

## Article

# COVID-19-Related Job Demands and Resources, Organizational Support, and Employee Well-Being: A Study of Two Nordic Countries

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**Abstract:** The purpose of this study is to examine how COVID-19-related job demands and resources have been associated with employee well-being in Nordic countries across specific occupational groups. The study investigated four occupational groups: (1) professional, scientific, and technical occupations in Norway ( $n = 301$ ); (2) teachers in Finland ( $n = 315$ ); (3) health and social service occupations in Norway ( $n = 267$ ); and (4) geriatric nurses in Finland ( $n = 105$ ). Hypotheses were tested using two-step hierarchical regression analysis. Work-home imbalance in Groups 1, 2, and 3, workload increase in Groups 1 and 3, and fear of infection in Groups 2 and 3 were positively related with exhaustion. A positive attitude towards digital solutions was positively related to work engagement in Groups 2 and 3. In addition, there was a significant positive relationship between COVID-19-related organizational support and work engagement in Groups 2, 3, and 4, and a negative relationship with exhaustion in Group 2. In conclusion, pandemic-related job demands and resources were differently associated with employee well-being across different occupational groups and countries. Further, organizational support may act as a supportive element for sustaining employee well-being during pandemics.

**Keywords:** COVID-19; Nordic countries; job demands; job resources; organizational support; employee well-being; work engagement; exhaustion; stress



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## 1. Introduction

### 1.1. Background and Purpose of the Study

The outbreak of COVID-19 in Wuhan, China, in January 2020 quickly developed into a global pandemic that has had a profound impact on working life. It has been suggested that the pandemic will permanently reshape perceptions of work and occupations, and result in both micro and macro shifts in working life [1]. Recent empirical research suggests that the pandemic has affected employee well-being in many and partly differing ways across occupational sectors [2]. Specifically, for healthcare employees, work during COVID-19 encompasses new and increased health and safety risks, such as becoming infected [3], while, for example, social services are battling with an increased workload and transition to virtual care [4]. Hence, healthcare and social services can be considered to be among the sectors most directly affected by the pandemic.

Previous pandemic research suggested that the COVID-19 situation has caused stress, strain, and other psychological symptoms among healthcare and social services employees [4–6], although prior to the pandemic, they have already been reported to have experienced significantly high levels of occupational stress [7–9] and symptoms of

burnout [10,11] due to work-related factors (e.g., time pressure, emotional workload). On the other hand, location-independent work, such as administrative and knowledge, has been transformed into remote work to a large extent. This has had an impact on, for example, digital working incidence, work intensity and rhythm, work–family balance, social relationships, and the availability of organization-provided support [12]. Additionally, formerly location-dependent and communication-intensive work, such as teaching, has undergone major and rapid transformation into various forms of digitalized and online education [13,14]. Prior research suggests that teaching as a profession has been heavily affected by the pandemic. In practice, the pandemic has affected countries differently, and various school policies have been applied. In both Finland and Norway, a rapid transition to school closures and online teaching took place shortly after the pandemic emerged in spring 2020. During its later phases, different combinations of classroom study and remote learning have been adopted. However, research highlights that teachers have, in many respects, been able to live up to the new demands and demonstrated resilience and the ability to cope with rapid transition [15].

This research investigates whether COVID-19-related job demands (namely work–home conflict, increased workload, and fear of infection), digital job resources (positive attitude towards digital solutions and well-functioning digital meetings), and COVID-19-related organizational support as a job resource are related to employee well-being among specific occupation groups in Norway and Finland. This study explores four occupational groups assumed to be differently affected by the pandemic: (1) professional, scientific, and technical occupations in Norway (including e.g., administrative, education, and knowledge work); (2) schoolteachers in Finland and two groups of healthcare personnel; (3) health and social services occupations in Norway; and (4) geriatric nurses in Finland. While the Norwegian and Finnish occupational groups are not completely comparable, due to the Norwegian groups being more heterogeneous and the Finnish groups more specific, the groups still share some common features. Moreover, although there may be within-occupation differences in how the pandemic has affected their ways of working (i.e., the possibility of working from home), they may be divided into two broader work categories: two groups of knowledge workers with the possibility to work from home, and healthcare personnel who mainly was asked to maintain their usual on-site practice. In this context, this study provides new knowledge to associate COVID-19-related changes with employee well-being, which has been highlighted as a research gap in previous studies [16].

Different countries are at various stages of pandemic, and thus their response to and communication of the danger of COVID-19 can vary. The situations of Asia, the UK, the US, and the Middle East, for instance, have been addressed in prior research [17–22]. However, there are still a variety of countries for which the COVID-19 impact has been less investigated. Thus, Khajuria et al. [16] suggested that both country-specific and comparable data from different countries are necessary. Building on these notions, this study provides information on the pandemic's impact in terms of well-being and workplace measures, particularly in two Nordic countries. The pandemic situation in Norway and Finland has been less severe during the time of the study, and applied restrictions may be described as less stringent than in several other developed countries (e.g., [23,24]). The demographic and economic profiles, healthcare systems, public health infrastructures, and working life structures—such as active labor-market policy, strong workplace democracy, and employer–employee co-operation—set the Nordic countries apart from the most studied countries to a certain extent [25].

Recent research [25] has discussed the benefits of the Nordic welfare model in terms of handling the COVID-19 crisis and its subsequent impacts. Therefore, examining COVID-19 implications for employee well-being in different occupations in Norway and Finland provides additional knowledge of the situation from a Nordic perspective. This study provides knowledge across both countries and different occupational groups that are assumed to be affected differently by the pandemic. It also contributes to the application of the job demands–resources (JD–R) model [26] by utilizing it in an examination

of COVID-19-related job demands and resources, and their association with employee well-being. As this study provides new information on both the impact of COVID-19-related changes on employee well-being and the role of organizational support during the pandemic, the results are valuable for furnishing workplaces with effective measures to combat possible future pandemics and supporting the adjustment to new situations after COVID-19.

### *1.2. The Link between Changes in Work Due to COVID-19 and Employee Well-Being—The Perspective of Job Demands and Resources*

The JD–R model [26]—which states that employee well-being is a result of the balance between work demands and work resources—is applied as a theoretical framework in this study. The JD–R model has previously been utilized in a study related to COVID-19 consequences by for instance Giusino et al. [27]. The JD–R model consists of two separate but related psychological processes that explain job strain (i.e., burnout and stress) and motivation (i.e., work engagement). However, job demands and resources are not necessarily the same in all types of work; while there are certainly some common denominators, demands and resources may also vary between occupations and fields [28].

The JD–R model proposes that job demands, such as high workload, time pressure, and emotional demands, contribute to the processes of losing energy and impairing health, which in turn lead to stress and burnout [29]. Ganster and Rosen [30] defined stress as the ‘process by which workplace psychological experiences and demands (stressors) produce both short-term (strains) and long-term changes in mental and physical health’ (p. 1088). Stress is considered to occur when demands exceed a person’s adjustive resources [31], while burnout is caused by long-term work stress, and is defined as a syndrome comprised of emotional exhaustion, depersonalization, and feelings of reduced personal accomplishment [32]. Moreover, emotional exhaustion is associated with mental fatigue and depersonalization (also conceptualized as cynicism), which refers to psychologically distancing oneself from one’s job or clients. Finally, reduced personal accomplishment refers to the feeling of losing one’s professional efficacy [32]. While it was stated that each dimension connects differently with the characteristics of the working environment as well as with unique health-related, behavioral, and motivational outcomes, existing research has widely suggested that emotional exhaustion is the key element of burnout that also covers the aspect of stress (e.g., [33]).

In contrast to job demands, job resources that motivate and help employees reach their goals are involved in a motivational process that is associated with the creation of positive consequences, such as work engagement [29,34]. Here, work engagement refers to a positive, fulfilling work-related state of mind that is characterized by vigor, dedication, and absorption [35]. Put simply, engaged employees have high levels of energy and are committed to and enthusiastic about their work [36]. Moreover, there is also growing evidence that job resources may be effective in decreasing stress and burnout, whereas job demands may reduce work engagement [37]. It has also been proposed that job resources are of particular importance in maintaining employee well-being when job demands are high [34]. Hence, it may be suggested that, in demanding conditions [38], such as those during the COVID-19 pandemic, job resources are the most salient factors in tackling pandemic-related effects. For example, in a previous COVID-19-related study by Giusino et al. [27], job resources, such as team and managerial support, were found to have sustained employee well-being.

### *1.3. COVID-19-Related Job Demands*

There are arguably a variety of COVID-19-induced occupation-specific, as well as general, job demands that are associated with well-being at work. Based on prior research covered above and below, the following COVID-19-related job demands were chosen for this study: work–home conflict, increased workload, and fear of infection. These were assumed as relevant in all four investigated occupational groups.

### 1.3.1. Work–Home Conflict

COVID-19 has caused the rapid increase of remote work in many fields. In this context, difficulties in combining domestic life and work responsibilities have been highlighted as a psychosocial risk of extensive remote work [12,39]. Work–home conflict (also referred to as work–family conflict) may appear in two ways: work interfering with home life and/or home life interfering with work (see, e.g., [40]). Prior research found work–home conflict to affect well-being at work, and to be associated with negative well-being outcomes such as burnout [40,41] and weaker job satisfaction [42,43].

Work–home conflict was also identified as a job demand in prior empirical studies on work during COVID-19. The rapid transition from office to remote work, which has occurred in a variety of occupations, including that of knowledge workers, was associated with work–home conflict [44,45]. In addition to sole remote work, hybrid and on-site workers also seem to have experienced work–family conflict during the pandemic. Prior research indicated that work–family conflict has been a significant burdening factor in healthcare and social services fields [46,47], as well as education [48]. In this study, we approach work–home conflict as a perceived difficulty in distinguishing between work and home life during COVID-19. According to prior research, work–home conflict can be burdening, affecting employees ranging from those in occupations with remote work to those who are completely on-site. Therefore, we hypothesize the following for all the examined occupational groups:

**Hypothesis 1 (H1a).** *COVID-19-related work–home conflict is negatively related to work engagement.*

**Hypothesis 1 (H1b).** *COVID-19-related work–home conflict is positively related to stress/exhaustion.*

### 1.3.2. Increased Workload

Adaptation to the COVID-19 situation appears to have increased the workload in many fields, which can have serious consequences on well-being at work. Workload is one of the key work stressors that has been studied and discussed for several decades (see e.g., [49]). In their meta-analysis, Bowling et al. [49] described workload as a multifaceted construct that encompasses both quantitative and qualitative as well as physical and mental aspects of job-related burdens. Further, prior research found high workload to have detrimental effects on wellbeing at work, associating it with, for example, emotional exhaustion and strain [49,50].

Previous research on COVID-19-related changes at work indicated an increase in workload and related effects on well-being at work. For example, the rise in patient volumes and rapid introduction of new protective procedures have been found to increase both the workload and strain of healthcare workers [51]. A meta-analysis of 97,333 healthcare employees across 21 countries [52] indicated a high prevalence of moderate depression, anxiety, and post-traumatic stress disorder during the pandemic. The adverse consequences were associated with an increased workload and new or changing work demands. Extreme workload during the pandemic has also been identified as a significant source of stress and strain in geriatric care settings [3,51]. Additionally, in social services occupations, employees have experienced increased workload due to changing work practices (e.g., switching in part to digital forms of client work) [4]. Meanwhile, in the education field, prior studies found that teachers have suffered stress from rapid adaptation to online teaching and its associated increase in workload [53,54]. In fact, an increased workload appears to be one of the most common COVID-19-induced job demands across occupations and fields. Therefore, we approach the concept of workload as a perceived increase in workload during COVID-19 regardless of occupation. Hence, we predict the following for all occupational groups:

**Hypothesis 2 (H2a).** *COVID-19-related increased workload is negatively related to work engagement.*

**Hypothesis 2 (H2b).** *COVID-19-related increased workload is positively related to stress/exhaustion.*

### 1.3.3. Fear of Infection

Recent studies have suggested that fear of infection during pandemic has a significant adverse effect on well-being at work [55]. Prior research on COVID-19-related stressors indicates that it has been a straining job demand, particularly in fields with close human contact. For example, fear of contagion and/or infecting others has been identified as a source of stress and strain in geriatric care settings [3,51] and social services [4]. When investigating frontline personnel of different health and social service occupations, scholars found that the fear of transmitting infection to be the highest among eldercare personnel [56]. However, according to recent literature, fear of infection is not limited to frontline personnel in specific occupational sectors. Despite sporadic periods in remote teaching, teachers also seem to have experienced fear of COVID-19 infection similar to employees in care professions [57]. Based on these notions, fear of infection during COVID-19 can be positively related to exhaustion and stress despite occupational differences. Therefore, we hypothesize the following for all the investigated occupational groups:

**Hypothesis 3 (H3a).** *COVID-19-related fear of infection at work is negatively related to work engagement.*

**Hypothesis 3 (H3b).** *COVID-19-related fear of infection at work is positively related to stress/exhaustion.*

## 1.4. COVID-19-Related Job Resources

### 1.4.1. COVID-19-Related Organizational Support

Organizational support may act as a valuable resource, especially in times of crisis, since the pandemic has induced rapid changes, concerns, and uncertainty in the workplace that organizations need to seek to alleviate. Thus, this form of support can be seen as a key resource during COVID-19, as it encompasses employer's actions in terms of organizing and securing working conditions during the pandemic. Moreover, perceived organizational support refers to the general experiences of employees regarding how their employer cares about their well-being, and recognizes their value to the organization (see e.g., [58–61]). In prior research, high levels of perceived organizational support were associated with positive well-being outcomes, such as job satisfaction, positive affective states [58,59], and work engagement [61,62]. In addition, a lack of organizational support was associated with negative well-being outcomes, such as stress, fatigue, anxiety, and burnout [58,60].

The importance of organizational support was also noted in studies covering the impact of the COVID-19 pandemic on work. For example, in their overview of the impact of COVID-19 on workplaces, Kniffin et al. [12] discussed the vital role of organizational support in restoring the balance between job demands and resources to secure employee well-being. In addition, aspects of organizational support—such as open communication and information sharing—were found to help sustain employees' sense of psychological safety [63], job satisfaction, and trust towards their employer [64], while also fostering positive emotions amid COVID-19-induced changes [65]. Further, organizational support has also been found to play a role in mitigating employees' stress and anxiety in care work [66]. Additionally, high-quality organizational communication was associated with a lower intention to resign by nursing home staff, even when COVID-19-related stressors were high [67]. Thus, based on previous research, organizational support can be understood as a job resource that can buffer the negative effects of straining job demands—such as COVID-19-related stressors—and support employee well-being. Hence, for all occupational groups, we hypothesize the following:

**Hypothesis 4 (H4a).** *COVID-19-related organizational support is positively related to work engagement.*

**Hypothesis 4 (H4b).** *COVID-19-related organizational support is negatively related to exhaustion/stress.*

#### 1.4.2. Digital Job Resources: Positive Attitude towards Digital Solutions

Individuals' affective reactions towards technology, particularly new technology use [68], and its implications for employee well-being have been recognized for some time [69,70]. Specifically, scholars suggested that attitudes towards digital solutions affect how an employee experiences the use of technology in terms of well-being at work. For example, Moreira-Fontan et al. [71] found that teachers' positive emotions towards information and communication technology (ICT) tools were related to higher work engagement. In addition, a positive attitude towards digital solutions was identified as a personal resource that can mitigate technostress [72]. The attitude towards technology was found to mediate the relationship between ICT exposure and burnout. In particular, high exposure to digital tools leads to more positive reactions, thus decreasing the symptoms of burnout [73]. The COVID-19 pandemic has accelerated digitalization, and thus presumably led to higher exposure to digital solutions among a variety of occupations. According to previous literature [73], the higher exposure to digital solutions can lead to more positive attitudes towards digital solutions and decrease the negative symptoms of well-being at work. Since the use of ICT tools has increased across occupations and sectors, we hypothesize the following for all the examined occupational groups:

**Hypothesis 5 (H5a).** *A positive attitude towards digital solutions during COVID-19 is positively related to work engagement.*

**Hypothesis 5 (H5b).** *A positive attitude towards digital solutions during COVID-19 is negatively related to exhaustion/stress.*

#### 1.4.3. Digital Job Resources: Well-Functioning Digital Meetings

For many professionals, especially knowledge workers, a significant effect of COVID-19 has been the rapid transition to remote work and the associated increase in digitalized communication [74]. Teamwork has mostly switched to a digital format, which may emphasize the role of smooth computer-mediated communication in employee wellbeing (see, e.g., [12,75]). Research on ICT use and well-being at work has indicated that computer-mediated communication may act both as a job demand and resource, depending on, for example, workplaces' practices and the quality of digital communication [76–80]. Prior COVID-19-related research also showed that while remote working and the subsequent reliance on digital communication may induce, for example, communication overload, it can also be a job resource when computer-mediated teamwork and communication practices are well-functioning [75,80]. In this context, we hypothesize that well-functioning digital meetings are related to well-being at work among occupational groups that presumably have digital meetings at work. Therefore, we predict the following for the professional, scientific, and technical employees, as well as teachers:

**Hypothesis 6 (H6a).** *Well-functioning digital meetings during COVID-19 are positively related to work engagement.*

**Hypothesis 6 (H6b).** *Well-functioning digital meetings during COVID-19 are negatively related to exhaustion.*

## 2. Materials and Methods

### 2.1. Data

This study explored four occupational groups: (1) professional, scientific, and technical occupations in Norway; (2) teachers in Finland; (3) health and social service occupations in Norway; and (4) geriatric nurses in Finland.

#### 2.1.1. Groups 1 and 3

The Norwegian data were collected as a part of the ‘Healthy workplaces in light of COVID-19’ project over the time period from January to February 2021. The data samples utilized in this study were subsets of a larger convenience sample. In this study the chosen samples are presented as the following occupational groups: (1) professional, scientific, and technical services; (2) health and social services.

The professional, scientific, and technical occupation sample included, among others, law, accounting, administration, architecture, research, marketing, communication, and veterinary services professions. The health and social services industry group included health services in and outside of institutions, social services such as asylum reception centers, kindergartens, and after-school care schemes, as well as other care and associated services.

A digital survey was constructed using the University of Oslo’s Nettskjema platform. A link to the survey was posted on social media and sent via e-mail to relevant respondents alongside a supporting letter that contained information about the survey and contact information for the project managers and assured participants about the voluntary nature of their participation, the maintenance of their anonymity, and confidentiality of their answers. The project followed the guidelines of the Norwegian Centre for Research Data (NSD): all data were treated confidentially, and data material was anonymized.

Of the 627 who responded to the questionnaire, 301 worked in the professional, scientific, and technical services group, of whom 174 were women (58%), and 127 were men (42%). The age distribution was 14% ‘up to 25’, 19% ‘26–40’, 41% ‘41–55’, and 26% ‘56 and above’. The health and social services group sample consisted of 267 workers, of whom 204 (76%) were women, and 63 were men (24%). The age distribution was 26% ‘up to 25’, 23% ‘26–40’, 36% ‘41–55’, and 15% ‘56 and above’. The remainder who responded indicated their industry grouping as ‘other’.

#### 2.1.2. Group 2

This study was conducted as part of a larger ‘Sustainable Brain Health’ project. Cross-sectional survey data were gathered between December 2020 and February 2021 through an online questionnaire using Microsoft Forms. A link to the survey was sent to comprehensive schoolteachers employed by the city of Tampere. The project contact person at Tampere sent out the survey link alongside a privacy notice and other relevant information regarding the study through the schools’ information-sharing web service, Wilma. A total of 361 responses were received, of which 38 non-teacher (e.g., administrative personnel) responses were excluded from the study. This amounted to a total of 315 teacher responses. The majority of the respondents were women (84%), and most of the respondents (55%) were 40–54 years of age, followed by those in the 55+ (25%) and 25–39 (20%) age groups. Of the respondents, 52% were primary school teachers (grades 1–6), 30% taught in upper comprehensive school (grades 7–9), and the rest (18%) worked in both. During the first wave of the pandemic, for the most part, schools in Finland switched to distant learning for two months (March 18–May 13). Of the respondents, 75% had worked solely remotely during that time, and 9% had worked solely in school, while the rest worked in both. Later, after spring 2020, teachers worked mainly in schools doing classroom and hybrid teaching.

#### 2.1.3. Group 4

Data on geriatric nurses were collected through surveys using the LimeSurvey platform as a part of a larger ‘Healthy Care’ development project that aimed to investigate and develop employee well-being in elderly care units in Finland. The survey data were

collected between April and September 2021 from 10 individual elderly care units located across different parts of Finland. Employees either received a link to the survey with the project's privacy agreement via their manager, or the link was sent directly to their work email, depending on whether they had an individual work email address. A total of 114 responses were received. However, nine responses from personnel working with administrative, catering, and cleaning services were excluded from the data analysis, since the target group was limited to nurses. The remaining 105 responses were from practical nurses (84%), registered nurses (14%), physiotherapists, and public health nurses. Of this group of respondents, 96% were female, and 4% were male. The age distribution was 10% 'below 25', 30% '25–39', 39% '40–54', and 21% '55 and above'. It should be noted that geriatric nurses in Finland have been working on-site to take care of elderly people during the whole pandemic. During the data collection period, geriatric nurses had strict pandemic-related safety measures at work.

## 2.2. Measures

### 2.2.1. COVID-19 Indicators

This study utilized three single COVID-19 job demand items and two single COVID-19 job resource items from the Department of Psychology at Norwegian University of Science and Technology (NTNU) to measure COVID-19-related changes in all four occupational groups. The items were rated on a five-point Likert scale ranging from 'Totally disagree' to 'Totally agree'. The three statements for COVID-19 job demands were as follows:

- 'It is more difficult to distinguish between home life and work during the COVID-19 pandemic'.
- 'My workload has increased during the COVID-19 pandemic'.
- 'I'm worried about COVID-19 infection at work'.

The two chosen statements for digital job resources were as follows:

- 'I have become more positive about digital solutions'.
- 'Digital meetings have worked well'.

Hence, the final variables related to COVID-19 pandemic job demands and resources were home–work imbalance, increased workload, fear of infection, positive attitude towards digital solutions, and well-functioning digital meetings.

Meanwhile, the COVID-19-related organizational support is a scale devised by the Department of Psychology at NTNU. The variable is based on the following four items related to the measures taken and information given during the pandemic:

- 'My employer has taken suitable measures to secure the working environment during the COVID-19 pandemic'.
- 'My employer has taken suitable measures to ensure productivity during the COVID-19 pandemic'.
- 'I have received sufficient information from my employer about measures surrounding the COVID-19 pandemic'.
- 'My employer keeps me updated about measures surrounding the COVID-19 pandemic'.

The statements were answered on a five-point Likert scale ranging from 'Totally disagree' to 'Totally agree'. The Cronbach's alpha of organizational support was above the recommended threshold of 0.7 for all four samples, as displayed in Tables 1 and 2.

### 2.2.2. Employee Well-Being Indicators

The Utrecht Work Engagement Scale (UWES-3) [81] was used as a positive indicator of employee well-being in all four groups. The indicator consisted of three items, each covering one dimension of work engagement, as follows: (1) 'At my work, I feel bursting with energy'; (2) 'I am enthusiastic about my job'; and (3) 'I am immersed in my work' [81]. The items were standardized, and averaged into one variable (Cronbach's alpha for each group is illustrated in Tables 1 and 2). For the Finnish studies (Groups 2 and 4) a seven-point Likert scale was used, as follows: (0) 'Never'; (1) 'A few times a year or less'; (2) 'Once



a month or less'; (3) 'A few times a month'; (4) 'Once a week'; (5) 'A few times a week'; and (6) 'Every day'. Meanwhile, the Norwegian studies (Groups 1 and 2) utilized a five-point Likert scale, as follows: (1) 'Never'; (2) 'Rarely'; (3) 'Sometimes'; (4) 'Often'; and (5) 'Always'.

Since the data samples were collected through surveys as part of different research projects, there were minor variations in the measures utilized for investigating negative effects on employee well-being. Existing research has widely suggested that emotional exhaustion is the key element of burnout, and also covers an aspect of stress (see, e.g., [33]). From the three subdimensions of burnout (exhaustion, cynicism, and inadequacy/inefficacy), exhaustion was selected as an indicator of a negative effect on well-being in the three samples covered in this study. Further, individual stress was utilized as a negative indicator of employee well-being in one sample. The exhaustion and stress measures used in the individual samples are presented below.

Groups 1 and 3 (Norway): Exhaustion was measured using one of the subdimensions in the Burnout Assessment Tool (BAT) developed by Schaufeli and colleagues [35]. Exhaustion consisted of three items such as 'At work, I feel mentally exhausted'. The statements were answered using a five-point Likert scale, as follows: (1) 'Never'; (2) 'Rarely'; (3) 'Sometimes'; (4) 'Often'; and (5) 'Always'. Here, Cronbach's alpha (illustrated in Table 1) was satisfactory, ranging from 0.85 to 0.88.

Group 2 (Finland): Emotional exhaustion consisted of three items that covered the exhaustion dimension of the nine-item Bergen burnout inventory (BBI-9) [82,83], and included items such as 'I often sleep poorly because of the circumstances at work'. In the questionnaire, a six-point Likert scale was used, as follows: (1) 'Completely disagree'; (2) 'Disagree'; (3) 'Partly disagree'; (4) 'Partly agree'; (5) 'Agree'; and (6) 'Completely agree'. Here, Cronbach's alpha (illustrated in Table 2) was satisfactory (0.75).

Group 4 (Finland): The stress measure used in the survey of nurses is a well-known single-item measure of stress symptoms [84]. Here, the question referred to generic feelings of stress: 'Stress means a situation in which a person feels tense, restless, nervous or anxious or is unable to sleep at night because their mind is troubled all the time. Do you feel this kind of stress these days?' The measure used a five-point Likert scale, as follows: (1) 'Not at all'; (2) 'Only a bit'; (3) 'Somewhat'; (4) 'Rather much'; and (5) 'Very much'.

### 2.2.3. Control Variables

Age- and gender-specific differences were controlled for in the regression analysis. The gender variable consisted of two items: (0) 'Male' and (1) 'Female' in all four samples. In samples from Finland, the age item of the survey contained four response options: 'Below 25-years-old'; '25–39-years-old'; '40–51-years-old'; and '55-years-old or older'. In the sample from Norway, the categories were 'up to 25', '26–40', '41–55', and '56 and above'.

### 2.3. Hierarchical Regression Analysis

The relationships were tested utilizing two separate hierarchical regression analyses for each group (four groups, which means eight regressions in total). The analyses were conducted using SPSS (IBM SPSS Statistics, Version 27, Armonk, NY: IBM Corp, United States). The risk for multicollinearity of all variables was checked prior to selecting variables for the finalized regression model. VIF factors of all variables within all examined groups were between 1–1.4; thus, the risk for multicollinearity was considered low. Work engagement and exhaustion/stress were used as dependent variables. Age and gender were entered as control variables in the first step. The rest of the independent variables were entered in the second step. These variables were the investigated COVID-19-related job demands (three variables), digital job resources (two variables), and organizational support during the pandemic as a job resource (one variable). In the regression analysis, an  $R^2$  value of 0.25 was considered small, 0.5 was moderate, and 0.75 explained a significant amount of variance.

### 3. Results

#### 3.1. Descriptive Statistics

##### 3.1.1. Professional, Scientific, and Technical Occupations and Teachers

Table 1 illustrates the means, standard deviations, and correlations between all study variables of occupational Groups 1 and 2: professional, scientific, and technical occupations in Norway, and teachers in Finland.

**Table 1.** Means, standard deviations (SD), and correlations for occupational Groups 1 and 2—Data of professional, scientific, and technical group ( $n = 301$ ) and teachers group ( $n = 315$ ).

Descriptive Statistics and Correlations: Professional, Scientific, and Technical Employees and Teachers										
	Mean	SD	1	2	3	4	5	6	7	8
<b>Group 1—Professional, scientific, and technical, Norway</b>										
<b>Independent variables</b>										
1. Home–work imbalance	3.30	1.23	–							
2. Workload increase	3.25	1.01	0.23 ***	–						
3. Fear of infection	2.75	1.19	0.02	0.07						
4. Organizational support	4.08	0.67	0.02	0.09	–0.08	0.78				
5. Positive attitude towards digital solutions	3.79	0.89	0.00	0.14 *	0.12 *	0.18 **	–			
6. Well-functioning digital meetings	3.90	0.89	–0.09	0.08	0.09	0.22 ***	0.50 ***	–		
<b>Dependent variables</b>										
7. Work engagement	3.93	0.57	–0.01	0.10 *	–0.10 *	0.15 **	0.07	0.07	0.80	
8. Exhaustion	2.02	0.79	0.25 ***	0.27 ***	0.06	–0.06	–0.04	–0.14 **	–0.28 ***	0.88
<b>Group 2—Teachers, Finland</b>										
<b>Independent variables</b>										
1. Home–work imbalance	3.87	1.13	–	2	3	4	5	6	7	8
2. Workload increase	4.33	0.90	0.51 ***	–						
3. Fear of infection	3.59	1.22	0.17 **	0.17 **	–					
4. Organizational support	3.66	0.81	–0.09	–0.02	–0.21 ***	0.84				
5. Positive attitude towards digital solutions	3.58	0.88	–0.06	0.08	0.07	0.19 ***	–			
6. Well-functioning digital meetings	3.54	0.95	–0.03	–0.02	0.06	0.23 ***	0.29 ***	–		
<b>Dependent variables</b>										
7. Work engagement	4.50	1.32	0.03	0.06	–0.03	0.24 ***	0.23 ***	0.20 ***	0.82	
8. Exhaustion	3.64	1.17	0.37 ***	0.27 ***	0.21 ***	–0.31 ***	–0.05	–0.14 **	–0.21 ***	0.75

Note: \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ . All independent items had a five-point Likert scale; the work engagement item of Groups 1 and 2 had five-point and seven-point Likert scales, respectively; the exhaustion items of Groups 1 and 2 had five-point and six-point Likert scales, respectively; Cronbach’s alphas of organizational support, work engagement, and exhaustion are presented in italics in the diagonal.

In the sample from the professional, scientific, and technical services group, the mean ranged between 2.02 and 4.08. Work engagement was positively associated with workload increase and organizational support and negatively associated with fear of infection. Exhaustion was positively associated with home–work imbalance and workload increase, and negatively associated with well-functioning digital meetings. There was also a significant negative association between work engagement and exhaustion.

In the sample of teachers, the mean ranged from 3.54 to 4.50. Work engagement was positively associated with organizational support, positive attitude towards digital solutions, and well-functioning digital meetings. Meanwhile, exhaustion was positively associated with home–work imbalance, increased workload, and fear of infection, and negatively associated with organizational support and well-functioning digital meetings. There was also a significant negative association between work engagement and exhaustion.

##### 3.1.2. Health and Social Services and Geriatric Nurses

Table 2 illustrates the means, standard deviations, and correlations between the study variables of the following occupational groups: health and social services in Norway and geriatric nurses in Finland. In the sample group of health and social services, the mean ranged between 2.18 and 4.05. Work engagement was positively associated with

organizational support and a positive attitude towards digital solutions. Meanwhile, exhaustion was positively associated with home–work imbalance, workload increase, and fear of infection. There was also a significant negative association between work engagement and exhaustion. In the geriatric nurses' sample group, the mean ranged from 2.46 to 5.56. Work engagement was positively associated with organizational support and a positive attitude towards digital solutions, while stress was negatively associated with a positive attitude towards digital solutions.

**Table 2.** Means, standard deviations (SD), and correlations for occupational Groups 3 and 4—Data from health and social services in Norway ( $n = 267$ ) and geriatric nurses ( $n = 105$ ) in Finland.

Descriptive Statistics and Correlations: Health and Social Services and Geriatric Nurses									
	Mean	SD	1	2	3	4	5	6	7
<b>Group 3—Health and social services, Norway</b>									
<b>Independent variables</b>									
1. Home–work imbalance	2.66	1.27	–						
2. Workload increase	3.43	1.15	0.22 ***	–					
3. Fear of infection	3.76	1.23	0.07	0.15 **	–				
4. Organizational support	4.05	0.70	0.09	0.08	–0.03	0.80			
5. Positive attitude towards digital solutions	3.68	0.91	0.12 *	0.07	–0.05	0.16 **	–		
<b>Dependent variables</b>									
6. Work engagement	3.92	0.57	–0.02	–0.00	–0.03	0.34 ***	0.23 ***	0.77	
7. Exhaustion	2.18	0.78	0.21 ***	0.23 ***	0.30 ***	–0.07	–0.01	–0.39 ***	0.85
<b>Group 4—Geriatric nurses, Finland</b>									
<b>Independent variables</b>									
1. Home–work imbalance	2.47	1.33	–						
2. Workload increase	3.39	1.19	0.13	–					
3. Fear of infection	2.46	1.24	–0.03	0.18 *	–				
4. Organizational support	4.00	0.75	0.18 *	–0.05	0.06	0.81			
5. Positive attitude towards digital solutions	3.50	1.04	0.16	0.33 **	0.11	0.06	–		
<b>Dependent variables</b>									
6. Work engagement	5.56	1.06	0.12	0.05	0.16	0.31 **	0.22 **	0.71	
7. Stress	2.90	1.11	0.12	0.12	–0.07	–0.07	–0.20 *	–0.07	–

Note: \*  $p < 0.05$  \*\*  $p < 0.01$  \*\*\*  $p < 0.001$ . The items of all independent variables had five-point Likert scales; the stress and exhaustion items had five-point Likert scales; the work engagement items of groups 3 had five-point and Group 4 had seven-point Likert scales, respectively; Cronbach's alphas of organizational support, work engagement, and exhaustion are presented in italics in the diagonal.

### 3.2. Regression Model Results of the Professional, Scientific, and Technical Services and Teachers Groups

Table 3 presents the regression analyses related to work engagement and exhaustion of the following occupational groups: professional, scientific, and technical services in Norway and teachers in Finland.

#### 3.2.1. Professional, Scientific, and Technical Services (Norway)

In the sample group of professional, scientific, and technical, COVID-19-related job demands and resources were not significantly related to work engagement, giving no support to Hypotheses 1a, 2a, 3a, 4a, 5a, and 6a. However, home–work imbalance ( $\beta = 0.16$ ,  $p < 0.01$ ) and workload increase ( $\beta = 0.21$ ,  $p < 0.001$ ) were positively related to exhaustion, supporting Hypotheses 1b and 2b. On the other hand, fear of infection, organizational support, positive attitude towards digital solutions, and well-functioning digital meetings were not related to exhaustion for this group; thus, these factors did not support Hypotheses 3b, 4b, 5b, and 6b. Altogether, the regression model explained 3% of the variance in work engagement, and 15% of the variance in exhaustion.

**Table 3.** Regression results of occupational Groups 1 and 2.

Standardised coefficients and R <sup>2</sup>	Norway		Finland	
	Group 1: Professional Scientific and Technical (n = 301)		Group 2: Teachers (n = 315)	
	Work engagement	Exhaustion	Work engagement	Exhaustion
	$\beta$	$\beta$	$\beta$	$\beta$
Step 1: Demographic variables <sup>a</sup>				
Age	0.11	−0.21 ***	0.10	−0.10
Gender	−0.03	−0.05	0.12 *	0.07
Step 2: COVID-19 variables				
Home–work imbalance	−0.02	0.16 **	0.02	0.27 ***
Workload increase	0.12	0.21 ***	0.05	0.11
Fear of infection	−0.11	0.06	−0.03	0.11 *
Organizational support	0.11	−0.04	0.18 **	−0.24 ***
Positive attitude towards digital solutions	0.01	0.05	0.14 *	−0.06
Well-functioning digital meetings	0.02	−0.12	0.11	−0.08
R <sup>2</sup>	0.05	0.18 ***	0.13 ***	0.26 ***
$\Delta R^2$	0.04	0.10 ***	0.09 ***	0.25 ***
adjR <sup>2</sup>	0.03 *	0.15 ***	0.11 ***	0.24 ***

Note: \*  $p < 0.05$  \*\*  $p < 0.01$  \*\*\*  $p < 0.001$ ; <sup>a</sup> Controlled for age and gender; R values presented from the final step 2.

### 3.2.2. Teachers (Finland)

In the sample group of teachers, none of the COVID-19 job demands were related to work engagement, and therefore the results did not support Hypotheses 1a, 2a, and 3a. However, in terms of COVID-19-related job demands, home–work imbalance ( $\beta = 0.27$ ,  $p < 0.001$ ) and fear of infection ( $\beta = 0.11$ ,  $p < 0.05$ ) were positively related to exhaustion, supporting Hypotheses 1b and 3b. Regarding COVID-19-related job resources, organizational support was positively associated with work engagement ( $\beta = 0.18$ ,  $p < 0.01$ ), and negatively associated with exhaustion ( $\beta = -0.24$ ,  $p < 0.001$ ); thus, both Hypotheses 4a and 4b were supported. In addition, a positive attitude towards digital solutions was positively associated with work engagement ( $\beta = 0.14$ ,  $p < 0.05$ ); thus, Hypothesis 5a was supported. There was no association between well-functioning digital meetings and work engagement, therefore Hypothesis 6a was not supported. Moreover, there was no evidence that either COVID-19-related digital resources were related to exhaustion, therefore Hypotheses 5b and 6b were not supported. Together, the model explained 11% and 24% of the variance in work engagement and exhaustion, respectively.

### 3.3. Regression Model Results for Health and Social Services and Geriatric Nurses

Table 4 presents the regression analyses related to work engagement and exhaustion/stress of the following occupational groups: health and social services in Norway, and geriatric nurses in Finland.

#### 3.3.1. Health and Social Services (Norway)

In the sample group of health and social services, home–work imbalance, workload increase, and fear of infection were not related to work engagement; thus, Hypotheses 1a, 2a, and 3a were not supported. However, organizational support ( $\beta = 0.31$ ,  $p < 0.001$ ) and a positive attitude towards digital solutions ( $\beta = 0.17$ ,  $p < 0.01$ ) were associated with higher work engagement, supporting Hypothesis 4a and 5a. Home–work imbalance ( $\beta = 0.16$ ,  $p < 0.01$ ), increase in workload due to COVID-19 ( $\beta = 0.14$ ,  $p < 0.05$ ), and fear of infection ( $\beta = 0.24$ ,  $p < 0.001$ ) were positively related to exhaustion, supporting Hypotheses 1b, 2b, and 3b. However, there was no support for Hypotheses 4b and 5b, as organizational support and positive attitude towards digital solutions were not related to exhaustion. Altogether, the regression model explained 16% of the variance in work engagement, and 17% of the variance for exhaustion.

**Table 4.** Regression results of occupational Groups 3 and 4.

Standardized coefficients and R <sup>2</sup>	Norway		Finland	
	Group 3: Health and Social Services (n = 267)		Group 4: Geriatric Nurses (n = 98)	
	Work engagement	Exhaustion	Work engagement	Stress
	$\beta$	$\beta$	$\beta$	$\beta$
Step 1: Demographic variables <sup>a</sup>				
Age	0.13 *	−0.19 **	−0.15	−0.02
Gender	0.10	0.04	0.17	0.12
Step 2: COVID-19 variables				
Home–work imbalance	−0.05	0.16 **	0.08	0.19
Workload increase	−0.01	0.14 *	−0.04	0.13
Fear of infection	−0.01	0.24 ***	0.18	−0.07
Organizational support	0.31 ***	−0.07	0.29 **	−0.08
Positive attitude towards digital solutions	0.17 **	−0.01	0.18	−0.27 *
R <sup>2</sup>	0.18 ***	0.19 ***	0.22 **	0.11
$\Delta R^2$	0.13 ***	0.12 ***	0.18 **	0.09
adjR <sup>2</sup>	0.16 ***	0.17 ***	0.16 **	0.04

Note: \*  $p < 0.05$  \*\*  $p < 0.01$  \*\*\*  $p < 0.001$ ; <sup>a</sup> Controlled for age and gender; R values presented from the final step 2.

### 3.3.2. Geriatric Nurses (Finland)

In the sample group of geriatric nurses, COVID-19-related job demands and a positive attitude towards digital solutions did not relate to work engagement; thus, Hypotheses 1a, 2a, 3a, and 5a were not supported. However, organizational support was positively associated with work engagement ( $\beta = 0.29$ ,  $p < 0.01$ ), supporting Hypothesis 4a. A positive attitude towards digital solutions was negatively related to stress ( $\beta = -0.27$ ,  $p < 0.05$ ), but no other associations were found among COVID-19-related job demands or resources and stress. However, the model for stress explained only 4% of the variation, and it was not significant. Thus, Hypotheses 1b, 2b, 3b, 4b, and 5b were not supported. Altogether, the model explained 16% of the variation in work engagement.

## 4. Discussion

This study contributes to the literature on COVID-19 and well-being at work by providing several important findings. First, the results showed associations between COVID-19-related job demands and exhaustion. Hypothesis 1b was partially supported. The positive relationship between home–work conflict and exhaustion was found in three occupational groups. This means that difficulties with balancing home and work life during the COVID-19 pandemic among professional, scientific, and technical employees in Norway, and teachers in Finland, as well as health and social service workers in Norway, was related to higher levels of exhaustion. This is in line with previous studies [12,39] which highlighted work–home conflict as a risk to well-being during the COVID-19 pandemic.

Increased workload was positively related to exhaustion in Groups 1 and 3, partially supporting Hypothesis 2b. This finding means that the greater the workload induced during the pandemic, the more exhaustion professional, scientific, and technical employees and health and social service employees in Norway experienced. However, interestingly, there was no evidence of increased workload affecting the well-being of teachers and geriatric nurses in Finland. This is in conflict with prior research on both teachers [48,53] and elderly care personnel [3,51], which found an increase in workload and subsequent negative associations with employee well-being. In the sample of teachers, this interesting result may be related to their resilience and coping abilities during times of rapid transition [15]—in this case, an increase in workload and changing work practices. Meanwhile, in the sample of geriatric nurses, this result could be related to the relatively high occupational stress and symptoms of burnout among healthcare personnel, even prior to the pandemic (see e.g., [7,10]), which may diminish the role of COVID-19-induced workload.

Fear of infection was positively related to exhaustion in Groups 2 and 3, partially supporting Hypothesis 3b. This means that the more teachers in Finland and health and social services employees in Norway were worried about being infected, the more

exhaustion they experienced. This finding supports prior studies that identified fear of infection for COVID-19 as a straining job demand (e.g., [4,57]). However, fear of infection was not related to exhaustion in the professional, scientific, and technical group in Norway. This could be because—in contrast to the other groups—they more likely to be able to work remotely and avoid close contact with other people. Furthermore, interestingly, the fear of infection was not related to exhaustion in the geriatric nurses group in Finland. This finding differs from that of previous studies which found fear of contagion to be among the major stressors in nursing homes [3,51]. It may reflect the pandemic situation in Finland, which has been less severe than in most studied countries [23], at least at the time of data collection. In addition, geriatric nursing staff may be more used to dealing with contagious infections and protective measures in their work than employees in other fields, which could explain why the fear of infection did not come up as a significant stressor in the geriatric nurses group.

The results showed an association between COVID-19-related digital job resources and work engagement. Hypothesis 5a was partially supported. The positive attitude towards digital solutions was positively related to work engagement in Groups 2 and 3. This finding is aligned with that of previous research [71], indicating that the more positive the attitude of teachers in Finland and health and social service employees in Norway towards digital solutions, the more work engagement they experienced during the pandemic. In the teachers group, this could be due to an increase in distance learning through digital devices, which could make work more motivating for those who are keen on using technology. Although health and social services workers have predominantly face-to-face contact, their working environment is presumably slowly digitalizing, with the increased adoption of ICT tools. In this context, those employees who have become more comfortable with digital solutions may also experience work engagement.

Hypothesis 4a was partially supported. A positive relationship between organizational support and work engagement was found in Groups 2, 3, and 4. This means that the more measures an employer took during the COVID-19 pandemic, the higher the work engagement was among teachers and geriatric nurses in Finland, as well as health and social service employees in Norway. The results are similar to those of pre-COVID-19 research findings regarding organizational support and work engagement [61,62]. Furthermore, as the vital role of organizational support during the COVID-19 pandemic has been discussed in prior studies (e.g., [12,64–67]), the results provide further evidence of the important role of pandemic-specific organizational support for employee well-being in these circumstances.

Additionally, Hypothesis 4b was partially supported, as there was a significant negative relationship between organizational support and exhaustion in teachers group of Finland. This means that the more measures an employer took during the pandemic, there were less exhaustion among teachers in Finland. Schoolteachers' work has been undergoing continuous change: for instance, during the rapid transition to distance learning in 2020. There was hybrid teaching during quarantines, as well as changes in safety regulations in schools. The role of organizational support (e.g., internal communication) may thus be crucial in the field of education. Interestingly, organizational support did not seem to play a significant role in mitigating stress and exhaustion in the other groups—not even elderly care. This differs from previous research findings on nursing homes [66,67] which highlighted the buffering role of organizational support on negative well-being outcomes during the COVID-19 pandemic.

The advantage of this study is its utilization of four different occupational groups across two Nordic countries to investigate the occupational and country-specific perspectives of COVID-19-related job demands, organizational support, and employee well-being. However, there are some limitations that should be acknowledged. First, there were some differences in the samples and items used in this study. The use of separate samples, analyses, and data collection periods between sample groups precluded the possibility of comparing and testing the strength of the identified associations. Hence, it was not possible

to test either the strength between country differences or the occupational differences. In addition, one of the data samples (Group 4) was relatively small, and may have had insufficient power for the regression model, since some of the coefficients were meaningful in value, but still not significant. However, as the goal was to describe the impact of the COVID-19 pandemic across four occupational groups in two Nordic countries, this sampling method was considered suitable for the aforementioned purpose. Additionally, since the data were gathered through self-reporting questionnaires, and all the data for each group originated from a common source, the quality of the data could have been affected by the data sampling method rather than the variables investigated. Thus, further studies should utilize similar comparable items and data samples to further investigate the strength of the country and occupational differences. Further studies should also elaborate on the size, as well as address the heterogeneity across groups through methods such as subgroup analyses with respect to occupation, job design, age group, and perhaps educational level as well. In addition, all variables were based on items that were self-reported by the respondents. For instance, the study captured self-reported perceptions of COVID-19-related changes, and did not consider the psychological and job-related factors before the pandemic. Hence, the degree and extent of change were not measured objectively. In addition, since the design was cross-sectional, it was not possible to conclude any causal relationships. Therefore, future research should investigate the causal relationship of pandemic-related factors to identify how fluctuations in the severity of the pandemic affect employee well-being over time as a means to gain a more comprehensive knowledge of the phenomenon. Finally, this study addressed a limited selection of factors associated with COVID-19-induced changes and employee well-being. It is thus possible that other COVID-19-related changes or demands related to it affect well-being at work in the studied occupational groups. We therefore propose future studies to test various combinations of job demands, resources, and workplace measures, such as social relationships [85], collegiality [86], leadership style, and culture [87], as well as learning opportunities at the working place [88] to examine their impact in maintaining well-being during exceptionally challenging times.

## 5. Conclusions

The present study responds to the need for more cross-cultural and cross-occupational knowledge on how COVID-19-related changes relate to employee well-being. Previous studies have been largely conducted in, for example, the US and the UK. However, there is less knowledge about how the pandemic has affected employee well-being among different occupational groups in Nordic countries, where restrictions are less invasive. Moreover, Norway and Finland have had a relatively low impact in relation to the number of deaths and hospitalizations. In addition, Nordic countries have a strong and well-developed welfare system related to work and health. This study relates to research regarding job demands and resources, as well as their implications on employee well-being [26]. By using COVID-specific variables, this study provides new knowledge on how the pandemic affected employees' health and well-being, and expands existing occupational health literature on work engagement and stress/burnout. Our results show that COVID-19-related job demands were not related to work engagement, but were related to staff exhaustion among three occupational groups. On the other hand, COVID-19-related organizational support seemed to be important for employees' work engagement in three occupational groups, but in terms of exhaustion, it was only significant in the teacher's group in Finland. Overall, the results indicate that COVID-19-specific job characteristics have only some association with the aspects of employee well-being among different occupational groups in Nordic countries, which can probably be explained by the less severe pandemic context in these countries.

As practical implications, finding strategies for ensuring a healthy workplace seems highly important across different occupational groups and countries. In fields and occupations with a high risk of increased workload, as well as work spilling over, it could be

beneficial for employers to take an active role in organizing work so that it can be performed in due time, even in unprecedented situations such as COVID-19, as well as discouraging extended working hours. It could also be useful to provide employees with both practical (e.g., comprehensive introduction to safety measures) and psychological support to alleviate their fear of getting infected. We also encourage employers to provide support for the implementation and use of digital solutions, since the positive attitude towards technology may act as a job resource. Finally, we recommend monitoring the development of the pandemic's effect on different occupational groups in these countries, since the strain over time could have a stronger impact and consequences on health impairment. We further suggest the development of COVID-19-specific overall organizational support to enhance well-being, since the effects of the pandemic could still become severe in Nordic countries.

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**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author. The data are not publicly available due to an agreement with the participants of each research project that data will be archived with a limited access. An additional restrictions apply to data of Group 2: The data were obtained in collaboration with the Sustainable Brain Health project consortium and are available from the authors with the permission of the rest of the consortium.

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