Job characteristics, personal characteristics and well-being of nursing assistants in long-term care facilities: A mixed methods systematic review and narrative synthesis

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ABSTRACT

Background: Within long-term care facilities, paraprofessional nursing assistants account for the largest proportion of the health care workforce and provide essential direct care to older people with complex care needs. There is a gap in developing a theory-driven, systematic synthesis of the job characteristics and well-being outcomes specific to this occupational group, as most existing studies evaluate either professional health care workers or both professional and nursing assistants.

Aim: Develop an occupation-specific conceptual model on the job characteristics and well-being of nursing assistants in long-term care facilities drawing upon the job demands-resources model.

Design: Mixed methods systematic review following the Joanna Briggs Institute approach. The review protocol was registered on PROSPERO (2023 CRD42023403654).

Methods: The review included qualitative, quantitative, and mixed-method studies meeting these inclusion criteria: (1) peer-reviewed empirical research; (2) involved paraprofessional nursing assistants in long-term care facilities; (3) addressed well-being outcomes; (4) addressed occupation-specific job characteristics. Studies that are (1) not written in English, or (2) published before 1 January 2000 were excluded. A convergent synthesis approach was conducted using the content analysis method.

Data sources: Database searches (i.e., MEDLINE, PsycINFO, Embase, CINAHL, Web of Science, Scopus, and Google Scholar) and manual searches were conducted. The last search was conducted on July 31st, 2024.

Results: A Nursing Assistants Job Demands-Resources Model was developed based on 21 studies included. Nursing assistants are particularly vulnerable to burnout and mental health conditions, as well as occupational hazards, because of their job characteristics. Working time demands, physical care task stressors, and emotional demands are occupation-relevant job demands, while financial rewards, professional development resources, work environment, and emotional resources are motivational job resources. Strain-related personal characteristics are also relevant to nursing assistants. Findings indicated a spiral of vulnerabilities characterized by the vicious cycle of individual vulnerabilities, poor quality job, and health inequalities among nursing assistants in long-term care facilities.

Conclusion: This study finds that empirical evidence on nursing assistants' job characteristics and well-being is underdeveloped compared to research focusing on professional and all health care workers. We adapt a conceptual model and identify job and personal characteristics specific to the occupation group. Occupational-specific macro, meso, and micro-level strategies that mitigate job demands and nurture job resources should be developed to tackle the occupational health disparities that nursing assistants face in long-term care facilities.

Registration: The protocol of this study was registered on PROSPERO (2023 CRD42023403654).

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What is already known

- Health care workers in long-term care facilities experience poor job quality and poor well-being outcomes.
- Paraprofessional nursing assistants are particularly vulnerable.

What this paper adds

- Several ill-being and positive well-being outcomes are relevant to nursing assistants in long-term care facilities, particularly burnout, occupational hazards such as low back pain and musculoskeletal disorders, and job satisfaction.
- Working time demands, physical care task stressors, and emotional demands are occupation-relevant job demands, while financial rewards, professional development resources, work environment, and emotional resources are motivational job resources for nursing assistants.
- Strain-related personal characteristics, such as personal stressors, health and lifestyle, and socio-demographic characteristics, are associated with well-being outcomes of nursing assistants.

1. Introduction

The demand for formal health care workers in long-term care facilities is expected to at least double by 2040 because of population aging and the declining availability of informal family care (Organisation for Economic Co-operation and Development, 2020). Nursing assistants, also known as personal care workers, direct care workers, care aides, are the "eyes and ears" of the long-term care system, accounting for over 70 % of the care workforce across developed countries (Organisation for Economic Co-operation and Development, 2020). Nursing assistants perform various functions and tasks beyond basic care, including providing hands-on assistance with activities of daily living, providing psychosocial care to older people and communicating with their family members, and performing health care (Scales and Lepore, 2020). They deliver meaningful and rewarding care labor, but their work is physically and emotionally challenging. Personal care work performed by nursing assistants is often stigmatized as dirty and less-skilled work and characterized by low wages, precarious working conditions, limited career development opportunities, understaffing, and overloading (Keating et al., 2021). As paraprofessionals in the care system, nursing assistants are largely marginalized and invisible. Compared to professional health care workers, the caregiving role of nursing assistants is often not defined, protected, and buffered by professional identity (Scales et al., 2017). These undesirable job characteristics have led to poor health and well-being outcomes, such as high job dissatisfaction, high job strain and burnout, and the prevalence of occupational injuries. The COVID-19 pandemic further exposed the vulnerabilities of this essential workforce (Lai et al., 2022). In the face of this well-being failure, the long-term care system has long struggled to attract and retain nursing assistants and assure quality of care.

To date, there is a lack of a specific evaluation of the job characteristics and well-being of nursing assistants as paraprofessional health care workers in long-term care facilities. Many existing studies focus either on professional nurses or on all health care workers, including professional and nursing assistants (Broetje et al., 2020; Keyko et al., 2016; Midje et al., 2024). Furthermore, they tend to be one-sided and only investigate either negative (e.g., burnout) or positive (e.g., job satisfaction) well-being outcomes, and cannot account for workers' complex experiences of well-being in the workplace (Cooper et al., 2016; Squires et al., 2015). This mixed methods systematic review aims to comprehensively synthesize the empirical evidence and develop a conceptual framework regarding the job characteristics and well-being of nursing assistants in long-term care facilities. Recognizing that the demand for long-term care workers is a global challenge and that there are a wide array of professional qualifications and titles of long-term care workers

across the globe (Zysberg et al., 2019), the current review targets at nursing assistants who undertake mostly hands-on personal care activities and are not certified as nurses. In term of setting, this study targets at a variety of residential facilities across the long-term care continuum in different care systems across the world, including nursing homes, assistive living facilities, and similar facilities, but excluding hospital, home, or community care setting. A research question is addressed: What are the influences of job characteristics specific to nursing assistants in long-term care facilities on their well-being?

2. The job demands-resources model

Worker well-being refers to an "integrative concept that characterizes the quality of life with respect to an individual's health and work-related environmental, organizational, and psychosocial factors" (Chari et al., 2018). As a multidimensional concept, worker well-being refers not only to "ill-being" (e.g., burnout and stress) but also to positive affect and the evaluation of work experiences (e.g., work engagement and job satisfaction) (Wijngaards et al., 2022).

As the latest evolvement of decades of research on occupational health and well-being, the job demands-resources model provides a heuristic tool to conceptualize the job characteristics and well-being of workers in a variety of job contexts. The job demands-resources model enables a balanced and comprehensive investigation of both negative (e.g., burnout) and positive (e.g., work engagement) worker outcomes (Schaufeli, 2017). It classifies job characteristics into two broad categories, namely job demands and job resources, which can be applied to different working environments and occupations (Bakker and Demerouti, 2014). Job demands refer to the "physical, psychological, social, or organizational aspects of the jobs that require sustained physical and/or psychological effort and are therefore associated with certain physiological and/or psychological costs", while job resources refers to aspects of a job that are "functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, or stimulate personal growth, learning, and development" (Bakker and Demerouti, 2007). Job demands and job resources instigate two independent processes to influence workers' well-being differently, namely a health impairment process and a motivation process. While job demands generally predict job strain related outcomes (e.g., burnout), job resources are generally the most important antecedents of work engagement (Bakker, 2011). Guided by the job demands-resources model, this review identifies and synthesizes occupation-specific job demands and resources meaningful to the well-being of nursing assistants and theorizes how these job characteristics interrelate with negative and positive well-being outcomes.

3. Method

3.1. Design

This study followed the Joanna Briggs Institute approach to mixed methods systematic review (Lizarondo et al., 2020). The protocol of this study was registered on PROSPERO (2023 CRD42023403654).

3.2. Inclusion/exclusion criteria and search strategy

The review included qualitative, quantitative, and mixed-method studies based on the following inclusion criteria: (1) peer-reviewed empirical research; (2) involved paraprofessional nursing assistants in long-term care facilities; (3) addressed well-being outcomes; (4) addressed job characteristics specific to the target group. If both nursing assistants and other professional health care workers (e.g., certified nurses) were involved in a single study, the study had to discuss specifically the relationships between the job characteristics and the well-being of nursing assistants as compared to other participant groups to be included. Similarly, if the study settings included both long-term care

facilities and other care settings, it must provide specific discussion and comparison of the job characteristics and well-being of nursing assistants in long-term care facilities to be included. In terms of exclusion criteria, studies that are (1) not written in the English language, or (2) published before 1 January 2000 were excluded to retrieve up-to-date, high-quality evidence.

We conducted searches in the MEDLINE, PsycINFO, Embase, CINAHL, Web of Science, Scopus, and Google Scholar databases based on the CINAHL subject headings (see Supplementary Material 1 for search strategies and the example of one database's full search

presentation). The last search was conducted on July 31st, 2024. In addition to database searching, two reviewers independently screened the reference list of included studies and conducted a manual search to identify further relevant studies to retrieve comprehensive results (Hopewell et al., 2007).

3.3. Study selection and rigor

The search results were imported into Mendeley, and duplicate articles were removed. Three reviewers read the titles and abstracts of 30
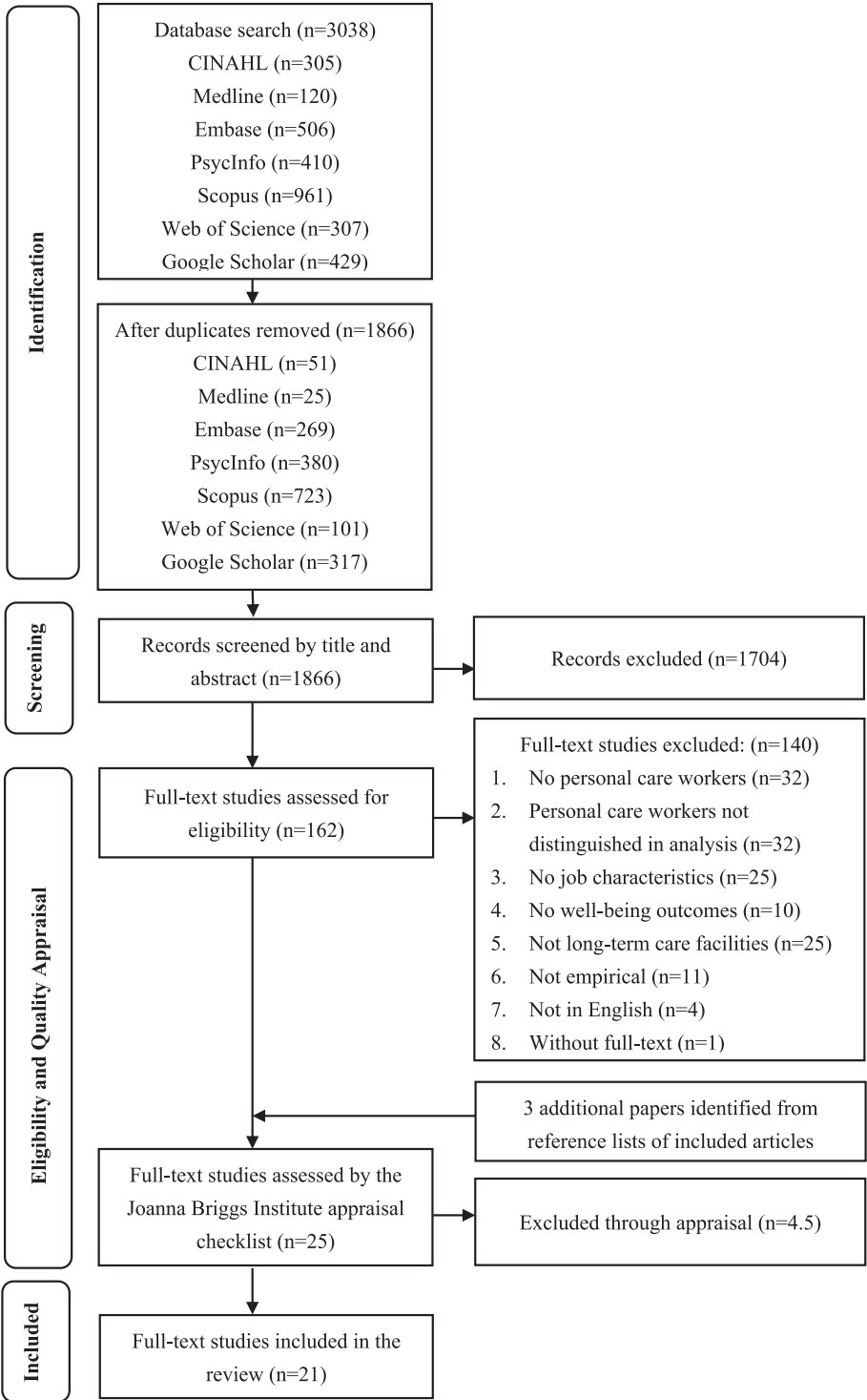

Fig. 1. Preferred reporting items for systematic reviews and meta-analyses flow diagram.

articles for a pilot title and abstract screening. Their inclusion/exclusion decisions were compared and discussed to ensure consistency in interpretation. Afterwards, two reviewers independently screened all abstracts based on the inclusion criteria. In cases of disagreement, a third reviewer was consulted for further evaluation until consensus was reached. At the full-text screening stage, a pilot screening was conducted. Three reviewers independently reviewed five full-text articles and repeated the same procedure. Then, a dual-check screening process was performed. The third reviewer conducted a final check of all included articles and disagreements were discussed and resolved among three reviewers. The search results are presented in a Preferred Reporting Items for Systematic reviews and Meta-Analyses flow diagram (Fig. 1).

3.4. Quality appraisal

The Joanna Briggs Institute Quality Assessment Review Instrument was adopted to assess the quality of selected articles (Moola et al., 2020). Three reviewers conducted a pilot assessment using two quantitative and two qualitative articles to ensure the consistency of the quality appraisal. Then, two reviewers independently conducted a critical appraisal of the articles. According to the Joanna Briggs Institute's scoring criteria, for quantitative studies to be included, they must receive scores in at least four out of eight domains, while for qualitative studies to be included, they must receive positive scores in at least five out of 10 domains (Gonella et al., 2019). Disagreements between the two reviewers were discussed with a third reviewer until consensus was reached. Supplementary Material 2 showcases the quality appraisal results of included studies using the Joanna Briggs Institute Quality Assessment Review Instrument.

3.5. Data extraction and synthesis

Eligible studies were extracted using the standardized Joanna Briggs Institute data extraction tool to elicit background information, including authors, year of publication, country, study aims, study design, data characteristics, facility type/conditions of care recipients, key findings, and quality appraisal results.

A convergent synthesis approach was adopted (Hong et al., 2017). Content analysis was adopted to analyze the extracted data (Gheyle and Jacobs, 2017). A combination of deductive and inductive coding was evoked iteratively in the data analysis process to engender theory-based and flexible data synthesis and integration. Specifically, two steps of data synthesis were performed by two independent reviewers to ensure the consistency and quality of the coding and categorization. Intercoder consensus was sought in each step of the data synthesis.

3.5.1. Step 1. Codify data into main categories and subcategories

Two main categories (i.e., job characteristics and well-being outcomes) and four subcategories (i.e., job demands, job resources, positive well-being outcomes, and ill-being outcomes) were established according to the job demands-resources model as the a priori coding scheme to facilitate deductive coding. The constructs of job characteristics and well-being outcomes in the included studies were coded and assigned to the main categories and subcategories. Then, a new main category, personal characteristics, was added to the coding scheme in the data analysis processes. The decision to include this new category was made because personal characteristics (1) repeatedly emerged in data analysis and (2) were relevant to the conceptual model and had the potential to enrich the theory building regarding nursing assistants' job characteristics and well-being.

3.5.2. Step 2. Develop themes within subcategories

Once the specific job and personal characteristics and well-being outcomes were categorized, we performed inductive coding within each subcategory to identify emerging themes while constantly

comparing them with literature. Following the procedures of a relevant study (Keyko et al., 2016), we coded each job and personal characteristic associated with well-being outcomes addressed in the quantitative and mixed-methods studies. The directions of association (i.e., positive, negative, nonsignificant) were marked when possible. For qualitative studies, we coded the processes and experiences to develop an in-depth understanding of job characteristics and well-being outcomes of interest. Codes were then grouped into themes and subthemes through constant comparison of the codes, data and references with literature. These deductively generated themes then become the specific job demand, job resources, and personal characteristics. The data synthesis processes combining deductive and inductive coding was presented with the example of "general job demands" in Supplementary Material 3.

4. Results

4.1. Search results and characteristics of included studies

The characteristics of the 21 included studies are summarized in Table 1. The included studies were conducted across developed regions characterized by population aging and the challenges of maintaining a sustainable health care workforce, including the United States (n = 8), Canada (n = 1), Australia (n = 3), the United Kingdom (n = 1), Denmark (n = 2), France (n = 1), Japan (n = 2), Taiwan (n = 2), and Israel (n = 1). Most studies (n = 16) adopted quantitative designs. Two studies adopted qualitative designs. Three were mixed-methods studies, but for one study (Miller et al., 2024), only the qualitative component was included for data extraction and analysis because of the low quality of the quantitative study. Among the quantitative studies and the quantitative component of the mixed-methods studies, most adopted a cross-sectional survey design (n = 14). Only two studies drew from longitudinal data.

4.2. The nursing assistants job demands-resources model

Based on the evidence from the included studies, we proposed a Nursing Assistants Job Demands-Resources model of worker well-being (see Fig. 2). The model synthesizes job characteristics, personal characteristics, workers' well-being outcomes, and secondary work-related outcomes specific to the occupational group of nursing assistants in long-term care facilities. Specifically, an array of ill-being (i.e., psychological ill-being and occupational hazards) and positive well-being (i.e., psychological well-being) outcomes, as well as secondary work-related outcomes are found to be relevant to nursing assistants. In addition, the model identifies job demands (i.e., general job demands, physical demands, emotional demands, working time demands, work-life conflict, psychological work stressors, and institutional care setting), job resources (i.e., general job resources, financial rewards, professional development, workplace rights and wellness, positive work environment, control and autonomy, emotional resources, positive organizational climate), and personal characteristics (i.e., personal psychological resources, personal stressors, health and lifestyle status, and socio-demographic characteristics) that are critical to the well-being of nursing assistants. These job and personal characteristics and well-being outcomes are found to be relevant to nursing assistants who are mostly low-wage workers whose job nature involves the delivery of demanding hands-on and emotional care in residential setting. Supplementary Material 4 showcases the well-being outcomes evaluated by the studies reviewed, as well as the relationships between job demands, job resources, personal characteristics, and these well-being outcomes. The sections below unfold components of the model in details.

4.2.1. Well-being outcomes

18 well-being and two secondary work-related outcomes were identified, and these outcomes were then categorized into three domains: 13 ill-being outcomes, five positive well-being outcomes, and two

Table 1
Characteristics of included studies.

No	Authors, year	Country	Study aim	Design	Data characteristics	Facility type/ Conditions of care recipients	Key findings	Quality appraisal
1	Chamberlain et al., 2016	Canada	To determine the individual and organizational variables associated with job satisfaction in care aides working in LTC	Quantitative: cross-sectional survey	Information from 36 long-term care facilities (30 urban and 6 rural) in three western Canadian provinces (Alberta, Saskatchewan, and Manitoba) was selected using stratified random sampling for urban facilities and convenience sampling for rural facilities.1224 care aides participated in the survey.	General long-term care facilities, secure dementia facilities, mental health facilities, combined long-term care and dementia facilities/ Not specified	Emotional exhaustion and cynicism in care aides are linked to lower job satisfaction, whereas increased professional efficacy and positive organizational factors, such as leadership, culture, and resources, boost their job satisfaction.	Quantitative: 6/8
2	Ejaz et al., 2008	United States	(1) To investigate the effects of background characteristics, personal and job-related stressors, and workplace support on direct care workers' (DCW) job satisfaction. (2) To examine the influence of components of the LTC stress and support model on DCW job satisfaction	Quantitative: cross-sectional survey	Survey data from 644 direct care workers in 49 long-term care organizations in the United States	Home health agencies, nursing homes, assisted living facilities/Not specified	Personal stressors (e. g., depression), job-related stressors (e.g., continuing education), and social support are key predictors of job satisfaction. Workers in nursing homes have lower job satisfaction compared to other settings, with organizations offering lower pay and experiencing high turnover also reporting lower satisfaction.	Quantitative: 7/8
3	Geiger-Brown et al., 2004	United States	To examine the relationships between demanding work schedule variables (such as shift work, working hours, rest periods) and depression, anxiety, and somatization symptoms	Quantitative: cross-sectional survey	Survey data from 473 nursing assistants	Nursing homes/Not specified	Working multiple double shifts monthly and 6 to 7 days per week increases the risk of poor mental health, depression, and somatization symptoms, with a greater number of demanding work schedule factors elevating the risk of mental health issues.	Quantitative: 7/8
4	Gillespie et al., 2011	United States	(1) To investigate the emotional job demands that may elicit negative suppression among direct care workers in the context of eldercare (2) To test the association between negative suppression and job attitudes	Qualitative: group interview Quantitative: survey	Qualitative: 28 care workers in two elder care facilities in the midwestern United States participated in four group interviews. Quantitative: 75 direct care workers working in the midwestern United States	Elder care facilities/Not specified	Difficult patient events (e.g., deterioration) are an emotional demand that can interact with display rules to induce negative suppression. Direct care workers in residential settings experience higher levels of negative suppression compared to those in-home care. Negative suppression is linked to lower job satisfaction and higher job stress.	Qualitative: 7/10 Quantitative: 7/8
5	Hart et al., 2023	Australia	To investigate the deficits in staffing time and relational care and workers' sense of being personally diminished and depleted as a result among older	Qualitative: semi-structured interview	20 participants who reflected the demographics and characteristics of the older home-care and residential aged-care workforce (representative in	Residential care homes, home care/ Not specified	Older aged care workers value the relational aspects of care but face stress due to a conflict between meaningful engagement and the need for procedural	Qualitative: 8/10

Table 1 (*continued*)

No	Authors, year	Country	Study aim	Design	Data characteristics	Facility type/ Conditions of care recipients	Key findings	Quality appraisal
			workers in the aged care industry		terms of geography, gender, relationship status, tenure, employer, hours, work setting, informal care responsibilities, cultural diversity, age)		efficiency amid staff shortages, feeling complicit in neglect and dehumanization.	
6	Hawes and Wang, 2023	United States	To investigate the factors contributing to long-term care workers' job satisfaction by examining the association between occupational stress (including job resources and job demands) and job satisfaction, and the differences among racial/ethnic and immigration groups.	Cross-sectional design	Quantitative data from 2763 nursing assistants, drawn from state licensing lists and the Centers for Medicare & Medicaid Services, with a focus on job satisfaction, job resources, and job demands.	Nursing homes/Not specified	High job resources and low job demands contributed to job satisfaction. Occupational stress works differently based on race/ ethnicity and immigration status. Organizational practices, such as providing benefits and ensuring respect, are important for job satisfaction. Structural, emotional, and physical demands impact job satisfaction.	Quantitative: 7/8
7	Heckenberg et al., 2020	Australia	To assess the impact of job demands on physiological stress markers (CAR, sAA-AR, sIgA) over time and to explore the buffering effects of job resources, self-efficacy, and empathy on these outcomes.	Quantitative: cross-sectional survey	23 direct care workers	Not specified/Not specified	Workplace support significantly influences direct care workers' job satisfaction more than personal factors such as self-esteem and self-efficacy, suggesting that improving training, compensation, and benefits could effectively boost job satisfaction.	Quantitative: 6/8
8	Huang and Yang, 2011	Taiwan	To discuss the nationality differences of foreign nurse aides and the effect of work stressors influencing work adjustment	Quantitative: cross-sectional survey	71 nursing aides from 11 long-term care facilities participated in a survey	Long-term care facilities/Not specified	Stress from patient care, supervisor pressure, and heavy workloads negatively impact foreign nurse aides' work skills, habits, personal relationships, self-concepts, and attitudes.	Quantitative: 7/8
9	Hussein, 2018	United Kingdom	To examine the levels of and differentials in, job strain among long-term care workers	Quantitative: use of longitudinal survey data from the Longitudinal Care Work Study	Drew from a locally representative sample of long-term care employers in four parts of England. In each site, nested samples of 15 agencies, and the same sample providers participated in the study at two time points (T1: 2010/11; T2: 2012/ 13)	Care homes, home care/Not specified	Care workers in nursing homes experience lower job insecurity, but factors such as age, workplace social support, job nature, union membership, and financial management skills affect job strain. Higher workplace social support reduces the likelihood of high-strain jobs, yet care home workers are more likely to face high-strain positions.	Quantitative: 7/8
10	Iwakiri et al., 2023	Japan	To investigate the relationship between quality of work life and job satisfaction regarding each task and identify factors	Quantitative: cross-sectional survey	Random sampling of 1000 seniors care facilities in Japan; the management of each facility invited to select eight care	Seniors' care facilities/older adults	Female, young, smoking, certified care workers with longer hours and shift work are more likely to experience severe LBP;	Quantitative: 7/8

Table 1 (*continued*)

No	Authors, year	Country	Study aim	Design	Data characteristics	Facility type/ Conditions of care recipients	Key findings	Quality appraisal
			influencing quality of work life among senior care workers with severe low back pain (LBP)		workers as participants. 3565 care workers finished the survey		interpersonal relationships, support, autonomy, and working hours significantly influence QWL; those with severe LBP paradoxically report lower LBP levels.	
11	Jakobsen et al., 2015	Denmark	To examine the association of emotional work, externally observed at the workplace, with self-reported depressive symptoms of professional caregivers	Quantitative: multi-level cross-sectional observational study	(1) A sample of 95 directly observed professional caregivers with full information on covariates (2) A sample of 205 observed and non-observed professional caregivers with full information on covariates working in one of the 56 observed work units	Eldercare homes/ older adults	Emotion work stressors are not linked to depressive symptoms, while unexpectedly, more social interactions between caregivers and residents correlate with higher depressive symptoms, both individually and at the work unit level.	Quantitative: 6/8
12	Jakobsen et al., 2016	Denmark	To investigate the association of individual levels of depressive symptoms with regulation requirements and barriers at the individual level and the work unit averaged level	Quantitative: (1) on-site observation of individual working conditions; (2) on-site observation of work unit working conditions; (3) cross-sectional survey of individual workers on depressive symptoms	95 female eldercare workers from 10 care homes	Care homes/Not specified	High regulation requirements at work, offering more decision-making and skill development opportunities, are linked to fewer depressive symptoms in eldercare workers; individually, no barriers significantly correlate with depressive symptoms.	Quantitative: 7/8
13	Jones et al., 2021	Australia	To explore the specific workplace demands, job resources, and personal resources among direct care workers in rural areas	Qualitative: focus group interview	Purposive sampling recruitment of 23 participants from three LTCFs; four focus groups were held. Participants were a mix of professional staff and personal care attendants.	Services provided include low care, low-to-high care, dementia care, end-of-life, and palliative care/No longer live at home because of chronic impairments and reduced independence	Direct-care workers identified job demands, including time pressure, physical demands, hindrances, staff mix, training for complex conditions, and work schedule demands. Job resources highlighted were collaboration, equipment, development opportunities, and schedule control. Personal resources necessary for aged care workers were disposition and self-care.	Qualitative: 7/10
14	McGilton et al., 2007	Canada	To evaluate the connections between supervisory support, job-related stress, and job satisfaction among nursing aides in LTC facilities, and to identify significant predictors of job satisfaction and stress at both individual and unit levels	Quantitative: cross-sectional design	222 nurse aides from 10 facilities in Ontario selected through stratified sampling of LTCFs	Nursing homes/Not specified	Thirty-three percent of the total variance in job satisfaction was explained by supervisory support, stress, birthplace, and nursing aides' first language. Greater supervisory support was also associated with reduced job stress	Quantitative: 7/8
15	Miller et al., 2024[a]	N/A	To explore the factors leading to high turnover rates among Nursing Assistants in long-term care	Qualitative: Interview	Qualitative: Collected via social media; included 17 interview participants.	Nursing homes, assisted living facilities, home care, and acute care/Not specified	Workplace culture and supervisor relationships impact NAs' experiences. High demands increase mental stress, while	Qualitative: 8/10

Table 1 (*continued*)

No	Authors, year	Country	Study aim	Design	Data characteristics	Facility type/ Conditions of care recipients	Key findings	Quality appraisal
							resources like autonomy and feedback are beneficial.	
16	Rouxel et al., 2016	France	To examine the relationships between environmental (job demands, job control, perceived emotional display rules) and individual (dispositional affectivity) variables so as to better understand the prevalence of burnout and job satisfaction among French geriatric care workers	Quantitative: cross-sectional design	343 female geriatric care workers from 32 long-term care facilities in northwest France	Geriatric care centers/Not specified	Negative affectivity, low job status, perceived negative display rules, and job demands are involved in the pathogenic process, while positive affectivity, perceived positive display rules, and job control are implied in the salutogenic process.	Quantitative: 7/8
17	Shinan-Altman and Cohen, 2009	Israel	To assess nursing aides' attitudes that condone abusive behaviors toward elderly people, as well as the relationship of these attitudes to demographic variables, work stressors (role conflict, role ambiguity, and work overload), burnout, and perceived control	Quantitative cross-sectional design	208 nursing aides from 18 nursing homes in central Israel	Nursing homes/Not specified	Nursing aides in nursing homes show a high prevalence of attitudes that condone abusive behaviors toward elderly residents, which are strongly linked to increased role conflict, role ambiguity, and burnout. Burnout also partially mediates the relationship between work stressors and attitudes endorsing elder abuse.	Quantitative: 7/8
18	Tsuboi et al., 2017	Japan	To investigate the association between perceived stress and low back pain (LBP) among Japanese eldercare workers	Quantitative: cross-sectional design	571 eldercare workers in long-term care facilities or home visit care employed by a Japanese company providing eldercare services participated in the study	Nursing homes, home visit care/Not specified	Higher perceived stress and physical workload are associated with increased lower back pain, while psychosocial stressors (job content) show no significant association, suggesting perceived stress is a more effective predictor of health outcomes than the stressors themselves.	Quantitative: 7/8
19	Yang et al., 2022	Taiwan	To investigate the association of work-related psychological factors among nursing aides in LTCFs with musculoskeletal disorders (MSDs) in Taiwan	Quantitative: cross-sectional design	297 nursing aides from 15 long-term care facilities were selected through simple random sampling. Purposive sampling was used to recruit participants	Long-term care facilities/Not specified	Work-related psychological factors (social support) among nursing aides are linked to musculoskeletal disorders and influenced by demographic and health characteristics (age, chronic disease, exercise) and job background (worksite, rest time, shift work, use of aids).	Quantitative: 7/8
20	Zhang et al., 2016	United States	To examine the influence of the long-term care work environment on the sleep quantity and quality of nursing assistants	Quantitative: cross-sectional design	Convenience sampling method was used to recruit 744 nursing assistants working in 15 long-term care facilities located in Maryland and New England between January	Long-term care facilities/Not specified	Workers with more beneficial work features had longer sleep duration and better sleep quality	Quantitative: 7/8

Table 1 (*continued*)

No	Authors, year	Country	Study aim	Design	Data characteristics	Facility type/ Conditions of care recipients	Key findings	Quality appraisal
21	Zontek et al., 2009	United States	To examine the effect of psychosocial factors (i.e., stress, job satisfaction, organizational climate, safety climate, and training) on direct care workers' injuries	Quantitative: cross-sectional design	2008 and October 2009 105 direct care workers who attended the Mountain Area Health Education Center Nursing Assistant Training Day	Nursing homes or residential facilities, Hospital, Home or private residence, Hospice/ Not specified	Injury rates were associated with type of facility, job satisfaction, training	Quantitative: 7/8

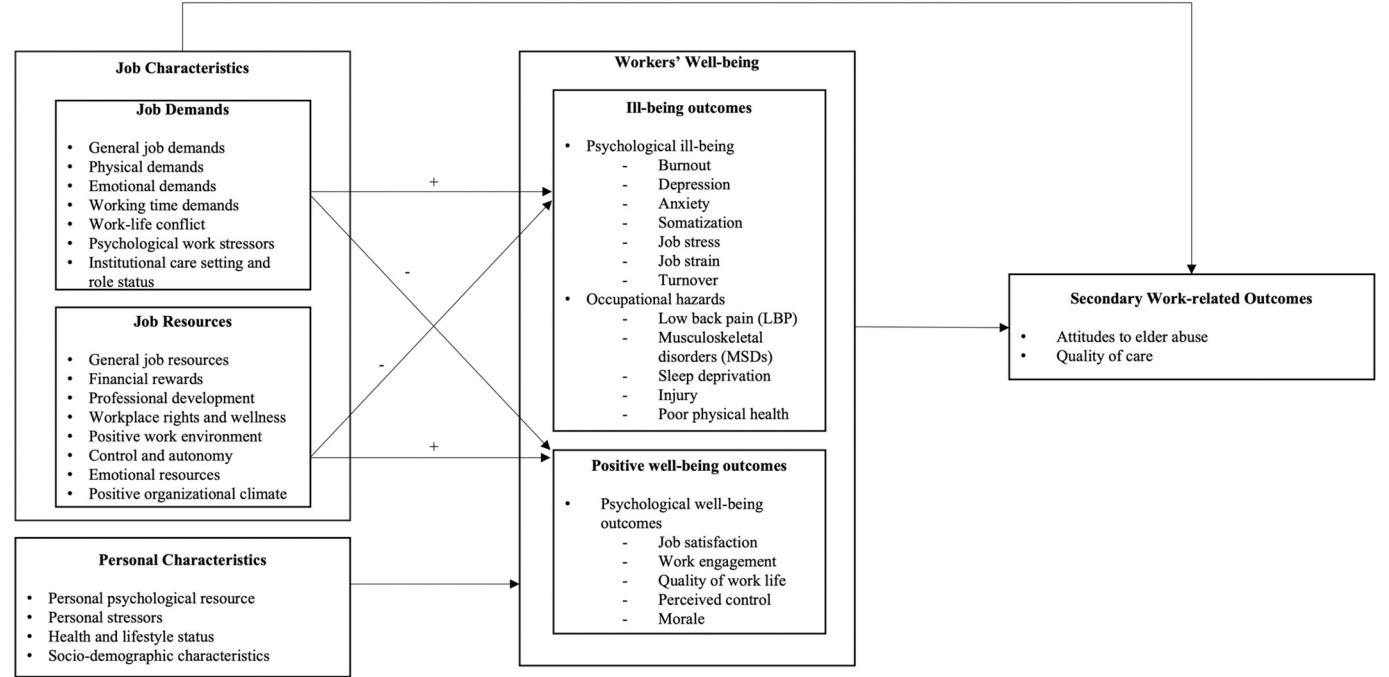^a Only the qualitative part of the mixed-methods study was included in this review.

Fig. 2. Nursing assistants job demands-resources model of worker well-being in long-term care facilities.

secondary work-related outcomes.

4.2.1.1. Ill-being outcomes. Ill-being outcomes accounted for over 70 % of all well-being outcomes in the studies reviewed. One domain of ill-being outcomes was psychological ill-being, including burnout (Rouxel et al., 2016; Shinan-Altman and Cohen, 2009), depressive symptoms (Geiger-Brown et al., 2004; Jakobsen et al., 2016, 2015), depressive disorder (Geiger-Brown et al., 2004), anxiety (Geiger-Brown et al., 2004), somatization (Geiger-Brown et al., 2004), job stress (Gillespie et al., 2011; Hart et al., 2023), job strain (Hussein, 2018), and intention to leave (Miller et al., 2024). The other domain focused on the occupational hazards specific to nursing assistants, including lower back pain (Iwakiri et al., 2023; Jones et al., 2021; Tsuboi et al., 2017), musculoskeletal disorders (Jones et al., 2021; Yang et al., 2022), sleep deprivation in terms of quantity and quality (Zhang et al., 2016), injury (Zontek et al., 2009), and three physiological indicators of stress response and poor physical health (i.e., cortisol awakening response; secretory immunoglobulin A; salivary alpha amylase awakening response +) (Heckenberg et al., 2020).

4.2.1.2. Positive well-being outcomes. All the positive well-being

outcomes in the reviewed studies focused on psychological well-being. Job satisfaction received the most interest in the literature (n = 7, Chamberlain et al., 2016; Ejaz et al., 2008; Gillespie et al., 2011; Hawes and Wang, 2023; McGilton et al., 2007; Miller et al., 2024; Rouxel et al., 2016). Other outcome variables included work adjustment (Huang and Yang, 2011), quality of work life (Iwakiri et al., 2023), perceived control (Shinan-Altman and Cohen, 2009), and morale (Hart et al., 2023).

4.2.1.3. Secondary work-related outcomes. Two secondary outcomes were identified in the reviewed studies: attitudes to elder abuse (Shinan-Altman and Cohen, 2009) and quality of care (Hart et al., 2023).

4.2.2. Job demands and the health impairment processes
A total of 26 job demands were identified in the literature, which were categorized into seven domains: general job demands (Heckenberg et al., 2020; Iwakiri et al., 2023; McGilton et al., 2007; Rouxel et al., 2016; Tsuboi et al., 2017; Yang et al., 2022; Zontek et al., 2009), physical demands (Chamberlain et al., 2016; Hart et al., 2023; Hawes and Wang, 2023; Huang and Yang, 2011; Jones et al., 2021; Shinan-Altman and Cohen, 2009; Tsuboi et al., 2017), emotional demands (Ejaz et al., 2008; Gillespie et al., 2011; Hawes and Wang, 2023; Huang and Yang, 2011; Jakobsen et al., 2015; Rouxel et al., 2016), working time

demands (Ejaz et al., 2008; Geiger-Brown et al., 2004; Hawes and Wang, 2023; Huang and Yang, 2011; Iwakiri et al., 2023; Jones et al., 2021; Yang et al., 2022; Zhang et al., 2016; Zontek et al., 2009), work-life conflict (Gillespie et al., 2011; Hart et al., 2023), psychological work stressors (Iwakiri et al., 2023; Jakobsen et al., 2016; Jones et al., 2021; Shinan-Altman and Cohen, 2009), as well as institutional care setting and role status (Chamberlain et al., 2016; Ejaz et al., 2008; Hussein, 2018; Iwakiri et al., 2023; Rouxel et al., 2016; Yang et al., 2022; Zontek et al., 2009). We identified 47 significant health impairment processes (i.e., job demand being positively related to ill-being outcomes and negatively related to positive well-being outcomes) from the reviewed studies.

4.2.2.1. General job demands. Seven studies employed a generic measurement to test the general impacts of job demands on well-being outcomes. These studies used global instruments that measured job demands being composing of different domains and did not distinguish the specific implications of different job demand domains on workers' well-being in their analysis. Job demands in general were positively related to salivary alpha amylase awakening response (Heckenberg et al., 2020), burnout (Rouxel et al., 2016), and musculoskeletal disorders (Yang et al., 2022) while negatively associated with job satisfaction (McGilton et al., 2007; Rouxel et al., 2016).

4.2.2.2. Physical demands. Physical demands were typical job demands relevant to nursing assistants discussed in the reviewed studies (n = 8). Physical demand decreased workers' job satisfaction (Hawes and Wang, 2023). Huang and Yang (2011), Jones et al. (2021) and Shinan-Altman and Cohen (2009) found that work overload was positively associated with burnout (Shinan-Altman and Cohen, 2009) and negatively associated with work adjustment (Huang and Yang, 2011). Qualitative findings (Jones et al., 2021) confirmed that heavy workload was a demanding job characteristic which fluctuated with the acuity of patients' conditions and could lead to workers' burnout out and hamper the quality of care. Two qualitative studies (Ejaz et al., 2008; Iwakiri et al., 2023) elaborated the manifestation and implications of time pressure, suggesting that the chronic shortage of staff time required workers to take a task-oriented rather than human-centered approach to care practice and in turn caused stress among workers. Time pressure decreased workers' job satisfaction (Gillespie et al., 2011). Additionally, two task stressors specific to nursing assistants were identified: physical workload and undesirable personal care tasks. Qualitative findings suggested that physical workloads such as lifting and transferring can be "wearing out" and cause occupational hazards, including lower back pain and musculoskeletal disorders (Jones et al., 2021), and influence workers' intention to leave (Miller et al., 2024). Tsuboi et al. (2017) also found a positive relationship between physical workload and lower back pain. Personal care tasks, especially incontinence care, can be undesirable and negatively associated with work adjustment (Gillespie et al., 2011) and influenced workers' turnover intention (Miller et al., 2024).

4.2.2.3. Emotional demands. Six studies examined 11 emotional demands in three sub-domains: general emotional demand, relational demands with supervisor and coworkers, and emotional labor. Emotional demand in general decreased job satisfaction (Hawes and Wang, 2023). Workers' relationships with their supervisor and coworkers can be negatively associated with work adjustment (Huang and Yang, 2011). Qualitative finding also suggested that nursing assistants often suffered from disrespectful attitude from supervisors (Miller et al., 2024). Racism perpetuated by coworkers significantly decreased workers' job satisfaction (Ejaz et al., 2008). Negative suppression, which was used as an indicator for emotional labor, was positively associated with job stress and negatively associated with job satisfaction (Gillespie et al., 2011). Negative emotional display rules increased burnout and decreased job satisfaction (Rouxel et al., 2016). Organizational barriers for emotional

labor were associated with depressive symptoms (Hussein, 2018). Qualitative findings (Gillespie et al., 2011) suggested that four scenarios may prompt a negative emotional response from workers in their everyday care practice: taxing events with residents; demanding concerns from families of residents; witnessing residents' deterioration, death, and dying; and suffering from residents' aggression and violence.

4.2.2.4. Working time demands. Ten studies discussed the domain of working time demands. Two sub-domains of working time demands were discussed: work schedule/shift work and working hours. Nursing assistants constantly worked unpredictable and rigid schedules, numerous shifts, and not having consecutive days off (Jones et al., 2021). Work schedule and shift work increased mental health conditions, including depressive symptoms, depressive disorder, anxiety, and somatization (Geiger-Brown et al., 2004), lower back pain (Iwakiri et al., 2023), musculoskeletal disorders (Yang et al., 2022), and decreased sleep quantity (Zhang et al., 2016), as well as negatively related to job satisfaction (Ejaz et al., 2008; Hawes and Wang, 2023) and work adjustment (Huang and Yang, 2011). While qualitative evidence found that nursing assistants often worked long hours (Iwakiri et al., 2023), quantitative study also found that total working hours were associated with lower back pain and quality of work life (Iwakiri et al., 2023). Working part time was not significantly associated with workers' job satisfaction (McGilton et al., 2007).

4.2.2.5. Work-life conflict. Two qualitative studies suggested that the heavy physical and emotional demands might affect workers' ability to perform nonwork roles, such as elder care responsibilities at home, which in turn led to stress (Gillespie et al., 2011; Hart et al., 2023). No quantitative study provided evidence about this domain.

Four studies discussed the domain of psychological work stressors, which were categorized into four sub-domains. Hindrance demand, or the tension between care provision and the meeting of regulatory requirements such as paperwork, was identified in a qualitative study (Jones et al., 2021). Role conflict was positively associated with burnout (Shinan-Altman and Cohen, 2009) and negatively associated with quality of work life (Iwakiri et al., 2023). It also increased workers' attitude to elder abuse (Shinan-Altman and Cohen, 2009). Meanwhile, role ambiguity was a psychological work stressor that increased burnout and attitude to elder abuse, and decreased perceived control (Shinan-Altman and Cohen, 2009). Jakobsen et al. (2016) found that barriers to regulation of action, which reflected workers' inability to exert influence on and control the work environment, increased depressive symptoms.

4.2.2.6. Institutional care setting and role status. Seven studies evaluated the institutional care setting of long-term care facilities and the role status of nursing assistants as a demanding job characteristic. Compared to working in a home care setting, working in a long-term care facility was associated with a lower level of job strain (Hussein, 2018) but a higher risk of musculoskeletal disorders (Yang et al., 2022). Facility type, including nursing homes and dementia care facilities that both require intensive caring, predicted lower workers' job satisfaction (Chamberlain et al., 2016; Ejaz et al., 2008). In studies that included both professional nurses and nursing assistants, the status of workers' role or their professional qualification as nursing assistants significantly increased the risks of job strain (Hussein, 2018), lower back pain (Iwakiri et al., 2023), and burnout (Rouxel et al., 2016), as well as decreasing job satisfaction (Rouxel et al., 2016).

4.2.3. Job resources and the motivation processes

36 job resources were identified and categorized into nine domains: general job resources (Heckenberg et al., 2020; Zhang et al., 2016), financial rewards (Ejaz et al., 2008; Gillespie et al., 2011; Hawes and Wang, 2023; Iwakiri et al., 2023; Miller et al., 2024; Shinan-Altman and Cohen, 2009), professional development (Ejaz et al., 2008; Hawes and

Wang, 2023; Iwakiri et al., 2023; Jones et al., 2021; McGilton et al., 2007; Miller et al., 2024; Yang et al., 2022; Zontek et al., 2009), workplace rights and wellness (Chamberlain et al., 2016; Hussein, 2018; Yang et al., 2022), positive work environment (Chamberlain et al., 2016; Ejaz et al., 2008; Huang and Yang, 2011; Iwakiri et al., 2023; Jakobsen et al., 2016; Jones et al., 2021; Miller et al., 2024; Yang et al., 2022), control and autonomy (Hart et al., 2023; Jakobsen et al., 2016; Jones et al., 2021; McGilton et al., 2007; Tsuboi et al., 2017; Yang et al., 2022), emotional resources (Chamberlain et al., 2016; Ejaz et al., 2008; Hart et al., 2023; Hawes and Wang, 2023; Hussein, 2018; Iwakiri et al., 2023; Jones et al., 2021; McGilton et al., 2007; Miller et al., 2024; Tsuboi et al., 2017; Yang et al., 2022), and positive organizational climate (Chamberlain et al., 2016; Hawes and Wang, 2023; Zontek et al., 2009). 37 motivational processes (i.e., job resources that lead to increasing positive well-being and decreasing ill-being outcomes) were identified.

4.2.3.1. General job resources. Two studies used a combination of various beneficial job factors to unravel the implications of general job resources on workers' well-being outcomes. General job resources only marginally associated with decreases in cortisol awakening response. However, job resources moderated the relationship between job demands and the salivary alpha amylase awakening response, suggesting that job resources can buffer the negative implication of job demands on workers' health and stress response (Heckenberg et al., 2020). Zhang et al. (2016) found that increased general job resources can significantly decrease workers' likelihood of experiencing short sleep duration and poor sleep quality.

4.2.3.2. Financial rewards. Six studies evaluated two sub-domains of financial rewards: pay and benefits. Four studies discussed pay as a job resource for nursing assistants. Workers' satisfaction with salary significantly improved their job satisfaction (Ejaz et al., 2008) and quality of work life (Iwakiri et al., 2023). Qualitative study also highlighted that nursing assistants reported that they felt underpaid and experienced financial strain (Miller et al., 2024). Benefit is significantly related to job satisfaction (Hawes and Wang, 2023). Further scrutinization of specific benefits found that although neither paid sick nor holiday leave was significantly associated with job satisfaction, retirement benefit and health insurance were both significantly associated with increased job satisfaction (Ejaz et al., 2008).

4.2.3.3. Professional development. Eight studies examined the domain of professional development, which consisted of five sub-domains, namely, promotion or official position (Iwakiri et al., 2023), personal development (Hawes and Wang, 2023), training (Ejaz et al., 2008; Jones et al., 2021; Miller et al., 2024; Zontek et al., 2009), caregiving techniques (Iwakiri et al., 2023), and job tenure (Iwakiri et al., 2023; Yang et al., 2022; McGilton et al., 2007; Zontek et al., 2009). Workers' satisfaction with promotion opportunities or their official position significantly increased their quality of work life (Iwakiri et al., 2023). Training was a significant job resource for nursing assistants as they are constantly confronted with the complex health care needs of frail older adults (Jones et al., 2021; Miller et al., 2024). Training and personal development significantly increased the positive well-being outcome of job satisfaction (Ejaz et al., 2008; Hawes and Wang, 2023). Caregiving techniques and length of job tenure increased the quality of work life (Iwakiri et al., 2023). Job tenure moderated the relationship between training and injury among workers (Zontek et al., 2009).

4.2.3.4. Workplace rights and wellness. Three studies explored the relationships between workplace rights and wellness and workers' well-being. Workers' union membership decreased job strain (Hussein, 2018). The availability of work breaks and rest times also mitigated the risk of musculoskeletal disorders (Yang et al., 2022).

4.2.3.5. Positive work environment. Seven studies explored three sub-domains of work environment. While qualitative findings revealed that staffing level was important for workers' job quality (Miller et al., 2024; Shinan-Altman and Cohen, 2009), quantitative studies found that staffing level increased job satisfaction (Chamberlain et al., 2016) and quality of work life (Iwakiri et al., 2023). Qualitative findings further suggested that facility design, in terms of the convenience of the physical layouts of buildings, was an important job resource (Jones et al., 2021). Quantitative findings confirmed that facility design was positively related to job satisfaction (Chamberlain et al., 2016) and work adjustment (Huang and Yang, 2011). The availability of devices and equipment to facilitate the care process was a facilitative work environment (Jones et al., 2021; Miller et al., 2024), which can decrease depressive symptoms (Jakobsen et al., 2016) and musculoskeletal disorders (Yang et al., 2022).

4.2.3.6. Control and autonomy. Six studies explored control and autonomy as job resources for nursing assistants. Two saw general job control as the combination of skill discretion and decision authority (Rouxel et al., 2016; Tsuboi et al., 2017). General job control was positively associated with job satisfaction (Rouxel et al., 2016). Yang et al. (2022) indicated that both skill discretion and decision authority decreased musculoskeletal disorders. Jakobsen et al. (2016) found that regulation requirements, or the opportunity for decision-making and skill development in the workplace, decreased depressive symptoms. Qualitative findings suggested that control over work schedule (Jones et al., 2021) and autonomy to respond to older adults' care needs in situated and flexible ways (Hart et al., 2023) were also important job resources.

4.2.3.7. Emotional resources. While emotional care can be draining, 11 studies discussed two sub-domains of emotional resources, namely, social support at work and meaningful relationships with residents. General social support was negatively associated with job strain (Hussein, 2018) and positively related to quality of work life (Iwakiri et al., 2023). Chamberlain et al. (2016) found that social capital at work can significantly lead to high job satisfaction. Qualitative findings showed that collaboration with colleagues was important job resource to achieve work goals, meet physical job demands, and meet the care needs of older adults (Jones et al., 2021; Miller et al., 2024). Quantitative findings also suggested that support from coworkers decreased musculoskeletal disorders (Yang et al., 2022) and increased job satisfaction (Hawes and Wang, 2023). Similarly, support from supervisor decreased musculoskeletal disorders (Yang et al., 2022) while increasing job satisfaction (Chamberlain et al., 2016; McGilton et al., 2007). Qualitative findings suggested that the performance of relational care was the most rewarding and meaningful part of personal care work for workers (Hart et al., 2023; Miller et al., 2024). But respect from resident did not significantly increased workers' job satisfaction (Hawes and Wang, 2023).

4.2.3.8. Positive organizational climate. Lastly, three studies examined four sub-domains of positive organizational climate (i.e., culture, organizational respect, institutional policy, and safety climate) and their implications for workers' well-being outcomes (Chamberlain et al., 2016; Hawes and Wang, 2023; Zontek et al., 2009). Organizational culture and organizational respect can lead to better job satisfaction (Chamberlain et al., 2016; Hawes and Wang, 2023).

4.2.4. Personal characteristics and worker outcomes

The reviewed studies also discussed a variety of personal characteristics that influence workers' well-being outcomes directly or indirectly. 32 personal characteristics in five different domains—personal psychological resources (Heckenberg et al., 2020; Jones et al., 2021; Rouxel et al., 2016), personal stressors (Ejaz et al., 2008; Hussein, 2018;

Rouxel et al., 2016; Tsuboi et al., 2017; Zhang et al., 2016), health and lifestyle status (Ejaz et al., 2008; Iwakiri et al., 2023; Tsuboi et al., 2017; Yang et al., 2022; Zhang et al., 2016), and sociodemographic characteristics (Chamberlain et al., 2016; Ejaz et al., 2008; Hawes and Wang, 2023; Huang and Yang, 2011; Hussein, 2018; Iwakiri et al., 2023; McGilton et al., 2007; Miller et al., 2024; Shinan-Altman and Cohen, 2009; Yang et al., 2022; Zhang et al., 2016; Zontek et al., 2009)—were identified. Among them, 17 personal characteristics were statistically significant antecedents of workers' well-being.

4.2.4.1. Personal psychological resources. Three studies examined nine sub-domains of personal psychological resources that promote workers' well-being. Empathy and compassion toward older adults were important personal psychological resources (Jones et al., 2021). Empathy decreased cortisol awakening response and buffered the impacts of job demands on salivary alpha amylase awakening response (Heckenberg et al., 2020). Qualitative findings revealed other personal psychological resources, including self-care, patience, flexibility, and adaptability (Jones et al., 2021). Rouxel et al. (2016) suggested that positive affectivity was a significant antecedent of job satisfaction, both directly and indirectly through its influence on positive display rules and job control. Positive affectivity also mitigated burnout (Rouxel et al., 2016).

4.2.4.2. Personal stressors. Five studies examined five sub-domains of personal stressors that impose a negative influence on workers' well-being. Rouxel et al. (2016) found that negative affectivity was a strong antecedent of burnout directly and indirectly through its impact on negative display rules and job demands. Negative affectivity was negatively associated with job satisfaction. Yang et al. (2022) found that life stress was positively related to lower back pain. Depressive symptom was a personal stressor that decreased job satisfaction (Ejaz et al., 2008). Lastly, three studies explored the sub-domain of financial stressor under two themes: financial status and having to take another job. Specifically, workers' ability to manage their own finances, which was used as a proxy of in-job poverty, was associated with higher job strain (Hussein, 2018). Having to take another job was also an antecedent of poor sleep quantity (Zhang et al., 2016).

4.2.4.3. Health and lifestyle status. Five studies discussed seven sub-domains of health and lifestyle status as personal characteristics that influence workers' well-being outcomes. Ejaz et al. (2008) found that job-related physical and emotional health was positively related to job satisfaction. Chronic diseases increased the risk of musculoskeletal disorders (Yang et al., 2022) and musculoskeletal disorders increased the risk of sleep quality deprivation among workers (Zhang et al., 2016). Exercise habit was negatively related to musculoskeletal disorders (Yang et al., 2022). Iwakiri et al. (2023) found that being a smoker increased the risk of lower back pain.

4.2.4.4. Sociodemographic characteristics. Eight sub-domains of socio-demographic characteristics were explored in 12 studies. Migration status was discussed in six studies (Chamberlain et al., 2016; Hawes and Wang, 2023; Huang and Yang, 2011; Hussein, 2018; McGilton et al., 2007; Yang et al., 2022). Specifically, foreign nationality was positively related to musculoskeletal disorders (Yang et al., 2022) and negatively related to work adjustment (Huang and Yang, 2011). Being born in a foreign country and speaking a foreign language as first language decreased job satisfaction (McGilton et al., 2007). Different types of job resources and demands can have varying effects on the job satisfaction for workers with divergent nationalities and race (Hawes and Wang, 2023). In addition, minority ethnicity or race was associated with poor sleep quality and quantity (Zhang et al., 2016) and job satisfaction (Ejaz et al., 2008). Being older in age was associated with job strain (Hussein, 2018), having severe lower back pain (Iwakiri et al., 2023) and musculoskeletal disorders (Yang et al., 2022). Being female was related

to lower back pain (Iwakiri et al., 2023; Tsuboi et al., 2017) and poor sleep quality (Zhang et al., 2016). Shorter traveling time from facilities was important consideration for nursing assistants (Miller et al., 2024).

5. Discussion

To the best of our knowledge, this is the first study to systematically review the job characteristics and well-being outcomes specific to the occupational group of nursing assistants working in long-term care facilities. We draw upon the job demands-resources model to develop an integrative conceptual framework that accounts for both the positive and negative job characteristics and well-being outcomes in a balanced and comprehensive way. We developed a Nursing Assistants Job Demands-Resources model of worker well-being (Fig. 2) and identified job demands, job resources, and personal characteristics that had implications on nursing assistants' well-being. Our study provides preliminary evidence about the manifestation of the health impairment process (i.e., the adverse impacts of demanding job characteristics on well-being) and the motivation process (i.e., the positive impact of job resource on workers' well-being) among nursing assistants in long-term care facilities. This echoes the job demands-resources literature's recommendation to tailor the model and capture the workplace characteristics unique to different populations and occupations (Bakker and Demerouti, 2007).

5.1. The nursing assistants job demands-resources model of worker well-being in long-term care facilities

5.1.1. Job demands and the health impairment process

This review found that existing studies have explored both the ill-being and positive well-being outcomes of nursing assistants in long-term care facilities, despite most studies focused on ill-being outcomes. Aligning with the job demands-resources literature, we found that burnout is an important outcome of the psychological ill-being of nursing assistants. They were also affected by mental health conditions, including depression and anxiety. More importantly, this study found that nursing assistants were vulnerable to several occupational hazards, including lower back pain, musculoskeletal disorders, sleep deprivation, injury, and poor health, which were largely a result of the occupation-specific job demands. Future studies adopting the job demands-resources model to examine nursing assistants' well-being should thus consider incorporating these occupation-specific hazards in the conceptual model.

This study revealed that nursing assistants were exposed to a set of demanding job conditions with well-being implications, including physical demands, emotional demands, working time demands, work-life conflict, and psychological work stressors. Among these job demands, working time demands received the most attention from the studies reviewed. Our review indicated that the working time demands are a significant antecedent of several detrimental outcomes, including mental health problems, lower back pain, musculoskeletal disorders, sleep deprivation, low job satisfaction, and poor work adjustment and quality of work life. Research to date found that shift work and irregular, prolonged working time are associated with poor psychological functioning and health issues among professional nurses in hospitals and long-term care settings, as well as disrupting their family and social life (Chang and Peng, 2021; Tahghighi et al., 2017). In long-term care facilities, where 24-hour care is provided for older adults with complex care needs, a demanding working time is a key job characteristic among health care workers, yet its well-being consequences for nursing assistants are less understood. During their working hours, nursing assistants are mostly on their feet providing physically and emotionally demanding care to older adults, which may compound with their demanding working time to produce negative consequences for their mental and physical health (Geiger-Brown et al., 2004). In addition, as low-wage workers, they may have to work long hours, take few times

off, and work irregular shifts to maintain a living income (Morris, 2009). The effect of working time demands on triggering the health impairment process of nursing assistants therefore needs further attention.

Consistent with existing studies, our review shows that physical demands are important for nursing assistants. While work overload and time pressure have been extensively evaluated among health care workers (Cooper et al., 2016; Hart et al., 2023), less attention has been paid to understanding the occupation-specific task stressors. Nursing assistants undertake many physically demanding tasks, such as moving, lifting, and transporting people and other manual handling tasks (Yeung, 2012). In this review, we found that these occupation-specific physical workloads influence workers' health and lead to lower back pain. In addition, we found that nursing assistants must undertake undesirable personal care tasks, which was an antecedent of poor work adjustment. The performance of intimate body care involves the day-to-day handling of incontinence and other unpleasant personal care tasks. Personal care work is often socially stigmatized and devalued as "dirty work" and is conferred a low occupational status partly because of the nature of the care tasks (Yau et al., 2022), a job characteristic in need of further attention.

This review identifies two emotional demands for nursing assistants (i.e., relational demands related to supervisor and coworkers and emotional labor) constitute the occupation-specific demands of personal care work. Most noticeably, emotional labor, which may include the surface performance of caring expression and building deep emotional bonds at work (Hochschild, 2012), is a relevant job characteristic. While emotional labor is prevalent in the health care setting and vital to high-quality care, it can be stressful for nursing assistants who are providing intimate, direct care to "ill, dying, aggressive, or disoriented clients" (Franzosa et al., 2019). As shown in the studies reviewed, the performance of emotional labor has consequences on workers' psychological well-being. Further studies exploring the implications of the emotional demands of care work will be needed to support this essential workforce.

5.1.2. Job resources and the motivation process

In addition to the negative aspects of personal care work, this review identifies motivational job resources important to the occupational group of nursing assistants in long-term care facilities. Job resources, including financial rewards, professional development, workplace rights and wellness, positive work environment, control and autonomy, emotional resources, and positive organizational climate, can become motivational factors contributing to positive well-being outcomes and buffering ill-being outcomes for nursing assistants.

Consistent with existing studies (Selden and Sowa, 2015), this review finds that financial rewards, including pay and benefits (i.e., retirement benefit and health insurance), are job resources that are associated with higher job satisfaction and quality of work life among nursing assistants. The wages of the long-term care workforce are not only lower than national mean wages but also significantly lower than the wages of health care workers in the hospital setting (Hussein, 2017). Worse still, many workers are not protected by health insurance and other work-related benefits along with the marketization of the long-term care sector (Corlet Walker et al., 2022). Within such context, financial rewards can be a motivational job resource that promotes workers' well-being and in turn increases the attractiveness and image of personal care work. Strategies such as increasing pay—including reforming minimum pay regulations to cover care workers, examining internal pay equity by gender and race, and improving benefits—should be considered to improve workers' financial well-being (Despard, 2023).

The review findings suggest that professional development, especially opportunities for promotion and personal development, training and acquiring caregiving techniques, is a significant antecedent of better quality of work life and job satisfaction. Personal care work has been a highly gendered domain and devalued in the contemporary world of work. An important way to promote its value and social recognition is to foster the professional development of the workforce through on-the-job

training and creating a promising career ladder (Choi et al., 2020; Somerville, 2006). Research has found that an important incentive for nursing assistants to pursue their career is the opportunity to seek upward mobility in the health care sector (Covington-Ward, 2017). Furthermore, professional development opportunities, particularly training to equip workers with the knowledge and skills required to work with residents with complex care needs, can, in turn, promote work performance and quality of care (Coogle et al., 2007). In addition, a systematic review of the work engagement of professional nurses found that control and autonomy, professional practice environment, professional identity, and development of professional practice are all important professional resources to promote nurses' work engagement (Keyko et al., 2016). Our review findings only support that job control is a motivational factor, with other professional resources uncovered by existing literature. Future studies could dig into the professional resources relevant to nursing assistants to enhance the job quality of this essential workforce.

Our review indicates that the positive work environment, particularly staffing level, facility design, and devices and equipment, is an important job resource. While staffing level has been extensively discussed in the health care workforce literature (Bowers et al., 2000; Eagar et al., 2020), other physical aspects of the work environment are particularly important yet under-examined for the occupational group of nursing assistants, who perform physically demanding tasks in their daily work and are vulnerable to a variety of occupational hazards. A physical work environment that is safe and comfortable in terms of its design and layout and the availability of assistive equipment and technology may have positive influences on workers' health and well-being and buffer the adverse influences of the physical demands of their work. Wingler and Keys (2019) found that environmental factors in the workplace, including ergonomic, sensory, layout and restorative factors, significantly influence professional nurses' fatigue and their competency to deliver direct patient care in the hospital setting. A systematic review on the physical environment in long-term care facilities found that unit configuration and layout, furniture, fixtures, and equipment were linked directly or indirectly to the stress, injury, and job satisfaction of staff (Joseph et al., 2016). Future research that comprehensively assesses the physical environment that facilitates workers' well-being is needed.

Lastly, our review findings suggest that while the performance of emotional labor can be straining, there were also a variety of emotional resources that can improve workers' well-being, including support from supervisors and coworkers and meaningful relationships with residents. Research has shown that emotional and relational care is a rewarding and meaningful part of personal care work (Yau et al., 2022). When the emotional labor is well supported by supervisors, coworkers, and organizations, workers are more likely to flourish in the workplace (Franzosa et al., 2019). To better nurture emotional resources for nursing assistants, it is recommended that employers take an antecedent approach by providing training that facilitates workers' healthy emotional regulation, reappraisal and modulation when they need to perform emotional labor (Costakis et al., 2021).

5.1.3. Personal characteristics

An important adaptation of our conceptual model is the incorporation of personal characteristics in the job demands-resources model. One latest development of the job demands-resources model is the inclusion of personal resources, or aspects of the self that are associated with resiliency and individuals' sense of control and influence over their external environment, in the model (Xanthopoulou et al., 2007). Our findings echo with the personal resource argument and find that empathy and positive affectivity are antecedents of worker well-being. Empathy also moderates the relationship between job demands and poor health.

In addition to these motivational personal psychological resources, we identify that personal stressors, health and lifestyle status, and sociodemographic characteristics may trigger the health impairment

processes. These strain-related personal characteristics are particularly relevant to nursing assistants, who are mostly low-wage minority workers vulnerable to social and health inequalities (Osterman, 2019). Personal stressors may spill over into the workplace and compound with job demands to predict burnout and reduced job performance among sales personnel (Peasley et al., 2020). Our review reveals that personal stressors, including negative affectivity, life stress, depressive symptoms, financial stressors, and family stressors can have adverse impacts on workers' well-being. In addition, the occupational health literature increasingly focuses on the non-work-related social determinants of workers' health and well-being (Flynn et al., 2015). As our review suggests, sociodemographic characteristics, particularly workers' migration status, are significant antecedents of nursing assistants' well-being. Yet the domain of personal characteristics has yet to be comprehensively explored in the job demands-resources model. Future studies should therefore consider expanding the job demands-resources model by evaluating the role of strain-related personal characteristics.

A comprehensive evaluation of the job characteristics, personal characteristics, and well-being of nursing assistants in long-term care facilities indicated a spiral of vulnerabilities characterized by the vicious cycle of individual vulnerabilities, poor quality job, and health inequalities among this group of low-wage, devalued health care workers. Historically and contemporarily, care work has been a highly gendered domain that is devalued, underpaid, and disproportionately occupied by the relatively powerless in society, including women, migrants, and people of color. When these minority workers enter the care sector, they are exposed to disproportionally more demanding job characteristics while having access to fewer job resources compared to workers in occupations with better job quality (Hämmig and Bauer, 2013). These adverse job conditions, in turn, lead to a high prevalence of occupational hazards and ill-being outcomes among nursing assistants, reinforcing and reproducing their social vulnerabilities.

6. Practice implications

To break this vicious cycle of personal-occupational-health vulnerabilities, macro (policy), meso (organization), and micro (worker) level strategies should be developed. At the macro level, care and labor market policies should be developed, particularly in terms of enhancing the staffing ratio regulation, financial rewards and job security, professional status, and other working conditions of nursing assistants who are undervalued low-wage workers. At the meso level, organizations should promote the job quality of nursing assistants through interventions to control health-impairing job demands while nurturing motivational job resources. To alleviate workers' physical demands, efforts can be taken by improving staffing ratio, technology and environment modification, and ensuring rest time and space in the workplace. Besides, organizations can consider addressing workers' emotional demands through workplace support and training for communication with service users and their family members, and relieving workers' time demands and work-life conflict through allowing more flexible working time. Health and well-being promotion initiatives at the organizational level, such as occupational health and mental health promotion programs, would be particularly beneficial to nursing assistants, who experience higher risks of health vulnerabilities because of their sociodemographic backgrounds. At the micro level, job crafting intervention, or job redesign strategy that enables individual workers to optimize job demands and resources in their work environment, would be desirable to promote workers' work engagement and performance (Wrzesniewski and Dutton, 2001). Future micro-level interventions should consider developing the job crafting strategy for nursing assistants.

7. Limitations

While the job demands-resources model provides a comprehensive and flexible tool to develop an integrative framework of the job characteristics and well-being of nursing assistants, it also means that this review includes multiple outcome variables of workers' well-being, making it infeasible to perform a meta-analysis of the highest evidence level. Instead, a narrative synthesis approach was adopted to synthesize the mixed methods findings of included study, which may hamper the rigor of the review. While narrative synthesis, especially when guided with a theoretical framework, has the strengths of going beyond summary of findings and generating new insights to refine theory, it is criticized for the lack of transparency and clarity in the data synthesis processes (Dixon-Woods et al., 2005; Snilstveit et al., 2012). Despite the potential weakness of narrative synthesis, the current review lays the foundation for future research on the well-being of nursing assistants by categorizing an array of theory-grounded and occupation-specific job and personal characteristics for further original and review studies. Secondly, the review results of this study draw primarily on quantitative study using vote-counting of statistically significance and direction of the effect estimate, which may lead to incorrect conclusion (Cumpston et al., 2023). Thirdly, one quantitative study (Yang et al., 2022) included in the current review conducted data collected in Taiwan from March to July 2020, and hence there may be possible data bias induced by the COVID-19 pandemic. An additional limitation is the heterogeneities of the professional qualifications of nursing assistants across the globe. Although we attempted to maximize the search results by including general keywords to define the population of interest, we may not have been able to locate and include all studies that unravel the job characteristics and well-being of this occupational group. Lastly, the decision to include only English articles has inevitably missed studies conducted in non-English contexts.

8. Conclusion

In conclusion, this review finds that empirical evidence on the job characteristics and well-being of paraprofessional nursing assistants in long-term care workers is underdeveloped compared to the vast body of research focusing on professional health care workers. We adapt a Nursing Assistants Job Demands-Resources model and identify job demands, job resources, and personal characteristics specific to nursing assistants. This study found that nursing assistants are vulnerable to burnout and mental health conditions, as well as occupational hazards because of their job characteristics. Working time demands, physical care task stressors, and emotional demands are occupation-relevant job demands, while financial rewards, professional development resources, work environment, and emotional resources are motivational job resources. Strain-related personal characteristics are also particularly relevant to nursing assistants. Macro-, meso- and micro-level interventions to break the vicious spiral of workers' vulnerabilities are discussed.

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CRediT authorship contribution statement

Shixin Huang: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Sui Yu Yau:** Writing – review & editing, Writing – original draft, Funding acquisition, Formal analysis, Conceptualization. **Yin King Linda Lee:** Writing – review & editing, Writing – original draft, Funding acquisition, Formal analysis, Conceptualization. **Jingxing Song:** Writing – original draft, Validation, Methodology, Investigation, Data curation. **Yuhong Guo:** Validation, Software, Methodology, Investigation, Data curation. **Dong Dong:** Writing – review & editing, Writing – original draft, Methodology, Funding acquisition, Formal analysis, Conceptualization.

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