital status					0.214
Married or registered partnership	2523 (39%)	527 (41%)	205 (36%)	138 (40%)	
Cohabitation	1785 (28%)	403 (29%)	156 (27%)	96 (28%)	
Divorced or separated	597 (9%)	11 (8%)	47 (8%)	31 (9%)	
Widow	97 (2%)	18 (1%)	10 (2%)	6 (2%)	
Single	1433 (22%)	288 (21%)	152 (27%)	74 (21%)	
Household size					0.303
1	1769 (27%)	362 (26%)	180 (32%)	96 (28%)	
2	2571 (40%)	570 (41%)	214 (38%)	141 (41%)	
3	915 (14%)	190 (14%)	79 (14%)	46 (13%)	
4	827 (13%)	192 (14%)	72 (13%)	39 (11%)	
5+	353 (5%)	79 (6%)	25 (4%)	23 (7%)	
Number of children in household		963 (69%)	410 (72%)	235 (69%)	0.145
0	4349 (69%)	205 (15%)	76 (13%)	50 (15%)	
1	934 (15%)	155 (11%)	64 (11%)	36 (11%)	
2	743 (12%)	49 (4%)	7 (3%)	12 (4%)	
3	247 (4%)	15 (1%)	3 (0.5%)	10 (3%)	
4+	88 (1%)				
Missing	29				
Median income, 2018 (€)					
Gross salary	24820	27792	27083	22991	<0.0001
Disposable household income	24446	26358	25567	23330	<0.0001
Self-perceived adequacy of income ^c					0.064
With great difficulties	387 (6%)	47 (3%)	24 (4%)	16 (5%)	
With difficulties	784 (12%)	139 (10%)	50 (9%)	45 (13%)	
With small difficulties	1837 (29%)	374 (27%)	149 (26%)	105 (30%)	
Quite easily	1820 (28%)	420 (30%)	157 (28%)	95 (28%)	
No difficulties	1130 (18%)	290 (21%)	120 (21%)	56 (16%)	
Very easily	477 (7%)	123 (9%)	70 (12%)	28 (8%)	
Employment status					0.867
Employed	4529 (70%)	1325 (95%)	535 (94%)	330 (96%)	
Partly working, partly retired	136 (2%)	13 (1%)	8 (1%)	3 (1%)	
Laid-off	12 (0.2%)	0 (0%)	1 (0.2%)	0 (0%)	
Unemployed	579 (9%)	16 (1%)	7 (1%)	2 (1%)	
Parental leave/stay-at-home parent	174 (3%)	1 (0.1%)	0 (0%)	0 (0%)	
Long-term sick leave (over 6 months)	107 (2%)	1 (0.1%)	0 (0%)	0 (0%)	
Retired	301 (5%)	0 (0%)	0 (0%)	0 (0%)	
Other	597 (9%)	37 (3%)	19 (3%)	10 (3%)	

^a Hospitality includes workers from hotels, restaurants, and travel companies.

^b Chi-square test for nominal variables and Kruskal-Wallis test for continuous variables.

^c Derived with the question: “How well can household cover expenses with income?”

(used to calculate BMI, kg/m²), alcohol consumption frequency, and daily smoking (Table 2). Alcohol consumption was derived with the question ‘How often do you drink alcoholic beverages in a way that you can really feel its effects?’ used in the Finnish Drinking Habit Survey (Warpenius & Mäkelä, 2020) and categorized from ‘Never’ to ‘At least once a week’.

Food insecurity was measured with an adjusted Household Food Insecurity Access Scale (HFIAS) tool (Coates, Swindale, & Bilinsky, 2007). The changes to the tool have been described earlier (Walsh et al., 2022) and included translation into Finnish and adjustment to ask for individual, rather than household, food insecurity experience. This change ensured comparable data with previous Finnish studies (Erkkola et al., 2020) and was motivated by findings of unequal distribution of

resources and differing experiences of food insecurity even within the same household (Coates, Webb, Houser, Rogers, & Wilde, 2010). The adjusted HFIAS tool was shown acceptable content, construct, and criterion validity among private service sector union members in Finland (Walsh et al., 2022). Based on the answers to the nine HFIAS questions, participants were categorized as food secure or as mildly, moderately, or severely food insecure, as described by Coates et al. (2007).

2.5. Statistical analysis

For the baseline survey, we presented the data in frequency tables and tested for differences in sociodemographic between job industry sectors. For continuous variables (age and income), we used

Table 2
Changes in well-being factors from pre-COVID-19 era to COVID-19 era.

		2019 (pre-COVID-19) n = 6435	2020 (during COVID-19) n = 2702	Change ^a	Model-based estimates of change [95% CI] ^b
Self-perceived health	Good	1892 (29%)	700 (26%)	559 (21%)	OR for improvement
	Quite good	2517 (39%)	1021 (38%)	improved	0.75 [0.68, 0.84]
	Average	1540 (24%)	707 (26%)	1463 (54%)	0.78 [0.70, 0.87]
	Quite poor	414 (6%)	230 (9%)	unchanged	
	Poor	72 (1%)	42 (2%)	678 (25%)	worsened
BMI (kg/m²)	Median	26.8	27.5	0.0	+1.2 [0.9, 1.4] %
	Interquartile range	(23.7, 31.1)	(24.2, 31.7)	(-0.4, 1.2)	+1.1 [0.9, 1.4] %
Alcohol consumption	At least once a week	494 (8%)	212 (8%)	666 (25%) reduced	OR for reduction
	1-3 times a month	1269 (20%)	450 (17%)	1573 (58%)	1.34 [1.20, 1.49]
	At most once in two months	1430 (22%)	534 (20%)	unchanged	1.33 [1.19, 1.48]
	At most twice a year	1948 (30%)	957 (35%)	increased	
Smoking daily	Never	1294 (20%)	545 (20%)	unchanged	
	Yes	4975 (77%)	2107 (78%)	97 (4%) quit	OR for quitting
Food (in)security	Food secure	2280 (35%)	1404 (52%)	2550 (94%)	1.31 [1.05, 1.64]
	Mildly food insecure	743 (12%)	263 (10%)	unchanged	1.30 [1.04, 1.62]
	Moderately food insecure	1113 (17%)	378 (14%)	52 (2%) started	
	Severely food insecure	2299 (36%)	646 (24%)	348 (13%)	OR for improved food security
				worsened	2.75 [2.45, 3.09]
Self-perceived adequacy of income^c	With great difficulties	387 (6%)	159 (6%)	1446 (54%)	2.66 [2.37, 2.99]
	With difficulties	784 (12%)	298 (11%)	unchanged	
	With small difficulties	1837 (29%)	746 (28%)	improved	
	Quite easily	1820 (28%)	774 (29%)	645 (24%)	OR for improvement
	No difficulties	1130 (18%)	464 (17%)	worsened	1.22 [1.10, 1.35]
	Very easily	477 (7%)	248 (9%)	improved	1.22 [1.10, 1.35]

^a Crude estimates based on those for whom data available in both 2019 and 2020.

^b First estimate derived from the primary model, and second estimate derived from the extended model.

^c Derived with the question: "How well can household cover expenses with income?"

nonparametric Kruskal-Wallis tests due to deviations from a normal distribution. For categorical variables (gender, highest education, marital status, household size and number of children, adequacy of income and employment status), we used Chi-square tests. In the follow-up survey, we considered a participant as a respondent if at least one of the questions on well-being was answered. To reduce the bias that might result from follow-up non-response, we used generalized linear mixed models to analyse the data. We fitted a linear model (for body mass index), a logistic regression model (for smoking), and a proportional odds model (for ordinal outcome variables) with a random intercept for each participant and time (2019 or 2020) as a fixed effect. These models, hereafter called **primary models**, are valid when the participation probability on the follow-up question depended only on the previous measurement of the outcome (i.e. missing at random mechanism) (Kenward & Carpenter, 2007). The categories in the ordinal outcome variables were arranged such that the odds ratios reflect the likelihood of an improvement over time. We also analysed job industry-specific change patterns. For the proportional odds model, no meaningful deviations from the proportionality assumption were found.

The adjustment (conditioning) is a recommended procedure to correct for systematic missingness when baseline variables have been observed completely or nearly so (Carpenter & Kenward, 2007). As selective missingness could persist even after this correction, our **extended model** was conditioned on baseline variables predictive of missingness on follow-up. Among all the variables studied, we identified the following five variables most obviously predictive of missingness ($p < 0.01$): 1) job industry: only 35% of those in 'Other' or unknown industries participated; 2) age (in tens of years): 37% of those <30 years of age participated; 3) BMI: those with higher initial BMI were more likely to participate; 4) gender: 48% of men and 54% of women participated; 5) those who responded to both baseline surveys were more likely to participate (50%) than those who responded to only one (29%). The

variables used in the extended model were chosen so that they did not exhibit strong associations with each other. Results of the extended model included the adjustment for these variables in addition to those included in the primary model. SAS version 9.4 was used to analyse the data.

3. Results

3.1. Sociodemographic characteristics

Sociodemographic characteristics (Table 1) suggest that participating private sector service workers were mostly women, less educated than the general population on average (Organisation for Economic Co-operation and Development, n.d.), mainly middle-aged employees with a lower than median annual income (Statistics Finland, n.d.), and mostly living in a two-adult household. The majority (70%) of the participants were employed, and almost half (47%) reported some difficulties in covering their usual household expenses. Job industry-specific results are presented for a subset of the three most frequent industry sectors ($n = 2308$). The property maintenance sector stood out with the largest proportion (13%) of the least educated (obligatory education or less) and with the lowest median annual salary and household disposable income. The hospitality sector was characterised by the highest prevalence of women (87%), the youngest age group (18%), and the most single persons (27%).

3.2. Well-being factors and changes from the pre-COVID era to the COVID era

At the pre-COVID baseline (Table 2), a considerable proportion (65%) of participants reported some level of food insecurity, the average BMI indicated overweight, one in four was a smoker, 28% consumed

alcohol at least once a month, and 7% reported rather poor or poor health.

Changes in well-being factors from pre-COVID to COVID era showed both improvements and deterioration (Table 2). A model-based assessment of the change showed a decrease in overall self-perceived health (odds ratio [OR] for improvement 0.78, 95% confidence interval [CI] 0.70-0.87). This was manifested as the proportion of those with quite poor or poor health increasing from 7% to 11%, along with a quarter of participants reporting worsening of health. An improvement was most notable for food security; the proportion of the severely food insecure fell from a third to a quarter (OR 2.66, 2.37-2.99). Positive changes occurred also in the consumption of alcohol (OR for reduction 1.33, 1.19-1.48) and in smoking (OR for quitting 1.30, 1.04-1.62). The proportion of those with clinically significant weight gain ($\geq 5\%$) was 24% and weight loss 13%. The change in BMI was, however, not statistically significant.

Well-being factors by job industry are shown in Supplementary Table 1. Among different job industry sectors, retail workers had the most favourable well-being factors both before and during COVID, while property maintenance workers tended to have the worst. During COVID self-perceived health deteriorated the most in property maintenance ($p = 0.028$ for differential changes between sectors). At baseline, severe food insecurity was most common among employees in hospitality (37%), while in 2020 it was most common among employees in property maintenance (27%). Deteriorated self-perceived adequacy of income was reported in hospitality, with other job industry sectors showing a slight improvement.

4. Discussion

Our follow-up analyses among the Finnish private sector service workers, the essential workers during the COVID-19 pandemic, demonstrated that the effects of the first pandemic year on their well-being indicators were bidirectional; both improvements and deterioration were seen. Overall, self-perceived health deteriorated from the pre-COVID year 2019 to the end of 2020 among service workers, whereas food security improved. Slight improvements were also observed in heavy episodic drinking, smoking, and self-perceived adequacy of income. The sociodemographic characteristics, the well-being profile, and the impact of COVID-19 on well-being varied by industry. The socioeconomic profile (education and income) was the lowest in the property maintenance sector. Also, food security remained at the worst level in property maintenance. Weakened self-perceived adequacy of income was reported only in the hospitality sector, which was most affected by the first pandemic wave. In contrast to our prior assumption of the solely negative impact of the COVID-19 crisis on service workers' well-being, our data showed also some positive changes that varied in magnitude in different industry sectors.

4.1. Well-being profile

The overall well-being profile of service workers is worse than the population average. Compared with the nationally representative FinHealth 2017 survey (Koponen, Borodulin, Lundqvist, Sääksjärvi, & Koskinen, 2018), a lower proportion of respondents perceived their income as sufficient (53% among service workers vs. men 65%/women 59% in the FinHealth study). In addition, heavy episodic drinking (8% vs. men 6%/women 3%) and smoking (23% vs. men 16%/women 11%) were more common among service workers than in the adult Finnish population. The median BMI exceeded the normal weight limit ($BMI \geq 25$), as in the entire Finnish population (Sotkanet, n.d.). The proportion of those who perceived their health as average or worse corresponded to that of the general Finnish adult population during COVID-19 in the National FinSote survey 2020 (Sotkanet, n.d.). In the private service sector, occupational healthcare is most commonly obtained from private medical clinics, often with minimum coverage.

According to the PAM member survey, approximately one in ten respondents were unaware or unable to determine how occupational healthcare is organised, and 5% indicated that no occupational healthcare was arranged at all (unpublished data).

4.2. Changes in health-related indicators

Our results on changes in health-related indicators are in line with studies in other Western employees (Recchi et al., 2020; Sudo, 2022; Tušl et al., 2021) and in the general Finnish adult population (Jääskeläinen et al., 2022), among whom the differential impact of the COVID-19 pandemic on self-perceived health (Recchi et al., 2020; Sudo, 2022; Tušl et al., 2021) and health behavior (Jääskeläinen et al., 2022) was observed. Large disparities in COVID-19 outcomes may arise partly from disparate working conditions and from socioeconomic differences between employees. A French study revealed that an unexpected rise in self-perceived health and well-being during the COVID-19 lockdown was not consistent across French society, as the level of self-reported health of blue-collar workers declined over the lockdown period (Recchi et al., 2020). Similar changes were reported in a Swiss and German study (Tušl et al., 2021); mandatory short-term workers and those who lost their job felt the negative COVID-19 impact the most. The adverse COVID-19 outcomes are partly related to higher risk exposure and higher COVID-19 incidence among blue-collar workers. It is also highly probable that the accessibility of occupational health services declined during the COVID-19 period, which could contribute to the deterioration in well-being.

Finnish service sector workers rarely worked remotely during the pandemic. Overall, in Finland, the remote workers rated their health as better during the pandemic than those who continued working on site (Sutela & Pärnänen, 2021). Self-perceived health has been demonstrated to be a comprehensive measure of health status, also reflecting the condition of people beyond clinical diagnoses (Kananen et al., 2021). Negative disposition and the poorer expected development of own health, recognized components in the evaluation of self-perceived health, could have been highlighted during COVID-19 and the lockdown measures. No significant changes in BMI were observed in our participants, whereas COVID-19-related weight gain has been observed in younger Finnish women and men with low education, groups known to be vulnerable for weight gain (Sääksjärvi et al., 2021). As weight gain may develop over a long period of time, a longer follow-up is needed to address the long-term effects of COVID-19.

Among the service sector workers, most substance users reported no changes in their alcohol and tobacco use. However, significant likelihoods for decreasing alcohol consumption and quitting smoking were observed. This may be linked to limited possibilities to drink and eat outside the home during lockdown measures. Our observation is in line with an observed decreasing trend of alcohol and tobacco use in Finland and Europe (Jääskeläinen et al., 2022; Rehm, Manthey, Shield, & Ferreira-Borges, 2019). It is, however, noteworthy that the share of individuals with weekly heavy episodic drinking exceeds the Finnish population average and this relatively high prevalence persisted. Despite COVID-19, a disease that particularly strains the lungs, the prevalence of smoking remained the same; about one-fifth of employees were still smokers. The results highlight the growing health inequality gap when factoring in the health consequences of alcohol and tobacco use.

4.3. Food insecurity

Overall, food insecurity improved from 2019 to 2020 among the service workers surveyed. This contrasts with reports from NGOs in Finland of increased need for food aid. Furthermore, studies in high-income countries have shown an increase in food insecurity since the COVID-19 pandemic (Dondi et al., 2020; Kent et al., 2022; Niles et al., 2021), as well as associations between COVID-19-related job or income

disruption and increased severe food insecurity (e.g. Kent et al., 2022; Niles et al., 2021; Shimpoo et al., 2022). However, Lamarche et al. (Lamarche et al., 2021) described the prevalence of food insecurity to decrease from 3.8% to 1.0% during the early lockdown in Quebec, Canada. They also reported a slight improvement in diet quality, while Carroll et al. (Carroll et al., 2020) noted that parents spent more time cooking meals from scratch during early lockdown. Lockdown, social distancing, and staying at home may have led to reductions in the frequency of eating out, which may have led to a better dietary quality (Lamarche et al., 2021). However, the prevalence of food insecurity was still alarming in 2020, with one-quarter of respondents being severely food insecure.

The lack of access to workplace food catering and other meal benefits among private sector service workers is a significant issue. A majority of PAM service workers do not have access to these services, and a significant proportion do not eat main meals during working hours at all (unpublished PAM member data 2022). It is crucial to address this issue and improve the accessibility and quality of workplace food catering in the private service sector. Public food services and workplace food catering have been shown to reduce sociodemographic dietary disparities at the population level (Raulio, Roos, & Prättälä, 2010), and they present as an opportunity to promote socially, ecologically, economically, and nutritionally sustainable food choices. Given the recent rise in food prices, their importance in ensuring the nutritional well-being of the most vulnerable population has become even more critical.

4.4. Well-being by job industry sectors

Among job industry sectors, the socioeconomic profile of employees in the property maintenance sector was found to be the lowest. Prior to the COVID-19 outbreak, severe food insecurity was most prevalent in the hospitality sector. However, in 2020, following the outbreak, it became most common in the property maintenance sector. The hospitality sector experienced a decline in self-perceived income adequacy due to widespread layoffs and redundancies, which resulted in reduced wages and salaries during the pandemic (Duarte Alonso et al., 2020). Nonetheless, reports suggest that many hospitality workers transitioned to retail work, which was associated with a lower likelihood of food insecurity (Walsh et al., 2022). In contrast, other industries saw a slight improvement in income adequacy relative to expenses. Hence, they did not experience income loss or, if they did, their expenses diminished in parallel. If people were able to maintain their jobs and income, but possibilities to eat out, travel, and spend on shopping and hobbies were limited, it may have left more money and time to spend on food and other necessities, as well as food preparation. As speculated by Lamarche et al. (Lamarche et al., 2021) and Carroll et al. (Carroll et al., 2020), this could have improved food insecurity. It is important to note, however, that the persisting COVID-19 pandemic may have exacerbated the existing inequalities in working conditions and well-being across various service sectors.

4.5. Support measures at different levels of society

Welfare state and trade union support measures for workers might have mitigated some of the adverse effects of the COVID-19 crisis. Most unemployed and laid-off PAM union members have been on earnings-related daily allowances rather than on basic social security. According to PAM (A. Veirto 12/2022, personal communication), about 12% of PAM's members received unemployment benefits from the PAM Unemployment Fund in 2020. It is important to note that the most vulnerable sections of the population are less likely to participate in surveys (Tolonen et al., 2006) or even be members of a trade union (Jonker-Hoffrén, 2019; Service Union United PAM, n.d.). Furthermore, the timing of the follow-up survey in autumn 2020 may mean we were unable to capture the initial drastic effects of the COVID-19 pandemic on income sufficiency and food insecurity.

In Finland, the distribution of food aid has traditionally been unregulated. However, as stated in the new government program (Finnish Government, Prime Minister's Office, 2023), the regularisation of food aid through third-sector parishes and charitable organizations is now a priority. Nevertheless, it is concerning that even individuals who are employed still rely on food assistance. To effectively monitor and evaluate the impact of various policy measures, it is necessary to establish a national monitoring system for food insecurity. This will help assess the effectiveness of interventions and identify areas where further improvements are needed.

Individual behavior is shaped by factors such as knowledge, skills, resources, attitudes, experiences, and self-efficacy (Green & Kreuter, 2005). Among these, we observed that educational and economic resources were notably lower among private sector service workers in comparison to the general population. The meso-environment encompasses the workplace, while the macro-environment extends to encompass broader influences such as politics, media, and societal attitudes. Developing an understanding of the significance and interplay of these diverse contexts broadens our perspective on opportunities for influence and support, ultimately contributing to the reduction of health inequalities and countering the tendency to attribute health behaviors solely to individuals. It is imperative to implement measures aimed at promoting health and well-being across all these contexts.

4.6. Strengths and limitations

The novelty of our research lies in the seldom studied target group of essential workers facing the COVID-19 pandemic. The low response rate raises questions about the representativeness of our sample. Recruitment for the study was not solely based on union membership but also on internet and technology access, including reaching out via email. Internet and technology access is generally readily available throughout Finland, and private sector service workers have rated their digital skills and capabilities as fairly good (Kankare, 2023). However, the use of digital devices was the lowest in the property maintenance sector. The response rates are likely underestimated because we do not have information on how many people opened the email and how many invitations may have gone directly to spam, for example.

Based on statistics provided by PAM (Service Union United PAM. n.d.), at the end of 2019, 76% of PAM members were women, compared with 80% among the respondents in our study. Both ends of the age distribution, the youngest (less than 30 years) and the oldest (over 60 years), were under-represented in our study. Among respondents for whom employment industry category was available, the shares of those working in retail and hospitality were very similar to PAM statistics (Service Union United PAM. n.d.), but those in property maintenance were under-represented. Therefore, our sample cannot be considered fully representative of all PAM members at the time, but it does provide a means to study the well-being and coping ability of workers with limited resources during an uncertain period. Trade union membership is lower among young people, men, migrants, the unemployed, and those in part-time or fixed-term contracts (Jonker-Hoffrén, 2019; Service Union United PAM. n.d.), indicating that some of the most vulnerable groups were not reached since the recruitment was based on union membership. The COVID-19 pandemic has highlighted the precarious position of migrant workers who endure worse working conditions or lower pay than those protected by trade unions (Jones, Mudaliar, & Piperthan, 2021). Self-report bias can mislead all research designs and lead to inaccurate results (Bauhoff, 2014). Additionally, it can complicate assessments of heterogeneity if the bias varies among different subgroups. Another validity issue concerns the extent to which people adapt to their circumstances, and the implications of adaptation for interpreting subjective well-being measures. Extreme events can result in "recalibration" of the scale (Ubel, Peeters, & Smith, 2010), rather than true adaptation.

5. Conclusion

By utilizing our versatile monitoring data on Service Union United members, we demonstrated the impact of the COVID-19 crisis on service workers' well-being in 2020. Diverging changes included improved food security and deteriorated self-perceived health. Workers with the lowest socioeconomic profile and those facing job uncertainty were the most vulnerable to adverse outcomes. Further follow-up studies are needed to assess the long-term effects of COVID-19 on well-being of service sector employees. Suitable working conditions, secure working hours, and basic income that adequately covers the cost of living are the best protection against future crises and would safeguard better resilience and more equal well-being of employees regardless of the differences in the job industries.

Availability of data and material

The data underlying this article cannot be shared publicly for the privacy of individuals that participated in the study.

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CRedit authorship contribution statement

Maijaliisa Erkkola: was involved in the data collection, conceived the study, set up the initial draft of the manuscript where all authors produced text from their own areas of expertise, and had primary responsibility for the content. **Hanna M. Walsh:** formed the food security variables, participated in commenting and critically revising the first draft of the manuscript and read and approved the final version. **Tiina Saari:** participated in commenting and critically revising the first draft of the manuscript and read and approved the final version. **Elviira Lehto:** participated in commenting and critically revising the first draft of the manuscript and read and approved the final version. **Ossi Rahkonen:** participated in commenting and critically revising the first draft of the manuscript and read and approved the final version. **Jaakko Nevalainen:** was involved in the data collection, conceived the study, was responsible for the design and conduct of the statistical analyses, and had primary responsibility for the content.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssaoh.2023.100711>.

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