

Implementation of shared workspace in a psychiatric outpatient clinic – effects on workspace usability, psychosocial work environment and employee well-being

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Abstract

Purpose – Shared workspace concept is one modern solution applied in health-care facility design. Yet, studies investigating the effects of their implementation on employees are rare. This study aims to compare perceptions of usability, psychosocial work environment and well-being in a psychiatric outpatient clinic that relocated from traditional workspaces into shared workspaces.

Design/methodology/approach – Questionnaires were administered seven months before and eight months after the change in a Finnish outpatient clinic. Data from 36 employees were analyzed statistically using the Wilcoxon Signed Ranks test methods.

Findings – Shared workspaces supported work tasks and task privacy less than traditional workspaces. Satisfaction with air quality and accessibility increased; however, perceptions of lighting and sufficiency of work- and storage space decreased. Further, well-being deteriorated, but psychosocial work environment was unchanged, except for perceived job security which decreased. To achieve a workspace that is effective,

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efficient, satisfying and supportive of well-being, shared workspaces and guidelines for using the facilities should support different work tasks.

Practical implications – Based on a small pre–post study in one psychiatric outpatient clinic, organizations moving to shared workspaces should clearly differentiate areas for quiet and noisy work in activity-based workspaces, ensure sufficient nearby enclosed rooms for calls and discussions, provide easy booking and allocation systems and establish guidelines to support a peaceful work environment. Further, organizations should guide employees to use spaces as intended and monitor user experience and the psychosocial environment after relocation and adjust practices as needed.

Originality/value – This empirical pre–post study is unique, as it investigates shared workspace concepts in the health-care sector, capturing the impact of the concepts on usability and well-being.

Keywords Shared workspaces, Flexible space, Health-care facilities, Activity-based workspace, Usability, Well-being

Paper type Research paper

1. Introduction

Psychiatric care, like other health-care services, faces major reforms and cost pressures, aiming to boost efficiency through improved interprofessional communication, new technologies and facilities (Deeni, 2011). Psychiatric inpatient stays have shortened in recent years leading to a shift in focus toward outpatient care (Konttila, *et al.*, 2018). In addition, the number of patients with multiple diseases has increased, putting pressure on organizations to promote multiprofessional communication (Verhoeff *et al.*, 2023). This necessitates bringing health-care professionals (HCPs) into same buildings (Schot *et al.*, 2019). Further, facility design has shifted focus from employees' needs to patient-centered care (VanHeuvelen, 2019; Vahdatzad, 2018). This means that employees are in move, and patients receive services from the same place (Reijula *et al.*, 2017; Vahdatzad, 2018). One way to organize flexible outpatient facilities is to replace assigned consultation rooms (CRs) and workstations by workspace design based on shared and efficient use of facilities (Sirola *et al.*, 2024; Harjunheimo and Peteri, 2024; Vahdatzad, 2018). That is, the HCPs no longer have assigned CRs or workstations but switch rooms and workspaces during their work shift. After completing one's work, the employee moves to another workspace, and a colleague takes over with patients in the current room. The immediate tasks of patient care are carried out in non-assigned CRs, whereas other tasks (e.g. paperwork, phone calls, dictations and communicating with colleagues) are performed in activity-based workspaces (ABWs) (Sirola *et al.*, 2024). According to Gjerland *et al.* (2019), an ABW is a flexible workspace concept supporting various tasks with open-plan layouts and areas for focus and collaboration. While workstations are usually non-assigned, teams may have designated home bases (Hoendervanger *et al.*, 2019).

The ABW design concept originates from the context of mobile and multilocal knowledge work, and studies on ABW-type shared workspaces predominantly derive from knowledge work environments (Engelen *et al.*, 2018; Masoudinejah and Veitch, 2023; Marzban *et al.*, 2021; Richardson *et al.*, 2017). Thus, separate research is needed on how shared workspace design affects health-care work. This study provides new insights into shared workspaces in health-care sector by focusing on it as consisting of two sub-concepts: non-assigned CRs and ABWs with non-assigned workstations (Table 1). Although in general the importance of well-planned health-care facilities (HCFs) for workflow and well-being has been recognized (Hagerup *et al.*, 2025; Brambilla *et al.*, 2019; Shetty *et al.*, 2024; Ulrich *et al.*, 2020), there is lack of data on how shared workspaces support usability of workspace, well-being and psychosocial factors among psychiatric care employees. Further, outpatient facilities (Weber *et al.*, 2022) have received less attention than inpatient and patient facilities

Table 1. Description of traditional and shared workspace concepts in a psychiatric outpatient clinic

Traditional workspace concept Consultation rooms (CR)	Shared workspace concept	
	Consultation rooms (CR)	Activity-based workspace (ABW)
Immediate tasks of patient care and other tasks (e.g. paperwork, phone calls, dictations and communicating with colleagues) are carried out in CRs	The immediate tasks of patient care are carried out in CRs	Other tasks (e.g. paperwork, phone calls, dictations and communicating with colleagues) are carried out in ABWs
Rooms and workstations are assigned	Rooms and workstations are non-assigned (with some exceptions) HCPs switch rooms during the day and week Each unit has its own home base area An electronic system directs users to available rooms, prioritizing rooms on the floor of their home base	Workstations are non-assigned in the open area and in additional enclosed spaces (with some exceptions) Each unit has its own home base area

Source(s): Authors' own work

(Rodríguez-Labajos *et al.*, 2024; Hagerup, *et al.*, 2024; Pawlaczyk-Szymańska *et al.*, 2025), indicating a need to study HCPs experiences in outpatient facilities. This study addresses these gaps by investigating mental HCPs' experiences of shared workspaces.

1.1 Usability in health-care environment

Originating in ergonomics of human–system interaction, the primary usability standard ISO 9241–11 (1998) defines usability as the extent to which specified users can use a product to achieve specified goals with effectiveness, efficiency and satisfaction within a particular context of use. Usability offers a way to evaluate quality in use (Bevan, 1995; van der Voort and van Wegen, 2005; van der Voordt, 2009). Essentially, this entails considering factors that enhance and inhibit the effectiveness or the performance of various activities. When applied to the built environment, usability refers to how well facilities support users' activities (Hansen *et al.*, 2011; Blakstad *et al.*, 2008; Alexander, 2008; Fenker, 2008). The updated ISO 9241–11 standard (2018) conceptualizes usability through three key factors:

- (1) efficiency, referring to the resources expended in relation to the results achieved;
- (2) effectiveness, denoting the accuracy and completeness with which users achieve specified goals; and
- (3) satisfaction, capturing the extent to which users' physical, cognitive and emotional responses meet their needs and expectations (ISO 241-11, 2018).

Given the context-specific nature of usability, definitions vary across research areas (Alexander, 2006; Haron *et al.*, 2012; Windlinger *et al.*, 2016; Aalto *et al.*, 2019). In health care, quality assessment is complicated by complex infrastructures and diverse users (Brambilla *et al.*, 2020). Few studies have considered the employee perspective, despite evidence that functionality, wayfinding (Aalto *et al.*, 2017, 2019; Brambilla *et al.*, 2020), safety, security, healthiness and interaction are central to employee experience (Aalto *et al.*, 2017, 2019).

The functionality and layout of the workspace shape the work environment experience (Tanja-Dijkstra and Pieterse, 2010). Well-executed spatial design can minimize errors (Chaudhury *et al.*, 2009) and enhance hospital design functionality and efficiency (Møllerup, 2009). Further, a positive impression of the HCF is associated with lower stress and higher well-being (Jin *et al.*, 2023).

Visibility (Lim *et al.*, 2022) and proximity (Peavey and Cai, 2020) support more timely and frequent communication, whereas surrounding noise can hinder communication quality (Gharaveis *et al.*, 2018). Consequently, increasing privacy and reducing noise are crucial for improving satisfaction and reducing stress (Zamani, 2019; McCullagh *et al.*, 2022). For this reason, a variety of spaces for focused task-work and collaborative teamwork are needed (Peavey and Cai, 2020). In addition, easy access to supplies and workstations reduces fatigue (Wingler and Keys, 2019) and boosts job satisfaction in the health-care settings (Zamani *et al.*, 2024). When executed effectively, wayfinding reduces stress (Mustikawati *et al.*, 2018) and enhances efficiency (Haron *et al.*, 2012).

In mental HCF, psychological needs such as safety, security, territoriality and privacy are typically central to design (Weber *et al.*, 2022). Employees in psychiatric care are at high risk for workplace violence by patients (Pearson, 2023), thus safety is linked to job satisfaction and reduced turnover (Zamani, 2019), making it important in mental HCF design. A review by Rodríguez-Labajos *et al.* (2024) found that, for example, breakrooms, proper equipment and alarms enhance safety perception as well as satisfaction and well-being in psychiatric hospitals. Jovanović *et al.* (2019) reported that private conversation spaces enhanced social interactions in these settings. Recent case studies (Hagerup *et al.*, 2024, 2025) concluded that spaciousness, natural light, nature view and adjustable lighting enhanced therapeutic work. While good soundproofing offered privacy benefits, excessive soundproofing was problematic if employees were not heard during dangerous situations with patients. Further, adequate rest spaces promoted coping with difficult patient cases. (Hagerup *et al.*, 2025).

1.2 Previous research on shared workspaces

Only few studies have explored shared workspaces in health care. Sirola *et al.* (2024) found that poor soundproofing (in non-assigned CRs and ABWs) and background noise (in ABWs) were common, and access to quiet spaces was associated with higher well-being. Similarly, Barnes *et al.* (2020) reported that noise and lack of privacy in ABWs hindered collaboration. Harjunheimo and Peteri (2024) showed that switching workspaces in ABWs raised HCPs' stress, increased metawork and required more effort for data security. Before and after studies are needed to complement these cross-sectional and qualitative studies.

Evidence from knowledge work on ABWs (Engelen *et al.*, 2018; Masoudinejah and Veitch, 2023; Marzban *et al.*, 2021; Richardson *et al.*, 2017) may not fully apply to health care, which includes patient care and less scheduling autonomy. Relevant, transferable factors include stressors such as those related to open workspaces (e.g. noise) (Marzban *et al.*, 2021), mixed perceptions of workspace switching (Hoendervanger *et al.*, 2022; Marzban *et al.*, 2021) and the potential benefits of choice for environmental fit (Hoendervanger *et al.*, 2022; Göçer *et al.*, 2018). The effects of workspace design on social relations are complex as design elements simultaneously exert positive and negative influences on different dimensions of social interaction (Elsbach and Pratt, 2007; Masoudinejah and Veitch, 2023). Moreover, ABW studies in knowledge work often emphasize social interaction while overlooking other psychosocial factors (Masoudinejah and Veitch, 2023; Berthelsen *et al.*, 2018) even though these factors affect employee well-being (Herbig *et al.*, 2016). This underscores the need for health-care-specific studies that consider both social and broader psychosocial outcomes.

To address these gaps, this study investigates the effects of implementing shared workspaces – specifically CRs and ABWs – on facility usability, the psychosocial work environment and employee well-being in an outpatient clinic of a psychiatric hospital.

2. Material and methods

2.1 Study design

This longitudinal naturally occurring intervention study investigated the effects of relocation from traditional workspaces (assigned CRs and workstations) into shared workspaces (non-assigned CRs and ABWs with non-assigned workstations) in an outpatient clinic of a Finnish psychiatric hospital. Questionnaire data were collected seven months before (baseline) and eight months after the relocation to new workspaces (follow-up). This study was ethically approved by the Ethics Board of the Finnish Institute of Occupational Health. All the respondents provided written informed consent to participate in this study.

2.2 Context of this study

The relocation of the whole study population took place from approximately ten different properties to one building. During the time of this study, Finland was undergoing a reform of its well-being services counties, which transferred social and health-care services from municipalities and joint municipal authorities to the well-being services counties (VNK Prime Minister's Office Finland, 2023; STM 2021, 2026). This changed the structuring of services as well as the ownership and management of facilities. Despite the change, all the units involved in this study continued working under specialized psychiatric care, largely with the same colleagues and under the same managers as before the move. The aim of the new concept was to improve collaboration that had previously been separated and carried out from different buildings.

Traditional outpatient workspaces mainly had assigned CRs for immediate patient work and other tasks such as paperwork. Some employees (e.g. secretaries and nurses) shared a room with other employees mainly when doing paperwork but had their own workstations. The new outpatient facilities had about 60% less space than in the traditional outpatient facilities. The clinic consisted of 113 CRs (access for patients and HCPs). Altogether 75 of them and ABWs (access only for HCPs) were used by the outpatient units and, thus, included in this study. All acute care and inpatient care units were excluded from this study.

A light court divided the building into a narrow and deep section, providing natural light on both sides of the sections. The ABWs, along with support spaces (break rooms, printing, meeting rooms etc.) and reception areas, were mostly located on the sides of the sections near natural light; however, some of ABWs and reception areas were located within the completely windowless interior structure. The ABWs were organized into smaller units among the reception spaces. The same routes were used by both employees and patients to access the reception areas. The CRs, designed in three sizes (S, M and L) also had emergency doors between the rooms, with soundproofing class of 35 dB. Main features of the layout concept are presented in Figure 1.

Each unit had been assigned its own home base area for shared outpatient workspaces, which included an ABW and non-assigned CRs (Table 1). Using spaces in other areas was also allowed if needed. Officially, all workstations were non-assigned, but there were some exceptions. In the ABWs, the open areas included usually 3–10 workstations grouped closely together. There were also enclosed spaces for concentrated work and phone calls (approximately as many enclosed spaces as workstations), furnished mainly with 1–2 workstations but also some for meetings or discussions. The workstations of the open areas varied in size, and they were bordered by table screens on three sides or just the front. The

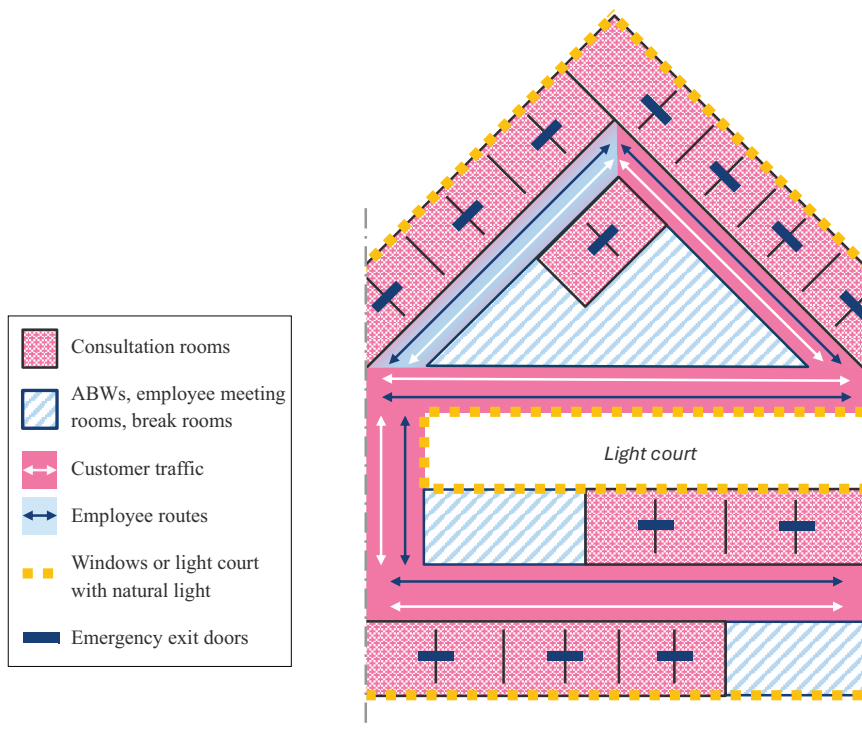


Figure 1. Layout concept diagram

Notes: Main features of the layout:

- A light court divides the building into a narrow and a deep section, with natural light in some way on both sides of the sections.
- The employees' ABWs, along with support areas and reception areas, are mostly located on the sides of the sections near windows.
 - Some ABWs and reception areas are entirely within the windowless interior structure.
- ABWs and support spaces (break rooms, printing, meeting rooms, etc.) are organized into smaller units among the reception spaces.
 - The same route is used by both employees and patients to access the reception areas.
 - There are doors between the consultation rooms, primarily for emergency exits.

Source: Authors' own work

employees had mainly laptop computers, smart phones and lockable compartments for personal belongings. There were some separate meeting rooms and break rooms with indirect natural light or no natural light at all. The general lighting could be adjusted in the CRs, but not in the ABWs. An electronic system to allocate CRs was in use, so the employees were unable to choose a room completely voluntarily. The system offered primarily spaces on the same floor of the individual's unit. Room reservations were usually slightly longer than the duration of the appointment, but there was a time limit to adhere to. No common guidelines (rules set for how to behave and work in ABWs, for example, where to take phone calls, where to work quietly and where to interact loudly) were set for using the

ABWs, but some rules had been agreed upon within teams. Generally, longer phone calls were handled in enclosed spaces, and in the open areas, HCPs remained quiet trying not to interrupt each other. However, the open areas could also be used for larger group discussions as meeting rooms were not always available or too small to accommodate team discussions.

2.3 Data gathering and participants

Before the relocation, in February 2023, employees ($n = 149$) of the participating units were approached via a Web-based questionnaire. The response rate was 38% ($n = 56$). (Figure 2). The follow-up survey was sent to 184 employees in May 2024, including those who had not responded to the baseline survey (response rate 51%, $n = 93$). The population of the follow-up survey was larger because it included respondents who participated in a pilot which tested shared workspace concept during the change process. The follow-up survey was collected from the entire group for the needs of a larger research project, but this study included only the before–after respondents. In all, 36 employees responded to both questionnaires and were included in this study. The average age of the participants was 51 years (range 24–65, SD 11.22), and the majority (89%) were women and were not in a managerial position (78%) (Table 2). Almost half (44%) of the respondents were nurses, and the rest were physicians, psychologists, social workers, rehabilitation professionals or secretaries. In the traditional outpatient clinic, most of the respondents (77%) had assigned CRs for patient work and/or for other tasks (e.g. writing referrals and patient reports, making appointments). This included all physicians, psychologists, social workers and the majority of nurses. The rest (23%) switched rooms they used for patient work and had assigned workstation in rooms for two or more people for other tasks. After the relocation, 75% switched the CRs, whereas 25% had assigned CRs and the majority (88%) of the respondents had non-assigned seating

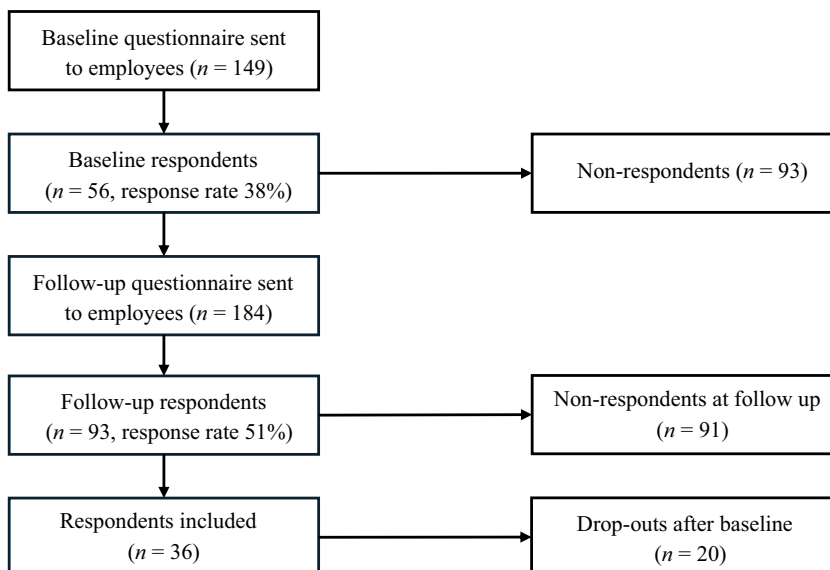


Figure 2. Questionnaire response rates at baseline, 8- and 21-month follow-up and respondent inclusion in this study

Source: Authors' own work

Table 2. Descriptive information on respondents. The table shows the statistics for the sample used in the statistical analysis

Variables	Respondents at baseline (<i>n</i> = 36)	Respondents at follow-up (<i>n</i> = 36)
Age, years, mean (SD)	50 (11.50)	51 years (11.22)
Age, range	24–65	24–65
Gender (%) female	89	89
Managerial position (%) yes	17	22

in ABWs. No differences were found between the participants and non-respondents in terms of age and gender, managerial position and in switching CRs or using assigned or non-assigned seats in ABWs.

2.4 Questionnaire

A modified Work Environment and Well-being questionnaire was used (Sirola *et al.*, 2024). The questionnaire was tested in the studied organization before use. It addressed questions related to the physical and psychosocial work environment and its support for various work activities and well-being at work. These questions were examined from the viewpoint of usability (Tables 3–5).

2.5 Statistical methods

IBM SPSS Statistics, Version 29 (IBM Corporation) and SAS software (Version 9.4) were used for statistical analyses. Descriptive statistics included frequencies, percentages and means and standard deviations (SDs) for continuous variables. Because of the small sample size, the nonparametric Wilcoxon Signed Ranks test was used to determine whether employee perceptions of usability of workspaces, psychosocial environment and well-being changed following the relocation from traditional into shared workspaces. Differences between the studied sample and dropouts were determined using *t*-tests for continuous and *z*-tests for categorical variables. A nonparametric effect size was calculated for related samples using the following formula: $r = Z/\sqrt{N}$ (Rosenthal, 1994). The effect sizes were interpreted as follows: $r = 0.1$ – 0.3 (small effect), $r = 0.3$ – 0.5 (medium effect) and $r = 0.5$ – 1 (large effect). Correlation analysis (Spearman’s correlation, r_s) was conducted to further interpret how psychosocial factors together with work environmental factors associate with well-being at work. The significance level was set at $p < 0.05$.

3. Results

Descriptive statistics and the statistical significance are shown in Tables 6–12. The majority of respondents experienced a decline in most of the efficiency, effectiveness and well-being items, but not in psychosocial factors, although the effects of the change varied between individuals (see Figure 3–7, Supplementary Material for proportions of positive, negative and no change).

3.1 Efficiency

The Wilcoxon Signed Ranks test indicated that switching to a more suitable workspace was statistically significantly more difficult in the shared workspaces compared to baseline ($z = -2.9$, $p < 0.01$ and $r = 0.50$). Likewise, the ease of reaching colleagues ($z = -3.3$, $p < 0.001$ and $r = 0.57$) and perceived work performance weakened ($z = -3.6$, $p < 0.01$ and $r =$

Table 3. Definitions and response scales of usability in terms of efficiency, effectiveness and satisfaction variables

Dependent variable	Item or a sample item (for sum variables)	Scale
<i>Efficiency</i>		
Wayfinding (the question was asked jointly concerning CRs and ABWs)	The facilities are easy to navigate	A
Time spent walking from space to space (the question was asked jointly concerning CRs and ABWs)	How many minutes per day do you generally estimate that you spend time moving between workspaces in total?	B
Ease of transition (the question was asked jointly concerning CRs and ABWs)	How easy is it for you to find a more suitable workspace during the working day and move there if necessary (for example, because of a need to concentrate, a confidential conversation or a phone call)?	C
Ease of reaching colleagues (the question was asked jointly concerning CRs and ABWs)	In this environment, colleagues are easy to reach	A
Perceived work performance (the question was asked jointly concerning CRs and ABWs)	I can work efficiently in these facilities	A
Task privacy (the question was asked jointly concerning CRs and ABWs)	Three items, for example, “interruptions at the workplace often prevent me from giving my full attention to my job” (reverse-coded)	D
<i>Effectiveness</i>		
Facility support: individual work tasks (the question was asked jointly concerning CRs and ABWs)	The facilities support the work tasks that I carry out alone and independently	A
Facility support: collaboration (the question was asked jointly concerning CRs and ABWs)	The facilities support collaboration between different teams	A
	The facilities support collaboration between one’s own team	A
Facility support: interactive work tasks (the question was asked jointly concerning CRs and ABWs)	The facilities support interaction between individuals	A
The guidelines for using the facilities (the question was asked jointly concerning CRs and ABWs)	The guidelines for using the facilities support the flow of work	A
Facility support: performing work tasks (the question was asked separately concerning CRs and ABWs)	The facilities are well-suited for carrying out my work tasks	A
<i>Satisfaction</i>		
Accessibility (the question was asked separately concerning CRs and ABWs)	The facilities are accessible	A
Sufficiency of work space (the question was asked separately concerning CRs and ABWs)	I have enough working space	A
Sufficiency of storage space (the question was asked separately concerning CRs and ABWs)	I have enough storage space	A
Ergonomics (the question was asked separately concerning CRs and ABWs)	The furniture is ergonomic and pleasant to use	A
Lighting (the question was asked separately concerning CRs and ABWs)	There is enough light in the facilities	A
Natural light (the question was asked separately concerning CRs and ABWs)	The facilities have sufficiently natural light	A

(continued)

Table 3. Continued

Dependent variable	Item or a sample item (for sum variables)	Scale
Temperature (the question was asked separately concerning CRs and ABWs)	I am satisfied with the temperature of the facilities	A
Air quality (the question was asked separately concerning CRs and ABWs)	The facilities have good air quality	A
Soundproofing (the question was asked separately concerning CRs and ABWs)	Soundproofing between rooms is sufficient	A
Disturbance of speech sounds (the question was asked separately concerning CRs and ABWs)	Speech sounds often disturb me in these workspaces	A
Speech intelligibility (the question was asked separately concerning CRs and ABWs)	While working, I can understand the speech of my conversation partner in these workspaces	A
Safety CRs (the question was asked concerning CRs only)	The work environment is safe (threatening situations)	A
Information security ABWs (the question was asked from ABWs only)	Information security is taken into account in the work environment	A
<i>Satisfaction as a whole</i>		
Satisfaction with the work environment (the question was asked jointly concerning CRs and ABWs)	How satisfied are you with your work environment as a whole?	E
Source(s): Authors' own work		

0.62) in the shared workspaces. There were no statistically significant differences between the baseline and follow-up workspaces in wayfinding or the time spent walking from space to space. Further, task privacy deteriorated ($z = -2.0, p < 0.05$ and $r = 0.35$) (Table 6).

3.2 Effectiveness

The suitability of facilities for individual work ($z = -3.3, p < 0.001$ and $r = 0.57$), interaction ($z = -2.3, p < 0.01$ and $r = 0.39$), collaboration between different teams ($z = -2.2, p < 0.05$ and $r = 0.37$) and within one's own team ($z = -2.6, p < 0.01$ and $r = 0.46$) deteriorated after relocating to shared workspaces. Additionally, the guidelines for using the facilities did not support the workflow as well as in the baseline facilities ($z = -2.9, p < 0.001$ and $r = 0.50$) (Table 7).

In the separate overall ratings of workspace support for work tasks when comparing traditional workspaces and shared workspaces, both shared workspace concepts received lower ratings than the baseline workspaces (CR: $z = -2.3, p < 0.01$ and $r = 0.45$; ABW: $z = -2.8, p < 0.01$ and $r = 0.58$) (Table 8).

3.3 Satisfaction

CRs in the new shared workspace concept were evaluated statistically significantly better in accessibility ($z = -2.4, p < 0.01$ and $r = 0.46$), whereas the evaluations between ABWs and baseline facilities were unchanged. Further, the sufficiency of workspace was evaluated statistically significantly worse in both shared workspaces (CR: $z = -2.1, p < 0.05$ and $r = 0.41$; ABW: $z = -3.9, p < 0.001$ and $r = 0.80$) compared to baseline. The storage spaces were evaluated as more insufficient in shared workspaces compared to baseline facilities

Table 4. Definitions and response scales of the well-being and psychosocial work environment variables

Dependent variable	Item or a sample item (for sum variables)	Scale
Well-being at work (the question was asked jointly concerning CRs and ABWs)		
Work engagement ² (The question was asked jointly concerning CRs and ABWs)	Three items, for example, “At my work I feel that I am bursting with energy”	F
Perceived stress ³ (The question was asked jointly concerning CRs and ABWs)	Stress refers to a situation in which a person feels tense, restless, nervous or anxious or has difficulty sleeping when things are constantly bothering his mind. Do you feel this kind of stress these days?	G
<i>Psychosocial factors</i>		
Job demands ⁴ (The question was asked jointly concerning CRs and ABWs)	Five items, for example, time pressures, deadlines and work overload	A
Job control: skill discretion ⁴ (The question was asked jointly concerning CRs and ABWs)	Six items, for example, the opportunities to develop special abilities within the job	A
Job control: decision authority (The question was asked jointly concerning CRs and ABWs) ⁴	Three items, for example, abilities to be part of the decision-making process within the organization	A
Team Climate Inventory ⁵ (The question was asked jointly concerning CRs and ABWs)	14 items, for example, participation safety, support for innovation, vision and task orientation	A
Relational justice ⁵ (The question was asked jointly concerning CRs and ABWs)	Six items, for example, whether closest supervisors are truthful, kind and can suppress personal biases	A
Effort-Reward Imbalance ⁶ (The question was asked jointly concerning CRs and ABWs)	Four items, for example, income, personal satisfaction	H
Perceived job insecurity ⁷ (The question was asked jointly concerning CRs and ABWs)	Five items, for example, threat of termination of one/some jobs, forced layoff, dismissal or involuntary transfer to other duties	I
Note(s): Response scales: A: 1 = Strongly disagree, 2 = More or less disagree, 3 = Neither agree nor disagree, 4 = More or less agree and 5 = Strongly agree; B: A numerical value was required, in minutes, with no restrictions on the range of response; C: 1 = Very easy, 2 = Quite easy, 3 = Neither easy nor difficult, 4 = Quite difficult and 5 = Very difficult; D: 1 = Strongly disagree – 7 = Strongly agree; E: 1 = Very dissatisfied – 7 = Very satisfied; F: 0 = never – 6 = every day; G: 1 = Not at all, 2 = only a little, 3 = Some, 4 = Quite a lot and 5 = Very much; H: 1 = Very little – 5 = Very much; and I: 1 = Very little – 5 = Very much ¹ Hongisto <i>et al.</i> (2016) ² Schaufeli <i>et al.</i> (2017) ³ Elo <i>et al.</i> (2003) ⁴ Karasek (1979) ⁵ Kivimäki and Elovainio (1999) ⁶ Moorman (1991) ⁷ Kivimäki <i>et al.</i> (2007) ⁸ Kivimäki <i>et al.</i> (2000) Source(s): Authors' own work		

(CR: $z = -4.0$, $p < 0.001$ and $r = 0.77$; ABW: $z = -4.0$, $p < 0.001$ and $r = 0.82$). Moreover, evaluations of ergonomics did not change in neither workspace (Table 9).

Air quality was evaluated as better in the shared workspaces (CR: $z = -3.2$, $p < 0.001$ and $r = 0.62$; ABW: $z = -3.3$, $p < 0.001$ and $r = 0.68$) compared to baseline, whereas satisfaction with temperature, soundproofing and acoustics did not change (Table 10). Further, overall lighting was evaluated worse in the non-assigned CRs (CR: $z = -2.1$, $p < 0.05$ and $r = 0.40$) and in ABWs (ABW: $z = -2.9$, $p < 0.01$ and $r = 0.60$). The sufficiency of natural light was statistically significantly worse in shared workspaces (CR: $z = -3.8$, $p < 0.001$ and $r = 0.74$; ABW: $z = -3.7$, $p < 0.001$ and $r = 0.75$). Further, satisfaction with the work environment did not change after the relocation (Table 11).

Table 5. Definitions and response scales of the background variables

Dependent variable	Item or a sample item (for sum variables)	Scale
Age, years	Birth year	–
Gender		Woman Man Other I do not want to define
Managerial position	Are you in a managerial position?	Yes No
Use of CRs ^a	In what kind of workspace do you mainly receive customers/patients face to face?	1 = My own consultation room (One or more), which others do not mainly use 2 = My own consultation room, which others use when the space is not at my disposal (e.g. if you work only a few days a week) 3 = Shared consultation rooms, which are also used by others (e.g. room change once a day) and 4 = Other, what? ^a
Use of ABWs	Do you have your own workstation in the activity-based office?	1 = I have my own, assigned workstation 2 = I do not have my own workstation, but work in shared workspaces

Note(s): ^aIn the analysis Options 1 and 2 were combined and responses to Category 4 were categorized and included in Options 1 and 2.
Source(s): Authors’ own work

Table 6. Efficiency before and after change. The comparisons between baseline (traditional workspace concept with assigned consultation rooms and workstations) and follow-up (shared workspace concept with non-assigned consultation rooms and activity-based workspaces) are shown (*n* = 36)

Variables	Traditional concept baseline facilities as a whole (mean, SD)	Shared concept follow-up facilities as a whole (mean, SD)
Wayfinding ^a	4.18 (0.96)	3.71 (1.16) ns
Ease of reaching colleagues ^a	3.88 (1.12)	2.65 (1.41)***
Ease of finding and switching to a more suitable workspace ^b	1.84 (1.09)	2.69 (0.95) **
Time spend walking from space to space (in minutes) ^c	15 (17.86)	24 (16.93) ns
Perceived work performance in the facilities ^a	4.09 (0.91)	2.75 (1.29) ***
Task privacy ^d	4.70 (1.18)	4.16 (1.41)*

Note(s): **p* < 0.05, ***p* < 0.01 and ****p* < 0.001, ns = non-significant, ^aScale: 1 = Strongly disagree – 5 = Strongly agree, ^bScale: 1 = Very easy – 5 = Very difficult, ^cScale: Time in minutes, ^dScale: 1 = Strongly disagree – 7 = Strongly agree
Source(s): Authors’ own work

Table 7. Effectiveness before and after change. The comparisons between baseline (traditional workspace concept with assigned consultation rooms and workstations) and follow-up (shared workspace concept with non-assigned consultation rooms and activity-based workspaces) are shown ($n = 36$)

Variables	Traditional concept baseline facilities as a whole (mean, SD)	Shared concept follow up facilities as a whole (mean, SD)
The facilities support work tasks that I carry out alone and independently ^a	3.97 (0.88)	2.85 (1.30) ***
The facilities support interaction between individuals ^a	3.26 (1.05)	2.59 (1.32) **
The facilities support collaboration between different teams/units ^a	3.26 (1.13)	2.59 (1.32) **
The facilities support collaboration between One's own team/unit ^a	3.53 (1.10)	2.71 (1.33) *
The guidelines for using the facilities support the flow of work ^a	3.97(0.90)	3.21 (0.88) ***

Note(s): * $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$; ns = non-significant; ^a Scale: 1 = Strongly disagree – 5 = Strongly agree
Source(s): Authors' own work

3.4 Well-being and psychosocial work environment

Of the well-being variables, work engagement decreased ($z = -1.9$, $p < 0.05$ and $r = 0.33$) and perceived stress increased statistically significantly in the follow-up ($z = -2.1$, $p < 0.05$ and $r = 0.35$). Psychosocial work environment did not change between baseline and follow-up except for perceived job insecurity, which increased ($z = 4.1$, $p < 0.001$ and $r = 0.70$, [Table 12](#)).

For the correlation analysis, we selected all psychosocial factors and those usability variables that declined and described the overall suitability of the spaces for work tasks and satisfaction. The aim of this analysis was to study, on a general level, whether psychosocial factors, in addition to physical work environment, associate with well-being. The correlation analysis showed that of all the psychosocial factors, higher ERI ($r_s = 0.50$ and $p < 0.01$) and perceived job insecurity ($r_s = -0.36$ and $p < 0.05$) were associated with higher perceived stress, but not with work engagement. Of the selected usability variables, the facilities support for individual and independent work tasks were positively associated with work engagement ($r_s = 0.39$ and $p < 0.01$) and lower stress ($r_s = -0.39$ and $p < 0.01$) and the facilities support for collaboration between different teams was associated with lower stress ($r_s = -0.39$ and $p < 0.01$). Satisfaction with work environment was positively associated with work engagement ($r_s = 0.35$ and $p < 0.05$), but not with stress. In addition, task privacy was positively correlated with work engagement ($r_s = 0.37$ and $p < 0.05$) and lower stress ($r_s = -0.46$ and $p < 0.01$) (Supplementary material, [Table 13](#)).

4. Discussion

To the best of the authors' knowledge, this pre-post study is one of the first to investigate the usability of shared outpatient facilities and well-being in the context of psychiatric care. Additionally, it provides new insights into the role of psychosocial factors related to shared workspaces, as studies of the physical work environment rarely take the psychosocial environment into account ([Sirola et al., 2024](#)).

Table 8. Effectiveness before and after change. The ratings of traditional workspace concept (assigned consultation rooms and workstations) at baseline are compared separately with ratings of non-assigned consultation rooms (*n* = 36) and activity-based workspaces at follow-up (*n* =24)

Variables	Assigned CRs baseline (mean, SD)	Non-assigned CRs follow-up (mean, SD)	Assigned CRs and workstations baseline (mean, SD)	ABWs with non- assigned workstations follow- up (mean, SD)
The facilities are well- suited for carrying out my work tasks	3.85(1.06)	3.11 (1.28) **	3.83 (1.04)	2.66 (0.96) **

Note(s): **p* < 0.05, ***p* < 0.01 and ****p* < 0.001, ns = non-significant, Scale: 1 = Strongly disagree – 5 = Strongly agree
Source(s): Authors’ own work

This study revealed a variety of challenges in the usability of shared workspace concepts compared to traditional concepts although there were some exceptions from this general trend. Overall, our results align with existing evidence on the superiority of private rooms over open spaces both in health care ([Adrianna Muzaffar et al., 2020](#)) and in the context of knowledge work ([Masoudinejah and Veitch, 2023](#)). Efficiency declined in terms of ease of switching to a more suitable workspace, reaching colleagues and perceived work performance compared to baseline. Furthermore, effectiveness declined as the shared workspace concept did not support individual, interactive and collaborative work tasks as well as the baseline facilities. In addition, the shared use of workspaces as a guideline for using the facilities did not support the workflow as effectively as working from a single specific location.

The negative and somewhat divided results regarding the ease of reaching colleagues, perceived facility support for interaction and collaboration correspond to previous findings from health-care settings ([Gurascio-Howard and Malloch, 2007](#); [Lim et al., 2022](#); [Peavey and Cai, 2020](#); [Gunn et al., 2015](#)) and knowledge work environments ([Masoudinejah and Veitch, 2023](#)). This implies that decentralized placement, where a specific colleague might be hard to locate ([Gurascio-Howard and Malloch, 2007](#); [Gunn et al., 2015](#); [Masoudinejah and Veitch, 2023](#)), may hamper interaction and collaboration among some professionals. In the new concept, changing CRs and working in additional spaces without easy access to information about work locations, for example, through a technical device, may have complicated finding colleagues compared to assigned workstations. In addition, it may have partly decreased communication as more frequent and timely communication seems to occur near the workstations ([Lim et al., 2022](#)) and when distance to other workstations is short ([Cai and Zimring, 2012](#)). Moreover, although most of the open workspace areas had meeting spaces nearby, they were quite small and might not have accommodated discussions in larger groups leading to meetings being held in the open workspace. The result of data security deterioration in the ABWs because of having confidential conversations in open areas supports this explanation. Moreover, factors related to communication may also be linked to a strongly hierarchical health-care culture, which in itself may form barriers to communication between different professionals. As the employees moved from different buildings into one building, the weak support for interaction provided by the spaces may also reflect different work cultures as learning a common work culture can take time ([Auschra, 2018](#)).

Table 9. Satisfaction with functionality of spaces before and after change. The ratings of traditional workspace concept (assigned consultation rooms and workstations) at baseline are compared separately with ratings of non-assigned consultation rooms ($n = 27$) and activity-based workspaces at follow-up ($n = 24$)

Variables	Assigned CRs baseline (mean, SD)	Non-assigned CRs follow-up (mean, SD)	Assigned CRs and workstations baseline (mean, SD)	ABWs with non- assigned workstations follow- up (mean, SD)
Accessibility	3.67 (1.14)	4.22 (0.89)**	3.52 (1.12)	3.73 (1.21)
Sufficiency of workspace	4.30 (1.13)	3.56 (1.15)*	4.37 (1.09)	2.41 (1.21)*
Sufficiency of storage space	4.37 (1.0)	2.30 (1.17)***	4.45 (0.93)	2.00 (1.14)**
Ergonomics	3.5 (1.25)	2.8 (1.16) ns	3.45 (1.28)	3.20 (1.10) ns
Safety (in terms of threatening situations)	3.77 (0.97)	3.96 (0.97) ns	–	–
Information security	–	–	4.33 (0.49)	2.42 (1.08)**

Note(s): * $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$, ns = non-significant, Scale: 1 = Strongly disagree – 5 = Strongly agree

Source(s): Authors' own work

Furthermore, although noise disturbances did not increase, task privacy (i.e. an absence of distractions and better ability to concentrate) declined which may indicate other disruptive factors (Harjunheimo and Peteri, 2024), such as switching workspace, passing by in cramped open spaces and having unclear practices on which spaces are for quiet work (enclosed office spaces or open areas). When work tasks are spread across different spaces, shared use of spaces may interfere HCPs already demanding cognitive workload. Investing in a peaceful work environment is especially important in mental health-care work, where in-depth and sometimes difficult conversations with patients take place (Hagerup *et al.*, 2025), making transitions from one room to another and the associated time pressures of patient work a challenge. Moreover, the decline in performing both individual and collaborative work tasks may be related to more shared and open environments where individuals typically report more distractions compared to enclosed spaces (Lim *et al.*, 2022; Masoudinejah and Veitch, 2023).

In the health-care context, decline in performing different types of work tasks may also be related to the lack of separate sound zones in open areas and the before mentioned unclarity on which tasks should be done in the open area and which in the enclosed spaces. The current study also indicated a decline in sufficiency of workspaces and difficulty in switching to a more suitable enclosed workspace to concentrate, though there were relatively many enclosed spaces available in most ABWs. Because of the scattered spaces, enclosed space might not be available nearby, thereby reducing possibilities for private conversation and social interactions (Jovanović *et al.*, 2019). All these factors lead to loud and silent tasks mixing in the open area; thus, in shared workspaces, tasks that interfere with each other should be better separated. In addition, the results suggest that a peaceful work environment is important for performing various types of work tasks in psychiatric care.

Satisfaction with the work environment did not change and many functionality factors were rated similarly or more positively than in the baseline workspaces, which may indicate

Table 10. Satisfaction with functionality regarding indoor environmental factors before and after change. The ratings of traditional concept (assigned consultation rooms and workstations) at baseline are compared separately with ratings of non-assigned consultation rooms ($n = 27$) and activity-based workspaces at follow-up ($n = 24$)

Variables	Assigned CRs baseline (mean, SD)	Non-assigned CRs follow-up (mean, SD)	Assigned CRs and workstations baseline (mean, SD)	ABWs follow- up (mean, SD)
Air quality	2.29 (1.29)	3.51 (1.18)***	2.12 (1.29)	3.45 (1.14) ***
Temperature	2.81 (1.24)	2.66 (1.10) ns	2.66 (1.20)	2.83 (1.00) ns
Soundproofing	2.18 (1.07)	2.18 (1.00) ns	2.12 (1.22)	2.54 (1.21) ns
Speech intelligibility	3.74 (1.16)	3.66 (1.07) ns	3.79 (1.14)	3.91 (0.97)ns
Disturbance of speech sounds	3.07 (0.87)	2.85 (1.19) ns	3.00 (0.80)	3.37 (1.31) ns
Lighting	4.33 (0.62)	3.77 (1.39)*	4.29 (0.62)	3.33 (1.27)**
Natural light	4.44 (0.75)	2.81 (1.38)***	4.37 (0.76)	2.50 (1.71) ***

Note(s): * $p < 0.05$, ** $p < 0.01$ and *** $p < 0.001$, ns = non-significant, Scale: 1 = Strongly disagree – 5 = Strongly agree

that a new and healthy building performs better, thus increasing satisfaction in comparison to old facilities (Jin *et al.*, 2023). Positive evaluations were given regarding the functionality of accessibility and safety; however, special attention should also be paid to sufficiency of natural light and storages, which corresponds to previous findings (Sirola *et al.*, 2024). More negative evaluations on the sufficiency of natural light were most likely related to the building design, where many ABWs and CRs were in the middle of the deep building mass with no outside windows. Ensuring sufficient natural light is important, as it has shown to enhance therapeutic work and thus the quality of psychiatric care (Hagerup *et al.*, 2024b, 2025). However, building regulations, such as permitted building volume and building codes (Finnish Ministry of the Environment, 2018) along with cost efficiency and other objectives, may steer toward deep framed building design and the placement of workspaces in the middle of the building frame, limiting possibilities for window design. Further, although the CRs were designed to be generic and included basic equipment, insufficient storages may be because of specific needs of therapeutic work while changing the CRs.

Regarding the role of psychosocial factors, two interpretations arise from our results. First, the relocation to shared workspaces did not clearly affect the psychosocial environment. Our findings seem to be, in line with the view that psychosocial factors cannot not alone explain the relation between the physical work environment and employee well-being, but workspace design may have its own role (Pejtersen *et al.*, 2006; Herbig *et al.*, 2016). Second, it is possible that the decreased well-being was partly related to the increase in perceived job insecurity which likely reflected other changes, such as the tightened economic situation in the society and well-being services county reform (VНК Prime Minister’s Office Finland, 2023; STM 2026). Because the study sample was small, larger samples are needed in future studies to analyze the relations between physical and psychosocial work environment and well-being in more detail.

In sum, usability is a multidimensional phenomenon that is highly context dependent. This study highlights that not only the shared workspaces but also how well the guidelines

Table 11. Satisfaction with work environment before and after change. The comparisons between baseline (traditional workspace concept with assigned consultation rooms and workstations) and follow-up (shared workspace concept with non-assigned consultation rooms and activity-based workspaces) are shown ($n = 36$)

Variables	Traditional concept baseline facilities as a whole (mean, SD)	Shared concept follow-up facilities as a whole (mean, SD)
Satisfaction with work environment	4.84 (1.41)	4.23 (1.45) ns

Note(s): Scale: 1 = Very dissatisfied – 7 = Very satisfied

Source(s): Authors' own work

for using the spaces supports the work tasks and task privacy are important when enhancing effectiveness of various activities and facilities.

This study has significant implications for both research and practice. It gives novel insights for researchers to continue investigating shared workspaces in health-care environments, which is an understudied field. Further, it challenges the underlying assumption that workspace switching (Hoendervanger *et al.*, 2022; Marzban *et al.*, 2021) improves satisfaction in the health-care sector, as in health care, the possibility to choose a workspace and cope with distractions is challenged by more scheduled clinical work and limited possibilities for remote work compared to knowledge workers working in shared workspaces such as ABWs (Appel-Meulenbroek *et al.*, 2011; Wohlers and Hertel, 2017).

Grounded in a small, single-organization pre-post study, the results highlight the importance of seeking a balance between social interaction and privacy. To reduce interference between tasks and improve task privacy, organizations should clearly differentiate areas for quiet and noisy work in ABWs, supported by guidelines for phone calls and team discussions. To make switching between tasks and locating colleagues easy, implementing user-friendly and mobile technology (including room booking applications) is recommended. As the effects on well-being may develop over a longer period, providing guidance on the intended use of spaces and monitoring user experiences in shared workspaces, including the psychosocial environments, is important. Finally, while the patients probably benefit from receiving comprehensive care from one location (Vahdatzad, 2018), the results of this study suggest that having to switch workspaces frequently may not be similarly positive for the HCPs. It is important for decision-makers to consider the balance between the needs of patients and those of the employees when designing new HCFs.

4.1 Limitations and future research

As this study was focused only on one organization, had a small sample size and low response rate, the generalizability of the results should be approached with caution. These factors might reflect self-selection by those with highest dissatisfaction, and such bias cannot be excluded. Further, studies with larger samples, longer follow-up times and different workspace designs and a control group are needed to gain stronger evidence on the relations between shared workspaces, psychosocial work environment and well-being. Because of the small sample size, we were also unable to compare the perspectives of different professional groups, and the results may not apply equally to all employee groups. As the questionnaire used in the study was new and not yet validated, the results should be interpreted with some caution. Psychosocial factors

Table 12. Well-being and psychosocial factors before and after change. The comparisons between baseline (traditional workspace concept with assigned consultation rooms and workstations) and follow-up (shared workspace concept with non-assigned consultation rooms and activity-based workspaces) are shown (*n* = 36)

Variables	Traditional concept baseline facilities as a whole (mean, SD)	Shared concept follow-up facilities as a whole (mean, SD)
Work engagement ^a	4.62 (0.98)	4.21 (1.44)*
Perceived stress ^b	2.75 (0.80)	3.05 (1.06)*
Job demands ^c	3.38 (0.54)	3.41 (0.52) ns
Job control ^c	3.94 (0.44)	3.84 (0.50) ns
Participatory safety ^d	4.05 (0.85)	4.07 (0.61) ns
Support for innovation ^d	3.46 (1.00)	3.49 (0.73) ns
Task orientation ^d	4.06 (0.66)	4.01 (0.69) ns
Vision ^d	3.67 (0.78)	3.61 (0.73) ns
Relational justice ^d	3.75 (0.79)	3.92 (0.72) ns
Effort-Reward imbalance (ERI) ^e	1.48 (0.41)	1.50 (0.44) ns
Perceived job insecurity ^f	1.43(0.45)	3.14 (1.06)***

Note(s): **p* < 0.05, ***p* < 0.01 and ****p* < 0.001, ns = non-significant, ^aScale: 0 = Never – 6 = Every day, ^bScale: 1 = Not at all – 5 = Very much, ^{c,e}Scale: 1 = Strongly disagree–5 = Strongly agree, ^dAn ERI score above 1 indicates that the effort is greater than the reward, and a score below 1 indicates the opposite, ^fScale: 1 = Very little–5 = Very much
Source(s): Authors’ own work

were assessed using items from the Job Content Questionnaire (Karasek, 1979), as these have been used to monitor psychosocial workload among HCPs in Finnish hospitals. However, more recent questionnaires (e.g. COPSOQ) are available, and this should be considered when interpreting the findings. Additionally, a survey alone cannot provide an in-depth understanding of the usability of facilities, which is one of the limitations of this study. As similar shifts toward more efficient space usage are underway elsewhere (Vahdatzad, 2018), this rare Finnish study – despite its small scale – serves as an indicative example, pointing to the need for further research of shared workspaces. More detailed qualitative research is needed to understand how shared workspaces are used and why and which factors explain the decline in workflow and productivity.

5. Conclusion

This small pre–post study showed that effectiveness and efficiency declined after relocating from traditional to shared workspaces. The results suggest that the decrease in well-being observed in the eight-month follow-up was likely at least partly related to workspace redesign as the psychosocial work environment remained mainly unchanged, although other explanations cannot be completely excluded. Longer follow-up studies with larger samples are needed to assess the sustained impact of such designs. The results challenge the underlying assumption that workspace switching support satisfaction in the health-care sector. Furthermore, the ABW concept should be developed to better suit the health-care settings, where for example hierarchical working culture, limited autonomy of choosing the workspaces and possibility to cope with distractions because of less remote work is more common. To achieve a usable work environment, workspace design and guidelines for using the facilities should separate the tasks that potentially disturb one another and accommodate

enough privacy for different work tasks. Further, well-being and user experiences must also be monitored.

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Supplementary material

The supplementary material for this article can be found online.

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