

Investigation of MSD toolkit risk and hazard measures in relation to claim rates and other indicators

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Executive Summary

Key messages

Musculoskeletal disorders (MSDs) are a significant issue affecting workers in residential aged care. Workplaces need to accurately identify all hazard and risk factors for MSDs prevalent in the workforce and develop risk controls. The survey measures used in this project provide a basis for organisations to develop appropriate risk controls for management of MSDs.

Purpose

The purpose of this research was to use a range of measures to identify differences between organisations that vary in MSD claim rates in terms of:

- Scores on MSD survey measures
- Manager and employee scores on the Stages of Change survey
- Less formal indicators derived from interviews and organisational data

A subsidiary aim was to identify the main predictors of MSD risk taking into account organisation differences.

Rationale

There is now a large body of research evidence concerning causes of MSDs and requirements for effective workplace interventions, but this knowledge is not yet reflected in conventional workplace strategies to manage MSD risk.

Currently, MSD risk management procedures primarily focus on controlling risks arising from manual handling activities. However, it is now well established that psychosocial hazards can strongly influence MSD risk. Workplace interventions to reduce such risk should aim to be multidisciplinary in their approach and include organisational, technical and personal/individual measures (European Agency for Safety and Health at Work, 2001).

Recent research in the UK has attempted to improve the efficacy of interventions by applying the “Stages of Change” model to the workplace (Whysall, Haslam, & Haslam, 2007). This model acknowledges the importance of addressing attitudes in order to achieve behaviour change, and assumes that any behaviour change involves movement through distinct stages:

1. Pre-contemplation (resistance to recognizing or modifying problem behaviour),
2. Contemplation (thinking about changing, but not ready to act),
3. Preparation (intending to change in the next 30 days and/or having made plans to do so),
4. Action (changed behaviour, no longer than 6 months ago),
5. Maintenance (changed over 6 months ago, working to consolidate gains made and avoid relapse).

Underpinning this rationale is that interventions appropriately targeted at the stage of change where an organisation is operating, are more likely to be effective. An individual's stage determines their receptiveness and the likely efficacy of an intervention. Work applying the Stages of Change model in workplaces to address OHS issues is in its infancy and this research explores whether the Stages of Change model can be used to differentiate between organisations with different MSD claims rates.

In previous work undertaken by La Trobe University (LTU) a risk management (MSD) toolkit was developed. The current project takes the survey component of the MSD toolkit and validates it against a range of claims related measures in the residential aged care sector, enabling the survey measure to be further refined and validated. The aged care sector was

selected in consultation with WorkSafe Victoria (WSV), due to the high numbers of MSD claims.

Methods

Four organisations were recruited on the basis of their claims data; two classified as poor performers, and two classified as good performers. A total of eight sites (two per organisation) participated in the project. Following the recruitment of participant organisations, the project comprised three stages of data collection: interviews with managers and supervisors (n=58); a review of policies and procedures related to OHS and MSDs; and an employee survey at each site (n=426). All quantitative data analysis was undertaken using SPSS v22. Qualitative data analysis of interviews was undertaken using NVivo v10.

Interviews with managers and supervisors explored topics which included: issues related to OHS policies and procedures, the organisation's mission or values (both general and those related to OHS), Stages of Change (SoC) measures, communication strategies, key OHS issues and a range of questions around organisational support.

Each participant organisation was asked to provide copies of policy and procedure documentation related to OHS and the management of MSDs. Documentation was reviewed and coded in relation to coverage of a range of identified hazards and risk in relation to MSDs. A coding framework was developed using criteria drawn from the conceptual framework underpinning this project

Survey measures assessed:

- 1) demographic characteristics and background information
- 2) job satisfaction, work-life balance and workability
- 3) physical and psychosocial hazards
- 4) musculoskeletal discomfort experienced in the last 6 months
- 5) Stages of Change (adapted questionnaire developed by (Whysall, Haslam, & Haslam, 2005)

A range of analysis strategies were undertaken to determine to what extent survey responses could differentiate organisations classified as good and poor performers based on MSD claims performance.

Research findings & implications

Interviews

Six key themes were identified following analysis of manager/supervisor interviews: supportive management, communication, general interest in OHS, policies and procedures, social support and teamwork, and difficulties in the aged care sector.

Some consistent issues arose from the interviews including problems with establishing effective communication strategies, variable interest in OHS across the organisations, policies and procedures available but not necessarily useful in terms of addressing all hazards in relation to MSDs and a range of issues related to the aged care workforce which included some difficulties in managing a highly multicultural staff and different expectations around the structure of work.

Policy review

The policy documentation review found very limited inclusion of identification or management of psychosocial hazards across the range of materials reviewed, only two of

the organisations reviewed had coverage of these hazards; one extensive and one minimal. Physical hazards were covered more extensively than psychosocial hazards. However, no clear differentiation between good and poor performers was identified.

Survey

Survey respondents had a mean age of 42.8 years (Range 0 – 77 years) and were predominately female (82.2%).

Analysis was undertaken to determine predictors of discomfort levels and of performance levels (good and poor claims performance).

In terms of predicting discomfort levels, both physical and psychosocial hazards were significant predictors of employees reporting having discomfort in the last six months and also the level of that discomfort. Those employees with higher levels of physical and psychosocial hazards were more likely to report higher levels of discomfort.

For the second outcome variable of high and low performance, identification of predictors was somewhat problematic. It appears that one of the organisations may be been misclassified and thus modelling to determine differences between good and poor performers resulted in some inconsistent results.

Item analysis was undertaken using the employee performance rate as an indicator of performance, both with and without Organisation 2. Results from this analysis provide insight into some important issues in the sample organisations. Workload was significantly associated with poorer employer performance rates; this was evident both in an item from the psychosocial (WOAQ) measure and three separate measures of work demands. Lower workability was associated with poor employer performance rates. In terms of physical hazards two items were significantly associated with worse employer performance rates, higher levels of repetitive tasks and standing in one position. One item

The variable Stages of Change was examined in a number of ways, both qualitatively and quantitatively. In general, organisations were using training as a method of addressing hazards and risks associated with MSDs. Employee responses to Stages of Change survey questions provide some insights into actions they have taken at an individual level to address some problems such as changing shifts or reducing numbers of hours.

This research provides evidence for the use of a range of measures to assist workplaces with improving their management of MSDs. The study findings support the relationship between self-reported discomfort levels and compensation claims.

Use of the research

Results from this project will be used to refine the survey measures developed in previous work. These measures form a central part of a risk management toolkit for MSDs, which is now ready for implementation and evaluation in workplaces in collaboration with the research team. Despite the difficulties with differentiating good and poor performance, the links between discomfort levels and the modified groupings provides support for the use of discomfort levels in hazard identification activities.

In addition, WSV project team members will examine survey items for potential use in future compliance related activities.

Potential impact of the research

Outcomes from the survey measure provide a basis for workplaces to accurately identify key hazard and risk factors for MSDs relevant to their own workforce and develop risk controls based on these findings.

Current strategies in workplaces are primarily focused on training of individuals in a range of physically orientated tasks. Whilst it is critically important that workers have appropriate skills in the usage of equipment, the current study has demonstrated that a range of other factors are also important in MSD development and subsequent claims patterns. Thus, it is strongly recommended that organisations adopt more comprehensive approaches to managing MSDs through regular hazard surveillance of all potential hazards and risks— both physical and psychosocial. Use of the survey measures enables organisations to more easily assess risks relevant to MSD development.

The Stages of Change measure provided useful information about organisations' perceptions of their approaches to MSD risk and can be used to ensure that interventions are targeted appropriately depending on which phase an organisation is in in the Stages of Change model.

Findings from this study contribute to the development of potential new and more effective ways of managing MSDs, ultimately leading to a reduction in MSD claims.

Research purpose

Two key aims were outlined for this research:

Primary aim: To identify differences between organisations that vary in musculoskeletal disorder (MSD) claim rates (two organisations with low rates and two with high rates) in terms of observed relationships between claim rates and MSD toolkit survey measures; manager and employee scores on the *Stages of Change* survey¹; and a range of less formal indicators derived from interviews and organisations' own records.

Subsidiary aim: Identify the main predictors of MSD risk taking into account organisational differences.

Background

There is now a large body of research evidence concerning causes of MSDs and requirements for effective workplace interventions, but this knowledge is not yet reflected in conventional workplace strategies to manage MSD risk.

Currently, MSD risk management procedures primarily focus on controlling risks arising from manual handling activities. Management of associated psychosocial hazards are rarely a workplace primary consideration. However, it is now well established that psychosocial hazards can strongly influence MSD risk. Workplace interventions to reduce such risk should aim to be multidisciplinary in their approach and include organisational, technical and personal/individual measures (European Agency for Safety and Health at Work, 2001).

In previous work undertaken by La Trobe University (LTU) a risk management toolkit was developed, using data collected in the health care, manufacturing and logistics sectors, and drawing on contemporary literature relating to MSD causation. Currently, the toolkit is in draft format and requires implementation and evaluation testing before being released for general usage.

This project takes the survey component of the toolkit and validates it against a range of claims related measures in the aged care sector. The aged care sector was selected in consultation with Worksafe Victoria (WSV), due to the high numbers of MSD claims in this sector.

Results from this project will be used to further refine the toolkit in readiness for implementation and evaluation in selected workplaces. In addition, WSV project team members will examine survey items used for potential inclusion in future compliance related activities.

An important aspect of the project is to determine what are the key differences between organisations that are good or poor performers as defined by a range of claims and other performance related data (see table 1). That is, do the toolkit measures differentiate these organisations and their claims performance?

To assist with this aspect of the project a measure called Stages of Change will be used.

¹ Indicates enterprise stage of 'maturity' in OHS risk management (scales have been validated in relation to MSD risk)

Stages of Change

Stage of Change is a component of the Transtheoretical Model developed by Prochaska & DiClemente (1982). This model acknowledges the importance of addressing attitudes in order to achieve behaviour change, and assumes that any behaviour change involves movement through five distinct stages:

1. Pre-contemplation (resistance to recognising or modifying problem behaviour),
2. Contemplation (thinking about changing, but not ready to act),
3. Preparation (intending to change in the next 30 days and/or having made plans to do so),
4. Action (changed behaviour, no longer than 6 months ago),
5. Maintenance (changed over 6 months ago, working to consolidate gains made and avoid relapse).

To date this model has not been widely used in the occupational health and safety area. However, recent research in the UK has attempted to improve the efficacy of interventions by applying the “Stages of Change” model to the workplace (Whysall et al., 2007). An individual’s stage determines their receptiveness and the likely efficacy of an intervention

For example, an organisation considered to be at the pre-contemplation stage may need to be convinced they have a problem and therefore education targeted at this stage of change would be appropriate. However, those in the preparation stage are already aware that a problem exists and are focussed on identifying appropriate solutions, therefore skills to assist with addressing the problem would be more appropriate. Underpinning this rationale is that interventions appropriately targeted at the stage of change where an organisation or individual is operating are more likely to be effective.

An important distinction in the Stages of Change approach for occupational settings is that to rely solely on the behavioural change of employees would be contrary to OHS legislation. Therefore, to bring about behaviour change at an organisational level, interventions should be targeted at managers and supervisors, based on the stage of change identified. However, employee participation remains a vital component of the process of risk management and much has been documented about the importance of a participative approach to reduce workplace hazards and risks in relation to MSDs.

Methods

Following recruitment of participant organisations, the project comprised three stages of data collection: interviews with managers and supervisors; a review of policies and procedures related to OHS and MSDs; and an employee survey at each site.

Research ethics

Submissions were made to the La Trobe University Faculty Human Ethics Committee (FHEC) and if required to organisations’ ethics committees. FHEC approval number is FHEC13/035.

Participant recruitment and selection

WorkSafe Victoria (WSV) played a key role in the selection and recruitment of participant organisations. WSV identified a number of organisations with either high or low MSD claims based on a range of criteria as seen in Table 1. Researchers were presented with a table containing four categories. The resultant four categories of organisations were good performers with low MSD claims rates, good performers with high MSD claims rates, poor performers with low MSD claims rates, and poor performers with high MSD claims rates.

Details of the four categories were withheld from the researchers. The research team identified target organisations in each of the four categories based on size of facilities (to maximise number of potential participants) and geographical location (to facilitate data collection) prior to contacting organisations to invite them to participate in the research. One organisation from each of the four categories agreed to participate. For each organisation, access to two facilities was requested, with a preference for larger facilities.

Participant organisations were asked to provide: general information about the size of the company; claims data for the previous 10 years, broken down by site; injury and incident data for the previous 10 years, broken down by site; and for the specific sites involved in the project: a de-identified list of all staff list indicating position held and employment fraction; absenteeism and sick leave data; and staff turnover rates.

Table 1 WSV criteria for organisation categorisation into good and poor performance

WSV criteria for categorisation of organisational MSD claims performance
Inspector experience
Visit numbers, review of Entry Reports, Notices and Compliance outcomes (for all OH&S activities). Both qualitative and quantitative elements including numbers of breaches, type of breach, duration to achieve compliance, observations made)
Review of relevant WSV projects in the sector, by size of organisation or by hazard and the outcomes of the projects
Industry Group, ANZIC code
Remuneration (in total and relative to business activity; annual remuneration over seven years)
Claims performance (rate per \$M and a comparison to weighted industry claims rate per \$M; annual claims over six years; mechanisms/agencies of injury; occupational distributions; cost distribution; workplace distributions
Return to work performance
workplace locations (within or near metropolitan Melbourne)
employer premium rate and employer performance rate

Outcome variables

A range of claims data was used to create the categories of good and poor performer organisations – one of the outcome measures used in the study – and can be seen in Table 2. Claims data was from 2012/2013 and employer premium and performance rates were from 2013/14 (this is averaged over three years so considered to take in the period of the study). WSV also provided industry and sector level data.

Table 2 Categorisation of organisations into good performers and poor performers

Measures	Org 1		Org 2		Org 3		Org 4	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
No of claims	2	0	2	2	3	2	4	2
Costs	142,819	0	20,424	51,528	472,917	28,968	186,154	141,000
Premium Rate	.154		.904		4.9906	8.24044	2.566	3.6536
Good/poor	Good performer		Good performer		Poor performer		Poor performer	

Manager and supervisor interviews

In total, 58 semi-structured interviews were conducted with managers and supervisors across all sites. Interviews took between 45 to 60 minutes to complete. Details of interviews can be seen in Table 3.

Table 3 Number of interviews across all sites

Role	No of interviews
Managers	14
Lifestyle Coordinators	9
Catering managers	8
Maintenance	3
Nursing	19
Other coordinators	5

Topics explored in interviews included role clarity, issues related to OHS policies and procedures, the organisation's mission or values (both general and those related to OHS), Stages of Change measures, communication strategies, key OHS issues and a range of questions around organisational support.

Interviews were conducted individually and audio recorded with the participant's consent. Audio recordings were later transcribed and analysed thematically using NVivo software to assist with data management.

Review of policies and procedures

Each participant organisation was asked to provide copies of policy and procedure documentation related to OHS and the management of MSDs. Specific documents requested from all organisations included those related to: the organisation values and/or mission statement; the OHS mission and/or policy statement; the well-being mission and/or policy statement; the MSD risk management system; and procedure for reporting and managing MSDs, sick-leave and/or absenteeism policies. Any other documents considered relevant to MSD risk management by managers were also requested.

Documentation was reviewed and coded in relation to coverage of a range of identified hazards and risk in relation to MSDs. A coding framework was developed (see Appendix A) using criteria drawn from the conceptual framework underpinning this project.

Two members of the research team independently undertook document review and coding. Discrepancies in coding were discussed and agreement reached.

Employee survey

A paper-based questionnaire was offered to all permanent and casual employees at each of the participating sites. The questionnaire used in this study has been validated in previous research (Macdonald & Evans, 2006; Oakman & Macdonald, 2012) and was modified for use in the current research. Modifications included changes to job categories to ensure these were appropriate to the organisation (following discussions with site managers), and the inclusion of scales to measure Stage of Change, and is described later in this report. The survey took employees between 15 to 20 minutes to complete.

Questionnaire content included the following:

Demographic information

Age, gender, current job, employment duration in current job, overall hours worked, shift pattern worked, primary carer status.

Job satisfaction

A single item asking: *How happy are you with your job here?* was used as a measure of job satisfaction. A five point scale from 1 to 5 was used, from very dissatisfied to highly satisfied.

Work life balance

A single item asking: *How satisfied are you with the balance between your home life and work here?* A five point scale from 1 to 5 was used, from very dissatisfied to highly satisfied.

Psychosocial hazards

A 26-item modified Work Organisation Assessment Questionnaire (WOAQ) (Griffiths, Cox, Karanikja, Khan, & Tomas, 2006) was used to measure psychosocial hazards in the organisation.

Workload was measured using a 4-item scale, adapted from the Copenhagen Psychosocial Questionnaire (Kristensen, Hannerz, Hogh, & Borg, 2005), with a five point scale with responses from *never* to *always*.

Physical work demands

A 12-item scale measured physical hazards at the site. *In your job here how much of the time do you: do very repetitive work, lift things that are moderately heavy?* etc. Items covered a range of physical work demands covering cumulative and over exertion type hazards. Response categories were *never, rarely, sometimes, often* and *almost all of the time*.

Work ability

A single-item asked respondents to rate their current work ability on a scale of 1-10 against their lifetime best. The work ability concept has been widely reported (Ilmarinen, 2009; Ilmarinen, 2005; Oakman & Wells, 2013). Work ability scores were categorised into excellent (10), good (9), fair (7-8) and poor (0-6)

Discomfort Scores

Respondents were asked to report the incidence of *any discomfort or pain towards the end of your overall working day/night in the past six months (yes or no)*.

Discomfort/pain ratings (both frequency and severity) were recorded separately for five body regions. Frequency was recorded on a scale of 0-4 (never to almost always) and severity from 1-3 (mild, moderate or severe). Scores were calculated for each region by multiplying the frequency and severity. As severity data had high levels of missing data a decision was made to use frequency data only. Frequency ratings for each body part were summed and divided by 5 to create a discomfort scale. This is a modification to previous work, where severity scores were also used (Macdonald, Evans, & Armstrong, 2007), however frequency data is commonly used in the literature as an outcome measure.

Categorical versions into three (low, medium, high) of all survey measures was undertaken to facilitate some analysis techniques. Categorisation was done on the basis of response scales (0-2= low, 2.01 to 3.99 = medium, 4-5 = high).

Stages of Change

A modified version of the Stages of Change questionnaire was used (Whysall et al., 2007). Four stages were used instead of the original five, based on discussions with other researchers using the tool and preliminary findings of the research team. The distinction between the stages of contemplation and preparation is related to timing of proposed

interventions, and for many employees this information was not known. As a result of this the coding structure outlined in

Figure 1 was used.

The four stages used in the current study are:

- Pre-contemplation: resistance to recognising or modifying problem behaviour
- Contemplation/Preparation: recognition of the problem, thinking about changing or having specific plans to do so within the next six months
- Action: having engaged in behaviour change, no longer than 6 months ago
- Maintenance: initiated changes over 6 months ago, working to consolidate gains made and avoid relapse

Stages of Change questions

Question: Are you concerned about the level of MSD risk in your organisation?

Response: Rating scale 1-5 from strongly agree to strongly disagree (in the original questionnaire, the response option was dichotomous, yes/no)

Question: Do you think that your employer needs to take action to reduce the risk of you developing muscular aches and pains?

Response: yes within the next 1-2 months, yes within the next 6 months, no

Question: Has your employer made changes to reduce the risk of you developing muscular aches and pains?

Response: yes 1-2 months ago, yes 6 months ago, no

Categorisation

Data collected from both employees and managers was categorised using the framework outlined in Figure 1. As highlighted earlier, contemplation and preparation stages were combined. Thus a total of four categories were used; pre-contemplation, contemplation/preparation, action and maintenance.

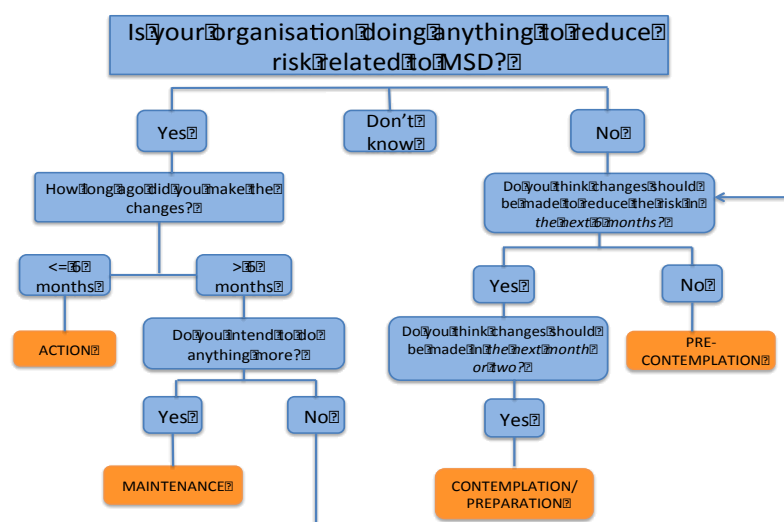


Figure 1 Coding framework for Stages of Change (modified from original UK version)

Data collection procedure

Questionnaires were distributed to team leaders and placed in strategic places (for example, the nurses' station). Managers and supervisors were asked to inform staff about the survey and allow them to complete the questionnaire during staff briefings and shift hand overs. A sealed envelope with instructions on where to place or send the completed questionnaire was attached to each questionnaire. Participants were assured of their anonymity. Members of the research team collected the completed questionnaires and returned them to La Trobe University for opening and data was then entered into a statistical package, SPSS Version 22.

At various points throughout the data collection period at each site, a member of the research team visited the site to speak at team briefings and assist employees with literacy problems. In these instances the researcher was available to clarify any questions or conduct the survey as a structured interview. Completion time of the survey ranged from 15 to 30 minutes.

Final analysis strategy

Preliminary analysis was undertaken prior to determining the final modelling strategy presented in this report. All data analysis was undertaken using SPSS v22.

Dependent variables included discomfort, Stages of Change, job satisfaction, work ability, work-life balance, WOAQ and physical hazards. Outcome measures were self-reported discomfort levels and a range of claims measures provided by the organisations.

Information on the number of claims, cost of claims, employer premium rate and performance rate were used by the research team to categorise the organisations as either having good or poor performance in terms of MSDs.

Bivariate data analysis was used to explore predictors of these outcomes. The independent variables for this series of analyses included psychosocial and physical hazards, Stages of Change and demographic data.

Further analyses were conducted to explore differences between organisations rated as good or poor performers across a range of variables.

A review of policy and procedure documentation was used to examine differences between the extent of coverage of physical and psychosocial hazards in MSD risk management documentation and organisational performance measures such as number of claims.

Results

Interviews

Key themes are presented here following analysis of the manager/supervisor interviews. Six themes will be presented: supportive management; communication; general interest in OHS; policies and procedures; social support and teamwork; and difficulties in the aged care sector. Some preliminary analysis was undertaken to identify potential predictors of good and poor performing organisations. Quotes are included where relevant to provide examples.

To protect the confidentiality of interviewees and organisations, the terms 'good' and 'poor' performers are used, labelled as GP and PP respectively.

Supportive Management

Managers and supervisors reported that being supported and providing support was key to developing a good team and addressing a range of issues including absenteeism and improving the understanding of OHS policies and procedures.

In most cases, senior managers reported they had good support from head office, and from managers at other sites within their broader organisational network. Some had developed mentoring relationships and reported these as highly beneficial in developing strategies to manage complex issues. A few reported a disconnect between the central organisation, head office, and what happened at site level, stating that change felt like it was imposed rather than negotiated. Higher influence on a range of issues was reported at site level than at an organisation level.

“She’s (the DON) willing to try things and doesn’t care where the suggestion comes from if it’s a good idea and is more pleased to hear constructive things from everybody rather than everybody just sit on their hands.” (PP)

“I always get access to talk with the care manager and DON at any time.” (GP)

Communication

Clear and constructive communication with staff presented ongoing challenges in the complex aged care environment. Changing shift patterns, rotating rosters and problems with absenteeism made developing reliable and efficient communication channels important but difficult. Staff and managers reported communication as critically important but reflected on failures to connect with staff, usually related to timing of delivered information and making clear the relevance and meaning to individuals.

“Communication has been a little bit of an issue here.” (GP)

“Between all us managers it’s email, with my staff it’s face to face, verbal.” (PP)

Interviewees reported a wide range of communication methods. However, interviewees acknowledged that some strategies, whilst more efficient, are problematic e.g. email. The wide range of employee backgrounds, ages and levels of technological uptake make the development of one single communication strategy very difficult and pointless.

“I put return receipt to my emails so I know who’s read them and who hasn’t, we have our whiteboards for informal communication and for the residents to see and the staff to go past. Notes in the diaries so that they can handover for the different shifts.” (PP)

“There are a few staff that aren’t able to use computers, so we always have those hard copies as well for staff.” (PP)

Communication methods varied across sites, but shift handover times played an important role in getting messages across to staff. The use of electronic communication was limited, as in many sites employees did not have regular access to a computer. The use of staff meetings appeared to be an area of frustration for more senior managers as few people regularly showed up. Potential opportunities for staff input were missed by poor attendance at the meetings.

Some managers reported that for very important issues they walked around to check that the “message was getting out”. One organisation had recently changed from electronic storage of notes and communication back to a paper-based system and this was reported to be causing some problems with access and location of information, policies and procedures.

General interest in OHS

Reporting on the levels of interest in OHS resulted in a range of responses: from not at all interested, to staff are very keen not to injure themselves and so take care with issues related to OHS. More senior managers reported a zero tolerance on breaches of policies and procedures related to OHS. For example, if staff were seen undertaking resident transfers without use of appropriate lifting devices, managers would approach and discuss why this had occurred. However, both managers and supervisors acknowledged that they were not always around and that sometimes things happened behind “the curtain” and out of their sight.

“They (the organisation) are very hot I’d say on OHS. I think generally they take it seriously and they do a lot.” (GP)

“The majority of the time it’s just fly by the pants and fingers crossed.” (GP)

“I think they sometimes feel like OH&S and the training...slows them down a bit and is a bit of a waster of time.... it’s just too slow to do it properly is the kind of attitude.” (PP)

“I don’t think the staff around here really care that much about it (OHS).” (PP)

“They don’t see it as being part of their responsibility, part of the employer’s responsibility to provide a safe work environment.” (PP)

Policies and procedures

Managers and supervisors reported on the availability and accessibility of policies and procedures. Mostly, people knew what was available and if not sure on the detail reported they knew where to find out answers to questions. However, many reported that the translation into practice of some policies and procedures, particularly in relation to OHS, could be improved. Managers and supervisors felt that staff were informed about the importance of particular policies related to manual handling but did not always demonstrate use of this information in practice.

“They’re very caring about OH&S.” (GP)

“There’s a lovely culture here, everybody just wants to do the best for the resident, so it’s not really tolerated people not following policy and procedures.” (GP)

“We have to do these courses and all that, and then as soon as we get out of the course or whatever we go back to our old habits.” (PP)

“It doesn’t matter how many signs you’ve got up, nobody reads them.” (PP)

Social support and teamwork

Social support was discussed as very important, particularly in relation to managing turnover and absenteeism levels. Senior staff felt that having high levels of support and good teamwork was key to addressing absenteeism issues. Building a support network in their respective areas was considered to be part of a manager’s and supervisor’s role. High levels of social support resulted in staff being more willing to fill in and swap shifts to avoid having to use agency staff (which was considered to be a negative outcome).

“The last few months it’s been quite up beat I think, the morale and the atmosphere’s been very good.” (GP)

Teams were reported as important mechanisms for managing problems, reducing absenteeism and improving processes for various workplace issues. Managers and supervisors reported that strong teams worked through problems and developed solutions,

presenting them to management, rather than having change imposed on them. In terms of risk management, strong teams monitored their own performance providing feedback to each other and if someone was found undertaking an unsafe act, then others would move in to assist them rather than walk away. Absenteeism was reported as better by interviewees, potentially because individuals felt more committed to their peers and did not want to let them down.

“I think that staff just aren’t all that happy,....I feel that’s improving now that the manager has started meeting with people who call in sick once a week to talk to them about we can do.” (PP)

“I guess if you’re getting lots of sick leave where it’s not really explained we tend to look at the environment that they’re working in. What are the stressors that may be causing them to call in sick?” (PP)

Difficulties in the aged care sector

Aged care facilities face a range of challenges from relatively minor and able to be managed at site level, to more complex ones requiring significant structural changes to the administration governing the whole sector. “Difficulties in the aged care sector” was a theme that was developed from a range of comments across interview participants. More senior managers were focused on issues relating to funding of facility residents and how this constrained their ability to adequately staff some sections of sites. At a more practical level, the care needs of individuals appears to be increasing, as residents tended to remain at home for longer before moving into a more formal care arrangement such as a residential facility.

Changes to the nature of the work force were considered by senior managers to raise some cultural issues that were reported as challenging. Employees in the aged care sector are from diverse cultural backgrounds and have a range of expectations in relation to work place entitlements, and interactions with residents and other staff. Highly experienced managers reported facing new workforce issues that they felt ill equipped to deal with. One manager stated that she felt a need for discussion and further training for employees and managers in mutual expectations so that some of these issues could be addressed prior to problems occurring.

Managers reported issues such as employees expecting to be granted long – up to three months – periods of leave with only one week’s notice, taking time off for cultural occasions without providing an explanation for the request and in some cases difficulties with employees from different religious and ethnic groups who have not traditionally worked together. Some managers reported issues concerning different expectations around levels of patient respect that should be provided.

Policy review

Results of the policy documentation review are shown in Appendix A. A summary of results is shown in Table 4. Of note, is the very limited inclusion of psychosocial hazards across the range of materials reviewed, only 2 of the organisations reviewed had coverage of these hazards; one extensive and one minimal. Physical hazards were covered more extensively than psychosocial hazards. However, no clear differentiation between good and poor performers was identified. Not included in this review was the date at which these policies were last reviewed by the organisations. This review did not include an audit of their usage, nor did it include a review of OHS committee meetings, their meeting minutes or outcomes. Some comments in the managers’ Stages of Change interviews related to proposed policy changes as a method for reducing MSD risk.

Table 4 Summary of policy review for all sites

		Org 1		Org 2		Org 3		Org 4	
		Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Policy Review	Physical Hazard coverage	✓✓		✓✓✓		✓✓✓		✓✓	
	Psycho-social hazard coverage	zero		✓		✓✓✓		zero	

Claims performance	Good Performer	Good Performer	Poor Performer	Poor Performer
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✓✓✓ extensive coverage, ✓✓ moderate coverage, ✓ minimal coverage, zero- zero coverage, N does not exist , Y provided

Definitions related to the coding framework

Extensive coverage: well described coverage of items, with sufficient detail to undertake risk management activities, identification and development of controls related to MSDs

Moderate coverage: some detail provided but additional knowledge or materials required to adequately undertake risk management activities

Minimal coverage: items only mentioned very briefly with no detail

Zero coverage: no inclusion of any items meeting the criteria in the framework

Survey results

Error! Reference source not found.5 shows numbers of surveys and interviews undertaken by site, and associated response rates.

Table 5 Data collection response rates all sites

		Number of Interviews	Number of Survey Responses	Response rate (%)
Org 1	Site 1	5	25	54.3
	Site 2	5	16	69.6
Org 2	Site 1	6	56	39.7
	Site 2	9	55	52.8
Org 3	Site 1	8	67	50.0
	Site 2	10	57	40.7
Org 4	Site 1	8	90	61.3
	Site 2	7	60	50.0
Total		58	426	52.3

Employee characteristics

Participant characteristics and independent variables can be seen in

. Respondents tended to be over 50 years of age and female, and Personal Care Attendants (PCAs) represented half the sample. This is consistent with the staff and gender profile in the facilities included in the study.

Table 6 Participant characteristics and independent variables across all sites

Participant Characteristics	N=426	%	χ^2
Age (Years)			
18-30	109	25.6	.00
31-40	61	14.3	
41-50	87	20.4	
51 plus	169	39.7	
Gender			
Male	64	15.5	.00
Female	350	84.5	
Job role			
PCA	212	50.2	.00
EEN/EN	57	14.5	
RN	37	8.8	
Support staff	65	15.4	
Other	51	12.1	
Job satisfaction			
Low	25	5.9	.18
Medium	322	75.9	
High	77	18.2	
Work life balance			
Low	47	11.2	.03
Medium	320	76.0	
High	54	12.8	
Work ability			
Poor	43	10.5	.10
Fair	170	41.4	
Good	84	20.4	
Excellent	114	27.7	
Work Load			
Low	109	40.3	.00
Medium	274	23.6	
High	38	36.1	
Physical Hazard			
Low	67	15.7	.00
Medium	310	72.7	
High	15	11.6	
WOAQ			
Low	12	2.8	.07
Medium	378	88.7	
High	36	8.5	
Stages of Change			

Pre-contemplation	113	28.2	
Preparation	106	26.5	
Action	107	26.8	
Maintenance	74	18.5	.00
Discomfort			
Yes	346	81.2	
No	80	18.8	.03

Figure 2 shows Stages of Change across all sites. Of note are the higher number of responses in the pre-contemplation stage for the poor performers versus the good. Overall, nearly a third of responses were in the pre-contemplation phase, and over half in the preparation and action phases of Stages of Change. The poor performers were more likely to be in the pre-contemplation phase than organisations classified as good performers.

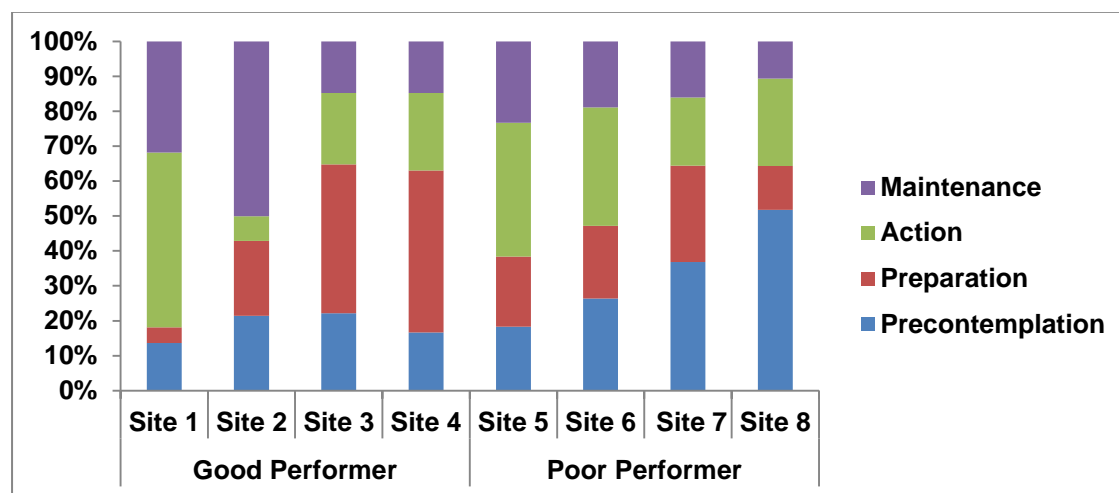


Figure 2 Stages of Change across all sites

Figure 3 shows work ability across all sites. Almost 70% of respondents reported their work ability as poor or fair, in comparison to only 30% who stated it was good or excellent.

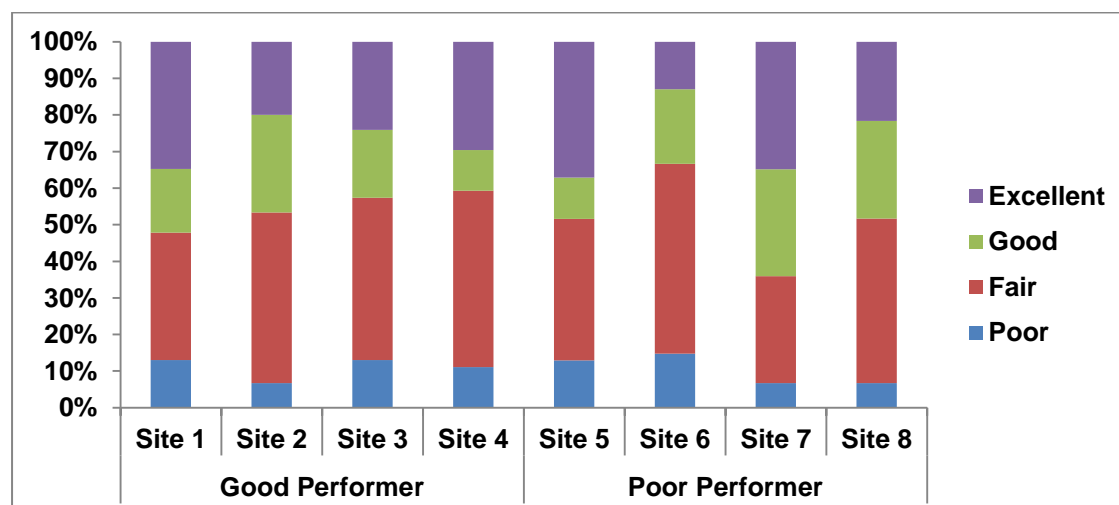


Figure 3 Work ability across all sites by good and poor performers

Predictors of Discomfort

Discomfort was examined in two ways, as a dichotomous outcome, that is whether a respondent has pain or not and secondly, as a continuous measure of self rated scores of discomfort (frequency measure). The two measures require different methods of analysis.

Table 7 Logistic regression of discomfort on independent variables

	B	S.E.	Wald	Sig.	Odds Ratio	95%CI	
Age	.00	.01	.04	.85	1.00	.98	1.03
Gender	.33	.39	.74	.39	1.40	.65	2.98
Job Satisfaction	-.15	.24	.39	.54	.86	.54	1.38
Work life balance	-.07	.22	.11	.74	.93	.60	1.43
Work ability	.20	.13	2.44	.12	1.22	.95	1.57
Psychosocial Hazards	.74	.31	5.66	.02	2.09	1.14	3.84
Physical Hazards	-1.37	.27	26.33	.00	.26	.15	.43
Workload	-.11	.18	.40	.53	.89	.63	1.27
Constant	-1.53	2.07	.54	.46	.22		

shows results of logistic regression with discomfort and eight predictors: age, gender, job satisfaction, work life balance, work ability, psychosocial and physical hazards and workload. The overall model was statistically significant $\chi^2(8, 346) = 64.1$, $p = .00$, indicating that as a set the predictors distinguish between those who have pain and those who do not.

shows regression coefficients, wald statistics, odds ratios and 95% confidence intervals for each of the predictors. The model predicts 81.8% of the cases correctly. Cox and Snell R Square is .17 and Nagelkerke R Square .27.

The two-significant predictors of having discomfort were psychosocial and physical hazards, with odds ratios of 2.1 and .26 respectively.

This can be interpreted in the following way, that for every increase of one on the psychosocial measures scale, respondents have double the odds of having discomfort compared to not having discomfort. For the physical hazards measure, a one level increase results in four times the odds of having discomfort compared to not having discomfort.

Discomfort measure (frequency of discomfort)

The continuous measure of discomfort was analysed for interaction effects between psychosocial and physical demands.

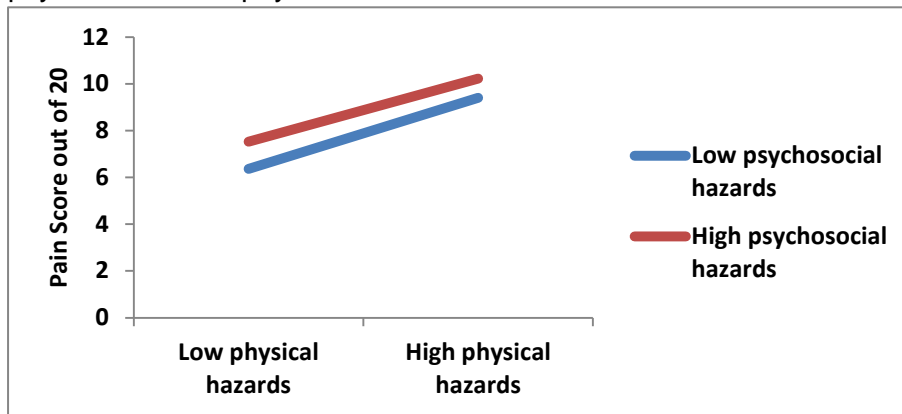


Figure 4 Additive effects of physical and psychosocial hazards on discomfort levels

8 shows the results of a 2 X 2 (physical x psychosocial hazards) factorial analysis of variance, which tested the effects of the both hazard groups on self-reported discomfort levels. Results indicated a significant main effect for physical hazards, $F(1,34.4)$, $p < .00$ and for psychosocial hazards, $F(1,4.0)$, $p < .05$.

The two main effects did not interact but were additive. Discomfort scores were highest when both physical and psychosocial hazards were high. **Error! Reference source not found.** shows this in graphical form.

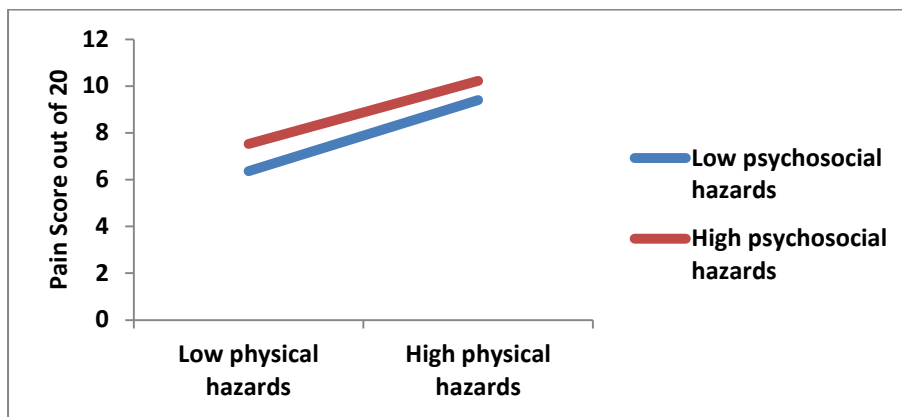


Figure 4 Additive effects of physical and psychosocial hazards on discomfort levels

Table 8 Physical x psychosocial hazards factorial analysis of variance on discomfort levels

Source	Type III Sum of Squares	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	824.146	164.8	9.1	0.0	0.1
Intercept	1283.3	1283.3	70.7	0.0	0.2
Age	0.8	0.8	0.0	0.8	0.0
Gender	59.0	59.0	3.2	0.1	0.0
Psychosocial hazards^	73.3	73.3	4.0	0.0	0.0
Physical hazards^	623.6	623.6	34.3	0.0	0.1
Psychosocial*Physical^	2.2	2.2	0.1	0.7	0.0
Error	5430.1	18.2			
Total	27876.0				
Corrected Total	6254.3				

Adjusted $R^2 = 11.7$ ^categorical measures high and low

Good and poor performers

Organisations were classified as good or poor performers based on a range of criteria outlined in the methods section.

From preliminary analysis it appears that this classification may be problematic given mean scores on a range of measures undertaken. Pain scores were highest in Organisation 2 and Organisation 3. Physical hazard scores were highest in Organisation 2, despite the classification as a good performer.

9 shows scores on measures relating to psychosocial hazards were similar across all organisations, but higher workload was reported in the good performing organisations.

To illustrate these results **Error! Reference source not found.** to **Error! Reference source not found.** show mean scores for survey measures across the organisations.

Table 9 Mean scores of survey measures by site

		Job satisfaction	Work-life Balance	Work ability	Physical hazards	Workload	Psycho-social hazards	Discomfort
Good Performers	Organisation 1							
	Site 1	3.6 (.9)	3.6 (.9)	8.5 (1.6)	2.8 (.6)	3.2 (.9)	3.1 (.7)	5.5 (3.6)
	Site 2	4.1 (.5)	3.9 (1.0.)	8.4 (1.2)	2.7 (1.0)	2.6 (.9)	3.2 (.5)	5.9 (4.6)
	Organisation 2							
	Site 3	3.7 (.8)	3.5 (.8)	7.9 (2.0)	3.0 (.7)	3.1 (.8)	3.1 (.7)	7.6 (5.7)
	Site 4	3.8 (.7)	3.6 (.7)	8.3 (1.5)	2.8 (.7)	2.7 (.9)	3.2 (.6)	7.3 (5.9)
Poor Performers	Organisation 3							
	Site 5	3.7 (.9)	3.6 (.9)	8.4 (1.7)	2.7 (.8)	3.0 (1.0)	3.1 (.7)	6.7 (5.1)
	Site 6	3.9 (.8)	3.5 (1.0)	7.9 (1.3)	2.9 (.6)	3.3 (.9)	3.1 (.7)	7.4 (5.3)
	Organisation 4							
	Site 7	3.9 (1.0)	3.8 (.9)	8.6 (1.6)	2.6 (.7)	2.6 (1.1)	3.2 (.7)	6.6 (5.3)
	Site 8	4.1 (.7)	3.8 (.7)	8.5 (1.2)	2.4 (.7)	2.5 (.9)	3.3 (.5)	5.4 (5.1)

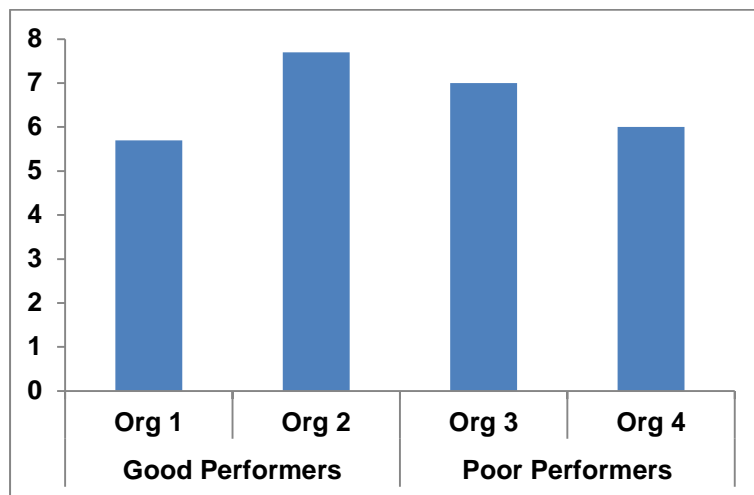


Figure 5 Mean pain score across all organisations

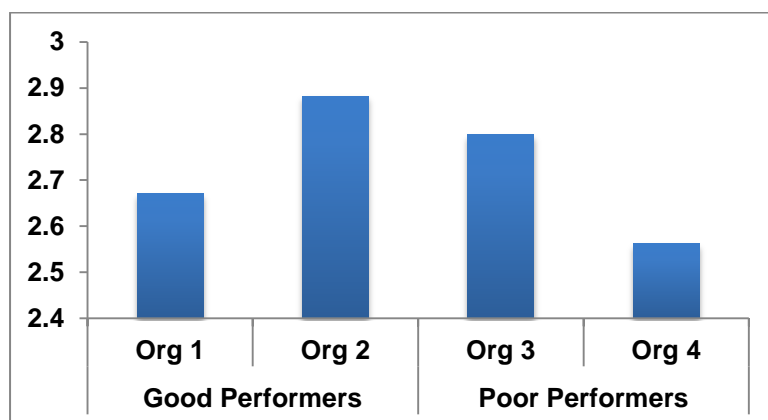


Figure 6 Physical hazards across all organisations

Physical hazards were highest in Organisation 2 and lowest in Organisation 4.



Figure 7 Psychosocial hazards across organisations

Organisation 4 had the lowest number of psychosocial hazards (a higher score indicates a better workplace environment), in comparison to the other three organisations, which had very similar responses. As highlighted in these figures, Organisation 2 shows high levels of physical hazards and higher levels of discomfort than the other three organisations suggesting that the classification of good performer may be incorrect. An important consideration is that claims measures are retrospective and the survey measures are taken at a point in time and thus indicate what is currently happening in an organisation. Interview data provides some suggestions about the organisation and its current situation. Organisation 2 is an organisation undergoing some significant changes, it had recently been taken over by a new group and a range of organisational changes was being implemented. Employees indicated a range of responses to these changes in their interviews; some positive and some negative. This may in part explain survey results of Organisation 2.

Single item measures were explored for significance in relation to the outcome measure of good and poor performers using T-tests, but results were problematic given the classification issues highlighted above. Whilst a range of single items was found to be significant the direction of the effect was opposite to what was expected. The potential misclassification of Organisation 2 goes some way to explaining some of these problems.

Further analysis was undertaken using employee performance rate as an outcome and the results are shown in Table 10 with all Organisations included and with Organisation 2 removed. For this analysis non-parametric methods were used as employer performance rates are not distributed normally, a requirement of parametric methods. In addition, this method takes into account the maximum amount of variance in the outcome variable. Table 10 shows only items that were significant following analysis.

These results provide insight into some important issues in the sample organisations. Workload was significantly associated with poorer employer performance rates; this was evident both in an item from the psychosocial (WOAQ) measure and three separate measures of work demands. Lower workability was associated with poor employer performance rates. In terms of physical hazards two items were significantly associated with worse employer performance rates, higher levels of repetitive tasks and standing in one position. One item that is significant but not easily interpretable is that of the company objectives.

Table 10 Survey items by employer performance rates

Item	With Organisation 2 included	Organisation 2 removed
WOAQ		
Your workload	ns	-.14*
Company objectives	.16**	.13*
Physical hazards		
Repetitive tasks	Ns	.12*
Standing in one position	ns	.12**
Workability	ns	-.15**
Workload		
Too much to do	ns	.20**
Difficult to keep up required work rate	ns	.15**
Not enough time to finish all my work	ns	.16**

* $p < .05$; ** $p < .001$

Stages of Change

In response to the question regarding concern of developing muscular aches and pains, over 62% of respondents agreed or strongly agreed. In contrast, 13.4% disagreed or strongly disagreed that they were at risk.

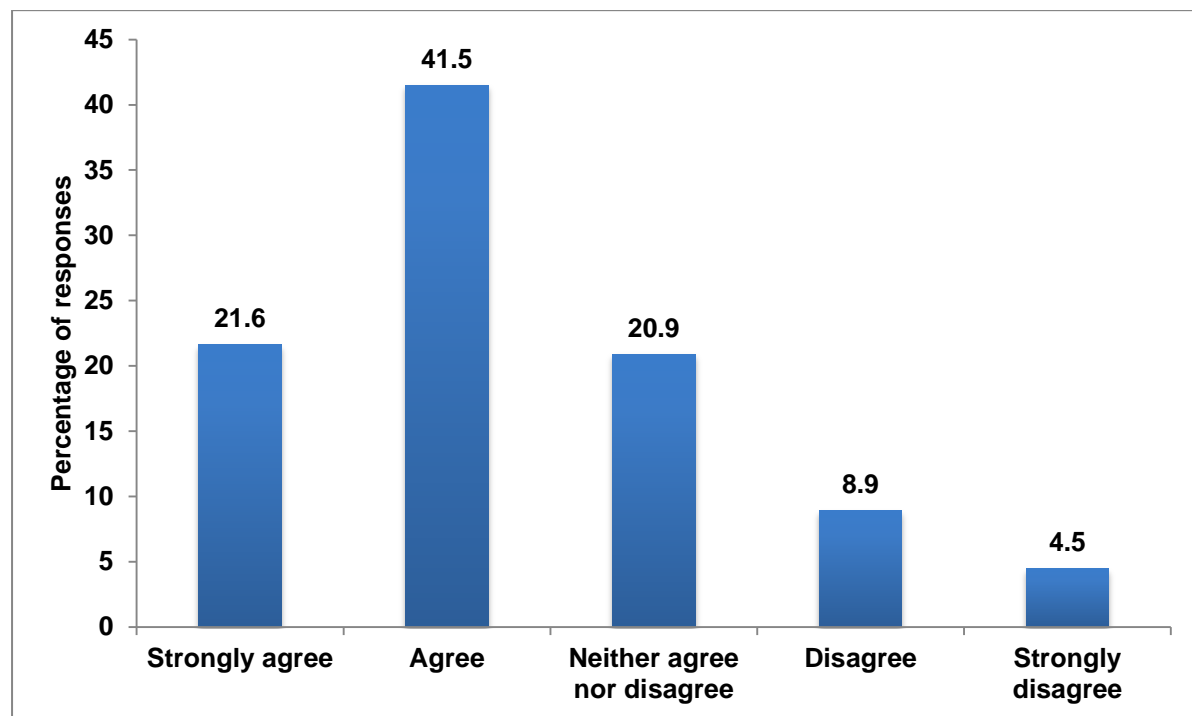


Figure 8 Employees' concern about development of muscular aches and pains

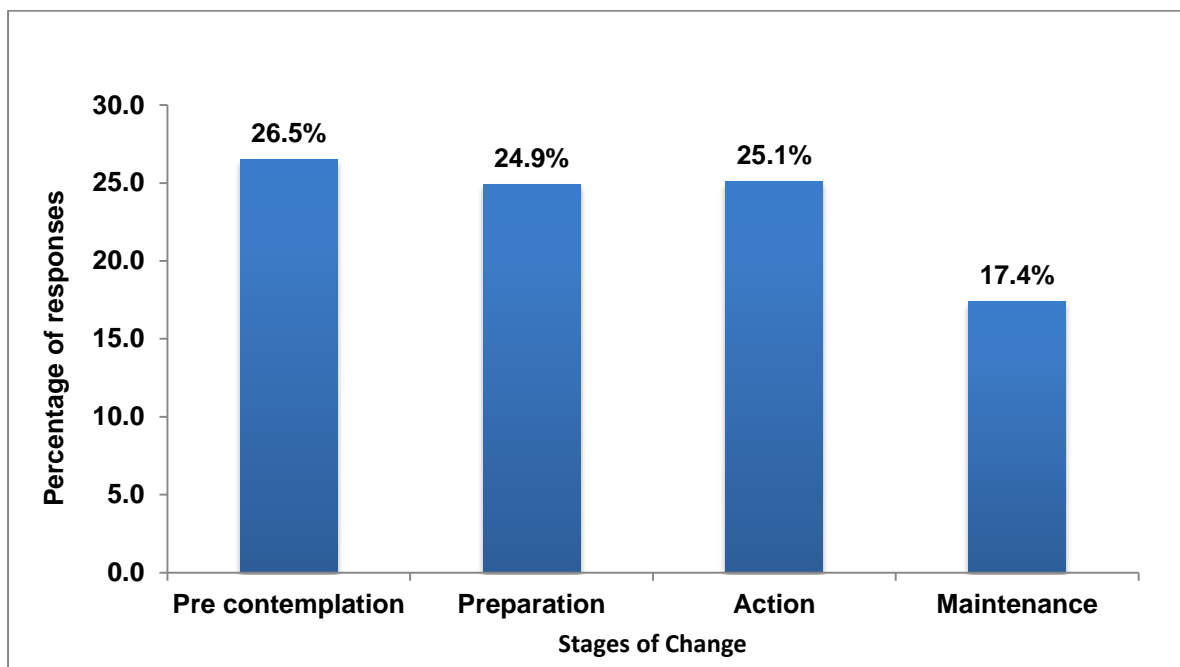


Figure 9 Stages of Change: employee ratings across all sites

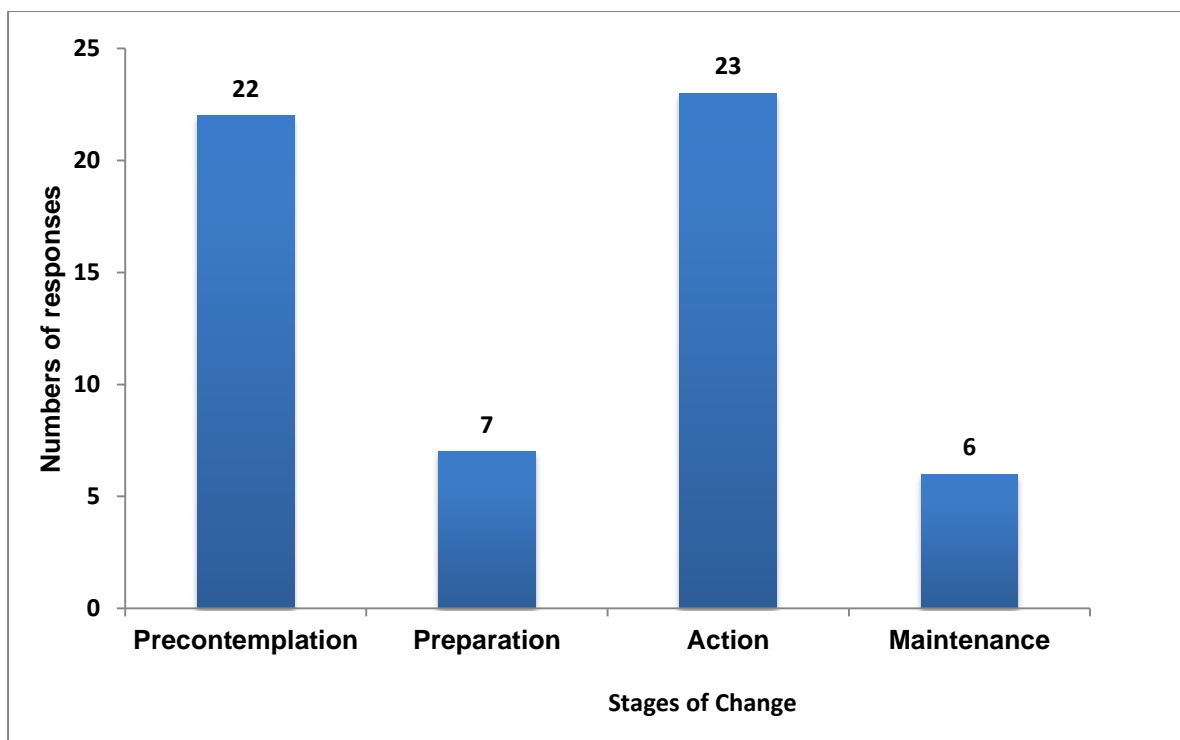


Figure 10 Categorisation of Stages of Change responses for managers and supervisors

Managers' responses to Stages of Change questions were more divided than employees, and tended to indicate a stage of pre-contemplation or action rather than preparation or maintenance. It is possible that managers and supervisors have greater knowledge than employees about changes happening in the organisation. However, of interest is the high numbers indicating they are in pre-contemplation stage. Overall, the different pattern of responses provides an interesting comparison to the employee responses.

Error! Reference source not found.11 provides details on a range of variables against Stages of Change. Figures are column percentages and sum to 100%. Figure 11 to Figure

13 illustrates the breakdown of responses. Significant differences across the variables were found in job satisfaction, physical and psychosocial hazards.

Table 11 Variables against Stages of Change

Variables	Low (%)	Med (%)	High (%)	Total for category	χ^2
Job satisfaction					
Pre-contemplation	20.0	20.9	35.7	28.4	.02
Preparation	40.0	32.9	14.3	26.4	
Action	24.0	30.9	25.0	26.9	
Maintenance	16.0	15.3	25.0	18.3	
Work life balance					
Pre-contemplation	15.8	23.5	31.6	28.6	.06
Preparation	36.8	31.5	15.8	26.3	
Action	36.8	27.5	31.6	26.6	
Maintenance	10.5	17.5	21.1	18.5	
Work Load					
Pre-contemplation	29.7	22.4	15.2	27.8	.06
Preparation	23.0	30.5	45.5	26.6	
Action	28.4	29.1	30.3	26.8	
Maintenance	18.9	17.9	9.1	18.7	
Physical Hazard					
Pre-contemplation	40.0	21.7	0.0	27.5	.00
Preparation	11.4	30.8	66.7	26.4	
Action	28.6	30.4	20.0	27.2	
Maintenance	20.0	17.0	13.3	18.8	
Psychosocial Hazards					
Pre-contemplation	0.0	23.3	36.8	28.2	.00
Preparation	75.0	30.2	5.3	26.5	
Action	16.7	29.9	26.3	26.8	
Maintenance	8.3	16.6	31.6	18.5	
Discomfort					
Yes				83.0	.00
No				17.0	

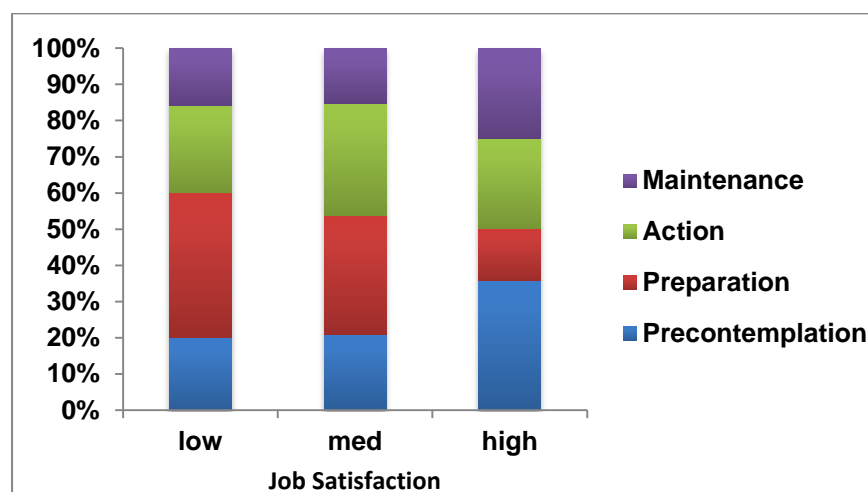


Figure 11 Job satisfaction and Stages of Change

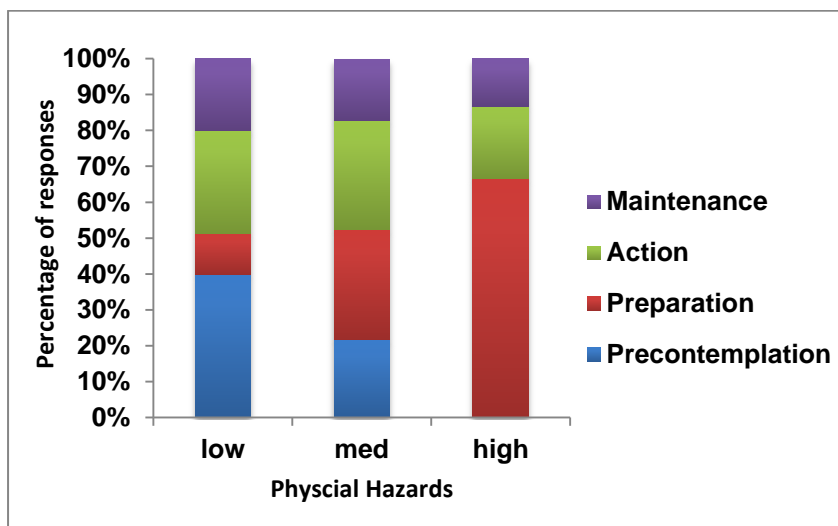


Figure 12 Physical hazards and Stages of Change

Examination of the results for physical hazards and Stages of Change reveals an interesting picture. Those with the lowest levels of physical hazards indicated a stage of pre-contemplation and those with high physical hazards indicated a stage of preparation. Respondents with medium levels of physical hazards were somewhat divided in their responses with 20% indicating a stage of pre-contemplation.

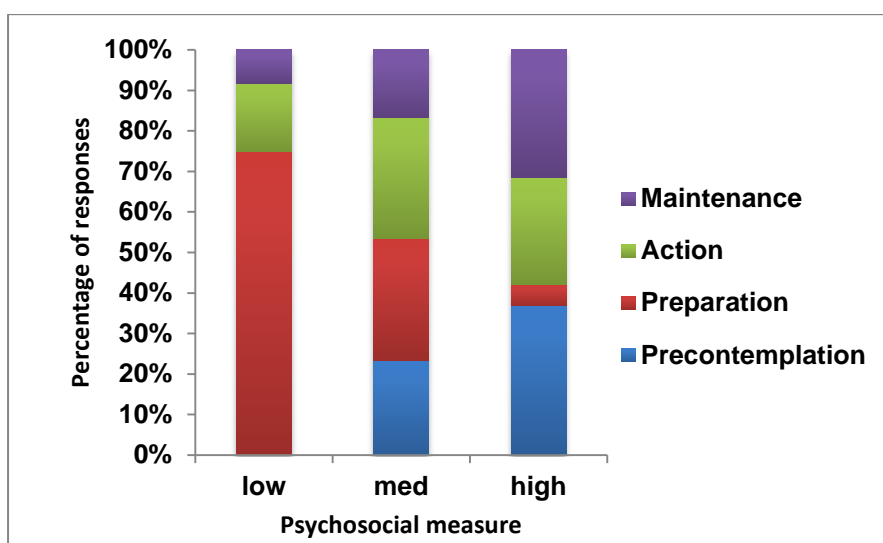


Figure 13 Psychosocial hazards and Stages of Change

A low score on the psychosocial hazards measure indicates a higher level of workplace environmental problems. Figure 13 shows that those in environments with higher psychosocial hazards, that is they scored low on the measure, were more likely to indicate that they were in a stage of preparation. Those respondents indicating less psychosocial hazards were more likely to be in pre-contemplation and maintenance, indicating that action on MSD risk reduction activities was more limited.

Manager/supervisor responses

Interviews were undertaken with 58 individuals in management or supervisor roles. Figure 10 shows responses for Stages of Change questions.

Manager and supervisor responses to Stages of Change questions are provided in Appendix B. These responses include proposed changes to reduce MSD risk and past changes made

in the organisation to reduce risk of developing a MSD. Responses to past changes were focussed on equipment provision and provision of training. A few comments were made regarding use of education tools such as videos, posters and awareness programs. Proposed changes were largely focussed around training, some changes to policies and procedures, and one comment related to the development of a policy.

Employee responses

Employees responses to Stages of Change are provided in Appendix C. Three questions were asked relating to; employer changes; changes that the employee had made in relation to managing their own MSD risk; and changes the employee was intending to undertake to reduce their risk.

Employees reported that changes made by employers were largely focussed on training and some equipment changes such as trolleys for food services and medication rounds. A change to job description, ensuring appropriate staffing levels, and a reduction in some repetitive tasks such as showering were also mentioned. Work redistribution was mentioned by a couple of respondents.

Employees were asked to list changes that they had made to reduce their own risk of developing a MSD, these were largely focussed on using training knowledge, equipment, changing positions, being more aware of postures, and using external treatments. However, a number of comments related to taking breaks, using holidays, pacing at work, working in pairs and different footwear.

In relation to planned changes, employees were also asked to list any changes they intended to undertake themselves to reduce their risk of developing a MSD. These included using training knowledge and taking more care of postures and positions, reduction of working hours and changing the pace of work. Some employees listed asking for equipment changes such as new trolleys or lifting equipment. A number of responses were focussed on treatment, and use of stretching exercises including improving core strength.

Discussion

This mixed methods study used a range of measures targeted at employee and manager/supervisor levels in the aged care sector. Its qualitative and quantitative approach enabled a rich collection of data to examine the issue of MSDs in 4 organisations. Using outcome measures such as claims to examine some of these measures provides a unique aspect to the project and some interesting outcomes.

However, in terms of the claims performance outcome it would appear the dichotomous grouping of the four organisations into good and poor performers in this case was somewhat problematic. One of the organisations in the good performer category appears to be different to the others in terms of measures on independent variables as highlighted previously in the report. Some interesting findings were reported with the removal of Organisation 2 and using the employee performance rate as an outcome measure.

The links between the outcome measure of good and poor performance were explored thoroughly and revealed some issues, which have been discussed in the report. Taking all of the data collected into account, qualitative and quantitative, the issue around the use of non-synchronous measures needs further exploration. That is, the claims data underpinning the classification of good and poor performance is retrospective and the measures in the study are taken at a particular point in time. The use of both the qualitative and the quantitative data collected provides some insight into the results reported in the study. Leadership changes at several of the sites had occurred within 12 months of the current project

occurring and in several instances, there had been many changes prior to the appointment of the new leaders. In some instances organisations were moving into periods of stability whilst in others periods of greater uncertainty. These results are not reflected in the claims data, making it difficult to attribute associations between the predictors and the outcomes measure.

However, some clear messages emerge from this study. Workload is an issue for aged care sector employees. Low workability is also an issue and particularly problematic given the expectation that employees will work for longer and in the context of physically demanding work. In addition the role of psychosocial and physical factors is important in predicting both having discomfort and then levels of discomfort.

Error! Reference source not found. provides a summary of the measures and some comments on the findings and the suggested use of measures in terms of MSDs performance.

Table 12 Summary of measures and outcomes

Measures	Outcome
Discomfort	
Psychosocial hazards (WOAQ)	This measure was found to be a significant predictor of discomfort levels. Examples of how the results can be interpreted for organisations to use in developing risk controls are provided (See Appendix D)
Physical hazards	Physical hazards are predictive of discomfort; this is consistent with previous research undertaken using the 12-item scale included in the current study. It was not predictive of claims performance.
Work ability	Work ability was low across the respondents, indicating an area for improvement. This measure has been widely used in Europe and has been found to be predictive of a range of health outcomes and timing of retirement (von Bonsdorff et al., 2011). It was also associated with employee performance rates
Stages of Change	Provided an insight into organisations within the aged care sector. In its current form requires some modification to simplify the analysis process but its relationship to a number of measures in the current study and the qualitative component provide a very good insight into the stage at which the sector is at, and an indicator for where interventions should be targeted. An over reliance on training was evident, which was appropriate for development of skills but for the management of psychosocial hazards some different approaches may be appropriate.

Claims level	The outcome claims performance, a dichotomous variable of good and low performance, based on a range of MSD claims measures was used as an outcome measure. As described this measure was problematic due to the classification of one on the organisations. In this study with only 4 organisations this left of only one case in the good performers category.
Employer performance rate	Item analysis revealed some significant and useful associations and identified issues around work organisation in the aged care sector, the findings from this analysis were supported by qualitative data collected.
Policy review	Provides a snapshot of the policy approach to managing MSDs. Results in this project and in other research have demonstrated the importance of psychosocial hazards in the development of MSDs and as such should be represented in risk management approaches. The method used here could be adapted further but in its current form provides a useful overview of coverage of relevant MSD hazards and control strategies.

The links between the outcome measure of good and poor performance were explored thoroughly and revealed some issues, which have been discussed in the report. Taking all of the data collected into account, qualitative and quantitative, the issue around the use of non-synchronous measures needs further exploration. That is, the claims data underpinning the classification of good and poor performance is retrospective and the measures in the study are taken at a particular point in time. The use of both the qualitative and the quantitative data collected provides some insight into the results reported in the study. Leadership changes at several of the sites had occurred within 12 months of the current project occurring and in several instances, there had been many changes prior to the appointment of the new leaders. In some instances organisations were moving into periods of stability whilst in others periods of greater uncertainty. These results are not reflected in the claims data, making it difficult to attribute associations between the predictors and the outcomes measure.

However, some clear messages emerge from this study. Workload is an issue for aged care sector employees. Low workability is also an issue and particularly problematic given the expectation that employees will work for longer and in the context of physically demanding work.

Potential impact of the research

This research provides evidence for the use of a range of measures to assist workplaces with improving their management of MSDs.

Workplaces need to accurately identify key hazard and risk factors for MSDs, which are relevant to their own workforce and develop risk controls based on these findings. Worker

consultation is required to assist with this process. Outcomes from survey measures provide a basis for achieving this.

Strategies in participant workplaces for the current study are primarily focused on training of individuals in a range of physically orientated tasks. Whilst it is critically important that workers have appropriate skills in the usage of equipment, the current study has demonstrated that a range of other factors are also important in MSD development and subsequent claims patterns. Thus, it is strongly recommended that organisations adopt more comprehensive approaches to managing MSDs through regular hazard surveillance of all potential hazards and risks – both physical and psychosocial.

Stages of change in its current form requires further modification to improve the usefulness of the output and its usability for workplaces. The current project found it provided useful information about organisations perceptions of their approaches to managing MSD risk, but as a workplace tool some further refinement is needed to improve the usability of the measure and its subsequent output.

The huge costs associated with MSDs and the impact on staff in a challenging sector such as aged care needs further attention on reduction of MSD claims. Findings from this study contribute to the development of potential new and more effective ways of managing MSDs, such as the Toolkit approach of which the survey tool is an integral part.

The next steps required to progress research in the area of MSD risk management are to use the survey tool and toolkit in a workplace intervention and evaluation study. This approach will enable evaluation of toolkit effectiveness in assisting workplaces to identifying and then develop interventions based on survey findings. In addition, the impact of the toolkit approach on reducing MSD claims would be evaluated.

Proposed dissemination activity

La Trobe University is a World Health Organisation (WHO) collaborating centre. The work undertaken in this study will contribute to delivering outcomes for the Centre's work plan and to delivering a risk management toolkit to the WHO for use by non-experts in developing countries.

Reports to participating organisations

Individual reports have been delivered to each participating organisation with site specific results compared to results from other sites (de-identified). Recommendations on potential future actions based on the results were provided.

Proposed journal articles

Ageing and aged care: Meeting the demands for quality residential aged care places?

Proposed Journal: Work

Stages of Change: What does it really tell us about working in residential aged care?

Proposed Journal: Applied Ergonomics

Musculoskeletal disorder claims: What is useful to measure at a workplace level?

Proposed Journal: Ergonomics

Conference presentations

Completed

High and low performers in the Aged Care Sector: What determines the differences in MSD claims rates? The right balance, HFESA. 7-9 December 2013.

High and low performers in the Aged Care Sector: What determines the differences in MSD claims rates? Expert workshop on psychosocial factors in the Asia Pacific, Ayutthaya, Thailand. 4-5 December 2013.

Proposed

Reduction of musculoskeletal disorders in the Aged care sector: What needs to be done?

ICOH WOPS, Adelaide, 17-19 September 2014.

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Appendix A: Coding frameworks

(Organisation 1)	Organisation value and vision statement	OHS Mission and or Policy statement	Sick Leave/absenteeism policy	Incident reporting policy	No lift and manual handling policy	Mental health risk management policy	Health and Well being policy
Document provided	Y	Y	Y	Y	Y	N	Y
Hazard ID and Risk Assessment	-	✓✓	-	✓✓✓	✓✓✓		-
Physical Task Demands	-	-	-	-	-		-
Overall Job Demands	-	-	-	-	-		-
Psychosocial Hazards	-	-	-	-	-		-
Interactions	-	-	-	-	-		-
Employee Characteristics	-	-	-	-	-		-
Hazard and Risk Control (Process)	-	✓✓✓	-	✓✓✓	✓✓✓		-
Control Hazards – Physical	-	-	-	-	✓✓		-
Control – Overall Job Demands	-	-	-	-	-		-
Control – Psychosocial Environ.	-	-	-	-	-		-
Interactions	-	-	-	-	-		-
Consider Employee Characteristics	-	-	-	-	-		-
Managing MSDs	-	-	-	✓	✓✓✓		-
Evaluation of controls	-	✓	-	✓✓	✓✓✓		-
Reference to OHS	-	✓✓✓		✓✓✓	✓✓✓		✓✓✓

(Organisation 2)	Organisation value and vision statement	OHS Mission and or Policy statement	Sick Leave/absenteeism policy	Incident reporting policy	No lift and/or manual handling policy	Mental health risk management policy	RTW Policy	Bullying / occupational violence
Document provided	N	Y	N	Y	Y	N	Y	Y
Hazard ID and Risk Assessment (process)		✓✓✓		✓✓✓	✓✓		✓✓✓	✓✓✓
Physical Task Demands		✓✓✓		-	✓✓		-	-
Overall Job Demands		-		-	-		-	-
Psychosocial Hazards		✓		-	-		-	-
Interactions		-		-	-		-	-
Employee Characteristics		✓		-	✓		-	-
Hazard and Risk Control (process)		✓✓✓		-	✓✓		✓	✓✓✓
Control Hazards – Physical		✓✓✓		-	✓✓		-	✓✓✓
Control – Overall Job Demands		-		-	-		-	-
Control – Psychosocial Environ.		-		-	-		-	-
Interactions		-		-	-		-	-
Consider Employee Characteristics		-		-	-		-	-
Managing MSDs		-		-	✓✓		-	-
Evaluation of controls		✓✓✓		✓	-		-	✓✓✓
Reference to OHS		✓✓✓		✓✓✓	✓✓✓		✓✓✓	✓✓✓

(Organisation 3)	Organisation value and vision statement	OHS Mission and or Policy statement	Sick Leave/absenteeism policy	Incident reporting policy	No lift and/or manual handling policy	Mental health risk management policy	RTW Policy
Document provided	Y	Y	Y	Y	Y	N	Y
Hazard ID and Risk Assessment (process)	-	✓	-	✓✓✓	✓✓✓		✓
Physical Task Demands	-	✓	-	-	✓✓✓		
Overall Job Demands	-	-	-	-	✓		
Psychosocial Hazards	-	-	-	-	✓		
Interactions	-	-	-	-	-		
Employee Characteristics	-	-	-	-	-		
Hazard and Risk Control (process)	-	✓	-	✓✓	✓✓✓		
Control Hazards – Physical	-	-	-	-	✓✓✓		
Control – Overall Job Demands	-	-	-	-	✓✓✓		
Control – Psychosocial Environ.	-	-	-	-	✓✓✓		
Interactions	-	-	-	-	-		
Consider Employee Characteristics	-	-	-	-	-		
Managing MSDs	-	-	-	-	✓✓✓		
Evaluation of controls	-	-	-	-	✓✓✓		✓
Reference to OHS	-	✓✓✓	-	✓✓✓	✓✓✓		

(Organisation 4)	Organisation value and vision statement	OHS Mission and or Policy statement	Sick Leave/absenteeism policy	Risk Management Policy	Incident reporting policy	MSD risk management policy and practice standards	Mental health risk management policy
Document provided	Y	Y	Y	Y	Y	Y	Y
Initial ID/Assessment of Injury Problem					✓✓		✓✓✓
Physical Task Demands	-	✓	-	✓✓	✓	✓✓✓	✓✓✓
Overall Job Demands	-	-	-	-	-	-	✓✓✓
Psychosocial Hazards	-	-	-	-	✓	-	✓✓✓
Interactions	-	-	-	-	-	-	✓✓
Employee Characteristics	-	-	-	-	-	-	
Hazard and Risk Control							✓✓✓
Process	-	✓	-	✓✓	✓✓	✓	✓✓✓
Control Hazards – Physical	-	-	-	-	-	✓✓✓	✓✓✓
Control – Overall Job Demands	-	-	-	-	-	-	✓✓✓
Control – Psychosocial Environ.	-	-	-	-	-	-	✓✓
Interactions	-	-	-	-	-	-	✓✓
Consider Employee Characteristics	-	-	-	-	-	-	-
Managing MSDs	-	-	-	-	-	-	-
Evaluation of controls	-	-	-	-	✓✓	-	✓✓✓
Reference to OHS	-	✓✓	-	✓✓✓	✓✓✓	✓✓✓	✓✓✓

Appendix B: Managers/supervisors responses to Stages of Change questions

Planned Changes	Past Changes
training and education ongoing training to facilitate manoeuvrability/manual handling wellbeing program, staff incentives (presidential card) ongoing	awareness program manual handling training update, room de-clutter Bariatric equipment training, sling project
Role models/peer mentoring self-management information	OH&S training update, well being forum, presidential card Lifting machines Policies and procedures in place, no serious problems extendable duster handles etc
Nursing care plans, manual handling risk assessments, incident reporting/review process manual handling updates, free massages	Constantly reviewing care plans, never ending
ongoing training all have training Monthly work health & safety audit refused to replace cleaning machine Organisational risk department reviewing procedures and guidelines ongoing manual handling training manual handling education ongoing manual handling training manual handling training, manual handling role models ("champions") new machines for PCAs developing a policy physio advice for staff in- services and machine maintenance Stretching before each shift	regular care plan updates annual manual handling training update Renewing contracts for lifting machines training monthly refresher manual handling/computer system training days manual handling training increased manual handling education ongoing manual handling training manual handling education
training and education enforcing no lift policy Major structural problems despite ongoing training ongoing education, equipment maintenance annual training	regular hands on training manual handling education mandatory manual handling training Visual prompts for staff eg posters Separate manual handling issues for clinical and non-clinical staff ongoing manual handling education using slings to decrease manual handling Education Care Channel
	update lifting machines ceiling hoists mandatory training, new equipment floorline beds mandatory training upgraded lifting machines

Appendix C: Employee responses to Stages of Change questions

Employee changes that they have made to the way they work to reduce MSD risk	Proposed changes you are going to make to the way you work
<p>Do manual handling the right way. Changed the way I manoeuvre the drug trolley. Uneven floors make the trolley veer in the opposite direction you need. I try not to pull and twist when trying to control the trolley. Used skills learnt at training.</p> <p>Consciously assessing what I am about to do and taking the time to assess the best way to complete in order to care for my own health status. Followed manual handling guidelines. Follow OHS rules. Have done manual handling refresh and second person to help. Changed some tasks so not doing the same thing repetitively for as long. Get help when lifting needed moving heavy objects. Started exercising.</p> <p>Will not repeat action which caused back pain. I don't spend long periods of time at my desk.</p> <p>Exercise, massage, osteo. I do right transfer for resident by using lifting machines or standing or sliding sheet. I work 2x staff together. Machine. Lifting without twisting or bending my back. Working less hours. Regular exercise; following OHS/ manual handling guidelines. Being careful. Take proper allocated breaks. As above.</p> <p>Annual leave.</p> <p>In a two staff move I always stand on my good side to reduce risk. Use machines and observe posture when working. Being smart. Avoid all the risk of pain and sore. Use the right policy of lifting and pulling. Take care of my health and lifting procedures.</p> <p>Changed shoes. More supportive shoes with innersoles. Making sure to be aware of moving trolley around ensuring to limit twisting and pulling. Apply proper manual handling techniques.</p> <p>Follow manual handling advice as much as possible. I squat more for reaching lower areas. New manual handling positions. Tried to but still quite difficult to keep it up. Stretching/exercise. Squat to clean toilets instead of bending over. No issues.</p> <p>Exercise. Make it slow??</p>	<p>Change the way using med trolley. Have tried already to change the way I work.</p> <p>Put into practice new skills I have learnt from recent training. I do right transfer for resident by using lifting machines or standing or sliding sheet. I work 2x staff together. Follow manual handling guidelines. Follow OHS (no lift policy). Have done manual handling refresh.</p> <p>Change some tasks so not doing the same thing repetitively for as long. Work smarter, not twist and turn etc. Get orthotics in my shoes and do exercises to strengthen core. Ask for better chairs. Being careful while working, so I don't hurt my back and other muscles. Slow down if possible. Training "how to lift people the right way"; learning techniques; physical training to support back muscles (do it already). Do neck and shoulder exercises. Find new job/change work place. Follow OHS and manual handling guidelines. Use less force when lifting and repositioning residents. Not take on others roles. Take more care in my movements. Avoid excessively using leg if hamstring pain is felt. I sit in front of a computer for 60-80% of my work. I want to stand/ move more. ?reduce work hours.</p> <p>Use available aid and outlined procedure. Use equipment properly. Be more alert in how I move around.</p> <p>Use all the equipment and learn all the way to take the risk of pain. Strengthen muscles. Apply proper manual handling techniques; visit my GP/physiotherapist; be cautious with my movements. Follow manual handling advice as much as possible. Try to work slower and take time to work slower. Improve manual handling. By cutting down my hours. Ask for new trolley and cart. Try to avoid lifting heavy items. Exercise. What prevention can be taken place to reduce the risk of developing muscular. Physio. Exercise more.</p>

Work less hours.
Drink more water and having a good diet.

Back brace.
Properly using sliding sheets to pull/push. I stopped manual handling.
Make use of the information and knowledge accepted during manual training section.

Used wound trolley/over bed table to position folders or paper work required for task at hand to reduce load on arms or weight increases.
Seek outside therapies.
Tried to stretch more at home to reduce risks.
Less bending.
Use aids as much as possible.

Physio.
Exercise.
Watch my back and knees when bending and lifting. Good posture.
Correct strategies for bending etc.
Bent knees during lifting/using machines - manual handling - work together.
I am training so I need to be careful.
Manual handling.

Proper use of hoists and slide sheets.
We can use slide sheets with heavy persons.

Stick to me allocated work and not do extra.
Try to implement training particularly relating to posture.
2 people assist with heavy items.

Consult with P; rest.

Exercises and avoiding certain positions for neck and shoulders. Modified footwear for tired aching feet.
Healthy; exercising.
Try to remember to adjust bed heights.
Self preservation.
Using bigger leg muscles while turning residents.
I am very much conscious and careful about my and my colleague's health and safety.
Re positioning.
Regular stretches and regular massages.
Follow appropriate manual handling technique.
Follow the no lift policy and work in pairs.
Started working night shift. Don't spend as much time on my feet during night shift.
Apply correct manual handling procedure.

Squatting.

Do not push myself - work thoughtfully re my health/safety.
No lifting and bending over the bed or chair.

Reduce my hours of working.
Ensure adequate footwear worn, use light trolley to carry items from one place to another.
Seek outside therapies.
Change to a less hands on role.

Try positioning better when pushing the medication trolley. Try not to stand in one position over 30min when checking the books.
I will try to stop lot of bending and sit on the chair and have resident feet up on chair to put shoes on.
Exercise.
Bend correctly.
Correct strategies for bending etc.
Bent knees during lifting/using machines - manual handling - work together.
Move people correctly.
Reduce the load pulled and pushed daily.
See physio.

By carrying on or practicing good lifting policy.
Extra staff (actually more staffing, proper breaks.
Asking for additional help.
Not to do extra work, just my allocation & stop trying to help others when I finish my allocated work.
Be aware of posture and tension.
Be more mindful and careful about how I use my back in manual handling. Revisit/re-educate correct manual handling techniques. I had a day of training in manual handling a month ago but too much to take in, in one day. Would like to do this training for a 2nd time - it was done before I started on the job.
Be more professional and use correct posture.
Exercise; need to have regular massages.

Use knees more; stop adjusting myself to attend to resident when they are on beds.
Cycling more often and to see a doctor re reducing this pain.
Insist that my work partner practices safe manual handling practices and not take shortcuts to get the work done quicker.
Rotate tasks.
Follow appropriate manual handling technique.
Play it safer at work with lifting.
Follow the no lift policy.
Not rushing too much; ask for help when required to lift.
Proper manual handling.
Buy new shoes.
Use correct manual handling procedure.
New shoes.
Ensuring using big leg muscles.

Do not push myself - work thoughtfully re my health/safety.
Correct the manual handling, prefer back to occupation health training for further concern about work safety.
Less pushing/pulling, and get help if unsure.

Too much rushing extra staff may help.

<p>Following what we were trained to do in manual handling sessions/in-services as well as common sense approach.</p> <p>Less bending, always bend knees while bending, stretching, use exercise as part of routine.</p> <p>I wear runners; less pain in legs, but I know it's not safe.</p> <p>Sit rather than stand when speaking to a seated or in-bed resident.</p> <p>By observing the way I do things.</p> <p>Implement manual handling techniques done through work.</p> <p>Lighter loads.</p> <p>Bending knees more.</p> <p>Manual handling refresher.</p> <p>Pace myself and be cautious; ask for help.</p> <p>Work at a pace that is not so frantic.</p> <p>Try to push drug trolley, linen trolley and residents in wheel chairs up ramps closer to body.</p> <p>Requested to reduce the amount of equip carried on shift ie radio, phone, keys, resident's emergency bell.</p> <p>Wait for help.</p> <p>Regular breaks in between repetitive duties. Ask for help.</p> <p>Using some of these [manual handling] techniques.</p> <p>Stopped work as a PCA every day. Work in admin in the week, and PCA at weekends.</p> <p>Always get help. Adjust posture. Be aware of pain.</p> <p>Water activities.</p> <p>Be more aware of how I move and manage lifting machines etc.</p> <p>Think before I put myself under pressure or risk whilst doing my job.</p> <p>As above.</p> <p>Do as I am trained to do - am as careful as possible to do the right thing, however residents often resistive and heavy, difficult to move at times despite using correct manual handling procedures.</p> <p>By using the proper equipment and correct posture during manual handling.</p> <p>Make sure I use my body properly.</p> <p>Stretch often.</p> <p>Didn't need to change.</p> <p>Counter pose exercise, drug trolley and bending over books. Rest before work, no physical work.</p> <p>Bought new shoes.</p> <p>Stretch muscles.</p> <p>Do not sit for too long, stretch.</p> <p>Take regular breaks from seated.</p> <p>Stop push/pull things.</p> <p>Regular breaks.</p> <p>Have become more aware of how I use my body</p>	<p>Refused to do things if it is to do with lifting manually.</p> <p>Change my job.</p> <p>I intend to change way I work to reduce the risk of aches, but workload too heavy.</p> <p>Tried to reduce aches and pains by looking at how I can do things differently.</p> <p>Lift bed to hip height so not leaning/bending over. Manual handling training.</p> <p>Not rush as much. Be more careful.</p> <p>Move around more, adjust chair height.</p> <p>Exercise.</p> <p>Having recently learnt warm up exercises and are currently using.</p> <p>Pace myself and be cautious; ask for help.</p> <p>Cut down on my hours/semi retirement.</p> <p>Pay more attention to what I am doing and the specific movements that cause pain.</p> <p>Vary duties doing requirements at different times of the day, taking more time.</p> <p>Be aware of posture, when at computers, when pushing med trolley, when transferring.</p> <p>Wait for help.</p> <p>More cautious of actions; change way I do things.</p> <p>Using correct manual handling techniques.</p> <p>Stopped work as a PCA every day. Work in admin in the week, and PCA at weekends.</p> <p>Move more often and stretch mainly.</p> <p>Try to become more mindful.</p> <p>Be more aware of how I move and manage lifting machines etc.</p> <p>Continue to train and implement the newly acquired skills during work.</p> <p>Work as best I can without taking risks.</p> <p>Do as I am trained to do - am as careful as possible to do the right thing, however residents often resistive and heavy, difficult to move at times despite using correct manual handling procedures.</p> <p>Better manual handling techniques.</p> <p>I have already changed the way.</p> <p>Check posture regularly.</p> <p>I already work effectively. I don't need to change.</p> <p>Follow the guidelines in the Health & Safety manual.</p> <p>Not lift heavy loads.</p> <p>Improve core strength, weight training; become more aware of correct posture whilst attending nursing duties.</p> <p>Strengthen my core muscles.</p> <p>Take regular breaks from seated.</p> <p>Follow OHS guide systems. Stack things better.</p> <p>Continue to ask for proper storage.</p> <p>To stop lift/carry things that are moderately.</p>
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movements.

I have tried to limit the amount of time I spend performing repetitive tasks but due to the demands of my job, this is not always possible.

Position myself properly. Desk/chair correct height/angle. Good night's sleep.

More aware of posture.

Become more diligent and objective in terms of maintaining my own health safety.

Followed the manual handling guidelines.

Pains are reduced when I don't sit for long periods of time.

Work low care now.

Proper technique.

Use other hand.

Use bed machines to help low care residents stand. Be firm with residents about what I will not to do to help them.

Put myself first before the patient.

New shoes purchased.

Use the correct posture while working.

Change positions.

Massage.

Never lifting by myself. Always ask for help. 2 x staff operate machine. Encourage residents to move/stand/walk by themselves.

Always work proper way, and work accordingly to procedure and policy which facility made so we can minimize the risk

Walk around after periods of time when working at my desk. Ensure chair, computer etc is correct height. Attend manual handling training.

As above.

Stretch; go for a walk at lunchtime.

Careful bending and lifting. Wear supportive clothing when at work. Do exercises from physio.

Yes, lifting techniques.

Watch posture at workstation and using a mouse.

Being very careful how I use my right hand and thumb.

Exercises/stretchers.

Concentration on correct movement, tightening of core muscles when attending to tasks.

Wearing orthotics and avoiding heavy lifting/using good lifting techniques.

Pain has been long term I just make sure I don't jerk my body too much.

Using right posture to do my job, and do more exercise to build up muscle tone.

Regular movement/breaks.

Have become more aware of how I use my body movements.

I intend to apply for work in another area (Laundry) in order to space out the work.

Correct footwear. Take time to stretch.

Continue with the work I am doing.

Make sure to bend legs when lifting.

Attend exercise programs and education sessions with physio if offered.

Buy better shoes.

Exercise more, read/update care work information.

Not push anyone heavier than me in wheelchair.

x 2 staff.

Try to do things in a different way to use other hand.

Refuse to move anyone without slide sheet.

Do more exercise, stretching after work.

Do more exercise outside of work.

Regular massage/spa.

Repeatedly asked for better equipment.

Ask for team work. encourage resident to move/stand by himself. use machine.

There are some stretch exercises.

Watch my movements.

To continue using lifting machines and improve good posture.

Take regular breaks.

Try to use proper lifting procedures and stretch muscles and exercise and rest.

Take more regular breaks when attending paper/computer based activities.

Taking frequent breaks and sitting down for notes/paperwork.

Slow down.

Watch the way I lift items.

Watch posture at workstation and using a mouse.

Use trolleys more to shift heavy loads being very careful how I use my badly injured right thumb.

Move more frequently and do exercises throughout the day.

Use proper when transferring the residents positioning.

Strengthen muscles, core, lower back and upper body at the gym. Regular stretching.

Build up core strength.

Kneeling whenever situation comes.

Pain has been long term I just make sure I don't jerk my body too much.

Changes that have been made by employers

Extra staff plus appropriate slings for hoist machine. Great manual handling education.
 Manual handling.
 Manual handling training.
 Not to push heavy trolleys. Try not to stack too much on them.
 Staff attended handling training to assist with techniques to protect yourself from getting aches and pains.
 Back support when heavy lifts and sharing load.
 Change of kitchen trolleys and some kitchen duties. None in laundry.
 Review of policies and procedures.
 Changed flooring from carpet to vinyl.
 Ongoing.
 Manual handling training.
 Seating in front of computer.
 Manual handling training.
 Pointing out better ways to lift or move heavy items.
 No lifting in front of the camera.
 Moving handling. No lift policy.
 Mandatory manual handling.
 Training.
 More appropriate desk heights and chairs.
 Regular manual handling workshops.
 Manual handling training.
 Training.
 We have in-service of lifting policy and take care of our self.
 Facility/employer facilitated proper manual handling every 2-3 months.
 Manual handling education.
 Need more staff to be able to work a bit slower and be able to take time bending, twisting, lifting.
 New manual handling positions.
 Ordered new standing machines.
 Manual handling training.
 Gave more training.
 Education/manual handling training.
 Changed me to trolleys.
 Lifting education, manual handling training.
 Using machine; help each other; work together.
 Request staff to take breaks.
 My employer offers manual handling course to update and remind us on any manual handling procedures.
 Manual handling
 Trolleys to carry the stuff to areas.
 Clearly job description [sic].
 By providing the best equipment that we used at work [sic].
 They provide manual handling training and describe that how we can use our muscles properly at workplace to reduce pain.
 More staff to decrease load on me.
 Given training to everyone (manual handling).keep updating all the time.
 Required amount of staff on the floor.
 Asking CCC to help with medication rounds in the pm but then it has been stopped.
 Given extra staff for feeding; course for elderly abuse it also covers employees.
 Training, OHS.
 By giving manual handling training and taught the proper techniques to use machines.
 2 people assist to carry heavy items.
 Using of correct machines; no lifting policy.
 Watch the way we hold the client and where.
 Equipment and well stored needs, gloves etc.
 Manual handling training.
 Manual handling training.
 Manual handling training.
 Decrease showering, decrease repetitive movements; delegated other tasks
 All staff were given proper manual handling training. We still need ongoing training and supervision of its implementation.
 Manual handling training.
 Offered training on occupation safety and manual training.

Maintaining dishwasher, servicing machinery.
 Manual handling training.
 Training manual.
 Manual handling training provided to staff.
 Regular manual handling in-services.
 Doing lighter duties as I went on work cover due to lower back injury.
 Not doing doubles alone.
 Change jobs.
 Redistribution of workload.
 Lift bed to hip height so not leaning/bending over. Manual handling training.
 Manual handling course.
 Manual handling techniques.
 New trolleys.
 Making sure staff pair up when someone or thing is heavy/difficult.
 Manual handling seminar.
 No changes made.
 I was on work cover, had time off, duties altered. Shown better OHS results.
 Putting in place manual handling training.
 Manual handling training x 12 monthly.
 Continual training to improve your manual handling skills.
 New medication trolley.
 Lifting machine, standing machine, slide sheet provided.
 New equipment ; training.
 Used techniques shown in manual handling training.
 Constant training/no lift policy.
 Light duties.
 Mandatory training in manual handling working together x 2 with clients who need extra help.
 Manual handling training.
 Provided a series of exercises to do.
 Completed OH&S survey related to current work station.
 Manual handling training.
 Regular breaks.
 No lift policy.
 Not on my feet so much.
 Manual handling training.
 Manual handling assessment.
 Allowed rest for 1 week until pain is gone.
 No lift policy use lifting, standing machines.
 New equipment: shower chairs etc.
 OHS lectures. More staff for night shift. Correct manual handling techniques and teamwork.
 Always have health and safety training and physio always access resident so we know their condition and we can use appropriate action to move around.
 x 2 staff.
 Manual handling training.
 Training sessions.
 Attend work organized manual handling training.
 Using available lifting machines and education and training.
 Proper lifting techniques.
 Continually updating mandatory training using correct moving techniques and using machinery properly.
 Alter work station to prevent bending.
 Replaced items in kitchen to make easier.
 Using standing machines and hoists of good quality. Regular assessment of resident by physio.
 Education.
 2 people when using any kind of lift.
 New lifting machines and standing machine lighter in weight.
 Manager would concern if any muscles ache or back pain happen, they would let employee having a day off of work.
 Providing more lifting machines.

Appendix D: WOAQ results for each organisation

Organisation 1: Organisational Factors	Average score (1=major problem), (5=very good)			% Respondents saying "major problem" or "slight problem"		% Respondents saying "very good" or "good"	
	Site 1	Site 2	All	Site 1	Site 2	Site 1	Site 2
Facilities for taking breaks (<i>places for breaks</i>)	2.7	3.1	3.2	48.0	20.0	28.0	26.7
Work surroundings (<i>noise, light, temperature</i>)	3.0	3.1	3.1	32.0	14.3	20.0	28.6
Clear roles and responsibilities	3.0	3.3	3.2	44.0	20.0	32.0	33.3
Exposure to physical danger	2.8	3.1	2.8	40.0	7.1	16.0	21.4
Support from supervisor	3.7	3.7	3.6	16.0	20.0	56.0	53.3
Pace of work	2.5	3.0	3.0	62.5	26.7	25.0	26.7
Feedback on your performance	2.9	3.2	3.3	32.0	23.1	32.0	53.8
Your workload	2.6	2.9	2.7	64.0	26.7	28.0	20.0
Health and safety at work	3.0	3.8	3.2	48.0	0.0	36.0	53.4
How well you work with your co-workers	3.7	3.5	3.8	12.0	13.4	60.0	60.0
How you get on with your co-workers	3.9	3.4	3.9	8.0	60.0	72.0	40.0
Consultation about changes in your job	3.0	3.2	3.1	36.0	26.7	32.0	46.7
Sufficient training for this job	3.2	3.6	3.6	24.0	0.0	36.0	46.6
Amount of variety in the work you do	3.4	3.2	3.3	12.0	13.4	36.0	33.4
Senior management attitudes	3.3	3.5	3.2	33.4	13.3	45.8	46.6
Clear reporting lines	3.5	3.5	3.3	21.7	13.3	52.1	53.3
Equipment, tools, I.T. or software that you use	2.8	3.5	3.0	48.0	6.7	28.0	53.4
Work stations and work space	3.1	3.2	3.1	36.0	26.7	40.0	40.0
Opportunities for promotion	2.6	2.9	2.9	38.1	33.4	4.8	33.3
Communication with supervisor	3.5	3.7	3.6	16.0	13.3	40.0	60.0
Opportunities for learning new skills	3.3	3.3	3.4	25.0	13.4	45.8	46.7
Flexibility of working hours	3.3	3.6	3.4	20.0	6.7	40.0	66.7
Opportunities to use your skills	3.6	3.3	3.5	8.0	13.3	48.0	46.7
Your status / recognition in the company	3.1	3.2	3.3	20.0	20.0	28.0	40.0
Clear company objectives, values, procedures	3.6	3.3	3.5	16.0	6.7	52.0	33.4
Appreciation or recognition of your efforts by supervisors	3.1	3.1	3.2	32.0	26.7	44.0	33.4

Organisation 2: Organisational Factors	Average score (1=major problem), (5=very good)			% Respondents saying "major problem" or "slight problem"		% Respondents saying "very good" or "good"	
	Site 1	Site 2	All	Site 1	Site 2	Site 1	Site 2
Facilities for taking breaks (<i>places for breaks</i>)	3.1	2.9	3.2	36.6	33.4	30.8	31.5
Work surroundings (<i>noise, light, temperature, etc</i>)	2.8	3.4	3.1	50.0	14.9	23.1	42.6
Clear roles and responsibilities	3.1	3.2	3.2	29.7	35.9	33.4	43.4
Exposure to physical danger	2.4	2.9	2.8	53.8	29.6	7.7	16.7
Support from supervisor	3.4	3.7	3.6	27.4	14.9	56.8	57.4
Pace of work	2.9	3.1	3.0	38.4	29.1	28.9	40.0
Feedback on your performance	3.2	3.3	3.3	28.0	30.9	44.0	49.0
Your workload	2.6	2.8	2.7	50.9	41.8	18.9	27.3
Health and safety at work	2.9	3.3	3.2	43.4	18.2	32.0	38.2
How well you work with your co-workers	4.2	3.9	3.8	3.8	11.2	79.2	66.6
How you get on with your co-workers	4.1	3.9	3.9	3.8	9.3	81.2	62.9
Consultation about changes in your job	3.0	3.0	3.1	31.5	29.1	33.4	27.3
Sufficient training for this job	3.4	3.8	3.6	24.1	9.3	55.5	68.5
Amount of variety in the work you do	3.2	3.1	3.3	18.6	23.6	40.7	36.4
Senior management attitudes	3.2	3.1	3.2	37.7	40.0	47.2	41.8
Clear reporting lines	3.3	3.4	3.3	19.6	23.6	43.1	47.3
Equipment, tools, I.T. or software that you use	2.8	2.9	3.0	43.4	40.8	28.3	29.6
Work stations and work space	2.9	3.6	3.1	40.7	12.7	33.3	54.5
Opportunities for promotion	2.9	3.0	2.9	30.7	27.8	30.8	29.6
Communication with supervisor	3.4	3.5	3.6	20.8	23.6	56.6	49.1
Opportunities for learning new skills	3.2	3.6	3.4	25.9	14.6	42.6	56.4
Flexibility of working hours	3.3	3.4	3.4	22.3	21.9	50.0	47.3
Opportunities to use your skills	3.5	3.5	3.5	13.2	14.8	49.0	53.7
Your status / recognition in the company	3.3	3.2	3.3	20.8	20.4	45.2	42.6
Clear company objectives, values procedures,	3.4	3.2	3.5	18.6	22.2	51.8	37.0
Appreciation or recognition your efforts by supervisors	3.1	2.8	3.2	31.5	42.6	44.4	29.7

Organisation 3: Organisational Factors	Average score (1=major problem), (5=very good)			% Respondents saying "major problem" or "slight problem"		% Respondents saying "very good "or "good"	
	Site 1	Site 2	All	Site 1	Site 2	Site 1	Site 2
Facilities for taking breaks (<i>places for breaks</i>)	3.2	3.1	3.2	26.1	24.6	41.6	29.8
Work surroundings (<i>noise, light, temperature</i>)	3.3	2.9	3.1	18.4	40.4	44.6	26.3
Clear roles and responsibilities	3.1	3.1	3.2	32.4	28.1	36.9	33.4
Exposure to physical danger	2.8	2.9	2.8	30.3	32.8	16.7	18.2
Support from supervisor	3.3	3.6	3.6	25.0	18.9	56.3	55.2
Pace of work	3.0	2.7	3.0	32.8	50.0	36.0	22.4
Feedback on your performance	3.1	3.2	3.3	26.2	24.5	44.7	43.8
Your workload	2.6	2.3	2.7	43.8	62.1	20.3	12.0
Health and safety at work	3.1	3.1	3.2	25.0	31.0	39.1	36.2
How well you work with your co-workers	3.7	3.6	3.8	15.1	17.9	62.2	55.4
How you get on with your co-workers	3.8	3.7	3.9	6.2	12.0	60.9	55.1
Consultation about changes in your job	3.1	3.1	3.1	26.9	31.6	31.7	31.6
Sufficient training for this job	3.6	3.4	3.6	12.1	19.0	59.1	46.5
Amount of variety in the work you do	3.2	3.2	3.3	22.7	21.1	42.5	35.1
Senior management attitudes	3.2	3.3	3.2	28.8	27.6	43.9	43.1
Clear reporting lines	3.2	3.4	3.3	19.7	22.9	45.4	47.3
Equipment, tools, I.T. or software that you use	3.3	2.6	3.0	19.7	55.2	45.4	25.9
Work stations and work space	3.4	2.7	3.1	15.1	50.0	45.5	25.9
Opportunities for promotion	2.8	2.8	2.9	31.3	33.3	28.1	21.0
Communication with supervisor	3.4	3.6	3.6	18.2	13.8	53.0	50.0
Opportunities for learning new skills	3.5	3.5	3.4	13.7	13.7	51.6	53.4
Flexibility of working hours	3.4	3.7	3.4	22.7	5.1	51.5	55.2
Opportunities to use your skills	3.4	3.5	3.5	19.7	17.6	51.5	50.9
Your status / recognition in the company	3.2	3.3	3.3	17.0	18.9	37.0	41.3
Clear company objectives, values, procedures	3.7	3.8	3.5	6.2	8.6	57.8	58.6
Appreciation or recognition of your efforts by supervisors	3.0	3.3	3.2	30.4	27.6	42.4	44.8

Organisation 4: Organisational Factors	Average score (1=major problem), (5=very good)			% Respondents saying "major problem" or "slight problem"		% Respondents saying "very good" or "good"	
	Site 1	Site 2	All	Site 1	Site 2	Site 1	Site 2
Facilities for taking breaks (<i>places for breaks</i>)	3.3	3.5	3.2	19.6	8.3	31.3	45.0
Work surroundings (<i>noise, light, temperature, etc.</i>)	3.0	3.1	3.1	34.8	25	30.3	33.4
Clear roles and responsibilities	3.2	3.7	3.2	30.3	3.3	43.9	55.0
Exposure to physical danger	2.9	3.0	2.8	26.2	20.7	17.0	15.5
Support from supervisor	3.7	3.9	3.6	16.7	3.4	58.9	69.5
Pace of work	3.1	3.5	3.0	27.5	10.2	37.4	49.2
Feedback on your performance	3.4	3.5	3.3	18.7	11.7	51.7	46.7
Your workload	2.8	3.1	2.7	41.3	13.4	23.9	25.0
Health and safety at work	3.1	3.5	3.2	28.3	11.7	35.9	48.3
How well you work with your co-workers (as a team)	3.8	3.8	3.8	13.1	10.0	65.2	65.0
How you get on with your co-workers (personally/socially)	3.9	3.8	3.9	6.7	8.3	69.6	66.7
Consultation about changes in your job	3.1	3.3	3.1	21.7	11.7	38.0	35.0
Sufficient training for this job	3.6	3.7	3.6	14.2	3.3	57.6	56.7
Amount of variety in the work you do	3.3	3.5	3.3	16.5	6.7	46.2	48.4
Senior management attitudes	3.1	3.5	3.2	31.9	15.0	46.2	50.0
Clear reporting lines	3.2	3.4	3.3	28.1	10.0	44.9	43.3
Equipment, tools, I.T. or software that you use	3.1	3.3	3.0	24.2	23.7	40.7	42.4
Work stations and work space	3.0	3.4	3.1	34.4	11.7	34.5	45.0
Opportunities for promotion	2.9	3.1	2.9	26.4	18.4	23.0	23.7
Communication with supervisor	3.7	3.8	3.6	16.5	6.7	58.3	50.0
Opportunities for learning new skills	3.4	3.3	3.4	18.5	18.3	46.8	35.0
Flexibility of working hours	3.4	3.4	3.4	15.2	13.3	46.8	41.6
Opportunities to use your skills	3.5	3.6	3.5	14.4	6.8	51.1	54.3
Your status / recognition in the company	3.4	3.5	3.3	16.8	8.3	43.8	53.4
Clear company objectives, values, procedures	3.5	3.6	3.5	12.1	1.7	50.6	51.7
Appreciation or recognition of your efforts by supervisors	3.3	3.5	3.2	24.4	8.3	48.9	48.4

