Measuring nurses’ perception of work environment: a scoping review of questionnaires

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Abstract

Background: Nurses’ work environment has been shown to be associated with quality of care and organizational outcomes. In order to monitor the work environment, it is useful for all stakeholders to know the questionnaires that assess or evaluate conditions for delivering nursing care. The aim of this article is: to review the literature for assessed survey questionnaires that measure nurses’ perception of their work environment, make a brief assessment, and map the content domains included in a selection of questionnaires.

Methods: The search included electronic databases of internationally published literature, international websites, and hand searches of reference lists. Eligible papers describing a questionnaire had to be; a) suitable for nurses working in direct care in general hospitals, nursing homes or home healthcare settings; and b) constructed to measure work environment characteristics that are amenable to change and related to patient and organizational outcomes; and c) presented along with an assessment of their measurement properties.

Results: The search yielded 5077 unique articles. For the final synthesis, 65 articles met inclusion criteria, consisting of 34 questionnaires measuring nursing work environments in different settings. Most of the questionnaires that we found were developed, and tested, for registered nurses in a general hospital setting. Six questionnaires were developed specifically for use in nursing home settings and one for home healthcare. The content domains covered by the questionnaires were both overlapping and unique and the terminology in use was inconsistent. The most common content domains in the work environment questionnaires were supportive managers, collaborative relationships with peers, busyness, professional practice and autonomy.

Conclusions: The findings from this review enhance the understanding of how “work environment” can be measured by an overview of existing questionnaires and domains. Our results indicate that there are very many work environment questionnaires with varying content.

Keywords: Questionnaires, Work environment, Review, Nurses, Care workers

Background

The work environment of nurses and its associations with quality of care is an area of research that has gained attention in recent decades [1]. A widely used approach in such studies is to describe the services from the bedside perspective, by surveying the employees’ perceptions of the characteristics of their daily work [2].

Although the results are inconclusive, studies on the topic support assumptions about associations between nurses’ work environments and patient outcomes, as well as associations with organizational outcomes such as turnover and retention [3–6]. In a review of studies exploring the relationship between work environment and direct measures of patient outcomes [7], ten out of eleven reviewed studies were North American, and most were conducted in acute general hospital settings.

There is a trend in western healthcare systems to strengthen the activities in non-hospital settings, moving healthcare services from hospital settings to long-term
been pointed out that the instruments' properties are unstable [17, 18]. This is acknowledged by the authors of the NWI, who later developed the Essentials of Magnetism (EOM) [19] process measurement tool and subsequently its revised version EOMII [20, 21]. The EOM tool was developed using the 14 Forces of Magnetism [22] as a framework, together with an extensive participant observation and a qualitative interview study, making the tool reflect a more contemporary nursing practice and the practice environments [19].

Our overall goal was to find questionnaires to measure the work environment in long-term care but in the process of conducting the review, we expanded the criteria to include questionnaires that were used in acute care settings, because these questionnaires contain domains of interest that are also applicable to long-term care nursing work environments. We believe that our review is of interest and useful to stakeholders in other areas of nursing practice. In addition, when choosing topics for a questionnaire, it is necessary to prioritize in order to balance the response burden and information needs. The questionnaires identified in the review provided an excellent opportunity to map the work environment domains that were prioritized by a number of authors.

The research questions guiding this study were:

1) Which assessed survey questionnaires measuring nurses' perception of the work environment can be found in the literature?

2) What are the content domains included in the questionnaires we found?

The description of work environment questionnaires of interest referred to in research question 1 is presented in more detailed under Screening – Inclusion and Exclusion.

Method

The review is based on the framework for scoping studies outlined by Arksey and O'Malley [23], further enhanced by Levac et al. [24], Khalil et al. [23, 25], Daudt et al. [26]. They proposed that a scoping review should include an iterative five-stage process, further described below. The two authors conducting the present study have expert familiarity with the field, as nurses with experience from different healthcare settings and questionnaire development and assessment.

Search strategy

A literature search strategy was designed with a basis in research question 1, and criteria described under Screening – Inclusion and Exclusion. The initial source was electronic databases, limited to articles published in peer-reviewed journals in the English or Scandinavian languages. The search was conducted with support from a research librarian. A test-search was first executed in order to identify relevant keywords representing the study topics. An extensive search was performed in October 2015, and updated in December 2016. The following databases were searched: Embase (1974–); Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily, Ovid MEDLINE(R) and Ovid OLDMEDLINE(R) (1946 -); PsycINFO (1806-); CINAHL and SweMed +.

We used the keywords and searched in title, index terms and author’s keywords. Several keywords in different combinations, endings, spelling, grammatical forms
and synonyms were included in the extensive search. The search strategy was tailored to the best possible fit for each database. We provide the strategy used to search MEDLINE as an example (Table 1). The complete list of search terms can be found in Additional file 1.

The reference lists of relevant articles were manually searched for additional literature. This was followed by a “snowball” procedure: when a citation in an article appeared relevant, we read the cited article. Figure 1 shows the final extensive search process illustrated in a flowchart. Our searches in electronic databases and reference lists were supplemented by targeted internet searches. Based on our familiarity with the field, we screened internet sites and publications of organizations that had previously done work in these specific or neighbouring areas, e.g. the Norwegian Association of Local and Regional Authorities (KS), the Swedish Association of Local Authorities and Regions (SALAR) and the Agency for Healthcare Research and Quality (AHRQ).

Table 1 Keywords used to search MEDLINE

| Work environment and outcomes          |
|----------------------------------------|
| occupational health, occupational safety, employee health, employee safety or occupational injury, working conditions, practice environment, work environment, workload, overwork, work stressor, nurse-patient ratio, missed or omitted or rationing, nursing left undone or care left undone, work schedule tolerance, workday shifts, work shift, rotating shift, workday shift, work schedule, work rest cycle, personnel turnover, employee turnover, turnover or intention-to-leave, vacancy, personnel staffing and scheduling, work scheduling, staffing, manpower, burnout, professional, occupational stress, burnout, exhaustion, distress, occupational stress, absenteeism, sick leave, sick rate, sick day, illness day, jobwork, employee-, career satisfaction, employee grievances, personnel-, work-, staff, nursing grievance, job dissatisfaction, work dissatisfaction, organizational- culture, --behaviour, --climate, morale, motivation, commitment, involvement, professional autonomy, professional self-regulation, professional power, empowerment, conflict resolution, leadership- style --qualities, management style, managerial, conflict resolution, efficiency, organizational- effectiveness, efficiency, productivity, performance, workflow, task performance, interprofessional relations, relation, nurse-physician, nurse-nurse, skill mix, RN mix, career mobility, professional development, learning plan, career development, clinical ladder, career ladder, job ladder, continuing education, advancement, staff experience, staff knowledge, scope of practice, professional practice, care activities, quality of health care, health care quality, quality of nursing care, nursing outcome, quality, healthcare, care, service, nursing, patient safety, patient harm, patient safety, safety |

Nursing personnel

- nurse, nursing staff, nurses’ aides, nursing assistant, nursing personnel, nursing workforce, nursing assistant, nursing home personnel or healthcare aide, care aide, healthcare attendant, care attendant, HCA or resident companion, geriatric aide
- Surveys and questionnaires
- health care surveys, –questionnaires, survey, questionnaire, reproducibility of results, validation studies, test validity, statistical validity, test reliability, statistical reliability, intrarater reliability, validity, reliability, validated, reproducibility
- Limitations

English, Norwegian, Danish or Swedish language

Screening – Inclusion and exclusion

All citations from the literature search were imported into an EndNote™ library, after which duplicates and conference abstracts were manually removed. After the study selection, the citations were imported into a spreadsheet and screened for relevance and quality.

The relevance of the studies in the search was assessed using a two-step screening process. The inclusion criteria in the first step were: a) Articles in which the questionnaire in use were tested on nurses working in direct and basic nursing care in general hospitals, nursing homes or home healthcare. That is, everyday nursing care that does not require special education, and that may be performed by less qualified personnel under registered nurses’ supervision. Hence, questionnaires that could be suitable for both registered nurses, practical nurses, and nursing assistants were of main interest. In this review, the term “nurses” include the three groups. b) Self-reported survey questionnaires constructed to measure work environment characteristics that are assumed to facilitate or limit nursing practice. This refers to nursing practice outcomes related to patient and/or organizational outcomes; the latter are highly relevant in human resource management. In order to be useful in quality development, the questionnaires of interest should describe characteristics of the work environment that are amenable to change. c) Articles presenting an assessment of the measurement properties of a questionnaire were included because measurement properties are central aspects when choosing a questionnaire.

Exclusion criteria included: a) Study setting was countries with health systems and cultures that differed greatly from Norway, such as Iran or China. b) Conference abstracts, books, reports and dissertations.

The first-step screening was conducted by the first author based on the titles in the publications. If more information was needed, the abstract was browsed. In the case of uncertainty regarding inclusion, the literature was included for further screening in the second step.

In the second step, the eligibility criteria were determined on a post-hoc basis, as the two authors independently judged the relevance by screening the abstracts. Because difficulties with recruitment and turnover among nurses were identified as a global concern in the early 2000s [27], we made a choice to restrict the included literature to not older than 20 years. Review articles [28, 29] were not included, but they were examined for citations. Articles explicitly stating that a usage fee or licence was required [30] were not included. We also excluded articles describing a questionnaire that measured only one work environment characteristic such as leadership [31]. This was done because the work environment is considered a multidimensional phenomenon, and in order to have a questionnaire of a reasonable
length, we excluded questionnaires that went deep into one characteristic, measuring only one dimension.

**Selected articles**

Articles were included for full-text reading and charting of contents, if one author found it potentially relevant. Additional articles that presented quality assessment of the questionnaire in the article were read thoroughly in order to clarify the development, use or properties of the questionnaire. For example, if an article referred to a qualitative study that described the content development of a questionnaire or the psychometric properties of the particular questionnaire, this article was included in the appraisal of the questionnaire and charting of data.

**Data extraction and presentation**

The results are mainly presented in tables as recommended by Khalil et al. [25]. Table 2 is a presentation of the characteristics of the questionnaires in order to compare and assess their relevance. If the questionnaire was used in several studies, we present these studies together.

First, we identified the study author(s) and country of development, name of the questionnaire used in the study and the main study object, i.e. the main dimension the questionnaire is designed to measure. The number of items in the questionnaire represents a total count, including questions not concerning work environment issues, but excluding sociodemographic questions. We recorded the target population in the study; this may differ from the population the questionnaire was originally developed for. The workplaces of the participants in each study and the response format used in the questionnaire are also presented in the table. In case of revisions, we extracted data from the latest version known to us.

**Brief appraisal and questionnaire content**

Daudt et al. [26] suggested that scoping reviews should include some form of quality assessment for included studies. Therefore, we performed a brief appraisal by recording relevant information about psychometric
| Author/country   | Name of questionnaire                                      | Main study object                                                                 | Target group                                                                 | Workplace Setting | Items/domains | Response format | Additional literature | Group/appraisal |
|-----------------|------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------|---------------|------------------|------------------------|------------------|
| Adams & Bond    | The Ward Organisational Features Scales - WOFS             | Environmental factors influential on the effectiveness of nursing services        | Registered nurses                                                             | Hospital          | 105/14        | 4- and 5-point scales | 93/12 (did not use 2 domains) | 1                |
| Sjetne & Stavem  |                                                           |                                                                                   |                                                                               |                   |               |                  |                        |                  |
| Edvardsson et al. | Person-centred Climate Questionnaire – PCQ-S              | Person-centred climate                                                            | Healthcare staff                                                              | Hospital          | 14/3          | 6-point scale    |                        | 1                |
| Bergland et al.  |                                                           |                                                                                   | Care staff                                                                    | Nursing homes     |               |                  |                        |                  |
| Edvardsson et al. |                                                           |                                                                                   | All staff on duty                                                             |                   |               |                  |                        |                  |
| Bondevik et al.  | The safety attitudes questionnaire – ambulatory Norwegian version for the primary care setting – SAQ-AV | Patient safety culture                                                             | Registered nurses, medical secretaries and bioengineers, medical doctors       | Out-of-hours casualty clinics & general practitioner practices | 62/5          | 5-point scale    |                        | 1                |
| Buljac-Samardzic et al. |                                                |                                                                                   | Direct care employees                                                           | Nursing and residential homes |               |                  |                        |                  |
| Chou et al. (2002) | Measure of job satisfaction for nursing homes. Based on Traynor & Wade – MJS (1993) | Job satisfaction                                                                  | All staff                                                                    | Nursing homes     | 22/5          | 5-point scale    |                        | 1                |
| Ellenbecker & Byleckie (2005) |                                                |                                                                                   | Home healthcare nurse's job sat. scale – HHNJS                                  | Home healthcare    | 30/9          | 5-point scale    |                        | 1                |
| Ellenbecker et al. (2008) |                                                |                                                                                   | All healthcare workers                                                         | Home healthcare    |               |                  |                        |                  |
| Estabrooks et al. (2009) | Alberta Context Tool – ACT                                  | Organizational context central to evidence-based practice                          | Paediatric nurses, Registered nurses (Registered nurses, licensed practical nurses), Healthcare aides | Hospitals          | 56–58/ 10     | 5-point scale    |                        | 1                |
| Flint et al. (2013) | Brisbane Practice Environment Measure - B-PEM                 | Nurses' practice environment                                                      | Registered nurses                                                             | Hospital          | 26/4          | 5-point scale    |                        |                  |
| Reid et al. (2015) | Instrument for job satisfaction in nursing developed for the UK | Nurses' job satisfaction                                                          | Nurses                                                                         | All settings       | 20/6          | 5-point scale    |                        | 1                |
| Murrells et al. (2005) |                                                |                                                                                   | Nurses                                                                         | Nursing homes     | 68/5          | 5-point scale    |                        |                  |
| Temkin-Greener et al. (2009) | Work environment and perceived work effectiveness | Nursing home work environment and perceived work effectiveness                      | All employees                                                                  | Nursing homes     |               |                  |                        | 1                |
| Author/country | Name of questionnaire | Main study object | Target group | Workplace Setting | Items/domains | Response format | Additional literature | Group/ appraisal |
|---------------|-------------------------|-------------------|--------------|-------------------|---------------|-----------------|----------------------|-----------------|
| Andersson & Lindgren (2008) [53]/Sweden | Karen-personnel | Quality of care from personnel’s perspective | Registered nurses, nurse assistants | Hospital | 35/6 | 5-point scale | Andersson & Lindgren (2013) [97]/Sweden | 2 |
| Castle (2010) [46]/USA | Nursing home certified nurse assistant job satisfaction questionnaire – NH-CNA-JSQ | Certified nurse assistant Job satisfaction | Certified nurse assistants | Nursing homes | 19/7 | Visual analogue rating format (10-point scale) | | |
| "de Brouwer, et al. (2014) [37]/Netherlands | Essentials of Magnetism – EOMII | Essentials of a productive nurse work environment identified by nurses practicing in Magnet hospitals | Nurses with vocational training, Bachelor degree nurses | Hospital | 58/8 | 4-point scale | Schmalenberg & Kramer (2008) [21]/USA | 2 |
| Deilkas & Hofoss (2008) [70]/Norway | Norwegian version of the Safety Attitudes Questionnaire, Generic version (Short Form 2006) – SAQ | Patient safety culture | Physicians, nurses, physio-therapists, radiographers | Hospital | 36/7 | 5-point scale | Sexton et al. (2006) [98]/USA, UK, New Zealand | 2 |
| From et al. (2013) [50]/Sweden | The Creative Climate Questionnaire – CCQ (Generic) | Creative climate | All care workers | Long-term care | 50/10 | 4-point scale | Mathiesen & Einarsen (2004) [99]/R | 2 |
| Ives-Erickson et al. (2013) [43]/USA | The patient care associates’ work environment scale – PCA-WES | Patient care associates’ practice environment in the acute care settings | Nurse aides | Hospital | 35/5 | 4-point scale | | 2 |
| Lake (2002) [14]/USA | Practice Environment Scale of the Nursing Work Index – PES-NWI | Nurses’ practice environment | Registered nurses | Hospital | 31/5 | 4-point scale | | 2 |
| Cummings et al. (2006) [17]/Canada | | | | | | | | |
| Flynn et al. (2006) [17]/Canada | | | | | | | | |
| Gajewski et al. (2010) [100]/USA | | | | | | | | |
| Jarrin et al. (2014) [49]/USA | | | | | | | | |
| Lynn et al. (2009) [101]/USA | Satisfaction in Nursing Scale – SINS | Work satisfaction | Registered nurses | Hospital | 55/4 | 5-point scale | | 2 |
| Mensik (2007) [63]/USA | Dimensions of Magnetism instrument – DOM | Dimensions of Magnetism | Nurses | Home healthcare | 37 | Checklist – 10 most important | | 2 |
| Mueller & Savik (2010) [63]/USA | Nursing Practice Model Questionnaire – NPMQ | Nursing practice model | Registered nurses, licensed practical nurses, nursing assistants | Long-term care | 37/5 | yes/no 3-point scale | | 2 |
| Author/country | Name of questionnaire | Main study object | Target group | Workplace Setting | Items/domains | Response format | Additional literature | Additional information |
|---------------|-----------------------|-------------------|--------------|------------------|---------------|----------------|---------------------|-----------------------|
| Slater et al. (2009) [56]/Ireland | The Nursing Context Index – NCI | Nurses practice environment (person-centred practice framework) | Registered nurses | Hospital | 89/19 | 7-point scale | McCormack et al. (2010) [62]/Ireland | 2 |
| Tourangeau et al. (2006) [102]/Canada | McCloskey/Mueller satisfaction scale – MMSS | Nurse job satisfaction | Nurses | Hospital | 23/7 | 5-point scale | 2 |
| Zuniga et al. (2013) [58]/Switzerland | Nursing Home Survey on Patient Safety Culture – NHSOPSC | Safety climate | Direct care nursing personnel & nursing unit supervisors | Nursing homes | 42/12 | 5-point scale | 2 |
| Aiken & Patrician (2000) [13]/USA | Nursing Work Index-Revised – NWI-R | Nurses’ practice environment | Registered nurses | Hospital | 57/4 | 4-point scale | 3 |
| Flynn et al. (2005) [57]/USA & New Zealand | | | | | | | |
| Cummings et al. (2006) [17]/Canada | | | | | | | |
| Joyce & Crooks (2007) [103]/Australia | | | | | | | |
| Li et al. (2007) [104]/USA | | | | | | | |
| Slater et al. (2010) [105]/Northern Ireland | | | | | | | |
| Sjetne et al. (2010) [106]/Norway | | | | | | | |
| Best & Thurston (2006) [107]/Canada | Index of Worklife Satisfaction – IWS | Worklife satisfaction | Public health nurses | Sample | Part A: 15  Part B: 44 | Paired comparisons and a 5-point scale | Zangaro & Soeken (2005) [108]/R | 3 |
| Castle (2006) [64]/USA | The Hospital Survey on Patient Safety Culture – HSOPSC | Safety culture | Nurse aides | Nursing homes | 42/12 | 5-point scale | 3 |
| Blegen et al. (2009) [109]/USA | | | | | | | |
| Castle et al. (2007b) [45]/USA | Nursing home nurse aide job satisfaction questionnaire – NHNA-JSQ | Nurse aide job satisfaction | Nurse aides | Nursing homes | 21/7 | Visual analogue rating format: 10-point scale | Castle (2007a) [110]/USA | 3 |
| Estabrooks et al. (2002) [111]/Canada | Practice Environment Index – Single factor model | Nurses’ practice environment | Registered nurses | Hospital | 26/1 | 4-point scale | 3 |
| Cummings et al. (2006) [17]/Canada | | | | | | | |
### Table 2 Characteristics of included studies (Continued)

| Author/country          | Name of questionnaire                                                                 | Main study object                           | Target group   | Workplace Setting | Items/domains | Response format               | Additional literature | Group/ appraisal |
|-------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|----------------|-------------------|---------------|-------------------------------|----------------------|------------------|
| Fairbrother et al. (2009) [41]/Australia | Nursing Workplace Satisfaction Questionnaire – NWSQ                                 | Job satisfaction                           | Nurses         | Hospital          | 14/3          | Agreement-based scale          |                      | 3                |
| Kvist et al. (2012) [112]/Finland    | Kuopio University Hospital Job Satisfaction Scale – KUHJSS                         | Job satisfaction                           | Nursing staff  | Hospital          | 37/7          | 5-point scale                |                      | 3                |
| Lacey et al. (2011) [113]/USA        | Organizational job satisfaction – OJS                                               | Organizational job satisfaction            | Nurses         | Hospital          | 17/NI         | 4-point scale                |                      | 3                |
| LaMarche & Tullai-McGuinness (2009) [47] /USA | Misener nurse practitioner job satisfaction survey – MNPJSS                        | Nurse practitioner job satisfaction        | Nurse practitioners | Primary healthcare  | 44/6          | 6-point scale                |                      | 3                |
| Parmelee et al. (2009) [44]/USA       | Nursing Assistants Barriers Scale – NABS                                        | Perceived barriers to job performance     | Nursing assistants | Nursing homes     | 30/6          | NI                           |                      | 3                |
| Santavirta (2003) [114]/Finland      | Job content questionnaire – JCQ + parts from QPS-Nordic (Generic)                  | General questionnaire measuring working conditions | Teachers & nurses | Hospital          | All studies used different parts/items | 4- or 5-point scale | 3                |
| Larsson et al. (2013) [67]/Sweden     | Minnesota Satisfaction Questionnaire – MSQ-SF                                     |                                             | Home care aides, nursing assistants | Home care        | All employees | Nursing homes                 |                      | 3                |
| Zhang et al. (2014) [68]/USA          | The RN Working Conditions Barometry Index form – RN-WCBI (based on NWI-R and QPS-Nordic) | Nurses’ work environment                   | Nurses         | Sample – all settings | 38 questions /207 statements | NI                           |                      | 3                |

*Found through reading of reference lists
NI No Information found in literature
R Review
properties that were presented with the questionnaire. This assessment was based on a very short customized version of the COSMIN checklist [32, 33]. For example, whether the content development was described, if reproducibility or internal consistency was tested and if it had acceptable results. The appraisal also included a global rating of scientific quality and of the overall face validity for basic nursing in long-term settings. The appraisal scores were summed, and the questionnaires were categorized in three groups according to their appraisal scores (nine with high scores in group one; thirteen in group two with medium scores; twelve in group three with low scores).

The methodological quality or risk of bias was not assessed in the included articles. This is in line with how scoping reviews are usually conducted [34].

In regard to research question 2; the questionnaire content mapping was conducted by mapping the content domains of the nine questionnaires in group 1, represented by the labels assigned to them by the authors. We decided, a priori, to build on Bae’s [7] review of working conditions. The first author did a qualitative interpretation of the domains in the questionnaires and their concurrence with Bae’s synthesised domains. This was done in order to map the domains and labels used in the questionnaires and possibly expand the range of domains already identified by Bae.

Results

Search and selection of literature

The first literature search was conducted in October 2015 and yielded 4305 unique articles. The update search conducted in December 2016 provided 750 new articles, after duplicates were removed. Figure 1 illustrates the search and selection. After the first relevance screening, 263 articles remained. For the final synthesis of full-text articles, 50 articles were included. Three more questionnaires measuring different dimensions of the work environment were found by screening references in the included literature [35–37]. We included 12 articles that elaborated on properties of any of the identified questionnaires; the final selection consisted of 65 articles comprising 34 questionnaires. We searched government and organization websites and found generic work environment questionnaires currently in use in many different types of services; for example the QPS-Nordic [38] and the 10-faktor [39].

Characteristics of included questionnaires

Table 2 shows the questionnaires found in our search and is sorted first by the appraisal group and then by the author’s name.

The number of items in the questionnaires varies considerably from 14 [40, 41] to 105 [42]. The questionnaires were developed for and tested in health personnel subgroups, for example, questionnaires developed for nurse aides [43–45], practical nurses [46], nurse practitioners [47], all employees [35], all care workers [48–53], and specific versions developed for different groups of workers [36, 54]. Most questionnaires were developed and tested for registered nurses [14, 16, 37, 53, 55–57].

Most questionnaires were tested in a general hospital setting. Six questionnaires were developed specifically for use in nursing home settings [35, 44–46, 49, 58], and one [59] for home healthcare. However, four questionnaires were adapted and modified from a hospital setting for use in nursing homes [48, 51, 60, 61]. Three questionnaires were developed for use in a hospital setting but were used in the long-term care setting without modification, or with just minor changes in wording to fit the new setting [3, 62–65].

The Nursing Work Index [63, 66] and the Job Content Questionnaire [67, 68] are used in both home healthcare and nursing homes settings. In these studies, only registered nurses were included.

The most frequently used response format was a Likert-type four- or five-point scale. There was considerable variation as to which outcomes and work environment dimensions were measured by the questionnaires. These were, for example, quality of care [53], job satisfaction [45, 46, 51, 69], safety attitudes or safety culture [58, 70, 71], creative climate [50], barriers [44], person-centred care [48], or evidence-based practice [36]. In regard to measuring only the practice environment, the most frequently used questionnaire that we found in this review is the Nursing Work Index (NWI). In our findings, the NWI is also the questionnaire that has been most revised. The nurses’ practice or work environment as the main study object was also found in a questionnaire named the Brisbane Practice Environment Measure (B-PEM) [55], which is similar to the NWI in terms of contents. Some of the questionnaires have the work environment in a specific context or setting as the main study object, such as: Work environment and perceived work effectiveness [35], Patient care associates’ practice environment in the acute care settings [43], Nurses’ practice environment (person-centred practice framework) [56], Essentials of a productive nurse work environment identified by nurses practicing in Magnet hospitals [37], and work environment as perceived by nurses [16].

The Job Content Questionnaire (JCQ) [67, 68] and the Creative Climate Questionnaire (CCQ) [50] are generic questionnaires, developed to be used in any professional group.
Table 3: Content in group one questionnaires

| Author (Year) | Name of questionnaire | Domains in questionnaire |
|---------------|------------------------|--------------------------|
| Bae (2011) [7] | Literature review of nurse working conditions and patient outcomes | Autonomy, philosophy emphasizing quality of clinical care, nurse participation, supportive managers, collaborative relationships with physicians or peers, staffing and resource adequacy, decentralized involvement in unit decision-making, patient-centred climate and busyness. |
| Adams & Bond (1995) [42] | The Ward Organisational Features Scales –WOFS | Ward facilities, staff organization, ward layout, professional practice, hierarchical practice, ward leadership, relationship between nurses and medical staff, professional relationship amongst nurses, influence on timing of ward and patient events, influence on ward management, influence on human and financial resources, job satisfaction |
| Edvardsson et al. (2009) [40] | Person-centred climate questionnaire – PCQ-S | A climate of safety, a climate of everydayness and a climate of community |
| Bondevik et al. (2014) [71] | The safety attitudes questionnaire ambulatory version – SAQ-AV | Teamwork climate, safety climate, job satisfaction, working conditions and perceptions of management |
| Chou et al. (2002) [51] | Measure of job satisfaction for nursing homes | Personal satisfaction, workload, professional support, team spirit and training |
| Ellenbecker and Byleckie (2005) [59] | Home healthcare nurse’s job sat. scale – HHNJS-(revised 2008) | Relationship with peers, relationship with organization, relationship with physician, salary and benefits, stress and workload, relationship with patients, professional pride, autonomy and control |
| Estabrooks et al. (2009) [36] | Alberta Context tool – ACT | Leadership, culture, evaluation, social capital, formal interactions, informal interactions, structural and electronic resources, organizational slack–staff, organizational slack–space, and organizational slack–time |
| Flint et al. (2010) [55] | Brisbane Practice Environment Measure – B-PEM | Professional development, management support, rostering, out of depth and workload |
| Murrells et al. (2005) [69] | Instrument for job satisfaction in nursing developed for the UK | Nature of work, development, relationships, education, work-life Interface and resources |
| Temkin-Greener et al. (2009) [35] | Work environment and perceived work effectiveness | Leadership, communication & coordination, conflict management, staff cohesion and perceived work effectiveness |

Questionnaire contents

Table 3 shows the nine questionnaires in appraisal group 1, with attention paid to the questionnaire contents. The ten domains synthesized in Bae’s review [7] are presented in the top row in Table 3.

The content domains are labelled differently. For example, Bae uses the concept “supportive managers” but supposedly similar domains identified in eight out of nine questionnaires were labelled “perceptions of management” [71], “professional support” [51], “relationship with organization” [59], “leadership” [35, 36], “management support” [55] and “ward leadership” [42]. The concept of “supportive managers” was split into two domains (relationships and development) in one questionnaire [69].

The concept domain of collaborative relationships with peers was present in almost all questionnaires, but the label varied. The labels in the questionnaires were: “a climate of community” [40], “teamwork climate” [71], “team spirit” [51], “relationship with peers” [59], “informal interactions” [36], “relationships” [69] and “staff cohesion” [35] and “professional relationship amongst nurses” [42]. The collaborative relationships with the physicians’ domain were less prevalent than the relationships with peers. The label was called: “relationship between nurses and medical staff” [42] and “relationship with physician” [59]. In one questionnaire, the label was “formal interactions” [36] and included different healthcare providers, not only physicians.

The perception of busyness is also a topic in the majority of the questionnaires. These are labelled: “stress and workload” [59], “workload” [51, 55], “staff organization” [42], “organizational slack-staff”, “organizational slack–time” [36], “nature of work” [69] and “perceived work effectiveness” [35].

The domains of autonomy, participation and involvement were labelled “personal satisfaction” [51], “professional pride” and “autonomy” [59], “influence on timing of ward and patient events”, “influence on ward management” and “influence on human and financial resources” [42] and “culture” [36] in the questionnaires.

The domain of patient-centred climate was present in one questionnaire, labelled “relationship with patients” [59]. Person-centred climate was also the overall phenomenon to be measured in one questionnaire [40].

Four out of nine questionnaires contained a domain related to professional practice and education. These were labelled “professional practice” [42], “training” [51], “professional development” [55], and “education” [69]. One questionnaire had “evidence-based practice” as an overall phenomenon to be measured [36].
Professional development was not included in Bae’s [7] synthesis.

Other domains that were not present in Bae’s review were the physical surroundings and availability of resources. In the questionnaires identified in the present study, these were labelled: “ward facilities” [42], “a climate of everydayness” [40], “structural and electronic resources”, “organizational slack–space” [36] and “resources” [69].

A domain including salary, benefits and rostering was also present in the questionnaires, labelled “rostering” [55], and “salary and benefits” [59], as was patient safety, labelled “ward layout” [42], “a climate of safety” [40] and “safety climate” [51].

Discussion
In this scoping review, we identified survey questionnaires measuring nurses’ perceptions of work environment. We have mapped the content domains included in a group of questionnaires.

The following discussion focuses first on nursing settings in general, then on the long-term care perspective.

Overall settings
The Nursing Work Index (NWI), and modified versions of it, stand out as the most frequently used instrument for measuring the work environment of registered nurses in this review. Because the NWI was developed in the USA over 25 years ago [12], the content of the NWI may be decreasingly relevant for contemporary work settings. However, The Essentials of Magnetism (EOM) [19] process measurement tool and subsequently its revised version EOMII [20, 21] were developed with a basis in the NWI and assess more contemporary aspects of importance for a productive nursing work environment. The healthcare sector is constantly under transformation. New management structures and cost containment have been prominent features in recent years [72], as have the change from profession-centredness to patient-centredness and patient-safety focus. Taking a broader view on the work environment, the questionnaires include a varied selection of constructs and operationalisations intended to represent the work environment domains of nurses. The domains we mapped in the questionnaires are to some extent overlapping, often with little consistency in terminology. Nurses’ perceptions of their work environment may include a range of different phenomena that are not necessarily directly related to one another, but indirectly or directly comprise the environment in which the nurses work [73, 74]. Some domains are more prevalent in the reviewed questionnaires, but it is premature to conclude that these are more significant than others for measuring the work environment. Some elements may have been the subject of less attention or research and therefore not measured in the questionnaires we found in this review, such as relationships with other professionals or relatives, as opposed to relationships with physicians and peers, which are the commonly measured domains.

Our findings illustrate the importance of clarifying and defining the outcome one intends to measure. When measuring a broad construct, in our case “nursing work environment”, the subdomains of relevance for the target population and in the specific context need to be defined [33, 75]. In our review, several questionnaires seem to measure the same or overlapping domains, but under different labels and uniquely operationalised. For example, the domain “autonomy” is a common work environment domain included in work environment surveys. It has been argued that the concept of autonomy can be theoretically differentiated into two discrete concepts – autonomy related to the nurses’ clinical practice and autonomy in relation to work [76]. When measuring a domain such as “autonomy”, one needs to clarify the theoretical construct, and be aware that a measure of a construct in one questionnaire may not be used interchangeably with another construct of the concept in a different questionnaire. This means that a theoretical consideration of how nurses’ work environments are conceived needs to be made, and made explicit, when choosing among questionnaires and in the design of a study [7].

Long-term care settings
Based on a review of national frameworks of long-term care quality policy documents and analytic frameworks in the academic literature, the Organization for Economic Co-operation and Development (OECD) stressed three aspects as generally accepted and critical underpinnings of the quality of long-term care: patient-centredness, care co-ordination, and safety effectiveness [77]. The dimension of patient-centredness was not a common dimension in the first group of the reviewed questionnaires. One questionnaire measured person-centred climate as not a sole topic [40]. Patient-centredness has become a healthcare quality hallmark and may represent something slightly different in long-term care settings compared to acute care settings. Nurses in long-term care deem social relationships with residents to be an important factor of their work environment and in their assessment of quality of care and their intent to remain in their work [78], as well as a motivating factor that is important for their job satisfaction [79]. This is supported by previous research, which found that residents in nursing homes find the relationships with nurses to be an important factor in their wellbeing and in high-quality care [80, 81].
The dimension of collaborative relations with peers was an aspect in almost all nine questionnaires. Researchers found that team collaboration and performance are associated with higher levels of quality of care and functional outcomes among residents in nursing homes [82, 83]. Nursing home staff’s perceptions of better team climate were related to better-perceived quality of care in a recent study, and the researchers concluded that team climate was an important factor to consider when trying to improve quality of care [84]. It is also argued that there is a possible association between improved teamwork and reduced work stressors and less care left undone [85].

The last aspect OECD stresses as important to quality of long-term care is “safety” [77]. We found this domain in the questionnaires. Nursing care is provided to patients in complex care environments that can generate errors and cause harm. Patient safety is also considered an indicator of high-quality nursing care. This can be seen as related to nurses’ direct roles in integrating care, detecting possible errors and preventing harm and adverse events [86]. A failure in fulfilling these roles may result in errors in patient care as well as adverse events. The aspect of safety climate may therefore be among the most important factors when measuring the work environment in long-term care settings.

An important phenomenon that was absent in the questionnaires was the relationship with relatives. As the residents in nursing homes need more complex care, in cases of, for example, dementia, the relatives’ role as “spokespersons” will be crucial for patient-centredness [87]. The relatives’ role may grow in importance and become more central among the prerequisites that facilitate good nursing practice.

Limitations

The literature about the work environment is large and complex, with a wide variety of constructs and operationalisations to represent the nursing work environment, often with little consistency in the use of terminology [74]. This means that there may be terms that pertain to the work environment domains that we did not include in the search. As a result, questionnaires may have been neglected by the procedures we followed. The first screening was done by reading the title, and browsing the abstract in case of uncertainty. The precision of this procedure is entirely dependent on the terminology used in the titles and the abstracts. There is a risk that relevant articles may have been overlooked for this reason.

We directed our search to factors that are amenable to change and that pertain to the aspects of professional nursing practice. Consequently, questionnaires may have been filtered out because we found that the main content concerned personal or psychosocial characteristics, while, in fact, a part of the questionnaire may have fitted our aim. Conversely, some of the questionnaires included in the review may have domains relating to psychosocial or personal aspects. There may also be questionnaires used by governments and organizations that our internet searches did not find. The search was also conducted with terms including measurement properties (included in Table 1), i.e. articles that did not present measurement properties could have been sorted out, even though they may fit our criteria.

The appraisal in this review should not be seen as a complete quality assessment, rather an appraisal of the questionnaires’ “fit” to a generic group of nursing personnel and setting.

Our results may also be influenced by some degree of dissemination bias [88], because questionnaire developers may be less willing to publish results that are unfavourable in terms of the psychometric properties of a questionnaire.

Conclusions

This scoping review identified a large number of heterogeneous work environment questionnaires. The findings from this review enhance the understanding how “work environment” can be measured with self-reported questionnaires by providing an overview of existing questionnaires and domains. The categorization of results in Tables 2 and 3 offers clarity in synthesis and in the presentation of results, providing information that is of importance when choosing a questionnaire. In future research, it is important to further investigate and clarify which work environment dimensions are the most relevant to measure for nurses in the practice setting in question.

Additional file

Additional file 1: Complete list of search terms. Search terms used for search in the following databases: Embase (1974-); Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations; Ovid MEDLINE(R) Daily; Ovid MEDLINE(R) and Ovid OLDMEDLINE(R) (1946 -); PsycINFO (1806-); CINAHL and SweMed +. (DOCX 21 kb)

Abbreviations

ACT: Alberta Context Tool; AHRQ: Agency for Healthcare Research and Quality; B-PEM: Brisbane Practice Environment Measure; CCQ: Creative Climate Questionnaire; CCQ: The Creative Climate Questionnaire; EOM: Essentials of Magnetism tool Norwegian; HHNJS: Home healthcare nurse’s job satisfaction scale; HSOPSC: The Hospital Survey on Patient Safety Culture; IWS: Index of Worklife Satisfaction; JCQ: The Job Content Questionnaire; KS: Association of Local and Regional Authorities (Norway); KUHJSS: Kuopio University Hospital Job Satisfaction Scale; MJS: Measure of job satisfaction for nursing homes; MMS: McCloskey/Mueller satisfaction scale; MNPSS: Misener nurse practitioner job satisfaction survey; MSQ-SF: Minnesota Satisfaction Questionnaire; NABS: Nursing Assistants Barriers Scale; NCI: The Nursing Context Index; NH-CNA-JSQ: Nursing home certified nurse assistant job satisfaction questionnaire; NHNA-JSQ: Nursing home
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Authors’ contributions
Both authors (RN and ISS) meet the criteria for authorship, including: a) making substantial contributions to conception and design, acquisition of data, analysis and interpretation of data AND b) being involved in drafting the manuscript and revising it critically for important intellectual content; AND c) giving final approval of the version to be published. Each author participated sufficiently in the work to take public responsibility for appropriate portions of the content; AND d) agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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References
1. Needleman J. Nurse staffing: the Knowns and unknowns. Nurs Econ. 2015; 33(1):5–7.
2. Page A. Ed: keeping patients safe: transforming the work environment of nurses. Washington: National Academies Press; 2004.
3. Flynn L, Liang Y, Dickson GL, Aiken LH. Effects of nursing practice environments on quality outcomes in nursing homes. J Am Geriatr Soc. 2010;58(12):2401–6.
4. Aiken LH, Sloane DM, Bruyneel L, Van den Heede K, Griffiths P, Busse R, Dromeyss M, Kinnunen J, Koza M, Lefaire E, et al. Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. Lancet. 2013;383(9913):1824–30.
5. Kane RL, Shamlayan TA, Mueller C, Duval S, Witt TJ. The association of registered nurse staffing levels and patient outcomes: systematic review and meta-analysis. Med Care. 2007;45(12):1195–204.
6. Needleman J, Buerhaus P, Mattke S, Stewart M, Zelevinsky K. Nurse-staffing levels and the quality of care in hospitals. N Engl J Med. 2002;346(22):1715–22.
7. Bae SH. Assessing the relationships between nurse working conditions and patient outcomes: systematic literature review. J Nurs Manag. 2011;19(6):700–13.
8. Buchan J, Aiken L. Solving nursing shortages: a common priority. J Clin Nurs. 2008;17(24/25):3262–8.
9. Colombo F, Llena-Nozal A, Mercier J, Tjaden J: Help wanted? Providing and paying for long-term care. In: Paris.: OECD health Policy Studies. 2011.
10. Collier E, Harrington C. Staffing characteristics, turnover rates, and quality of resident care in nursing facilities. Res Gerontol Nurs. 2008;1(3):157–70.
11. Lake ET, Friese OR. Variations in nursing practice environments: relation to staffing and hospital characteristics. Nurs Res. 2006;55(1):1–9.
12. Kramer M, Hafner LP. Shared values: impact on staff nurse job satisfaction and perceived productivity. Nurs Res. 1989;38(3):172–7.
13. Aiken LH, Patrician PA. Measuring organizational traits of hospitals: the revised nursing work index. Nurs Res. 2000;49(3):146–53.
14. Lake ET. Development of the practice environment scale of the nursing work index. Res Nurs Health. 2002;25(3):176–88.
15. Erickson JL, Duffy ME, Gibbons MF, Fitmarmaux J, Ditomassi M, Jones D. Development and psychometric evaluation of the professional practice environment (PPE) scale. J Nurs Scholarsh. 2004;36(3):279–85.
16. Choi J, Bakken S, Larson E, Du Y, Stone PW. Perceived nursing work environment of critical care nurses. Nurs Res. 2004;53(6):370–8.
17. Cummings GG, Hayduk L, Estabrooks CA. Is the nursing work index measuring up? Moving beyond estimating reliability to testing validity. Nurs Res. 2006;55(5):89–93.
18. Brysik P, Koza M, Squires A, Brzostek T. How factor analysis results may change due to country context. J Nurs Scholarsh. 2016;48(6):598–607.
19. Kramer M, Schmaling CB. Development and evaluation of essentials of magnetism tool. JONA: The Journal of Nursing Administration. 2004;34(7):365–78.
20. Kramer M, Schmaling CB. Revising the essentials of magnetism tool: there is more to adequate staffing than numbers. J Nurs Adm. 2005;35(4):188–98.
21. Schmaling CB, Kramer M. Essentials of a productive nurse work environment. Nurs Res. 2008;57(1):12–13.
22. Forces of Magnetism [http://www.nursecredentialing.org/Magnet/ProgramOverview/HistoryoftheMagnetProgram/ForcesofMagnetism].
23. Arkesy H, O’Malley L. Scoping studies: towards a methodological framework. Int J Soc Res Methodol. 2005;8(1):19–32.
24. Levac D, Colquhoun H, O’Brien KK. Scoping studies: advancing the methodology. Implementation Science. 10:569.
25. Khalil H, Peters M, Godfrey CM, McInerney P, Soares CB, Parker D. An evidence-based approach to scoping reviews. Worldviews Evid-Based Nurs. 2016;13(2):118–23.
26. Daudt HM, van Mossel C, Stone PJ. Enhancing the scoping study methodology: a large, inter-professional team’s experience with Arkesy and O’Malley’s framework. BMC Med Res Methodol. 2013;13(1):48.
27. ICN: International Council of Nurses. The global shortage of registered nurses: an overview of issues and actions. A Report From ICN/IFNIF. In: Paris.: OECD health Policy Studies; 2011.
28. Bonnetteve R, Lavyd G, Chatellier G, Lang T, de Gaudemaris R. Reliability, validity, and health issues arising from questionnaires used to measure psychosocial and organizational work factors (POWFs) among hospital nurses: a critical review. J Nurs Meas. 2008;16(3):207–30.
29. Gershon RR, Stone PW, Bakken S, Larson E. Measurement of organizational culture and climate in healthcare. J Nurs Adm. 2004;34(1):33–40.
30. Baumann A, Kolotylo C. The professionalism and environmental factors in the workplace questionnaire: development and psychometric evaluation. J Adv Nurs. 2009;65(10):2216–28.
31. Karste O, Miettunen J, Kyngas H. Psychometric properties of the multifactor leadership questionnaire among nurses. J Adv Nurs. 2007;57(2):201–12.
32. Mikkinen LB, Tenwee CB, Patrick DL, Alonso J, Stratford PW, Krol DL, Bouter LM, de Vet HC. The COSMIN checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments: an international Delphi study. Qual Life Res. 2010;19(4):339–49.
33. Mikkinen LB, Prinsen CA, Bouter LM, Vet HC, Tenwee CB. The COSMIN-based standards for the selection of health measurement instruments (COSMIN) and how to select an outcome measurement instrument. Brazilian journal of physical therapy. 2016;20(2):105–13.
34. Peters MD, Godfrey CM, Khalil H, McInerney P, Parker D, Soares CB. Guiding principles for conducting systematic scoping reviews. International journal of evidence-based healthcare. 2015;13(3):141–6.
35. Temkin-Greener H, Zheng N, Katz P, Zhao H, Mukamel DB. Measuring work environment and performance in nursing homes. Med Care. 2009;47(4):482–91.
36. Estabrooks CA, Squires JE, Cummings GG, Birdsell JM, Norton PG. Development and assessment of the Alberta context tool. BMC Health Serv Res. 2009;9:234.
37. de Brouwer, Kajouw MJ, Kramer M, Schmalenberg C, van Ackerbergh T: Measuring the nursing work environment: translation and psychometric evaluation of the essentials of magnetism. Int Nurs Rev 2014, 61(1):99–108.
38. Dallner M. Validation of the general Nordic questionnaire (QPSNordic) for psychological and social factors at work, vol. 2000:12. Nordisk Ministerråd; København; 2000.
39. Li L: 10-Faktor, KS' medarbeiderundersøkelse n.d.
40. Edvardsson D, Sandman PO, Rasmussen B. Construction and psychometric evaluation of the Swedish language person-centred climate questionnaire – staff version. J Nurs Manag. 2009;17(7):790–5.
41. Fairbrother G, Jones A, Rivas K. Development and validation of the nursing workplace satisfaction questionnaire (NWSQ). Contemp Nurs. 2009;34(1):10–8.
42. Adams A, Bond S, Arber S. Development and validation of scales to measure organisational features of acute hospital wards. Int J Nurs Stud. 1995;32(6):612–27.
43. Ives-Erickson J, Duffy ME, Jones DA. Development and psychometric evaluation of the patient care associate's work environment scale. J Nurs Adm. 2015;45(3):139–44.
44. Parmelee PA, Laszlo MC, Taylor JA. Perceived barriers to effective job performance among nursing assistants in long-term care. J Am Med Dir Assoc. 2009;10(8):559–67.
45. Castle NG, Engberg J, Anderson R, Men A. Job satisfaction of nurse aides in nursing homes: intent to leave and turnover. Gerontologist. 2007;43(1):16–23.
46. Castle NG, Engberg J, Foss H, Olsen MA, Men A. Job satisfaction of nurse aides in nursing homes: intent to leave and turnover. Gerontologist. 2007;43(1):16–23.
47. Murrells T, Clinton M, Robinson S. Job satisfaction in nursing: validation of a new instrument for the UK. J Nurs Manag. 2005;13(6):296–311.
48. DeKlasa ET, Hofoss D. Psychometric properties of the Norwegian version of the safety attitudes questionnaire (SAQ), generic version (short form 2006). BMC Health Serv Res. 2008;8:191.
49. Bondevik GT, Hofoss D, Hansen EH, Deikas EC. The safety attitudes questionnaire - ambulatory version: psychometric properties of the Norwegian translated version for the primary care setting. BMC Health Serv Res. 2014;14:139.
50. Trydegard GB. Care work in changing welfare states: Nordic care workers’ experiences. European Journal of Ageing. 2012;9(2):119–29.
51. Currie EJ, Carr Hill RA. What are the reasons for high turnover in nursing? A discussion of presumed causal factors and remedies. Int J Nurs Stud. 2012; 49(9):1180–9.
52. Gunningdottir S, Rafferty A. Enhancing working conditions: In: Dubois CAMM, Nolte E, McKee M, Mossialos E, Salmon RB, editors. Human resources for health in Europe European Observatory on Health Systems and Policies Series. Edn. Maidenhead: Open University Press; 2006. p. 155–72.
53. Steiner DL, Norman GR, Carney J. Health Measurement Scales. A practical guide to their development and use. United States: Oxford University Press Inc, New York; 2015.
54. Weston MJ. Validity of instruments for measuring autonomy and control over nursing practice. J Nurs Scholarsh. 2009;41(1):87–94.
55. OECD/European Commission: A Good Life in Old Age? Monitoring and Improving Quality in Long-Term Care. In: Paris, France OECD Health Policy Studies, 2013.
56. McGilton KS, Boscot VM, Brown M, Bowers B. Making tradeoffs between the reasons to leave and reasons to stay employed in long-term care homes: perspectives of licensed nursing staff. Int J Nurs Stud. 2014;51(6):917–26.
57. Edin AC, van der Zijpp T, McMullan C, McCormack B, Seers K, Rycroft-Malone J. I have the world’s best job - staff experience of the advantages of caring for older people. Scand J Caring Sci. 2016;30(2):365–73.
58. Bergland A, Kirkevold M. Thriving in nursing homes in Norway: contributing aspects described by residents. Int J Nurs Stud. 2006;43(6):681–91.
59. Rantz MJ, Zwiggart-Stauffacher M, Popejoy L, Grando VT, Mehr DR, Hicks LL, Rantz MJ, Zwygart-Stauffacher M, Popejoy L, Grando VT, Mehr DR, Hicks LL, Rantz MJ, Zwygart-Stauffacher M, Popejoy L, Grando VT, Mehr DR, Hicks LL. Contemp Nurse. 2009;34(1):1–22.
60. Estabrooks CA, Squires JE, Hayduk LA, Cummings GG, Norton PG. Advancing the argument for validity of the Alberta context tool with healthcare aides in residential long-term care. BMC Med Res Methodol. 2011;11:107.
61. Buljac-Samardzic M, van Wijngaarden JD, Dekker-van Doorn CM. Safety culture in long-term care: a cross-sectional analysis of the safety attitudes questionnaire in nursing and residential homes in the Netherlands. BMJ quality & safety. 2016, 25(8):424–31.
62. McCormack B, Dewing J, Beslin L, Coyle-Nevin A, Kennedy K, Manning M, Peelo-Killooe L, Tobin C, Slater P. Developing person-centred practice: nursing outcomes arising from changes to the care environment in residential settings for older people. Int J Older People Nursing. 2010;5(2):93–107.
63. Jarrin O, Flynn L, Lake ET, Aiken LH. Home health agency work environments and hospitalizations. Med Care. 2014;52(10):877–83.
64. Castle NG. Nurse Aides’ ratings of the resident safety culture in nursing homes. Int J Qual Health Care. 2006;18(5):370–6.
65. Mensik J. The essentials of magnetism for home health. J Nurs Adm. 2007; 37(5):230–4.
66. Spencer Lasching H. Effect of empowerment on professional practice environments, work satisfaction, and patient care quality: further testing the nursing Worklife model. J Nurs Care Qual. 2008;23(4):322–30.
67. Larsson A, Karlqvist L, Westerberg M, Gard G. Perceptions of health and risk management among home care workers in Sweden. Phys Ther Rev. 2013; 18(3):336–43.
68. Zhang Y, Punnett L, Gore R, Team C-NR. Relationships among employees’ working conditions, mental health, and intention to leave in nursing homes. J Appl Gerontol. 2014;33(1):16–23.
69. Murrells T, Clinton M, Robinson S. Job satisfaction in nursing: validation of a new instrument for the US. J Nurs Manag. 2005;13(6):296–311.
70. Deikas EC. The safety attitudes questionnaire - ambulatory version: psychometric properties of the Norwegian translated version for the primary care setting. BMC Health Serv Res. 2014;14:139.
71. Currie EJ, Carr Hill RA. What are the reasons for high turnover in nursing? A discussion of presumed causal factors and remedies. Int J Nurs Stud. 2012; 49(9):1180–9.
72. Gunningdottir S, Rafferty A. Enhancing working conditions: In: Dubois CAMM, Nolte E, McKee M, Mossialos E, Salmon RB, editors. Human resources for health in Europe European Observatory on Health Systems and Policies Series. Edn. Maidenhead: Open University Press; 2006. p. 155–72.
73. Steiner DL, Norman GR, Carney J. Health Measurement Scales. A practical guide to their development and use. United States: Oxford University Press Inc, New York; 2015.
74. Weston MJ. Validity of instruments for measuring autonomy and control over nursing practice. J Nurs Scholarsh. 2009;41(1):87–94.
75. OECD/European Commission: A Good Life in Old Age? Monitoring and Improving Quality in Long-Term Care. In: Paris, France OECD Health Policy Studies, 2013.
76. McGilton KS, Boscot VM, Brown M, Bowers B. Making tradeoffs between the reasons to leave and reasons to stay employed in long-term care homes: perspectives of licensed nursing staff. Int J Nurs Stud. 2014;51(6):917–26.
77. Edin AC, van der Zijpp T, McMullan C, McCormack B, Seers K, Rycroft-Malone J. I have the world’s best job - staff experience of the advantages of caring for older people. Scand J Caring Sci. 2016;30(2):365–73.
78. Bergland A, Kirkevold M. Thriving in nursing homes in Norway: contributing aspects described by residents. Int J Nurs Stud. 2006;43(6):681–91.
79. Rantz MJ, Zwiggart-Stauffacher M, Popejoy L, Grando VT, Mehr DR, Hicks LL, Conn VS, Vipke-Tevis D, Porter R, Bostick J, et al. Nursing home care quality: a multidimensional theoretical model integrating the views of consumers and providers. J Nurs Care Qual. 1999;14(1):16–37. quiz 85-17.
80. Havig AK, Skogstad A, Veenstra M, Romoren TI. Real teams and their effect on the quality of care in nursing homes. Int J Qual Health Care. 2006;18(4):370–6.
81. Rantz MJ, Zwygart-Stauffacher M, Popejoy L, Grando VT, Mehr DR, Hicks LL, Rantz MJ, Zwygart-Stauffacher M, Popejoy L, Grando VT, Mehr DR, Hicks LL, Rantz MJ, Zwygart-Stauffacher M, Popejoy L, Grando VT, Mehr DR, Hicks LL. Contemp Nurse. 2009;34(1):1–22.
82. Estabrooks CA, Squires JE, Hayduk LA, Cummings GG, Norton PG. Advancing the argument for validity of the Alberta context tool with healthcare aides in residential long-term care. BMC Med Res Methodol. 2011;11:107.
85. Zuniga F, Assershoefd D, Hamers JP, Engberg S, Simon M, Schwendimann R. The relationship of staffing and work environment with implicit rationing of nursing care in Swiss nursing homes—a cross-sectional study. Int J Nurs Stud. 2015;52(2):1463–74.

86. Rogers AE, Dean GE, Hwang WT, Scott LD. Role of registered nurses in error prevention, discovery and correction. Qual Saf Health Care. 2008;17(2):117–21.

87. Helgesen AK, Athlin E, Jarsson M. Relatives’ participation in everyday care in special care units for persons with dementia. Nurs Ethics. 2015;22(4):404–16.

88. Song F, Parekh S, Loke YK, Ryder J, Sutton AJ, Hing C, Kwok CS, Pang C, Harvey I. Dissemination and publication of research findings: an updated review of related biases. Health Technol Assess 2010, 14(8), iii–xi, 1–193.

89. Sjetne IS, Stavem K. Properties of a Norwegian version of the Ward Organisational features scales. Scand J Caring Sci. 2006;20(4):455–61.

90. Edwardson D, Sigjøn K, Lindkvist M, Taylor M, Edwardson K, Sandman PO. Person-centred climate questionnaire (PCQ-S): establishing reliability and cut-off scores in residential aged care. J Nurs Manag. 2015;23(3):315–23.

91. Traynor M, Wade B. The development of a measure of job satisfaction for use in monitoring the morale of community nurses in four trusts. J Adv Nurs. 1993;18(1):127–36.

92. Ellenbecker CH, Bylecki JJ, Sarnia LW. Further psychometric testing of the home healthcare nurse job satisfaction scale. Res Nurs Health. 2008;31(2):152–64.

93. Eldh AC, Ehrenberg A, Squires JE, Estabrooks CA, Wallin L. Translating and testing the Alberta context tool for use among nurses in Swedish elder care. BMC Health Serv Res. 2013;13:68.

94. Squires JE, Hayduk L, Hutchinson AM, Mallick R, Cummings GG, Estabrooks CA. Reliability and validity of the Alberta context tool (ACT) with professional nurses: findings from a multi-study analysis. PLoS One. 2015;10(6):e0127405.

95. Webster J, Flint A, Courtenay M. A new practice environment measure based on the reality and experiences of nurses working lives. J Nurs Manag. 2009;17(1):38–48.

96. Reid C, Courtenay M, Anderson D, Hurst C. Testing the psychometric properties of the Brisbane practice environment measure using exploratory factor analysis and confirmatory factor analysis in an Australian registered nurse population. Int J Nurs Pract. 2015;21(1):94–101.

97. Andersson IS, Lindgren M. Perceptions of nursing care quality, in acute hospital settings measured by the Karen instruments. J Nurs Manag. 2013;21(1):87–93.

98. Sexton JB, Heitkemper ML, Neighbors WB, McHugh EP. The safety attitudes questionnaire: psychometric properties, benchmarking data, and emerging research. BMC Health Serv Res. 2006;6(1):44.

99. Mathiesen GE, Einarsen S. A review of instruments assessing creative and innovative environments within organizations. Res Nurs Health. 2006;29(4):384–99.

100. Gajewski BJ, Boyle DK, Miller PA, Oberhelman F, Dunton N. A multilevel confirmatory factor analysis of the practice environment scale: a case study. Nurs Res. 2010;59(2):147–53.

101. Lynn MR, Morgan JC, Moore KA. Development and testing of the satisfaction in nursing scale. Nurs Res. 2009;58(3):166–74.

102. Tourangeau AE, McGillis Hall L, Doran DM, Petch T. Measurement of nurse job satisfaction using the McCloskey/Mueller satisfaction scale. Nurs Res. 2006;55(2):128–36.

103. Joyce J, Crookes P. Developing a tool to measure ‘magnetism’ in Australian nursing environments. Aust J Adv Nurs. 2007;25(1):17–23.

104. Li YF, Lake ET, Sales AE, Sharp ND, Greiner GT, Lowy E, Liu CF, Mitchell PH, Sochalski JA. Measuring nurses’ practice environments with the revised nursing work index: evidence from registered nurses in the veterans health administration. Res Nurs Health. 2007;30(1):31–44.

105. Slaters P, O’Halloran P, Connolly D, McCormack B. Testing of the factor structure of the nursing work index-revised. Worldviews Evid-Based Nurs. 2010;7(3):123–34.

106. Sjetne I, Tvedt C, Squires A. Male instrumentet “The Nursing Work Index-Revised” -oversettelse og utproving av en norsk versjon. Sykepleien Forskning. 2011(6):358–65.

107. Best MF, Thurston NE. Canadian public health nurses’ job satisfaction. Public Health Nurs. 2006;23(3):250–5.

108. Zangaro GA, Soeken KL. Meta-analysis of the reliability and validity of part B of the index of work satisfaction across studies. J Nurs Meas. 2005;13(1):7–22.

109. Blegen MA, Gearhart S, O’Brien R, Sehgal NL, Aldredge BK. AHRIQ’s hospital survey on patient safety culture: psychometric analyses. Journal of patient safety. 2009;5(3):139–44.

110. Castle NG. Assessing job satisfaction of nurse aides in nursing homes: the nursing home nurse aide job satisfaction questionnaire. J Gerontol Nurs. 2007;33(5):41–7.

111. Estabrooks CA, Tourangeau AE, Humphrey CK, Hesketh KL, Giovannetti P, Thomson D, Wong J, Acorn S, Clarke H, Shamian J. Measuring the hospital practice environment: a Canadian context. Res Nurs Health. 2002;25(4):256–68.

112. Krat T, Martynen R, Partanen P, Turunen H, Miettinen M, Vehviläinen-Julkunen K. The job satisfaction of Finnish nursing staff: the development of a job satisfaction scale and survey results. Nurs Res Pract. 2012;2012:210509.

113. Lacey SR, Teasley SL, Cox KS, Olney A, Kramer M, Schmalenberg C. Development and testing of an organizational job satisfaction tool: increasing precision for strategic improvements. J Nurs Adm. 2011;41(1):15–22.

114. Santátiva N. Construct validity and reliability of the Finnish version on the demand-control questionnaire in two samples of 1028 teachers and 630 nurses. Educ Psychol. 2003;23(4):423–36.

115. Teno-Heilikkönen T, Partanen P, Vehviläinen-Julkunen K, Laaksonen K. Working conditions of Finnish registered nurses: a national survey. Nordic Journal of Nursing Research & Clinical Studies/Vård i Norden. 2008;28(1):8–12.