

Designing SMARTer work to reduce psychosocial risks: Evaluating the effectiveness of a participatory work-redesign intervention in aged care.

Project Report to Safe Work Australia

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Acknowledgements:

We would like to express our sincere gratitude to Ms. Cecilia Runneboom and Ms. Michelle Spratling for their invaluable support and contributions to the successful implementation of research activities and for their assistance in managing the relationship with stakeholders. We would also like to extend our gratitude to Mr. Arnold Rodricks for his support and commitment to this project, and for facilitating a strong research collaboration with our partner organisation.

This project was supported by funding from the Commonwealth Government Agency Safe Work Australia for the project titled: *Designing SMARTer work to reduce psychosocial risks: Evaluating the effectiveness of a participatory work-redesign intervention in aged care* (Project ID:G-2021/01).

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Executive Summary

Recent reports highlight complex systematic problems in the aged care sector, including high risks for psychosocial injuries related to work design. Among the most cited risks are high emotional demands and excess workload driven by complex legislative, industry, and organisational factors. There is a lack of documented intervention research that targets complex configurations of job demands experienced by direct care workers who make the majority of paid workers in aged care.

The current project titled *Designing SMARTer work to reduce psychosocial risks: Evaluating the effectiveness of a participatory work-redesign intervention in aged care* was funded by Safe Work Australia through the grant initiative “Interventions to manage work-related psychosocial hazards”. The grant was awarded to a team of researchers at the Centre for Transformative Work Design at Curtin University and conducted across 2022 and 2023. We partnered with a large Australian non-for-profit aged care provider to conduct a primary, organisational-level work redesign intervention aimed to modify the work environment to minimise and eliminate psychosocial risks associated with increased demands in the sector. The resulting intervention comprised integrated solutions across factors that affect work design, including system (e.g., rosters, workforce management) and local influences (e.g., task distribution methods) developed via a participatory approach.

The various research activities across the different stages of intervention development, implementation, and evaluation received approval from the Curtin University Human Research Ethics Committee (HREC No: HRE2022-055).

The overall objectives of the project were to:

- Identify, develop, and implement an effective primary and organisational level intervention to eliminate or minimise psychosocial risks associated with high job demands in the aged care sector;
- Document and share key findings with the Commonwealth and the Australian public;
- Share intervention and relevant key findings with academia to advance existing academic knowledge of work redesign interventions aimed at addressing job demands.

The project used a comprehensive methodology spanning four key stages:

- **STAGE 1 BASELINE ASSESSMENT:** Collection of data via multiple methods (systematic review, surveys, interviews) to gain an in-depth understanding of the job demands experienced by aged care workers and their impact; Establishing relationships and resources with the Partnering Organisation to facilitate the project.
- **STAGE 2 INTERVENTION DEVELOPMENT AND IMPLEMENTATION:** Design and implementation of work redesign solutions to address job demands via participatory workshops and further collaboration with the Partnering Organisation.
- **STAGE 3 INTERVENTION EVALUATION:** Evaluation of the work redesign intervention through multiple sources of data including surveys, interviews, and organisational data to establish its effectiveness according to pre-established aims.
- **STAGE 4 INTERVENTION SCALING:** Support in scaling the intervention at the Partnering Organisation and informing decision making about implementing work redesign interventions more broadly via a cost effectiveness analysis.

Key findings of the project:

Upon review of the literature, most interventions aimed at reducing job demands in the aged care industry do not attempt to directly address workers' experiences of demands and few attempt to change the design of work.

A review of 65 articles indicated that a range of job demands are experienced by workers in aged care including time pressure, physical demands, and emotional demands. The review also concluded that there is moderately consistent evidence that job demand interventions have the potential to reduce job demands in aged care. However, interventions reviewed most frequently targeted client behavioural and psychological symptoms (which can contribute to job demands) and aimed to adjust workers' behaviours to improve the care of clients to reduce these symptoms. Therefore, there is a lack of interventions that directly measure and aim to adjust workers' experienced job demands by modifying the work environment.

In identifying job demands to be addressed, equal attention needs to be given to how frequently a demand is experienced and its strength of relationship with outcomes of interest.

Surveys conducted with the Partnering Organisation to inform intervention development highlighted that the most frequently experienced demands were not necessarily the most strongly correlated with wellbeing. Conducting a correlational analysis helped to identify job demands that were frequently experienced by workers *and* had stronger associations with emotional exhaustion and symptoms of mental ill-health. This provided a more complete picture of psychosocial hazards and the risk they are posing to worker health and safety and guided the targets of work redesign solutions.

Various aspects of work can influence workers' exposure to, and experience of, job demands. These aspects can be redesigned with worker input to optimise job demands.

Having presented direct care workers with baseline findings, they described how aspects of their work may be contributing to currently captured experiences of job demands. This included staff and staffing issues in terms of shortages and quality, high administrative requirements, ineffective and inefficient work processes and procedures, unique and complex needs of residents and families, poor communication and co-ordination processes, layout of the physical environment, and working within a heavily regulated industry. By engaging workers to generate insights and work redesign solutions, these factors can be addressed by intervention measures.

Involving direct care workers as experts in identifying the sources of increased job demands and in redesigning work to address some of these factors can result in work demands reduction, over and above adding additional staff and implementing technological improvements.

Analyses indicated that the intervention sites experienced a statistically significant reduction in time pressure and emotional demands at intervention follow up whilst the comparison sites did not. As all sites had received additional funding to employ a greater number of permanent staff and a comparison site underwent a technological improvement intervention, this difference between intervention and comparison sites highlights that the participatory work redesign intervention resulted in a reduction in demands over and above these other changes. For example, at baseline assessment, 49% of workers in the intervention sites agreed or strongly agreed that their workload was manageable and at follow up the percentage of workers who agreed or strongly agreed workload was reasonable rose to 62%. This suggests that interventions that use a participatory

approach to informing work redesign solutions have substantial potential to address job demands in aged care and beyond.

On the longer term, data provided by the Partnering Organisation continued to reveal an increasing trend of organisational commitment in the intervention sites and a slight decrease in the comparison sites. Prior to the work redesign intervention 74% of workers in intervention sites agreed or strongly agreed that the organisation was a great place to work in, and this had increased to 91% towards the end of the project.

The significant reduction in job demands was not accompanied by significant increases in job resources or improvements in employee wellbeing outcomes.

Whilst a positive trend was observed in co-worker support, with intervention sites showing a 7.3% increase in workers reporting high levels of support at intervention follow-up (1.8% in the comparison sites for the same period), these improvements did not reach significance levels. No statistically significant changes in ratings of supervisor support, consultation about change, or role clarity were found in the intervention or comparison sites. However, unexpectedly, both intervention and comparison sites experienced increases in emotional exhaustion post-intervention, and this reached statistical significance for the intervention sites. As job demands had strong positive associations with emotional exhaustion both at baseline and post-intervention, a potential explanation to the simultaneous reduction in demands and increase in emotional exhaustion may be due to (1) the timing of follow up data collection, and/or (2) co-occurring changes that might have counteracted the positive benefits of reduced job demands.

Taken together, the work redesign intervention developed can be a cost-effective strategy to reducing job demands in organisations.

Intervention sites were found to reduce the rate of personal leave and associated costs, with an estimated average of 119.4 AUD per employee, while rates increased in comparison sites leading to increased costs of 397 AUD. This resulted in a substantial difference between the intervention and comparison estimates, reaching as high as 516.9 AUD per employee when directly compared. The average reduction of absenteeism costs in the intervention sites decreased from 119.4 AUD to 81.4 AUD per employee after factoring in the costs of implementing the intervention (estimated at 20,922 AUD for two facilities). This adjusted estimate of 81.4 AUD (ranging from 52.2 to 110.5 AUD) is deemed to represent a net cost benefit for the organization. While the intervention overall was deemed to be cost-effective, efficacy was predominantly observed in job demands with both time pressure and emotional demands resulting in mean estimates that were >95% contained in the cost-saving quadrant.

Implementing work redesign solutions requires commitment from all organisational levels, and a proactive consideration of broader forces that could impact on the effectiveness of the intervention.

As anticipated, the dynamic and complex context of the aged care sector contributed to challenges in implementing and evaluating the intervention. For example, operational demands often preceded the intervention in priority, and necessary administrative processes had to be followed to enable work redesigns solution implementation (e.g., extending shifts by 15-minutes). Industry-wide changes resulted from the implementation of a new governmental funding model for aged care also generated a series of significant organisational changes in the Partnering Organisation that coincided with the intervention. These barriers were navigated with the essential commitment from all organisational levels, but ultimately, they did impact on the structure of data available and the

research team's ability to isolate the effect of intervention from these concurrent changes, especially when the secondary and broader outcomes of the interventions are considered.

Recommendations for organizations aiming to reduce job demands using work redesign interventions:

With increased trends towards work intensification, aged care organisations as well as organisations from other industries and sectors are facing the challenge of addressing the psychosocial risks posed by increased levels of job demands experienced by employees. Work redesign interventions have the potential of identifying ways in which organisations can optimise job demands in an effective and cost-efficient manner. But tailoring to the specific needs of the organisation, unit, or categories of employees is key. Therefore, the maximum benefit of a work redesign intervention can be expected from replicating the participatory processes illustrated in the current project report (rather than implementing the specific solutions designed for the Partnering Organisation in this instance).

Our recommendations for organisations looking to replicate a similar intervention are as follows:

1. Develop a thorough understanding of the problem space through multiple methods of data collection and analysis. This will shed light on the many different types of demands that might be experienced in the workplace, as well as the strength of their links to various outcomes of interest in terms of wellbeing or other valued outcomes (e.g., turnover, absenteeism, compensation claims, etc.).
2. Involve workers through participatory processes in all stages of intervention planning, development, and implementation. This increases the chances of identifying root causes of the experienced job demands, and generating tailored solutions to redesign work and optimise job demands. Furthermore, employee participation is often associated with better implementation processes and outcomes.
3. Systematically capture and monitor the effectiveness of work redesign solutions to optimise their efficacy (i.e., ensure implementation fidelity, make needed adjustments). This can be done via quantitative survey data collection at different timepoints during and after the intervention, via qualitative data collection using methods such as interviews, focus-groups, or observations, or via monitoring and analysis of relevant HR data.
4. Maintain and communicate a consistent awareness of the opportunity to modify work design for constant improvements and as a strategy to address psychosocial risks for employees.

Introduction

This report provides an overview of the activities completed as part of the *Designing SMARTer work to reduce psychosocial risks: Evaluating the effectiveness of a participatory work-redesign intervention in aged care* (in short *SMARTer Work in Age Care*) project funded by Safe Work Australia. This multi-stage project included the completion of numerous activities that are described in greater detail in dedicated research manuscripts (see; Kho et al., in review; Chong et al., in review; Kho et al., in prep; Karin et al., in prep). In this report, these activities are summarised across the key stages of the research which involved developing, implementing, and evaluating a work redesign intervention designed to reduce job demands in aged care, followed by subsequent scaling within and outside the Partnering Organisation.

Background

Population ageing highlights the national need for a sustainable aged-care workforce. However, recent government and independent investigations have highlighted complex systemic problems within the aged care sector (OECD, 2023). This has included the high prevalence of psychosocial risk including high emotional demands and excessive workload. These risks have led to high rates of psychosocial injury that threatens the sustainability of the workforce (Cooper et al., 2016; Gelaw et al., 2022). Therefore, there is an outstanding and immediate need to address psychosocial hazards and the risk they pose in the aged care sector, to protect the psychosocial wellbeing of aged care workers and ensure continued care of the ageing population.

Work redesign is a primary and organisational level intervention approach, that has the potential to eliminate or minimise the presence of psychosocial risks. Work design refers to the content and organisation of tasks, responsibilities, activities, and relationships in a job or role, or group of jobs or roles (Parker, 2014) and work redesign involves changing these elements to optimise work conditions and experiences (Hackman, 1980). Although recent reviews of work design interventions (Daniels et al., 2017; Knight & Parker, 2021) describe that many focus on uplifting job resources, fewer focus on the optimisation of job demands to eliminate or minimise psychosocial risk. A work redesign intervention that directly addresses the demands in the aged care sector not only responds to the need to investigate how psychosocial risks can be addressed in this context but makes an important contribution to the gaps in the work design literature.

This report presents the findings of a work redesign intervention that aims to address job demands to reduce psychosocial risks in aged care work. The intervention featured a participatory approach that involved the consultation of workers to identify and provide work redesign solutions. This project was supported by a Safe Work Australia research grant awarded to the Centre for Transformative Work Design at Curtin University and conducted across 2022 and 2023. The findings of this project will contribute to strengthening the evidence base regarding organisational interventions that can address psychosocial risks related to job demands in aged care as well as other sectors.

The study was approved by the Curtin University Human Research Ethics Committee (HREC No: HRE2022-055)

Setting

Like the rest of the world, Australians are living longer than ever before. The consequence of this ageing demographic is the increased demand for and provision of aged care. The aged care sector in Australia is a large and complex system that provides subsidised care and support to older people.

Care ranges from low-level support to more intensive services, such as accommodation, clinical care, personal care, respite, and assistance with everyday living activities. Most of Australia's aged care budget is spent on residential aged care, where older people who need ongoing help with everyday tasks and are unable to continue living independently in their own homes are provided accommodation and support.

Despite aged care being one of Australia's largest service industries, its workforce faces many systemic challenges. In a recent Royal Commission into Aged Care Quality and Safety, it was noted that "... Australia's aged care system is understaffed, and the workforce underpaid and undertrained. Too often there are not enough staff members, particularly nurses, in home and residential aged care. In addition, the mix of staff who provide aged care is not matched to the needs of older people. Aged care workers often lack sufficient skills and training to cater for the needs of older people receiving aged care services. Inadequate staffing levels, skill mix and training are principal causes of substandard care in the current system. The sector has difficulty attracting and retaining well-skilled people due to: low wages and poor employment conditions; lack of investment in staff and, in particular, staff training; limited opportunities to progress or be promoted; and no career pathways. All too often, and despite best intentions, aged care workers simply do not have the requisite time, knowledge, skill and support to deliver high quality care." (p.76, Aged Care Royal Commission Final Report 2021).

In October 2022, a new residential aged care funding model was introduced through the Australian National Aged Care Classification (AN-ACC). This new model aims to reform the sector in response to key recommendations from the Royal Commission into Aged Care Quality and Safety by changing the funding that aged care providers receive depending on the care needs of the residents and the type of services that are provided. The direct implications of this sector-wide change on our project and findings are discussed in conjunction with our findings.

Study Context

The study was conducted in collaboration with a large, not-for-profit aged care provider in Western Australia. Working with the leaders and organisational development team from the organisation, four residential aged care facilities were selected from 14 aged care facilities to participate in the study: one large intervention site (160 beds) and its respective comparison site (99 beds), and one small intervention site (60 beds) and its respective comparison site (37 beds). Rather than being randomly assigned to each condition, the facility managers volunteered their facilities to be intervention or comparison sites. Voluntary participation was considered essential as participative interventions need to be supported by management commitment to integrate redesign solutions with other organisational systems and promote worker engagement (Daniels et al., 2017).

Overview of research approach

We developed a multifaceted research approach, combining multiple empirical investigations at differing timepoints throughout the intervention development, implementation, and evaluation process. Such a complex and multi-source approach is needed when working in highly dynamic, applied settings where opportunities for controlling intervention measures and isolating effects of specific changes are reduced.

To facilitate this approach, the study was conducted in four stages: baseline assessment, intervention development and implementation, intervention evaluation, and scaling and recommendations.



STAGE 1 BASELINE ASSESSMENT aimed to use multiple methods to obtain data to diagnose work design with particular attention to job demands. This information was key to informing the focus of work redesign solutions and to later utilise as a point of comparison for evaluating the success of work redesign solutions. During this stage resources and relationships were established with the Partnering Organisation to facilitate the later development and implementation of the intervention.

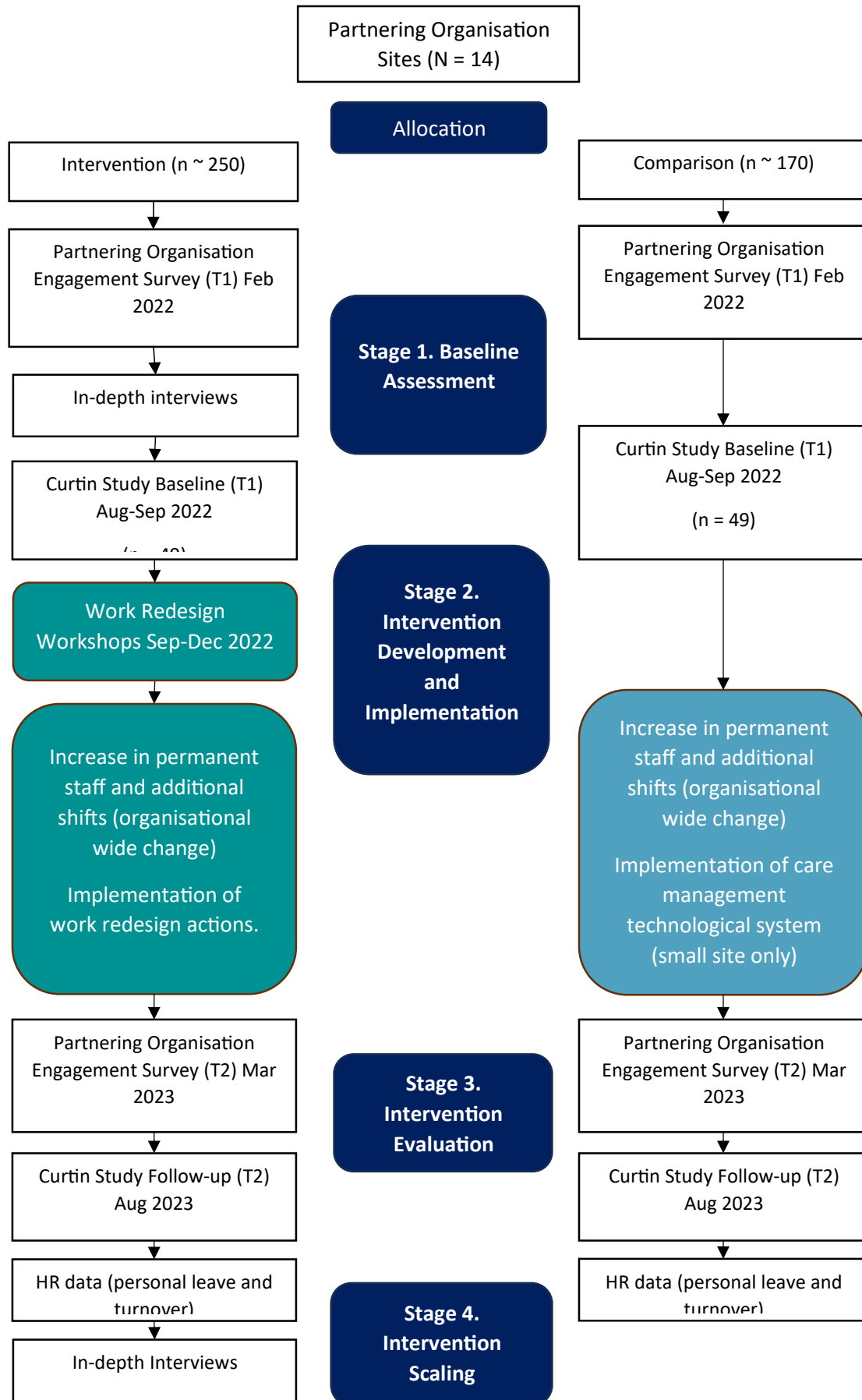
STAGE 2 INTERVENTION DEVELOPMENT AND IMPLEMENTATION aimed to co-design the intervention in a participatory process and implement the worker generated redesign solutions. This included conducting workshops with assembled workgroups of direct care workers and reflecting on the results of baseline assessment to derive work redesign solutions. Work design solutions were implemented over an iterative process with the Partnering Organisation enacting and communicating changes whilst the research team provided oversight and support.

STAGE 3 INTERVENTION EVALUATION aimed to capture the effect of the work redesign solutions. Further data collection facilitated a comparison between follow up data and baseline to observe any changes in targeted job demands and explore effects on job resources and wellbeing, as well as organisational data were obtained to explore the cost-effectiveness of the intervention.

STAGE 4 INTERVENTION SCALING aimed to extend the implementation of work redesign solutions across the Partnering Organisation and enable the transfer of learnings to other contexts within and outside of the aged care sector.

A simplified overview of our research approach, including the various sources of data collected across the project stages to develop, implement, and evaluate the proposed intervention is provided below in Figure 1.

Figure 1. An Overview of Intervention Development and Evaluation Research Design.



Stage 1: Baseline Assessment

Introduction

The aim of Stage 1 was twofold. First, we aimed to develop a thorough and in-depth understanding of the main challenges experienced by employees in the Participating Organisation and best practices on how these challenges might be addressed. This understanding would not only inform the future stages of the project but also serve as a baseline comparison for studying the effects of the intervention developed throughout the project. Simultaneously, we aimed to put in place adequate relationships, infrastructure, resources, and processes to enable the effective collaboration between the research team, the industry partner, and funding body, as well as the optimal development and implementation of the project in the long run.

To establish a comprehensive baseline, the research team utilised a mixed-method approach including:

- A systematic review of job demand interventions in aged care;
- Quantitative survey data collection from two sources;
- In-depth qualitative interviews with staff across the sites, complemented with insights from observations and discussions with other organisational stakeholders.

Systematic Review

The systematic review of the wider research literature was conducted to identify what interventions had been done to date to address job demands in aged care to date and any learnings and outcomes from previously studied interventions that could be relevant or transferrable to the present project. Furthermore, it provided some guidance around the commonly studied work demands in the aged care sector, interventions tried and tested to optimise demands, and barriers and facilitators in the implementation process that had the potential to influence the success of the current intervention. Additionally, it also guided the research team to identify further research gaps in the academic literature that could be addressed with the present research, thus enhancing its impact potential. A comprehensive reporting of the systematic review is reported in (Kho et al., in review).

Method

A systematic literature search was conducted to examine any intervention that aimed to address job demands in aged care. The first search returned 2,701 unique articles, and following title, abstract, and full text screening resulted in 65 articles for inclusion. These 65 articles represented 63 unique studies and 69 unique interventions. These articles were reviewed to examine the job demands they aimed to address, the type of strategy utilised to address job demands, the consistency of evidence for their efficacy, and the quality of their methodology.

Key Findings

First, most studies reviewed did not measure or specifically target worker experienced job demands, rather they aimed to address client behavioural and psychological symptoms. Client behavioural and psychological symptoms such as aggression and agitation can be distressing for workers to witness and respond to, however are not a direct measure of job demands. To ensure that worker experiences are captured as directly as possible, job demand interventions should measure worker experiences of job demands. Second, most interventions involved a form of professional education or a change in care protocols to improve the care of clients, rather than an attempt to change and

improve work design to alter experiences of job demands for employees. This indicates a greater expectation for workers to adjust and change their behaviour as opposed to making changes in the work environment and highlights the prioritisation of client welfare. Third, there appeared to be moderately consistent evidence that job demand interventions reduced job demands. This highlights that it is important for organisations to take action, as interventions are capable of generating positive outcomes. Fourth, evidence for efficacy was stronger for studies that had a less rigorous study design. This included studies that made no comparisons between an intervention and control group and studies that did not assess for changes before and after the intervention. More rigorous study methods should be adopted to clarify what strategies are most effective in reducing job demands.

Summary and Implications

The results indicated that whilst there was some consistency in evidence that interventions can reduce job demands in aged care, that there was a lack of interventions that (1) aim to directly address workers' experiences of job demands, (2) aim to alter the work design of aged care workers to address job demands, and (3) utilise more rigorous methods to evaluate the effect of their interventions. Thus, there was a current gap in the literature for work redesign interventions that addressed job demands with a rigorous methodology that the current project would contribute to filling.

Quantitative Survey Data Collection

The aim of the quantitative surveys was twofold: to identify the job demands present in the Partnering Organisation that would be targeted by the work redesign intervention, and to provide a baseline for measuring change after the intervention. Two instances of quantitative data collection occurred for the baseline assessment; the Partnering Organisation's annual engagement survey and a survey purposefully designed for the present research.

Method

Sample

Eligible participants were employees at the four participating facilities who were involved in the direct care of residents, including nurses, carers, therapists, and therapy assistants. Non-direct care roles (e.g., administrative staff, hospitality, and support services staff) were excluded. Although the number of eligible employees regularly fluctuated across the study period, staff numbers were approximately; intervention sites = 250 and comparison sites = 170. These employees were considered the end recipients of and key stakeholders of the participatory intervention. Table 1 below details the number of employees who completed each survey.

Table 1. Number of Respondents for each Baseline Survey.

Baseline Survey Respondents		
	Engagement Survey	Research Survey
	February 2022	August 2022
Intervention Sites	77	49
Comparison Sites	39	49

Measures

The surveys captured a range of demands (see Figure 2), job resources (see Figure 3), and emotional exhaustion (a psychological state of feeling emotionally worn out and drained) and symptoms of mental ill-health (e.g., anxious state or depressed mood).

Job Demands

 Cognitive demands	Work is complex and requires focus <i>"I have to keep track of more than one process at a time"</i>	 Time pressure	There is not enough time to complete work <i>"I have unrealistic time pressures"</i>
 Conflicting requests	People instruct you to do different things <i>"Different people at work expect conflicting things from me"</i>	 Job scope	Doing things outside of your role <i>"I perform tasks that are not within my official job scope"</i>
 Policies	Policies create barriers to doing your work <i>"I have to buck a rule or policy in order to carry out an assignment"</i>	 Team change	Lack of consistency in team members <i>"The team I work with changes from shift to shift"</i>
 Admin/paperwork	Admin is too much, or complicated, or boring <i>"There are too many administrative tasks"</i>	 Physical demands	Work is physically strenuous <i>"I have to work in uncomfortable or tiring positions"</i>
 Emotional demands	Work is emotionally difficult/ challenging <i>"My job involves exposure to distressing materials and experiences"</i>	 Work-home conflict	Work interferes with and makes home life difficult <i>"The demands of my work interfere with my home and family life"</i>

Figure 2. Job Demands Measured Across Baseline Surveys.

Job Resources



Figure 3. Job Resources Measured Across Baseline Surveys.

Approach

Variable means were observed to establish levels of exposure to job demands and presence of job resources. As solutions were tailored to each site, levels of job demands for the small and large sites are separated. Correlations were used to examine the strength of statistically significant associations between job demands and work related well-being using a significance level (p value) of .05. This criterion suggests a 95% certainty that a result is a genuine rather than chance finding.

Key Findings

What are the highest demands that aged care workers face?

As seen in Figure 4, cognitive demands appeared to be the highest rated across all sites surveyed. Staff reported that their work requires undivided focus, yet they have to keep track of more than one process at a time. Staff from the small intervention site reported the highest cognitive demands compared to staff from other sites. Both comparison sites appear to be experiencing less cognitive demands than the intervention sites.

Having high workload, administrative demands, and emotionally demanding work were also rated high across all surveyed sites. Staff at the large intervention facility reported higher levels of emotionally charged and distressing situations than other sites. This may be attributed to having the largest number of residents with dementia in the facility compared to the other sites. In general, staff

from the small intervention site consistently reported experiencing more demands compared to the small comparison site.

Staff at the large intervention site appear to have the least stable teams. This is likely partially due to the size of the facility, but it is important to note that these scores are higher also compared to the corresponding large comparison site. Frequent team changes or the inability to work with a consistent team may result in additional demands due to a lack of team coordination and poor team cohesion. Physical demands have also been identified as most demanding at the large intervention site.

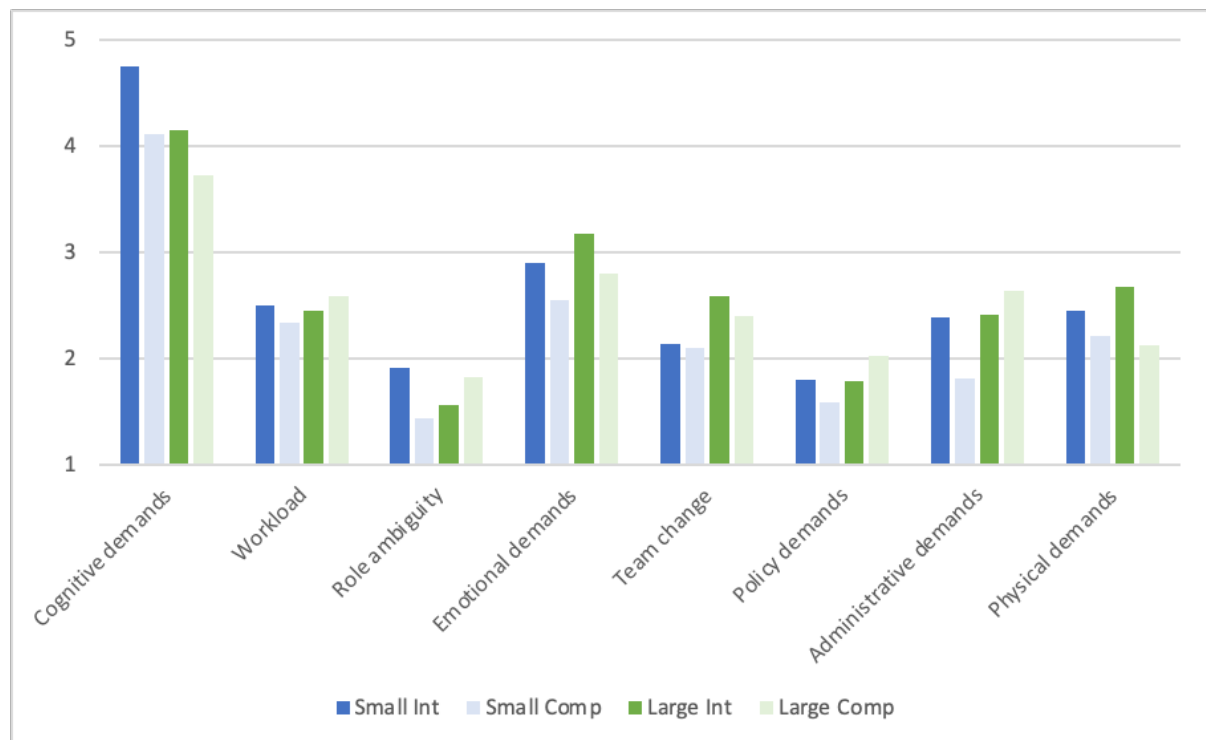


Figure 4. Means of Job Demands Across Small and Large Intervention and Comparison Sites.

What work resources are available in the work environment?

As seen in Figure 5, most surveyed staff across both intervention and control sites reported good levels of work resources. The small intervention site stood out in terms of the range and accessibility of work resources to staff, closely followed by the corresponding small comparison site.

Levels of supervisor support and role clarity reported by staff at the small intervention site were also rated very positively. Additionally, they reported similar or higher scores than staff from the small comparison site across most work resources.

Overall, staff at the two larger sites reported lower levels of work resources compared to staff at the smaller facilities. When compared to the large comparison site, staff at the large intervention site reported relatively higher scores for role clarity. However, they also reported lower scores for job autonomy and all forms of support (supervisor, co-worker, and facility) compared not only to its comparison site but all other surveyed facilities. Understanding the levels of existing work resources was important for the development of the intervention given the complex interactions between demands and resources.

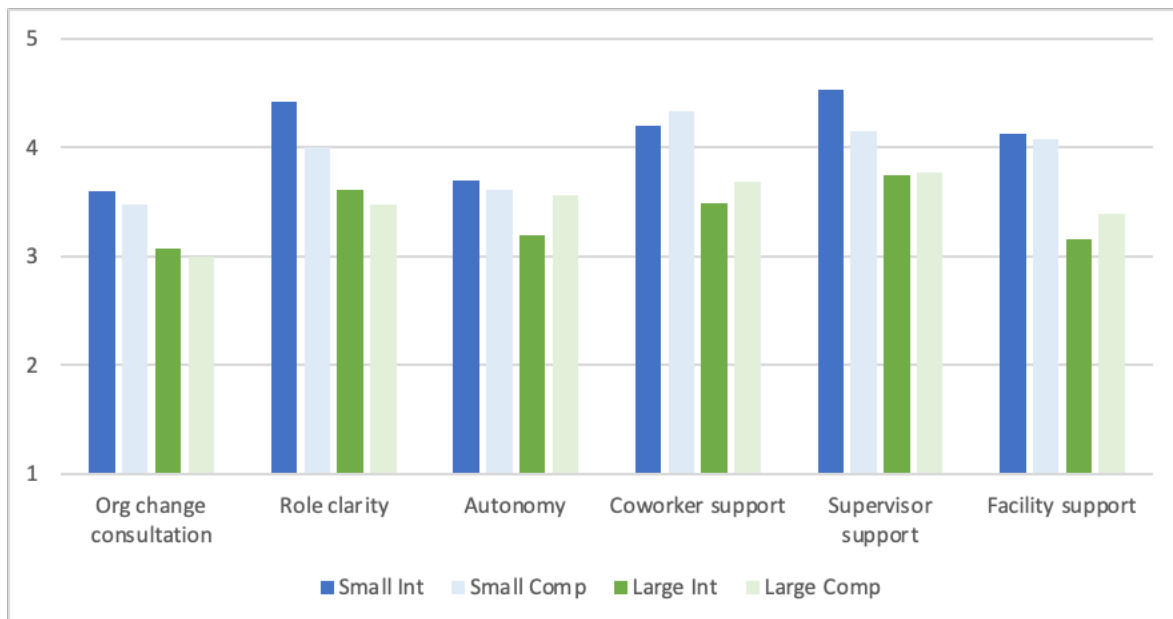


Figure 5. Means of Job Resources Across Small and Large Intervention and Comparison Sites.

Which demands were most strongly related to well-being related outcomes?

To provide a more in-depth understanding of the possible impact of job demands reported by workers, we went beyond descriptive analyses focused on the overall levels of job demand and complemented it with an analysis of the associations between each demand and indicators of employee wellbeing. Our analysis focused particularly on emotional exhaustion and symptoms of mental distress or ill-health. Figure 6 displays a graph that compares frequency of exposure to correlation of a demand with emotional exhaustion and symptoms of mental ill-health.

Emotional exhaustion is a psychological state of feeling emotionally worn out and drained and can slowly build over time. Emotional exhaustion was measured by three items that assessed employees' feelings of being used up at the end of a workday, the extent of feeling burned out from one's work and the extent of feeling emotionally drained from one's job. The figure below shows that although cognitive demands were the highest rated across all sites, its association with emotional exhaustion is weaker. However, physical and emotional demands are more strongly associated with the experience of emotional exhaustion, followed by policy and administrative demands.

Work demands can contribute to the occurrence of symptoms of mental ill-health (e.g., anxious state or depressed mood). Six items measured the frequency of mental ill-health symptoms, including feelings of nervousness, hopelessness, or worthlessness. Similar to emotional exhaustion, the graph below indicates that physical and emotional demands have the strongest association with self-reported symptoms of mental ill-health. This was followed by time pressure, policy demands, and administrative demands.

Overall, while cognitive demands received the highest scores from direct care workers in our sample, its correlation with wellbeing indicators appears to be low relative to other demands. For example, our data suggests that emotional demands are still experienced quite frequently (56% of workers agreed or strongly agreed that their work involves being exposed to distressing material and experiences) and are most strongly correlated with wellbeing outcomes. Similarly, time pressure and physical demands were also reported with relatively high frequency with 58% of workers agreeing or strongly agreeing that they have too much work to do and 58% of workers agreed or strongly

agreeing that their work was physically strenuous. Moreover, both these demands were also moderately correlated with wellbeing outcomes considered here.

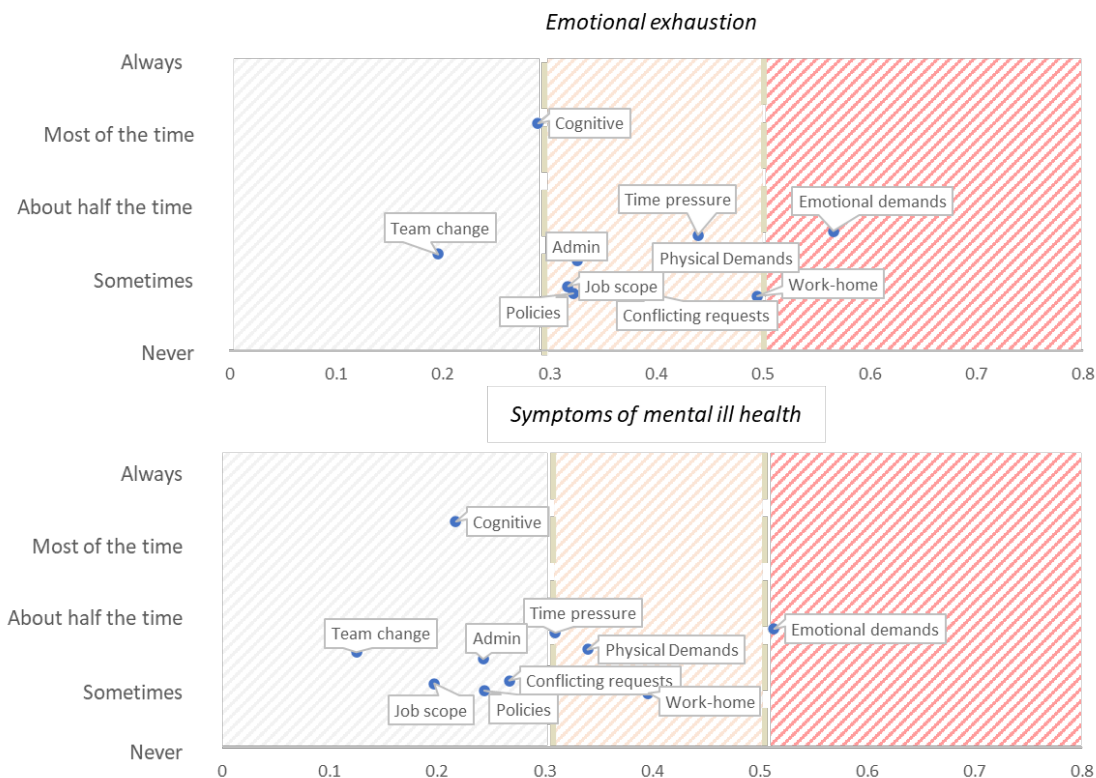


Figure 6. Means and Correlations of Job Demands with Emotional Exhaustion and Symptoms of Mental Ill-health.

Summary and Implications

The results reinforce that although exposure to some demands may be experienced as higher, other demands that are experienced at moderate levels can have a stronger relationship with wellbeing outcomes. This was important to discern when establishing what job demands to target in the intervention development, so that it has the highest potential to impact worker wellbeing.

Qualitative Data Collection

To further understand existing challenges in work design at the aged care facilities, we conducted interviews that would contextualise experiences of job demands. Additionally, data collected via interviews also provided us with key insights into how to better tailor the follow-up survey instruments but also allowed the research team to become more acquainted with the work environment, to interact directly with employees and start to identify possible areas to bring to attention during the intervention development workshops.

Method

Semi-structured in-depth interviews were conducted with 15 aged care workers across intervention sites. Interviewees had a range of experience, tenure, and roles. The interviews ranged in duration from 45 to 60 minutes. Questions targeted perceptions of work design, particularly job demands, the experienced impact of these demands, and emerging suggestions for redesign solutions.

Key Findings

Overall, interview results were consistent with quantitative findings on experiences of demands and how they impact wellbeing.

First, workers across a variety of roles were consistently experiencing high time pressure to complete their work. This time pressure was described to be contributing to feelings of being stressed, overburdened, and negative affect towards their organisation.

“I think the carers are under a lot of stress at this point of time... if you can’t get staff, you can’t do your job properly and you’re under a lot of pressure to keep moving and just pump out the work all the time.” – Therapy Assistant

“You cannot support every single resident at the same time... You know, you cannot meet the expectations and you were just... Yeah, it feels like you’re overburdened with every single thing.” – Registered Nurse

“So I can’t finish it within my duty hours. I need to stay all day and night to finish all these tasks... That’s how I feel really bad at [partnering organisation]” – Clinical Nurse

Second, workers described the emotional demands experienced as part of their role. However, what was more surprising was the fact that emotional demands were linked not only to resident interactions, but also to interactions with other coworkers in the working environment. These experiences appeared to be contributing to low job satisfaction.

“It’s really, really, difficult getting staff to work in aged care currently... sometimes emotions can get in the way. Because you either get involved with a resident, and you can see their health decline. And then you’ve got the new resident pass away” – Enrolled Nurse

“That’s why, to be honest, every Thursday it is my shift in the morning. I always call in sick because I don’t like to work with that person”. – Care worker

Summary and Implications

The qualitative data reinforced the findings of the quantitative surveys conducted, while at the same time providing further nuance into the experience of job demands and implications for wellbeing at work. In particular, experienced time pressure was a prominent theme that emerged in the analysis of interview data, despite the fact that survey results showed only moderate levels (on average) across the sample of survey participants. Taken together the findings provided by the range of methods used in this initial stage of the study provided a solid and nuanced understanding about the work design of direct care employees working for the Partnering Organisation and guided our approach and focus for the next stage of the research project.

Stage 1 Summary

Stage 1 comprised the collection of key data to inform the later stages of the research project through a systematic review, two surveys, and multiple in-depth interviews. The synthesis of this data clarified challenges the employees in the Partnering Organisation were experiencing in relation to job demands and highlighted potential targets for the work redesign intervention. Further, collaboration with the Partnering Organisation during the collection of this data facilitated conversations regarding the infrastructure, resources, and processes that would support future actions. Having completed the baseline assessment, the research team were equipped with necessary knowledge to support the further development of the work redesign intervention.

Stage 2: Intervention Development and Implementation

Introduction

The primary goal of this stage was to work collaboratively with members from each of the participating facilities to jointly develop and implement tailored work redesign solutions aimed at eliminating or reducing the levels of job demands and other associated psychosocial hazards identified during the initial stage of the project.

Approach to intervention development

After securing support from senior executive management of the organisation for the project, the research team engaged with the leadership team at each facility (a facility manager and clinical nurse manager) and the internal organisational development consultant for a project kick-off meeting. The purpose of these discussions was to understand the strategic objectives of the facilities and to ensure management were fully committed to organisational change.

Effective consultation with end recipients of interventions (direct care workers in the current project) is known to improve both identification of psychosocial hazards and decision making about solutions and is a legal requirement of a person conducting a business or undertaking (Safe Work Australia, 2023). Consequentially, the work redesign intervention took a participatory approach. The participatory approach was achieved by forming work redesign groups at each intervention facility consisting of a cross-section of employees to ensure a representative perspective of work experiences and psychosocial hazards (see Table 2).

Table 2. Composition of SMARTer Work in Aged Care representative groups per site.

SMARTer Work in Aged Care - Workshop Participants		
	Large Intervention Site	Small Intervention Site
Nurses	2	1
Care worker	7	6
Therapy	0	1
Total participants	9	8

The work redesign groups participated in a series of workshops designed and delivered by the research team. The aim of these workshops was to generate insights into the psychosocial risks associated with experienced levels of work demands, to identify factors in the work environment contributing to these and ways in which they could be addressed within each site (see below for a detailed description of the workshop series).

Solutions generated during the workshops were further refined together with the leadership team at each facility, resulting in action plans that brought together a series of measures tailored to the specific needs of each participating facility. These measures were implemented by the leadership team at each facility, with the members of the participatory work redesign workshops providing further feedback throughout the early stages of implementation.

Additional consultation meetings were also held with members of the executive team to ensure consideration of broader strategic and operational constraints and to further refine directions and solutions. Furthermore, broader educational workshops were delivered to executive leaders (1

workshop) and safety representative members across the business (2 workshops) to increase awareness on the role of work design in reducing psychosocial risks, to highlight principles of good work design, and facilitate organisational readiness for the proposed changes.

The SMARTer Work in Aged Care Workshop Series

The SMARTer Work in Aged Care series consisted in six workshops delivered separately to each of the workgroups at separate intervention sites between September and December 2022. All the workshops in the series were designed and facilitated by the research team and an overview of the entire series is provided in Figure 7 below. The first three workshops focused more on gaining a deeper understanding of the various factors that were seen as contributing to the high levels of work demands, while the last three workshops focused on generating solutions grounded in participants' work experience, prioritising these solutions and generating action plans for interventions.

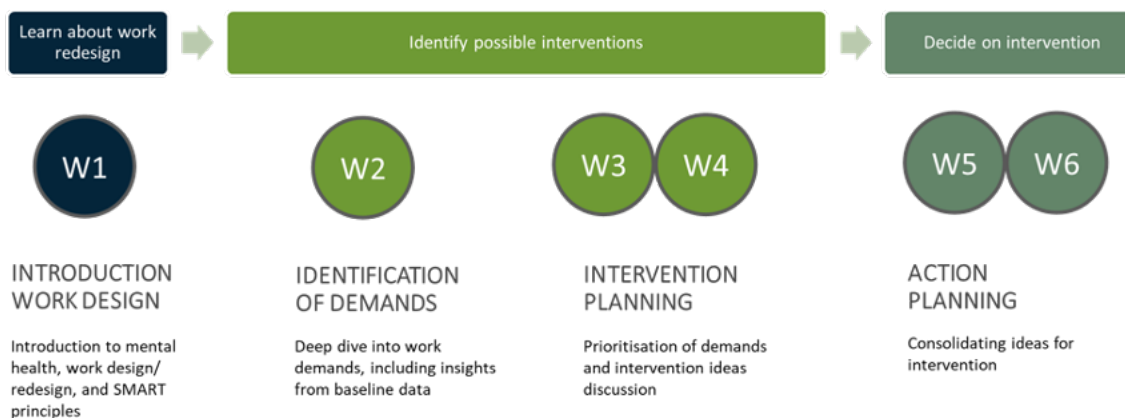


Figure 7. Overall Structure of the Workshop Series.

More specifically, in Workshop 1 participants were provided with information on principles of good work design to enable them to recognise aspects of their work that may be contributing to increased psychosocial risk and to consider how they could be redesigned to eliminate or minimise these risks. This first workshop was grounded in an evidence-based model of work design, the SMART work design model (Parker & Knight, 2023) which provides a comprehensive, yet simplified structure that enables the simultaneous consideration of specific work design characteristics that might be relevant to each organisational context. However, we note that other existing evidence-based models of work design can be used as an alternative, such as the Job-Demands Resources model (Bakker & Demerouti, 2014), Job Demands-Control model (Karasek, 1979), or the Work Characteristics model (Hackman, 1980), depending on the focus and particular needs of the intervention.

In Workshop 2 information from the previous baseline assessment stage was used to further contextualise examples and stimulate discussions on the workplace factors that contribute to these levels of job demands and ways in which these workplace factors could be addressed. From here, Workshops 3 and 4 moved into prioritisation of some of these factors and generation of a wide range of ideas for solutions to modify these factors and hence reduce job demands. These initial ideas were further analysed and prioritised to identify those that could be implemented over the duration of the project and had the highest probability of a tangible impact on job demands. As a result of this process, a subset of solutions was further refined and presented to the facility leadership team during Workshop 5. The leadership team provided feedback regarding the feasibility and impact of the proposed solutions. Workshop 6 focused on incorporating this feedback into tailored action plans for each of the intervention facility that went back to the facility management for implementation.

After piloting some of the proposed solutions in the participating facilities, action plans went through another round of feedback and review during two additional follow up workshops attended by the workshop participants and members of the facility level leadership team. The aims during these workshops were to identify any modifications to the action plan that were necessary, to identify any barriers to implementation and facilitate uptake.

Key Findings

Two main outcomes were achieved via the implementation of the participatory work redesign workshop series. First, rich discussions during the workshops allowed participants to identify a series of workplace factors that were seen as contributing to the high levels of demands experienced in each of the intervention facility. Second, a detailed and tailored set of work redesign solutions were identified for each of the facilities, forming the basis of the intervention implemented. We will briefly summarise each of these in the sections below.

Factors contributing to increased levels of work demands experienced in the facilities under study.

Throughout the delivery of the work redesign workshops a series of factors that were seen as contributing to the experience of increased work demands were identified by the participants. They ranged from broader factors such as the funding model, regulatory requirements, residents' characteristics, and ongoing pandemic, to more proximal factors related to the work environment, staff structure and characteristics, work processes and procedures. Throughout the participatory workshops the focus was narrowed down towards addressing sources of additional work demands residing in existing work systems, processes, and practices, as well as associated psychosocial hazards that are present and increase risks of high job demands such as the poor support, low quality teamwork, reduced control over work methods and lack of role clarity. Main factors identified and discussed during the workshops are summarised below.

Staff and staffing

Not surprisingly, staffing levels were often seen as a contributor to increased time pressure experienced in everyday work. However, "staff and staffing" related issues went well beyond staff shortages or staff numbers, with participants often discussing "the quality of staffing" in terms of an appropriate mix of skills and experience, and the quality of teamwork and working relationships. These are seen as important contributors to increased workload as well as emotional demands beyond merely staff numbers.

Administration and documentation

Another category of factors seen to contribute to experienced work demands as well as other psychosocial risks was related to reporting and documentation requirements and the different systems through which these requirements are implemented. Not only the amount of documentation was seen as an issue, but also its perceived importance in the business and industry at large. Workshop participants described feeling that the complex care work that they deliver is often reduced to what is officially documented, as well as an attitude of "if you haven't documented it, you haven't done it." This has the potential to create additional role conflict as employees either have to rush through care tasks to ensure sufficient time for documentation, or complete documentation tasks in their personal time, during breaks or after their shift ends, potentially increasing work-family conflict.

Work Processes & Procedures

Work processes and procedures were often mentioned as contributing to increased demands, especially time pressure and workload, mainly by affecting the staff's ability to efficiently organise and coordinate tasks within care teams. Processes such as handover, task distribution within teams,

format and allocation of duty lists were identified as contributing to losses in efficiency throughout the day and creating additional demands.

Resident & Families

The increasing care needs of residents was seen as contributing to more demanding work but also to increased coordination requirements between care workers who must work together to assist a resident. The increase in care needs is also contributing to more complex skills being required to manage complex behaviours related to conditions such as dementia or mental ill health conditions for which staff don't feel they have sufficient training and/or support. In regards to families, care workers and clinical staff are often faced with managing family relations on two extremes: either completely absent, or having unrealistic expectations of care (to which marketing and communication services are also a contributing factor).

Communication & Co-ordination

Breakdowns in communication and co-ordination processes within and across teams were seen as contributors to increased work demands. These breakdowns were seen to impact the ability of staff to efficiently organise their work and coordinate with each other within or across shifts. Not being able to rely on team members for help or support has a critical impact during periods of peak demands or when working understaffed. Participants further described that frequent team changes, increased reliance on casual staff, and reduction of permanent staff members lowered social connection within teams and contributed to employees being more individually focused. This may be as employees see less opportunities for colleagues to reciprocate support if they might not often work in the same area or within the same team.

Physical Environment

In terms of physical environment, the physical layout and design of the buildings were seen to create additional demands on staff or contribute to existing demands. For example, the layout of buildings is designed to provide each resident with their private space, but this can hinder monitoring activities, or coordination of care staff. The size of particular wings or work areas further compounds these issues.

External Environment

The industry overall is reported to be heavily regulated and accountable to very high standards. While this is not an issue per se, it can contribute to high demands for compliance and documentation, as well as perceptions of constantly changing rules and interpretation of rules. This has the potential to increase ambiguity about required work processes or often generate new tasks for clinical and care staff. Other broader factors such as the impact of the COVID-19 pandemic and the tight nature of the labour market are seen as impacting the capacity of the organisation and wider industry to attract and retain operational staff in the residential aged-care setting.

Work Redesign Solutions

Workshop activities resulted in a series of tailored and complementary actions and measures that together constitute a multidimensional intervention aimed at reducing experienced demands and associated psychosocial risks in the participating facilities. The multidimensional nature of the intervention is in line with evidence highlighting that systems' approaches (combining several organisationally focused, work directed, and worker-directed measures) are most effective at preventing and controlling job stress (LaMontagne, 2007). Collectively, the intervention measures had the following aims:

1. The primary aim of the intervention was to reduce levels of job demands that present a psychosocial risk to staff, such as time pressure, workload, and emotional demands, through multiple preventative actions including:
 - o Introduction of additional shifts to obtain a better distribution of tasks. This additional measure was made possible due to recent changes in the funding model.
 - o Introduction of new functionalities and settings in the care management platform that aim to (1) remove duplication of documentation tasks for clinical staff (2) reduce the risks of mistakes through automatic updates and integration of assessments, and (3) provide better informational support for the delivery of care.
 - o Alignment of timetables and rosters to allow additional time in situations when demands are particularly high, such as major shift changes/ handover or when new staff members need to be integrated within the workplace.
 - o Optimisation of existing work processes, practices and tools related to (1) the distribution, communication and coordination of tasks within houses/teams (large intervention site), (2) effective integration of new and/or temporary staff members (both sites), and (3) handover delivery (small intervention site), in order to reduce inefficiencies, interruptions and doubling up of tasks/communications as well as improve employee retention.
2. The secondary aim was to evaluate whether the implemented measures also contribute to increased levels of job resources available in the working environment, thus enabling employees to more effectively manage existing levels of job demands, and reducing the extent to which these demands cause harm to workers. Overall, the intervention measures developed had the potential to affect the following job resources:
 - a. Improved support and workplace relationships.
 - b. Improved role clarity.
 - c. Increased sense of control and engagement to enhance employees' influence and voice.
 - d. Increased psychological safety for frontline employees so that they feel comfortable to provide feedback on factors that contribute to work demands, as well as be actively involved in solution identification.

Appendix 1 provides a detailed overview of identified psychosocial hazards and measures derived from the work redesign workshops to address these hazards.

Stage 2 Summary

Stage 2 featured the intervention development and implementation using participatory work redesign workshops. In these workshops, representative groups of workers reflected together on psychosocial hazards at work, generated solutions and prioritised and refined these solutions into actionable measures. This process was conducted in close collaboration with facility and executive leadership to ensure support and feasibility of the solutions. Following the implementation of these solutions, the next section of the report considers how the combination of these changes implemented in each intervention facility impacted targeted job demands, job resources and employee wellbeing, whilst recognising that co-occurring changes also were experienced by the partner organisation during the project period.

Stage 3: Intervention Evaluation

Introduction

The aims of this stage were to collect, integrate and analyse follow-up data to document and understand any changes in job demands, job resources, and employee work-related wellbeing that might have occurred in the participating facilities post-implementation of the intervention. We used a comprehensive mixed method approach focusing on collecting data from various sources, including follow up quantitative surveys, qualitative in-depth interviews with employees and key stakeholders in the intervention facilities, as well as collection and analysis of organisational data provided by the partner organisation. Further, the longer-term effectiveness of the work redesign intervention was projected via additional quantitative and qualitative data collection at the end of the research project.

Quantitative Evaluation of Intervention Effectiveness

A quantitative evaluation of the intervention effectiveness was conducted by comparing scores from baseline surveys conducted in Stage 1 and follow-up surveys conducted in Stage 3. This resulted in a quasi-experimental research design comparing the two facilities in which the intervention was developed and implemented to the comparison facilities which were similar in size. Given the focus of the intervention on optimizing job demands, we first focused on understanding how the participatory work redesign intervention and resulting solutions affected job demands experienced by employees across the facilities under study. Second, given that the proposed solution and the reduction in job demands had the potential to impact work and employee wellbeing more widely, we also investigated possible secondary outcomes of the intervention in terms of perceived job resources, self-reported wellbeing, and facility level absenteeism and actual turnover rates.

As is the nature of applied research, other organisational events that changed the design of work occurred across and within the facilities included in the study during the duration of the project. This included a change in the national aged-care funding model that facilitated an increase in permanent staff and the availability of additional shifts in all sites, including the comparison facilities.

Additionally, due to operational constraints, the implementation schedule for the technological element of the intervention led by the Partnering Organisation had to prioritise the smallest facility for initial trials (the small comparison site). As a result, comparison sites have also received various degrees of the intervention and overall findings from this research will reflect the impact of these emerging changes.

Method

Study Population and Samples

Eligible participants were employees at the participating facilities who were involved in the direct care of residents, including nurses, carers, therapists, and therapy assistants. Non-direct care roles (e.g., administrative staff, hospitality, and support services staff) were excluded. Although the number of eligible employees regularly fluctuated across the study period, staff numbers were approximately: intervention sites = 250 and comparison sites = 170. These employees were considered the end recipients of and key stakeholders of the participatory intervention. The table below details the number of employees who completed each survey throughout the project.

46 employees from the intervention group and 46 employees from the comparison group provided data at baseline, representing a response rate of 19% and 27% respectively. Lower response rates were most probably due to employees experiencing survey fatigue as well as high levels of work

demands. The research team and partner organization undertook several actions to improve the response rate. These included site visits by the research team to distribute paper surveys, encouragement from management through e-mails and staff meetings, reducing survey length, and incentivizing survey completion. This resulted in 77 employees from the intervention group and 51 employees from the comparison group completing the follow-up surveys, representing a response rate of 28% and 29%, respectively. Unfortunately, there was insufficient matched data across times for a repeated measures analysis. Independent samples t-test indicated no significant differences between intervention and comparison groups at baseline for the study variables: time pressure $t(85) = -.04, p = .97$, emotional demands $t(82) = -1.5, p = .13$, emotional exhaustion $t(79) = -.18, p = .86$, and job satisfaction $t(74) = .50, p = .62$.

Table 3. Number of respondents for each survey wave.

	Partner organisation engagement survey T1	Study baseline T1	Partner organisation engagement survey T2	Study post-intervention T2
	February 2022	August 2022	March 2023	August 2023
Intervention	77	49	88	77
Comparison	39	49	55	51

Measures

Survey Data

Quantitative data were obtained from the Partner Organisation's Engagement Survey (conducted annually) and Curtin University's study specific surveys. These surveys captured the following psychosocial work characteristics and indicators of work-related wellbeing.

Job Demands and Resources

Time pressure was measured with two items "I receive tasks without enough time to complete it" and "I am unable to perform tasks due to high workload" using a 5-point Likert scale from 1 (*never*) to 5 (*always*).

Emotional demands was measured with two items "My work is emotionally demanding" and "I face emotionally charged situations in my work" using a 5-point Likert scale from 1 (*never*) to 5 (*always*).

Coworker support was measured using one item "My coworkers assist me with heavy workloads" using a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Supervisor support was measured using one item "I get the help and support I need from my supervisor" using a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Organisational change consultation was measured using two items "There is meaningful consultation about change at work" and "When changes are implemented, I am clear how they will be implemented" using a 5-point Likert scale from 1 (*never*) to 5 (*always*).

Work-Related Wellbeing

Emotional exhaustion was measured using two items “I feel used up at the end of the day” and “I feel burned out from my work” from Maslach & Jackson (1981)’s burnout measure using a 7-point Likert scale from 1 (*never*) to 7 (*every day*).

Job satisfaction was measured using one item “Overall, I am satisfied with my job” using a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Approach

Given the complex structure of the data available, our approach was to systematically investigate change in means for focal constructs over time and to compare these changes across the participating facilities.

We first focused on testing whether the observed changes in means over time are statistically significant, therefore indicating that any differences or patterns observed in the data are probably not due to random chance, but rather likely to be real and meaningful. Again, a significance level (p value) of .05 was adopted. However, it is important to remember that p -values are just one piece of the statistical puzzle, and their interpretation depends on the context and design of the study. Therefore, we also report and reflect on trends in the data that did not reach significance level to get further insight into possible effects, but these findings should be interpreted with caution.

Key Findings

In the present section we will report results based on the data collected through the various sources presented in Figure 1.

Table 5 reports descriptive statistics and correlations for the study variables for intervention sites which are also depicted in Figure 8 below, focusing on changes observed in job demands and resources.

Looking first at job demands, the primary outcome of the present intervention, workers from interventions sites reported a **significant decrease in time pressure** between August 2022 ($M_{\text{time pressure}} = 2.46$) and August 2023 ($M_{\text{time pressure}} = 2.09$). Between February 2022 and March 2023, workers also reported that their workload for their role became more reasonable. For example, in 2022, 49% of workers who completed the staff engagement survey agreed or strongly agreed that their workload is manageable, while in 2023 this percentage increased to 62%. Further, workers also reported a **significant decrease in emotional demands** between August 2022 ($M_{\text{emotional demands}} = 2.82$) and August 2023 ($M_{\text{emotional demands}} = 2.50$).

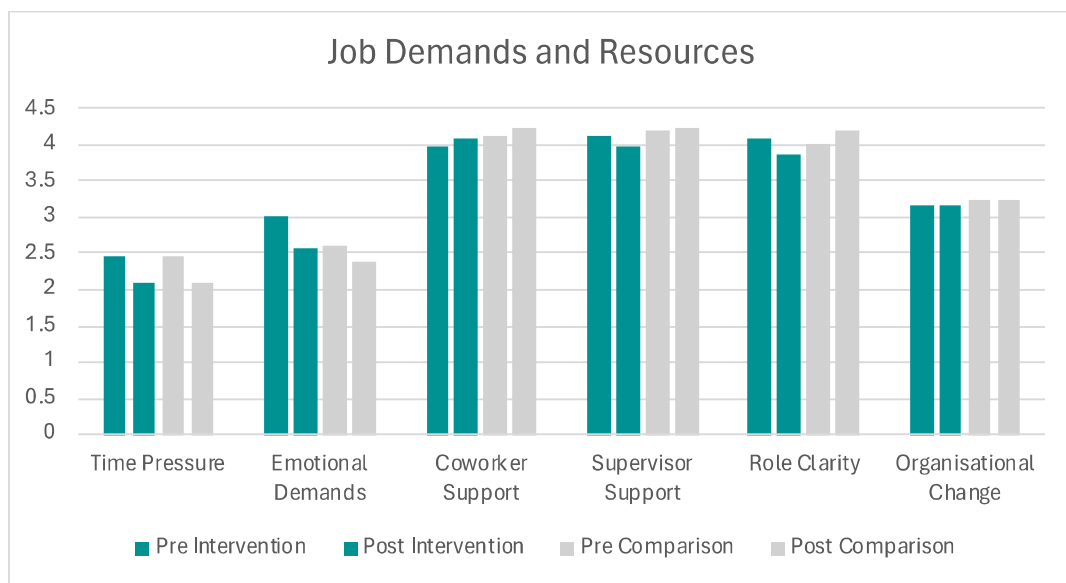


Figure 8. Graph of Means of Job Demands and Resources for the Intervention and Comparison Sites.

*****Overall, this data shows statistically significant reductions in critical work demands at intervention follow up. As these reductions did not also occur in the comparison sites, we can be reasonably confident that the intervention contributed to or caused the reduced job demands.***

Though not statistically significant, participants in the large intervention site also reported an increasing trend in coworker support throughout the study. In terms of coworker support, intervention sites had a 7.3% increase in workers who agreed or strongly agreed that their coworkers assisted them with heavy workloads when comparing responses before and after the intervention. However, the increase was only 1.8% in the comparison sites for the same period.

There were no statistically significant variations in ratings of supervisor support, the extent staff perceived that they were consulted about organisational change, or role clarity throughout the study, in either the intervention or comparison sites.

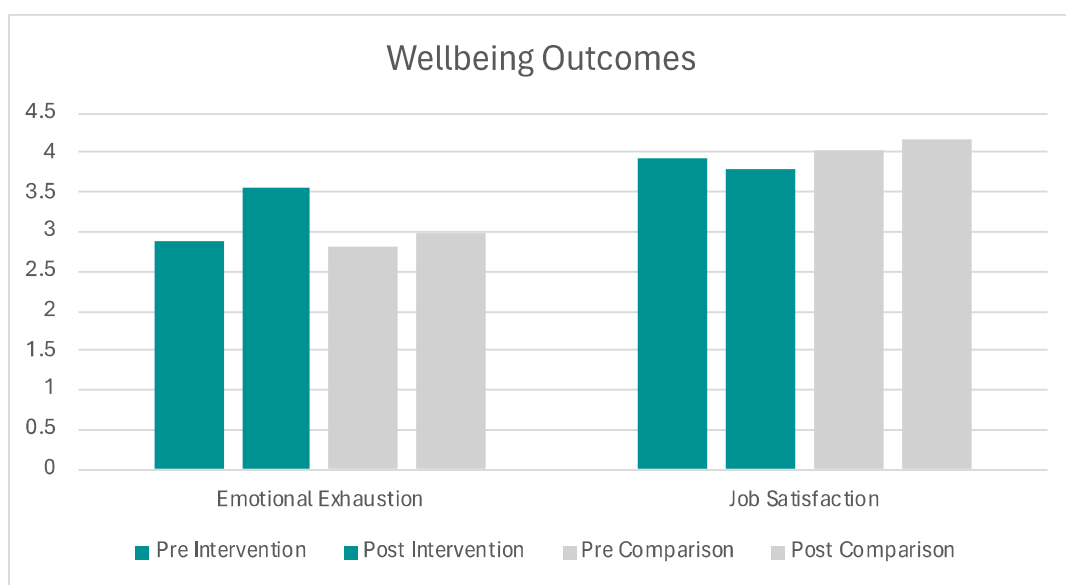


Figure 9. Graph of Means of Wellbeing Outcomes for Intervention and Comparison Sites.

When looking at broader wellbeing related outcomes (Figure 9), there were no observable trends in job satisfaction for either intervention or comparison sites between August 2022 and August 2023. A closer look at the data suggests that there is a lot of variation amongst individuals. Additionally, the percentage of workers who agreed that they recommend the partner organisation as a great place to work was 74% at the time of the first engagement survey February 2022. This figure increased to 79% in March 2023.

However, contrary to our expectations, increased scores in self-reported emotional exhaustion were observed in both intervention and comparison sites from August 2022 to August 2023, and this increase was statistically significant for the intervention sites. This finding was surprising considering that our data indicated strong associations between self-reported emotional exhaustion and time pressure ($r_{T1} = .40, p < .05$; $r_{T2} = .30, p < .01$) and emotional demands ($r_{T1} = .47, p < .05$; $r_{T2} = .53, p < .01$), experienced by carers (see Table 4). In fact, the strength of the association between both time of demands and emotional exhaustion increased, and therefore a decrease in job demands would normally be expected to be associated with a decrease in emotional exhaustion. Several reasons might explain this finding.

First, emotional exhaustion can occur following the accumulative experience of stress and as a result can also take substantial time to recover from (Maslach & Leiter, 2008). Increases across intervention and comparison sites could represent reflections of previously accumulated strain that has yet to be recovered from. Additionally, the effect of the observed reduction in time pressure and emotional demands on emotional exhaustion may not be concurrent and require more time to eventuate. Most importantly, a potential explanation of these findings is provided by the series of additional changes that happened across the business and especially within the intervention sites at the time of the intervention that could have contributed to a reduction in employee wellbeing. These included, (amongst others) a wide operational implementation of the new funding model that saw additional shifts being added for care workers, but also other categories of personnel being laid off; significant changes in the leadership team at both intervention sites; a change of CEO at the time of follow-up data collection and an associated restructuring of the executive team. As all these factors are known to contribute negatively to employee engagement and wellbeing at work, they could explain the negative changes in emotional exhaustion, and one could argue that the significant reduction of demands during this time could have acted as a protective factor. However, data available does not allow us to test this alternative explanation.

In short, the trends observed for emotional exhaustion and job satisfaction were similar across both intervention and comparison sites and caution is needed in drawing conclusions on intervention efficacy regarding these more distal outcomes.

Summary and Implications

Results obtained based on quantitative data available indicate that the work redesign solutions implemented in intervention sites have been successful in reducing time pressure and emotional demands experienced by direct care workers.

Whilst a positive trend was observed in co-worker support, particularly when compared to the comparison site, the improvements in the intervention sites were not strong enough to reach significance levels.

Both intervention and comparison sites experienced increases in emotional exhaustion, and this reached statistical significance for intervention sites. As high levels of job demands are associated

with higher levels of emotional exhaustion, a potentially explanation to the simultaneous reduction in demands and increase in emotion exhaustion may be due to (1) the time it takes to recover from emotional exhaustion and for the effect of the reduction of demands to eventuate or (2) co-occurring changes that counteracted the positive benefits of reduced job demands.

Table 4. Descriptive statistics and correlations for study variables across all sites.

	M (SD) T1	M (SD) T2	TP	ED	CS	SS	RC	OCC	EE	Jobsat
TP	2.46 (1.01)	2.09 (.85)	--	.43**	-.14	-.28**	-.31**	-.12	.30**	-.25**
ED	2.82 (1.13)	2.50 (1.05)	.46**	--	-.04	-.33**	-.26**	-.26**	.53**	-.28**
CS	4.02 (0.86)	4.16 (1.00)	-.32**	-.13	--	.45**	.51**	.15	-.16	.23*
SS	4.16 (0.82)	4.09 (1.03)	-.32**	-.26*	.50**	--	.60**	.41**	-.40**	.39**
RC	4.05 (.91)	3.99 (.98)	-.43**	-.21	.41	.51**	--	.32**	-.28**	.36**
OCC	3.20 (.95)	3.19 (1.03)	-.29**	-.24*	.25*	.23*	.40**	--	-.34**	.15
EE	2.85 (1.62)	3.33 (1.86)	.40**	.47**	-.09	-.24*	-.13	-.26*	--	-.38**
Jobsat	3.97 (0.89)	3.95 (1.00)	-.30**	-.30**	.25*	.35**	.35**	.39**	-.41**	--

Note. TP= Time pressure; ED = Emotional demands; CS= Coworker support; SS= Supervisor support; OCC= Organisational Change Consultation; EE= Emotional Exhaustion; Jobsat= Job satisfaction. Lower diagonals represent correlations for T1, upper diagonals for T2.

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Table 5. Descriptive statistics and correlations for study variables for intervention sites.

	M (SD) T1	M (SD) T2	TP	ED	CS	SS	RC	OCC	EE	Jobsat
Intervention Site										
TP	2.46 (.93)	2.08 (.80)	--	.34**	-.17	-.30**	-.26*	-.07	.32**	-.30*
ED	3.00 (1.14)	2.57 (1.04)	.36*	--	-.12	-.47**	-.23*	-.31**	.62**	-.39**
CS	3.95 (.86)	4.10 (1.00)	-.36*	-.04	--	.36*	.53**	.19	-.13	.16
SS	4.11 (.81)	3.99 (1.07)	-.28	-.20	.54**	--	.53**	.46*	-.40**	.26*
RC	4.07 (.80)	3.85 (.98)	-.39*	-.01	.34*	.34*	--	.36**	-.26*	.24*
OCC	3.17 (.95)	3.15 (1.08)	-.18	-.08	.27	.56	.38*	--	-.36*	.15
EE	2.88 (1.49)	3.55 (2.00)	.40*	.42**	-.08	-.27	-.22	-.16	--	-.44**
Jobsat	3.92 (.98)	3.79 (1.08)	-.36*	-.32*	.25	.30	.53**	.43**	-.43*	--

Note. TP= Time pressure; ED = Emotional demands; CS= Coworker support; SS= Supervisor support; OCC= Organisational Change Consultation; EE= Emotional Exhaustion; Jobsat= Job satisfaction. Lower diagonals represent correlations for T1, upper diagonals for T2.

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Qualitative Evaluation of Intervention Effectiveness

Qualitative data was obtained from interviews conducted with workers across the large and small intervention sites and the small comparison site. These interviews investigated the impact of recent changes in the organisation on demands and wellbeing. Emerging findings from interviews are integrated in this report to support quantitative data analysis.

Method

Following the implementation of interventions, interviews were conducted with 11 direct care workers (10 care workers, 1 therapy assistant). The interviews addressed both the intervention process overall as well as the longer impact that the intervention might have had, which will be discussed in a later subsection of the present report. Interviews were analysed using content analysis, a research method used to interpret qualitative data by identifying and examining patterns or themes within the text.

Key Findings

The overarching themes emerging from the content analysis of interviews conducted with care workers in participating facilities were (1) consistent with the previously described quantitative results and (2) provide evidence that workers have recognized and experienced change to targeted job demands and resources associated with workplace changes.

First, the increase in staff numbers was positively experienced. Most staff explicitly associated this rise in numbers not only with reductions in time pressure, but also with a tangible reduction in emotional demands. They expressed that having more colleagues allowed them to allocate more time to individual residents. This, in turn, made them feel as though they had the additional resources necessary to provide personalised care. As a direct consequence of increased staffing, time pressure also seemed to decrease, enabling staff to complete their tasks without feeling rushed or overwhelmed.

"I can see there's more staff on the floor. That's definitely a big difference. I can see the original [staff] aren't running around like crazy." – Care Worker.

"[The staff] seem to be happier and lighter in their working days as well, which is what you notice more than the numbers on the floor...they're happier." - Care Worker.

Another noteworthy theme was the strong sense of coworker support, especially when it came to the large intervention site wherein a new onboarding process was introduced as a part of the work redesign intervention. Many comments indicated that having the backing of their peers significantly facilitated the transition of newcomers into the facility. It appeared that the presence of a robust support system amongst coworkers not only eased the assimilation of new practices but also fostered a collaborative environment where everyone felt encouraged to succeed.

"Everyone is helpful. And you know where to go for help. They're approachable...everyone is approachable. Which is I think a good thing. If you need something, you can go and ask them without them being, you know, judgmental or anything. I still feel like I can go and ask." - Care Worker.

"I feel comfortable. It doesn't seem like it's my new workplace. It feels like I've been working here for a long time." - Care Worker.

Lastly, the reintroduction of a task list was also mentioned. These organisational tools were seen to play an important role in streamlining work processes, improving role clarity, and giving a sense of

autonomy and ownership over the care tasks back to the team, although more data might be needed to fully understand this impact.

"I feel like the staff on the floor have more responsibility...they have a more set task for them, you know, they're aware that "yes, this is my responsibility. And I have to do this, this, and this" rather than RNs telling them what to do." Registered Nurse

In conclusion, the changes introduced in the partner facility largely appeared to have been received positively. While the increased staffing numbers were frequently noticed within the interviews, so were the actions implemented as a result of the participatory work redesign intervention. The significant reduction in emotional demands and time pressures observed in the quantitative data was also echoed by the qualitative data provided during the interviews. Furthermore, the sense of camaraderie and support among staff, particularly in relation to the onboarding process and handover, underscores the importance of a positive workplace culture

Intervention Effectiveness based on Organisational Data

We obtained organisational data on turnover, personal leave and leave without pay for all facilities involved in the study, for the entire period covered in the project. For the purposes of this project we have cleaned, integrated, and analysed data on turnover and personal leave for the facilities involved in the study.

Key Findings

This section reports findings from an analysis of retention and leave data over the study period obtained from the Partner Organisation. We analysed personal leave and turnover rate for six months before the start of the interventions (between 1 April 2022 to 30 September 2022), during the intervention period (1 October 2022 to 31 March 2023), and post intervention (1 April 2023 to 30 September 2023).

We first analysed instances of personal leave (Table 6, Figure 10). We focused on this type of leave because it constitutes a form of voluntary absence and is typically associated with recovery from ill health or burnout. We first looked at the average number of hours of leave across the intervention and comparison sites. As can be seen in Figure 10, intervention sites experienced an initial 20.7% decrease between pre-intervention to during intervention followed by a 12.8% increase at post-intervention. Despite this increase, **intervention sites' post-intervention personal leave averages were 10.5% lower than pre-intervention rates.**

In contrast, the comparison sites experience consistent increases. First, an initial 11.5% increase between pre-intervention to during intervention and then a further 33.3% increase at post-intervention. Overall, **comparison sites' post-intervention personal leave averages were 48.6% higher than pre-intervention rates.**

Table 6. Average personal leave hours per employee for each site in the pre-intervention, during-intervention, and post-intervention periods.

	Large Intervention	Small Intervention
Pre-intervention	30.5	18.3
During intervention	24.2	20.4
Post-Intervention	27.3	27.2

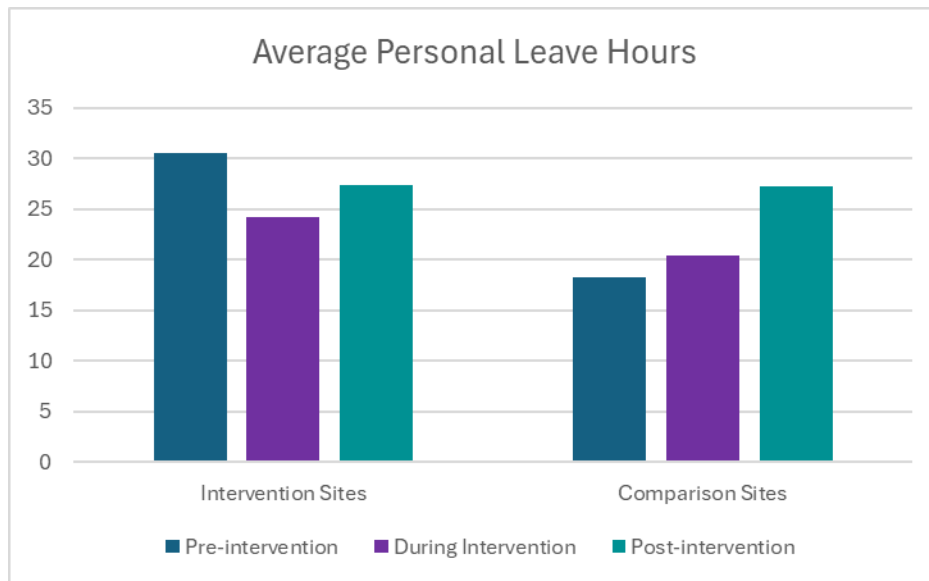


Figure 10. Average Personal Leave Hours per Employee for each Site in the Pre-intervention, During-intervention, and Post-intervention Periods

We also analysed the turnover rate for each site (Figure 11). The turnover rate was calculated by dividing the number of people who stopped working at the facility during the pre-, during and post-intervention periods, divided by the number of unique people who were present at any point during that period.

Interestingly, the comparison sites showed the greatest decline in turnover rate over the course of the project. In these facilities, caregiver turnover decreased from 21.7% in the six months prior to the intervention, to 9.5% in the post-intervention period. Comparatively, turnover rates at the intervention sites remained relatively stable through the intervention process, with a .5% decrease in the turnover rate when comparing pre-intervention to post-intervention percentages.

We note turnover is a distal outcome of poor employee wellbeing and that multiple factors contribute to turnover rates other than employee wellbeing (e.g., personal financial and family circumstances, organisational changes). For example, during the study period changes to the operations of Wellness Centres resulted in downsizing of allied health workers in some sites.

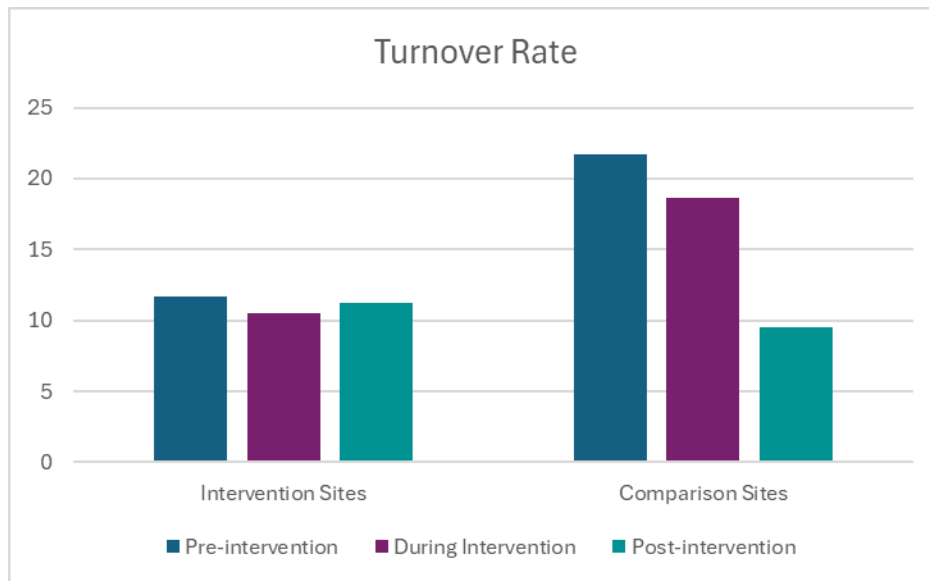


Figure 11. Turnover Rate of Intervention and Comparison Sites Across the Research Project.

Longer-Term Impact

Due to significant changes happening in the Partnering Organisation and especially intervention facilities towards the end of 2023, a further large scale data collection was not successful. However, the potential longer-term impact of the intervention was explored via the interview data described in the earlier section, complemented with further quantitative and qualitative data. Although the Partnering Organisation provided data on worker personal leave and turnover up until the 12th of December 2023, a projection of longer-term impact based on the full range of this data was ill-advised due to inequivalent analysis periods, the approaching of the holiday season, and the significant additional organisational change experienced by the partnering organisation at this time, all of which could have significantly impacted leave and turnover.

Quantitative Results

The Partnering Organisation completed another engagement survey at the end of the September 2023. Although this survey did not capture workers experience of job demands or resources, worker responses provide an indication of endorsement of their organisation and their intention to stay.

Responses to the most recent engagement survey show a continuing positive trend in workers who endorse their organisation. Prior to the intervention (March 2022), 73.7% of intervention site workers agreed or strongly agreed that their organisation is a great place to work in. This increased by 5.5% to 79.2% by March 2023 during the implementation of the intervention, and in September 2023 rose further by 11.8% to 91% agreement. Alternatively, the comparison group workers responded with a 3% increase from March 22 to March 2023, and then experienced a 5.4% decrease to 84.7% agreement by September 2023.

Similar changes are observed in workers self-reported turnover intentions. Assessed in the March 2023 engagement survey, intervention site workers reported a 6% increase in those who agreed or strongly agreed that they see themselves working at the partner organisation in the next two years (86%). However, comparison site workers had a 4% decrease, from 81.1% to 77% agreement.

In summary, we see the maintenance of increasing trends of organisational commitment (for organisation endorsement and intentions to stay) in the intervention sites, compared to a slight shortfall in the comparison sites.

Qualitative Results

We obtained reflections through interviews with employees (see section above on qualitative data), complemented with interviews with the two intervention sites' facility managers and the internal organisational development consultant at the partnering organisation to assess the wider impact of the intervention on the organisation and potential avenues for improvement.

The interviewees iterated how the intervention contributed to shifting and diversifying pathways for addressing issues experienced by workers. For example, it was described that solutions previously used to be training-focused but that the organisation had gradually shifted in adopting more system solutions and that the work redesign intervention contributed to their repertoire of such solutions.

"I think it has reinforced that need to look at the broader picture, rather than just trying to fix everything with training."

Further, there also appeared to be a greater focus on identifying and addressing root causes of problems in existing systems and processes.

"New staff coming who don't know what they're doing... and then they're creating these lists to try and tell the staff what to do... but it wasn't really accurate... What we need to do is fix that problem, fix the onboarding, ... which has really gone towards improving the orientation process."

Additionally, the participative nature of and consultation process within the intervention appeared to be positively received as an opportunity for workers to have a voice in these solutions.

"It gave them a bit of empowerment to know that what they're saying is being heard and [there are] actions coming as a result of it. So yeah, it's been a positive experience for everybody concerned."

These interviews also shed light onto potential areas of improvement for further intervention success, particularly in balancing operational needs and improving change communication.

There was a described challenge in balancing the work required to implement the intervention with the everyday work to maintain operations. For example, it was described that an agency worker may not receive an agency sheet if workers are too busy caring for residents to give one to them. However, solutions were being made to counter constraints (i.e., have agency workers collect their own agency sheets when they sign in) and it was recognized that intervention actions that addressed workers' needs were equally important and essential to operational success.

"Residents come first, but to me, the staff come first because if we look after them, they will look after our residents."

Communication regarding intervention actions were also seen as an area that could be improve. Managers from the intervention sites described challenges in communicating changes as workers are often unable to read emails.

"It's better to talk in person because staff don't read emails. We can't expect them to read emails outside of their work and onsite they don't have time to read their emails"

"I sent the email and then I went out on the floor and I said to everybody, I've sent an email. Make sure you tell everyone that you work with [about] that."

However, with multiple strategies including walking out on the floor and speaking to workers in person, meetings that workers had the option of dialling in to attend, and spreading the responsibility of sharing information, communication challenges appeared to be overcome.

Stage 3 Summary

Stage 3 established the effectiveness of the work redesign intervention as there was a reduction in job demands in the intervention sites that was not observed in the comparison sites. Further qualitative data and organisational data indicate these the reduction in job demands was recognized by workers and having a positive impact on their perceptions of work and on rates of personal leave. Longer-term impact data indicated that these benefits were being sustained as well as indicated that work redesign intervention were consolidated in the Partnering Organisation's repertoire of strategies to address job demands.

Stage 4: Intervention Scaling

Introduction

In this final stage of the research project the aim was to consolidate the research findings and provide information to support further scaling of the intervention both within the Partnering Organisation as well as more broadly across the aged care sector and beyond. Activities at this stage were focused on:

1. Continuous engagement with the partner organisation to support scaling within the business.
2. Conducting a cost-effectiveness analysis of the intervention to support decision making about further scaling or replications of similar interventions in other organisations.

Engagement to support scaling within the partner organisation

To support the wider adoption of the work redesign solutions and embed work redesign within the Partnering Organisation's repertoire of strategies for addressing job demands, further details of the work redesign solutions and tools were provided.

Work redesign solutions and data regarding their effectiveness was shared with the facility managers and the Partnering Organisation's organisational development team and executive team. These details could be freely circulated around the Partnering Organisation for adoption in other facilities that experienced similar challenges and could make use of these solutions. For example, the organisational development team had simultaneously been reviewing the onboarding process for nurses across the organisation. Details about the redesign of the onboarding process at an intervention site were shared with the organisational development team to assist in the changes that they were leading across the organisation.

The research team further engaged with the staff responsible for work, health, and safety at the Partnering Organisation to develop a tailored tool kit for work redesign intended for Health and Safety Representatives at each facility as well as the leadership team. Consistent consultation with these staff members clarified which practical resources were needed at the organisational level for better equipping health and safety representatives as well as facility managers to address psychosocial risks in the workplace independently (without the support from the research team) and via participatory processes.

The result of this engagement was a toolkit which provided methods and associated resources (e.g., activity sheets) for conducting work redesign workshops to address psychosocial risks. For example, instructions on developing a change team that includes a diverse range of roles, workers who will be directly impacted by changes, and workers with differing perspectives to changes.

Cost-effectiveness analysis

To provide further support to both employers and policy makers in making evidence-based decisions regarding the feasibility and scalability of participatory work redesign interventions aimed at optimising job demands and reducing their associated psychosocial risks, we conducted a cost-effectiveness analysis of the work redesign intervention presented in this report. We conducted this analysis from the perspective of an aged care employer who would be expected to cover the expenses associated with running the same workplace intervention.

This analysis used the following sources of data:

1. The assessment of intervention efficacy for both primary outcomes (time pressure and emotional demands) as well as secondary outcomes (job resources and employee wellbeing) reported in the earlier section of the present report.
2. Data regarding the average hours of personal leave taken within each 6-months time periods provided by the partner organisation which was converted into cost items. This was achieved by multiplying the total hours of personal leave taken by the cost associated with each type of professional appointments. Fifty-two distinct professional roles were coded into broader categories using classifications by the Australian Bureau of Statistics (ABS). The median hourly rate reported by ABS for each appointment category was used to compute cost estimations.
3. An estimation of intervention delivery costs was compiled, including direct costs related to workshop preparation and delivery, as well as indirect costs associated with lost works for employees participating in the work redesign workshops.

Following convention, we assessed and reported cost-effectiveness by examining the mean cost efficacy and the variation of mean estimates distribution across the four quadrants of the incremental cost-effectiveness ratio (ICER) graphical plane. These quadrants signify distinct scenarios: the southwest quadrant represents interventions that are less effective and lead to increased costs, while the southeast quadrant indicates interventions that are effective but still incur additional costs. In contrast, the northwest quadrant represents interventions that are less effective but contribute to cost reduction, while the northeast quadrant indicates that an intervention not only delivers superior treatment effects but also offers cost-saving benefits (more than zero saving and more than zero effects).

Key Findings

Our analysis indicated that the four sites studied experienced differing rates of absenteeism over time, with the intervention sites reducing the rate of absenteeism and consequently absenteeism-related costs, with an estimated average of 119.4 AUD per employee, while comparisons sites were associated with marked increased costs of 397 AUD. This resulted in a substantial difference between the intervention and control estimates, reaching as high as 516.9 AUD per employee when directly compared. The average reduction of absenteeism costs in the intervention sites decreased from 119.4 AUD to 81.4 AUD per employee after factoring in the costs of implementing the intervention (estimated at 20,922 AUD for the two facilities). This adjusted estimate of 81.4 AUD (ranging from 52.2 to 110.5 AUD) is deemed to represent a net cost benefit for the organization, resulted from reductions in personal leave hours taken in the intervention sites.

Considering the broader contextual factors (i.e. COVID, new funding model, changes in the executive leadership team and facility level leadership, etc) and their potential impact on the quasi-experimental settings, further analysis focusing on the incremental cost-effectiveness ratio (ICER) was limited to the intervention group only. This analysis revealed that while the intervention overall was

deemed to be cost-effective, efficacy was predominantly observed in job demands with both time pressure and emotional demands resulting in mean estimates that were >95% contained in the cost-saving quadrant. This result was not surprising given the primary focus of the intervention on reducing demands and significant reductions in time pressure and emotional demands being observed at follow-up for the intervention group (see Stage 3 section of the present report). As results at follow-up revealed no significant changes in most of the other secondary outcomes measured, our findings showed mean estimates for self-reported job resources dispersed around the north-east and north-west quadrants, reflecting a potential for cost saving for interventions that would more actively and effectively target job resources. This is in line with existing theory pointing towards a greater efficacy potential for interventions that target both demands and resources at the same time (Bakker & Demerouti, 2014). In line with the unexpected findings detailed in the earlier section of this report, our findings for wellbeing outcomes indicated a trend towards cost saving, but negative efficacy, but these results need to be interpreted in the light of the various intervening factors already discussed.

A detailed account of the cost-effectiveness analyses conducted, and full range of findings are provided in a manuscript currently in preparation for submission to an academic publication (Karin et al., in prep).

Stage 4 Summary

We engaged with the Partnering Organisation to support a wider communication of outcomes within the business and facilitate the scaling of the work redesign intervention beyond the intervention facilities. In this process we have created tailored tools to support a wider application of work redesign solutions and to better equip the organisation to make further positive changes to work design. The cost-benefit analysis we conducted using data and findings from this research informs decision making for other organisations seeking economically viable solutions to address demands and highlights the cost effectiveness of the intervention developed and implemented.

Conclusions and Recommendations

This report presents the findings from the evaluation of a complex work redesign intervention conducted across four residential care facilities within an aged-care organisation in Western Australia. Multiple sources of data were collected over time and across intervention and comparison sites to enable research into how the work redesign intervention and other organisational events contributed to trends and differences in job demands and resources. The results are encouraging with statistically significant decreases in job demands including experiences of time pressure and emotional demands which were also deemed cost-effective for the organisation. However, trends in job resources were less clear amongst sites and it did not appear that the reduction in job demands had affected employee work-related wellbeing in the anticipated direction, likely due to a delay in its potential effect or because its effect was counteracted by other concurrent organisational changes. This evaluation contributes to our and the partnering organisations repertoire of evidence-based methods to address psychosocial risks and present timely recommendations for the aged-care sector in enhancing workforce sustainability.

With increased trends towards work intensification, aged care organisations as well as organisations from other industries and sectors are facing the challenge of addressing the psychosocial risks posed by increased levels of job demands experienced by employees. Work redesign interventions have the potential of identifying ways in which organisations can optimise job demands in an effective and cost-efficient manner. But tailoring to the specific needs of the organisation, unit, or categories of employees is key. Therefore, the maximum benefit of a work redesign intervention can be expected from replicating the participatory processes illustrated in the current project report (rather than implementing the specific solutions designed for the Partnering Organisation in this instance).

Our recommendations for organisations looking to replicate a similar intervention are as follows:

1. Develop a thorough understanding of the problem space through multiple methods of data collection and analysis.

This is an important step that will shed light on the many different types of demands (and other work characteristics) that might be experienced in the workplace. An important note though is the fact that the analysis should go beyond just inspection and comparison of mean levels across organisations or units and document also the strength of the links between each of the targeted job demands and various outcomes of interest in terms of wellbeing or other valued outcomes (e.g., turnover, absenteeism, compensation claims, etc.). This type of information will help target the intervention towards areas where there is the maximum potential for gains and impact. Further triangulation of data using qualitative sources will also enable a better understanding of what is important to employees while at the same time providing insight into possible factors contributing to increased levels of job demands as well as possible solution areas that could be considered, thus informing the intervention development and implementation.

2. Involve workers through participatory processes in all stages of intervention planning, development, and implementation.

A participatory approach to intervention development and implementation is acknowledged to positively contribute to better intervention implementation and outcomes. This is due to the fact that it improves the chances that solutions address relevant problems or root causes of experienced job demands (Fox et al., 2021). Also, it facilitates the identification of tailored solutions to redesign

work and minimise or eliminate job demands which are rooted in the real needs and experiences of employees. Furthermore, employing participatory processes represents in itself a work redesign intervention that can support employee wellbeing due to its effects on employee increased autonomy to deal with workplace inefficiencies, more opportunities to voice important workplace issues with the leadership team and increased participation in decision making regarding relevant work processes (Fox et al., 2021). Moreover, involvement of employees in decision making about solutions and measures that impact their day-to-day work processes will result in increased support and feedback during implementation.

3. Systematically capture and monitor the effectiveness of work redesign solutions to optimise their efficacy (i.e., ensure implementation fidelity, make needed adjustments).

Closely monitoring and documenting intervention processes and outcomes allows for a timely consideration of any barriers in implementation and/or needs to operate modifications to the identified solutions to ensure maximum impact. Systematic evaluation also enables more complex analysis to identify which outcomes have been impacted, for whom, and why. This has the potential of providing clear guidelines for decisions around modifications needed, as well as scaling or replications within the business. Monitoring and evaluation can be achieved by using quantitative survey data collection at different timepoints throughout the intervention as well as the analysis of organisational data already captured by the HR department. Quantitative data can and should be complemented by qualitative data collected using interviews, focus-groups, or observations to obtained more in-depth insights into how employees perceive the changes working as intended, what are the barriers in the implementation as well as different ways in which impact could be enhanced.

4. Maintain and communicate a consistent awareness of the opportunity to modify work design for constant improvements and as a strategy to address potential psychosocial risks for employees.

In the context of a highly complex and dynamic work environment, and with research pointing to reduced benefits from stress management interventions targeted at the individual employees (Song & Baicker, 2019) it becomes ever more important for organisations to take a proactive and continuous approach to creating healthier workplaces. This requires genuine support and endorsement from leaders and decision makers within the business for continuous and systematic processes that target improvements in work conditions (Day & Nielsen, 2017). In other words, work processes and practices should be continuously considered and scrutinised, not just during formal intervention programs. And the key ingredient for this is the effective nurturing of active participation processes that can involve employees and stakeholders at different levels in collectively generating constructive, incremental, and effective organisational change (Lovejoy, et al., 2021).

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Appendix 1.

Overview of Interventions and How They Map onto Identified Hazards.

Identified Hazard	Description	Proposed interventions	Site(s) Implemented
High Job Demands	<ul style="list-style-type: none"> High time pressure, especially at the beginning of the shift due to competing responsibilities of attending handover and attending to residents' calls, and at the end of shifts due to many documentation tasks. Increased emotional demands arising from complex interactions with residents and their families, as well as from unproductive/ unsupportive interactions with colleagues (e.g., during handovers, coordination of tasks). High workloads are experienced due to staff shortages, staff absences, and/or the need to work with new staff members or agency staff who lack familiarity with residents and work systems. Absence of systems to prevent the doubling up of documentation tasks and to reduce the risk of documentation errors. 	Plan shifts to allow for a 15-minute overlap at each of the major shift changes. This shift restructure will allow sufficient time for incoming staff to attend handover without leaving bells unanswered or starting the shift with a backlog of tasks. It also reduces time pressure at the end of the shift for exiting staff.	Small intervention site
		Development and implement new work tools (e.g., an agency worker checklist) and processes to reduce inefficiencies, interruptions, and doubling of tasks	Small intervention site
		Reintroduce the use of care task lists as a tool enabling a more efficient distribution and coordination of tasks across care teams, thereby improving care quality and reducing demands	Large intervention site
		Roster additional shifts to ensure enough workers and create a better distribution of workload particularly during periods of high demands (e.g., absent staff).	All sites
		Implement new settings/functionalities in the care management technological system to: 1) automate actualisation of assessment data, to remove duplicated administrative tasks, and to reduce risks of mistakes; all of which will remove and/or reduce stressful staff demands. 2) allow for summary reports that are tailored for different role categories and provide essential information needed.	Small comparison site
Poor Support		Redesign the handover processes and delivery to ensure that workers have quick access to	Small intervention site

	<ul style="list-style-type: none"> Necessary information to organise work efficiently is not communicated effectively during handovers. Full handovers are not available at all major shift changes. Information (e.g., about residents, level of care preferences) needed to organise tasks properly and on time is not readily available. New staff members and agency staff are required to do complex tasks without sufficient induction/integration. Inadequate guidance from supervisors and assistance from co-workers for new staff members. Frequent changes in team membership contributes to a culture that discourages coworker support. 	information that they need to do their job. This includes roster changes to ensure a 15-minute overlap between shifts (see above), implementation of full handovers at all major shift changes, establishing a briefing process for staff members on shorter shifts, and revising the handover protocol to reduce inefficiencies, interruptions, and emotional strain and ensure that information is communicated effectively.	
		Encourage the development of positive working relationships (by introducing new staff members during handover, clarification of roles and responsibilities during onboarding, effective communication of initiatives).	Small intervention site
		Redesign the onboarding process to ensure that all new staff members develop the required knowledge and skills needed to use facility specific tools, equipment, systems, policies, and processes.	Large intervention site
		Reintroduce the use of care tasks lists (which contain necessary information regarding care tasks and residents – see above).	Large intervention site
		Increase the number of permanent staff during peak periods of workload (e.g., morning shifts) to ensure more stable teams and facilitate co-worker support, efficiency, and coordination.	All sites

Lack of Role Clarity	<ul style="list-style-type: none"> Information about roles and responsibilities for some categories of staff is incomplete, missing or not readily available (e.g., agency staff members, staff providing training and support to new staff members). Lack of clarity about work priorities due to inefficient/ inconsistent handover processes. 	Implement a new checklist that clearly outlines key responsibilities and expectations for agency staff together with key information needed.	Small intervention site
		Provide workers with an improved onboarding process to ensure that a) new staff members understand their role and are well equipped for independent work, and b) existing staff members understand expectations from new staff members at each phase in the onboarding and can provide adequate support.	Large intervention site
		Design and implement feedback processes during onboarding so that new staff receives feedback, has an opportunity to raise concerns about role clarity and schedule additional buddy (job shadowing) shifts if needed.	Large intervention site
		Provide new functionalities in the care management platform that allow for reports to be adapted for different categories of staff members (e.g., care versus clinical roles).	Small comparison site
Low Job Control	<ul style="list-style-type: none"> Limited scope for workers to adapt the way they work due to the high workload or to introduce efficiencies due to prescriptive processes and regulations. Limited consultation about changes impacted employees' work. 	Reintroduce the use of care tasks list to encourage workers to adopt more efficient ways of self-organising and coordinating tasks within teams.	Large intervention site
		Implement participatory processes to involve workers in organisational decision making about improving existing work demands through the SMARTer Work in Aged Care workshop series.	Intervention sites
		Create an environment in which workers feel empowered to raised concerns about work requirements and/or changes in work. This is achieved by supporting regular SMART Care Team meetings in which members raised issues and put forward ideas.	Intervention sites

