REVIEW

Measuring quality of life at work for healthcare and social services workers: A systematic review of available instruments

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Abstract

Quality of life at work is an important and widely discussed concept in the literature. Several instruments can be used to measure it, but with regard to healthcare and social services, the existing instruments are not well known. A review of available instruments intending to capture the quality of life of healthcare and social services workers (QoLHSSW) is necessary to better assess their working conditions and promote programs/guidelines to improve these conditions. The aim of this study was to identify the existing instruments used in measuring QoLHSSW and explore their characteristics. Particular attention was given to instruments adapted to the province of Quebec, Canada, which enabled the determination of which instruments are adapted for the measurement of QoLHSSW in Quebec and possibly elsewhere. A systematic review of the literature was conducted according to the JBI methodological guide. The articles' selection procedure was performed according to the PRISMA flowchart. The search was conducted up to October 28, 2021, and then updated on January 25, 2023, in four databases: PsycINFO, Medline, Embase, and CINAHL. The selection and extraction were performed independently by two researchers. The analysis of the quality of the studies was performed with the COnsensus-based Standards for the selection of health Measurement Instruments. From a total of 8178 entries, 13 articles corresponding to 13 instruments were selected. Among these instruments, the common aspects that were considered were work conditions, job satisfaction, stress at work, relationship/balance, and career development. Most instruments used a 5-point Likert scale. Various validation methods were used, including reporting Cronbach's alpha for overall scale reliability;

Abbreviations: BQNWL, Brooks Quality of Nursing Work Life; COSMIN, COnsensus-based Standards for the selection of health Measurement Instruments; HSSW, healthcare and social services workers; NQOLS, Nursing Quality of Life Scale; NQWL, Hospital Nurses' quality of working life; ProQOL, Professional Quality of Life; QoLHSSW, quality of life of healthcare and social services workers; QWL, quality of working life; QWLSI, Quality of Working Life Systemic Inventory; WRQoL, Work-Related Quality of Life Scale.

factor analysis to test construct validity; different model fit indices to test model superiority; different language comparisons to test cross-cultural validity; and qualitative expert reviews to assess content validity.

1 | INTRODUCTION

A study on the "Global Nursing Shortage" (McGill Nursing Collaborative for Education and Innovation in Patient and Family–Centered Care, 2019) showed that healthcare and social services workers (HSSW) experienced an unprecedented shortage of skilled professionals [1]. The COVID-19 pandemic has exacerbated this situation and put continuous pressure on HSSW, leading to increased burnout, stress, mental health deterioration, and job-family conciliation dilemmas in addition to the risk of COVID-19 exposure, which has exacerbated the health labor shortage [2].

The term "quality of working life" (QWL) originated from the concept of the open sociotechnical system designed in the 1970s that helps to ensure autonomy in work, interdependence, and self-involvement with the idea of the "best fit" between technology and social organizations [3]. QWL is a multidimensional construct, and it is difficult to conceptualize the quality of work-life elements [4]. Since the concept was developed, various definitions and theoretical constructs have succeeded each other in an attempt to mitigate the many problems involved in the concept [5]. This systematic review aims to explore the instruments that were developed and/or adapted to measure the quality of life at work of healthcare and social services workers (QoLHSSW).

Some systematic reviews have discussed quality of life at work. These reviews focused on the quality of life for a specific category of professionals or a particular aspect of working life. For example, Pennisi et al. [6] conducted a systematic review and meta-synthesis study of six articles on the quality of life of family health professionals. Vasiliki et al. [7] identified the factors that influence nurses' work-related quality of life and included 26 studies in their systematic literature review. Khatatbeh et al. [8] systemically reviewed 21 studies exploring nurses' burnout and their quality of life within the previous 12 years (2009–2021).

Similar to the above systematic review studies, this review also examined quality of life at work, but we considered a wider target population that included all HSSW. Furthermore, our focus was on the methodological development and validation of instruments and their application to the healthcare and social services sector. In addition, we performed a general comparison between all selected instruments that were available for HSSW.

This systematic review aims to contribute to future studies that would select and apply these instruments. By doing so, it will help researchers to select the appropriate instruments to measure changes in studies where QoLHSSW is a critical outcome that may help to attract professionals, increase their retention, and reduce turnover. In this way, we first analyzed the development and validation methods and then determined the nature of the dimensions used in the instruments. Finally, we discussed how to interpret the score for each instrument.

2 | METHODS

2.1 | Search strategy

A systematic review of the literature was conducted according to the JBI methodological guide for systematic reviews [9]. The JBI guideline endorses the PRISMA statements [10, 11]. The protocol was developed by a research team including university professors, healthcare and social services professionals, and information specialists. This protocol was registered on PROSPERO (CRD42021287892). An experienced medical information specialist developed and tested the search strategies through an iterative process in consultation with the review team. The MEDLINE strategy was peer-reviewed by a second skilled information specialist using the PRESS Checklist [12]. Using the multifile option and deduplication tool available on the OVID platform, we searched Ovid MEDLINE®, including Epub Ahead of Print, In-Process and Other Non-Indexed Citations, Embase Classic+Embase, and APA PsycInfo. We also searched CINAHL on Ebsco. We searched all databases from the database inception to the search date of October 28, 2021. An update was conducted on January 25, 2023.

The strategies utilized a combination of controlled vocabulary (e.g., "health personnel," "quality of life,"

"psychometrics") and keywords (e.g., "HCW," "quality of wellbeing," "instrument"). Vocabulary and syntax were adjusted across the databases. No language or date limits were applied, but animal-only records and opinion pieces were removed where possible.

A targeted gray literature search of instruments and authors previously known by the review team was undertaken in Researchgate and Google Scholar to complement the bibliographic database search. The list of instruments on the Wikipedia webpage for "QWL" was also consulted in addition to the bibliographic references of the included studies.

The results were downloaded and deduplicated using EndNote version 9.3.3 (Clarivate Analytics). Specific details regarding the strategies appear in Supporting Information Files S1 and S2.

2.2 | Selection of studies

Following our literature search protocol, the selection of studies was based on a set of criteria. The target population was HSSWs, that is, providers of healthcare treatment and advice based on formal training and experience or professionals providing support and services to groups, individuals, or families that are challenged to cope with terminal, acute, or chronic illness. The measurement focus was the quality of life at work, whether physically or psychologically. The population was adult workers (≥18 years old). The survey procedure was a self-reported measure of the quality of life at work, and studies on aggregate indicators were excluded (e.g., suicide rate). No restrictions were applied to the language of the studies or their date of publication.

Instruments that measured only one aspect of working life, such as risk, burnout, or stress, were not considered in this review. Rehabilitation measurement instruments for return to work were also not included. Editorials and commentaries were excluded. The articles' selection procedure was conducted according to the PRISMA flowchart [10]. The selection of studies was performed in two stages by two researchers (L. W. and M. T.): reading the titles and abstracts (step 1) and reading the full texts (step 2) following selection in step 1. If necessary, arbitration was performed by a third researcher (T. G. P.). A kappa coefficient was calculated at each step.

2.3 | Data analysis

Data extraction was performed independently by two researchers (L. W. and M. T.). In case of disagreement between these two evaluators, arbitration was carried out by a third evaluator (T. G. P). Data extraction was

performed using a form structured around the instrument's development process. Thus, the main information to be collected was related to the four aspects of instrument elaboration: characteristics, development, validation, and score interpretation. Specifically, we summarized the common features of the dimensions used to build the instruments and studied the various technical methods that were applied in the instrument's validation procedure. We also explored the instrument's score interpretation. Finally, we checked the instrument's applicability in Quebec.

When available, information on the sociodemographic characteristics of the participants enrolled in the instrument's validation process was collected. The analysis of the quality of the studies was performed with the COnsensus-based Standards for the selection of health Measurement Instruments (COSMIN) [13]. The COSMIN Study Design checklist consists of 10 boxes. Each box contains standards on measurement properties that are assessed on a 4-point rating scale. We followed the COSMIN checklist to measure whether all important properties were considered in the development of QWL instruments.

3 | RESULTS

3.1 | Selection of studies

Figure 1 shows the selection process. The search identified 8178 records. At the title and abstract screening stage, 8091 articles were excluded since they were irrelevant or duplicates ($n = 710$). A kappa coefficient of 0.32 indicated fair agreement at this point. After this stage, 87 articles were selected for potential inclusion in the review. Following assessment of the full-text articles, an additional 74 were excluded because they were not an original instrument development study (i.e., application [$n = 65$], validation [$n = 6$] and translation [$n = 3$] of the instrument in a specific population). The resulting kappa coefficient in this second stage was 0.68, reflecting good agreement [14].

This procedure resulted in 13 instruments that were identified specifically as developed for or usable with HSSW. For each instrument, the latest version was preferred (i.e., the most up to date instrument recommended by authors). Among the selected articles, 10 were about the original instrument's development (i.e., 10 original instruments) and 3 were an adaptation (i.e., 2 adaptations from an original instrument and 1 adaptation from a well-known model). Indeed, one article [15] presented an instrument that was adapted specifically for HSSW in Quebec; It was an adaptation and application of
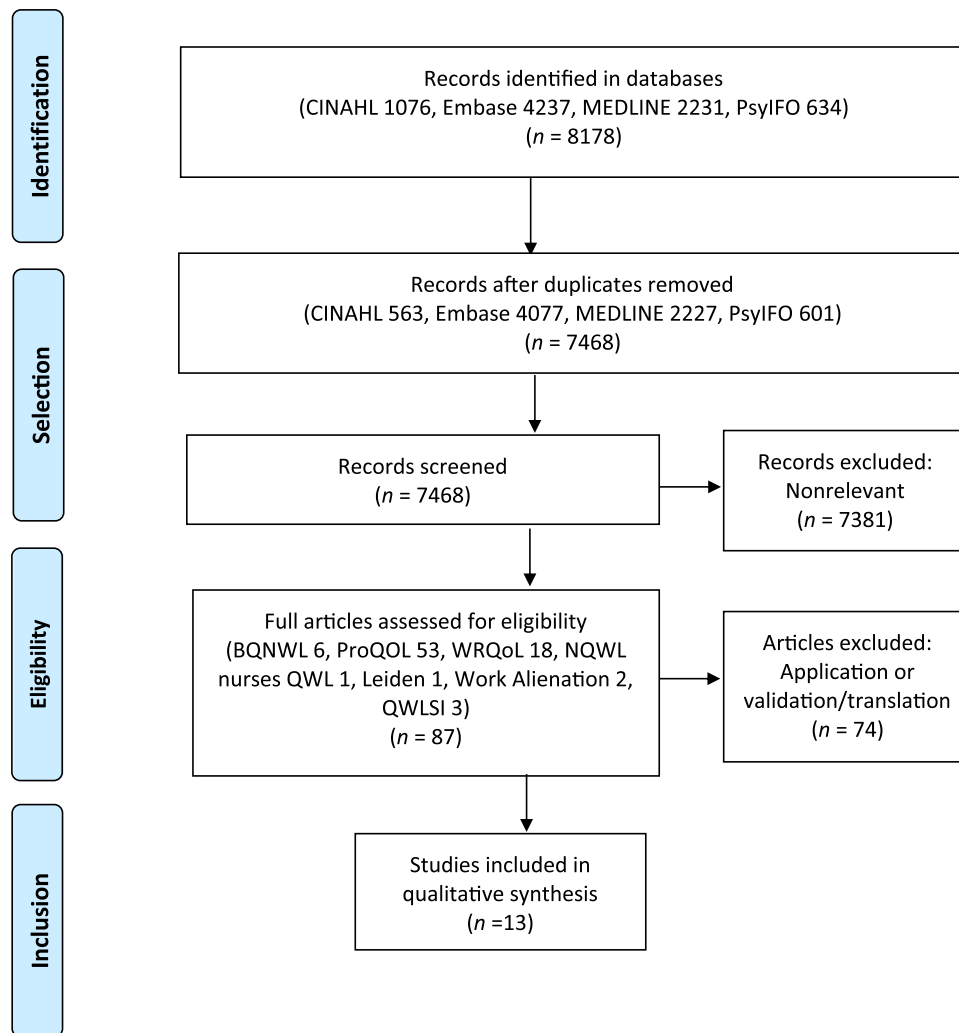
FIGURE 1 PRISMA diagram up to January 25, 2023.

the work by Martel and Dupuis [5]. Another article by Sili et al. [16] was an adaptation of the Satisfaction Profile Questionnaire (SAT-P) for nurses. The article by Timossi et al. [17] was an adaptation of the model of Walton [18]. The full list of instruments is provided in Table 1.

3.2 | Characteristics of the instruments

Table 2 provides the main characteristics of the selected instruments. The selected articles in this review were published from 1981 to 2022, and the related instruments were then largely applied to measure QoLHSSW. The instruments were developed for diverse reasons, such as "to assess/evaluate the quality of nursing/healthcare workers' lives [15, 16, 21, 22, 24–26]," "to measure the positive and negative effects of working [23]," "to examine the nature and sources of self-estrangement in work [19]," "to measure characteristics and the

outcome variable of job satisfaction [20]," "to provide an organizational diagnosis [5]," and "to rescue human and environmental values [17]." The originally targeted professionals were mainly nurses [15, 21, 24, 27], caring professionals [25], and healthcare workers [22, 26]. Some instruments were developed for the working population at large [5, 17, 19, 20, 23] but have been widely applied to HSSW in many countries.

In the development process of instruments, a literature review was applied to most of the studies. Specifically, 7 of 13 instruments were developed from systematic literature reviews or historical reviews [5, 15, 17, 19, 22, 27]. For example, the Quality of Working Life Systemic Inventory (QWLSI) was developed in this way. Martel and Dupuis [5] historically reviewed the concept development of the Systemic Quality of Life Inventory (SQLI) and then provided a definition and measurement strategy. Another example is Walton's QWL adaptation model by Timossi et al. [17], which was developed in four

TABLE 1 List of instruments available to measure QoLHSSW.

No.	Instrument	References
1.	Work Alienation	Mottaz [19]
2.	Leiden Quality of Work Life Questionnaire	Van der Doef and Maes [20]
3.	Quality of Working Life Systemic Inventory (QWLSI)	Martel and Dupuis [5]
4.	Brooks Quality of Nursing Work Life (BQNWL)	Brooks et al. [21]
5.	Work-Related Quality of Life Scale (WRQoL)[a]	Van Laar et al. [22]
6.	Walton's QWL model (adaptation)	Timossi et al. [17]
7.	Professional Quality of Life 5 (ProQOL 5)	Stamm [23]; ProQOL.org
8.	QWLSI (Quebec)	Bragard et al. [15]
9.	Hospital Nurses' QWL (NQWL)	Hsu [24]
10.	ProQOL-21	Heritage et al. [25]
11.	Short ProQOL	Galiana et al. [26]
12.	Nurses' Quality of Work Life (QWL)	Nanjundeswaraswamy [27]
13.	Nursing Quality of Life Scale (NQOLS)	Sili et al. [16]

Abbreviation: QoLHSSW, quality of life of healthcare and social services workers.

[a]A newer version, the WRQoL-2, exists but it is still in development (http://www.qowl.co.uk/qowl_news_wrqol2_dev.html).

steps: (1) literature evaluation models; (2) investigation and adaptation of the questions; (3) application of the instrument; and (4) analysis of the coefficients found by criteria.

Some instruments were derived or adapted from one or several existing instruments [20, 23, 25, 26]. For example, the ProQOL-21 and Short ProQOL were based on previous research and item discussion results for the ProQOL (versions IV and V). Nursing Quality of Life Scale (NQOLS) [16] was developed with a deeper validation of the NQOLS [29], which was a selection and modification of the SAT-P [30] from the literature by a panel of experts to achieve a more specific version for nurses.

Hospital Nurses' QWL (NQWL), which was developed by Hsu [24], applied a sequential mixed methodology that integrated understanding from various data sources: focus group findings (i.e., key issues), experts' assessments, and self-administered questionnaires to elicit perceptions of QWL from nurses.

The majority of instrument levels (10 out of 12) were designed with a Likert scale format, with the 5-point Likert scale mostly used. A visual analog scale-type dial was used in two articles that adopted the QWLSI [5, 15].

3.3 | Nature of dimensions

Table 3 presents a summary of the nature of the dimensions used in each instrument retrieved. All instruments included a minimum of three dimensions. ProQOL 5 [23] used two meta-dimensions, but the

second dimension was separated into two other dimensions. The other instruments using three dimensions were Work Alienation [19], ProQOL-21 [25], and the short version of ProQOL [26]. The highest number of dimensions was observed in the NQWL (Hospital Nurses' QWL), with 33 dimensions [24]. Note that all dimensions in each instrument corresponded to several items, providing a range of items from 9 to 123. Generally, each instrument was built (created) based on their own theoretical framework and development method except for those that were updated or shortened version (for details see Table 2). The three instruments in the ProQOL family shared the same instrument dimensions since they were rooted in the same theoretical framework. So, when presented in the dimensions, the names may be similar but the contents and logics between instruments were somewhat different.

This review summarized the common aspects that were considered by different instruments and distinguish their unique aspect as well. Indeed, the dimensions used in each instrument are not directly comparable, but the aspect of QWL and the features that were considered have some features in common. For example, the three most frequent dimensions (i.e., overlapped dimensions) were work conditions, job satisfaction, and stress at work. The first one could be named working conditions (in WRQoL [22]) task-related characteristics (in Work Alienation [19]) characteristics of the environment (in QWLSI [5]), or work aspects (in NQWL [24]). For the

TABLE 2 Characteristics of instruments available to measure QoLHSSW.

Instrument's name	Purpose	Professionals targeted by the instrument	Theoretical framework used	Development method	Structure	References
Work Alienation	To examine the nature and sources of self-estrangement in work	Occupational groups	Melvin Seeman's five dimensions of alienation	Systematic review discussed measures of work alienation; Expectations and importance were constructed with work dimensions	(1) 4-point Likert scale (with weighted importance score) (2) 7-point Likert scale (3) 4-point Likert scale	Mottaz [19]
Leiden Quality of Work Life Questionnaire	To measure characteristics and the outcome variable of job satisfaction in a reliable way	Working population	Job Demand-Control-Support model, Michigan model	Derived from 3 questionnaires: Job Content Instrument; Questionnaire for Organizational Stress, version Doetinchem; Wellness at Work-interview	4-point Likert scale	Van der Doef and Maes [20]
Quality of Working Life Systemic Inventory (QWLSI)	To provide an organizational diagnosis both for respondents and for groups	Working population	Dupuis et al.'s definition of QoL	A historical overview of the concept development of the Systemic Quality of Life Inventory (SQLI) provided a definition and measurement strategy	Visual analog scale-type dial	Martel and Dupuis [5]; Dupuis et al. [28]
Brooks' Quality of nursing work life (BQNWL)	To assess the quality of nursing work life	Staff nurses	Theoretical foundation: sociotechnical systems (STS) theory; conceptual framework: O'Brien-Pallas and Baumann.	Further analysis of STS theory along with the 4 dimensions of the O'Brien-Pallas and Baumann framework were used	6-point Likert scale	Brooks et al. [21]
Work-Related Quality of Life Scale (WRQoL)	To assess employees' quality of working life	Healthcare workers	Satisfaction and spillover theories	Literature reviews develop 200 questions and scale items; opinions of experts in the domain; six panelists' discussions	5-point Likert scale	Van Laar et al. [22]

TABLE 2 (Continued)

Instrument's name	Purpose	Professionals targeted by the instrument	Theoretical framework used	Development method	Structure	References
Walton's QWL model (adaptation)	To rescue human and environmental values that have been neglected in favor of technological advancement	Workers (also adapted for workers with low schooling levels)	Model of Walton; the scale of answers was converted into a Likert scale with five alternatives from WHOQL-100	(1) Literature evaluation models; (2) investigation and adaptation of the questions; (3) application of the instrument; (4) analysis of the coefficients found by criteria	5-point Likert scale	Timossi et al. [17]
Professional Quality of Life 5 (ProQOL 5)	To provide a measure of the positive and negative effects of working with people who have experienced extremely stressful events	Being exposed to another's potentially traumatizing material as a result of paid or volunteer work	Compassion satisfaction and fatigue framework	Derived from the Compassion Fatigue Self Test; added the concept of compassion satisfaction	5-point Likert scale	Stamm [23]
QWLSI (Quebec)	To assess the evaluation of recruitment and retention factors in Quebec	Rural ED nurses	QWLSI https://qualitedevie.lepsyq.ca/en/content/quality-of-life	Literature search and clinical experience; an additional item designed to capture aspects of emergency department nurses and physicians was added	Visual Analog Scale-type dial	Bragard et al. [15]
Hospital Nurses' QWL (NQWL)	To examine the quality of working life of nurses	Hospital nurses	–	Literature review; focus group findings; self-administered questionnaires; experts' opinions	5-point Likert scale	Hsu [24]
ProQOL-21	To measure compassion satisfaction and compassion fatigue	Caring professionals	Compassion satisfaction and fatigue framework	Deletion of misfitting items from the original Stamm's ProQol	5-point Likert scale	Heritage et al. [25]
Short ProQOL	To present a short version of the ProQOL scale	Healthcare-area professionals	Professional Quality of Life (ProQOL) scale versions IV and V	Based on previous research, retained the three best items from each dimension of the initial ProQol IV and V; retained those with no reported psychometric problems through 2 studies	5-point Likert scale	Galiana et al. [26]

(Continues)

TABLE 2 (Continued)

Instrument's name	Purpose	Professionals targeted by the instrument	Theoretical framework used	Development method	Structure	References
Nurses' Quality of Work Life (QWL)	To assess nurses' quality of work life	Nurses	Pareto analysis	Literature review; discussion with hospital authorities, nurses and academicians; exploratory factor analysis (EFA), confirmatory factor analysis (CFA)	5-point Likert scale	Nanjundeswaraswamy [27]
Nursing Quality of Life Scale (NQOLS)	To evaluate the four dimensions of nurses' quality of life	Nurses	Satisfaction Profile Questionnaire (SAT-P)	Selection and modification of the SAT-P from the literature by a panel of experts to achieve a more specific version for nurses	4-point rating scale	Sili et al. [16]

Abbreviation: QoLHSSW, quality of life of healthcare and social services workers.

second one, authors referred to job satisfaction (in Nurses' QWL [27] and Leiden [20]) and showed similar features as compassion satisfaction (in ProQOL 5 [23], ProQOL-21 [25], the short version of ProQOL [26]) job and career satisfaction (in WRQoL [22]), and factors that influence job satisfaction (in QWLSI [5]). The third one was labeled stress at work (in WRQoL [22], Nurses' QWL [27]), work and time pressure (in Leiden [20]), compassion fatigue (in ProQOL 5 [23], ProQOL-21 [25], and the short version of ProQOL [26]).

From the authors' view, the unique (or specific) dimensions that their instruments were trying to capture, as compared to other instruments, were charter bordered in Table 3. For example, for the Work Alienation instrument, this unique dimension was Self-estrangement; and for the NQOLS, the Emotional satisfaction was measured.

Additionally, it is important to note that the soft environment factor was highly valued in many instruments. This corresponded to the relationship/balance with patients (in QWLSI [Quebec] [15] Nurses' QWL [27]), colleagues/superiors (in QWLSI [5], Leiden, Walton's QWL model [adaptation] [17], NQWL [24], home life (in BQNWL [21], WRQoL [22], and Nurses' QWL [27]).

The last and least common item specified by half of the instruments was career development-related features. It could be called career development (in Nurses' QWL [27], QWLSI [5]), evolution of the profession (in QWLSI [Quebec] [15]), growth and security (in Walton's QWL model [adaptation] [17]), or work design (in BQNWL [20]). The questionnaires were designed based on these dimensions and a table summarizing the characteristics of the surveys conducted to develop, test or validate the instruments can be found in Supporting Information File S3.

3.4 | Validation methods

Table 4 provides an overview of the methods used to validate the instruments. Factor analysis, convergent validity, discriminant validity and reliability tests were the techniques used to measure the credibility of the measuring instrument [31]. Nanjundeswaraswamy [27] noted that the validation of an instrument was verified using different techniques, such as confirmatory factor analysis (CFA), structural equation modeling (SEM), content validity test, convergent validity test, average variance extracted (AVE), composite reliability (CR), and the variance inflation factor (VIF). The internal consistency was tested with Pearson correlations. Table 4 shows that these techniques were used by at least one study.

TABLE 3 Nature of dimensions in instruments available to measure QoLHSSW.

Instrument's name	Number of dimensions/ subscales	Nature of dimensions	Number of items
Work Alienation	3 critical factors	(1) Self-estrangement (2) Task characteristics (3) Task-related characteristics	26
Leiden Quality of Work Life Questionnaire	12	(1) Skill discretion (2) Decision authority (3) Task control (4) Work and time pressure (5) Role ambiguity (6) Physical exertion (7) Hazardous exposure (8) Job insecurity (9) Lack of meaningfulness (10) Social support supervisor (11) Social support coworkers (12) Job satisfaction	59
QWLSI	8	(1) Compensation (2) Career growth (3) Working schedule (4) Relationship with colleagues (5) Relationship with superiors (6) Physical environment (7) Factors influencing appreciation of tasks (8) Employee support	34
BQNWL	4	(1) Work life/home life (2) Work design (3) Work context (4) Work world	42
WRQoL	6	(1) Job and career satisfaction (2) General well-being (3) Home–work interface (4) Stress at work (5) Control at work (6) Working conditions	23
Walton's QWL model (adaptation)	8	(1) Adequate and fair compensation (2) Safe and healthy environment (3) Development of human capacities (4) Growth and security (5) Social integration (6) Constitutionalism (7) The total life space (8) Social relevance	35
ProQOL 5	2 meta-dimensions	(1) Compassion satisfaction (2) Compassion fatigue (burnout and secondary trauma)	30
QWLSI (Quebec)	8 spheres	(1) Compensation (2) Career growth (3) Working schedule (4) Relationship with colleagues (5) Relationship with superiors (6) Physical environment	40 (including 6 new items for emergency department)

(Continues)

TABLE 3 (Continued)

Instrument's name	Number of dimensions/ subscales	Nature of dimensions	Number of items
		(7) Factors influencing appreciation of tasks (8) Employee support	
NQWL	6 meta-dimensions; 33 dimensions	(1) Socioeconomic relevance (2) Demography (3) Organizational aspects (4) Work aspects (5) Human relation aspects (6) Self-actualization	123
ProQOL-21	3 subscale scores	(1) Compassion satisfaction (2) Compassion fatigue (burnout) (3) Compassion fatigue (secondary trauma)	21
Short version of ProQOL	3	(1) Compassion fatigue (2) Burnout (3) Compassion satisfaction	9
Nurses' QWL	9	(1) Work environment (2) Working condition (3) Work–life balance (4) Compensation (5) Relationship and cooperation (6) Stress at work (7) Job satisfaction (8) Career development (9) Organization culture	35
NQOLS	4	(1) Physical (2) Emotional (3) Working (4) Social	28

Note: Charter bordered words indicate the unique dimensions captured by the instrument.

Abbreviations: BQNWL, Brooks Quality of Nursing Work Life; NQOLS, Nursing Quality of Life Scale; NQWL, Nurses' QWL; ProQOL 5, Professional Quality of Life 5; QoLHSSW, quality of life of healthcare and social services workers; QWL, Quality of Work Life.

Generally, some common methods were identified, but high heterogeneity predominated. This section categorizes the most frequently used validation methods into four groups.

First, the overall scale reliability (i.e., the extent to which items are interrelated or consistent with each other and measure the same construct) was most frequently tested. Eight out of 13 instruments were tested for instrument reliability by measuring Cronbach's alpha coefficient. A value greater than 0.7 was seen as an indicator of good reliabilit [32]. For all eight instruments, Cronbach's alpha was higher than 0.7. ProQOL 5 ranged from 0.75 to 0.88. The Work Alienation instrument yielded a reliability of 0.875, and NQWL reported a range from 0.80 to 0.89. Note that Cronbach's alpha coefficient was not reported in the latest version of BQNWL [21], but Brooks (2001) previously reported a Cronbach's alpha

coefficient of 0.83 when he first developed this scale. Other instruments were all higher than 0.9: ProQOL-21 (0.90), Nurses' QWL (0.902), Leiden (0.917), WRQoL and Walton (adaptation) (0.96).

The second most commonly used method was factor analysis (i.e., a method which helps in condensing the information obtained from high number of variables in fewer number of variables, called factors or dimensions, to allow an easier comprehension and interpretation of results). Half of the instruments used factor analysis to test the construct validity. The factor analysis involved principal component analysis (PCA), exploratory factor analysis (EFA) or confirmatory factor analysis (CFA). Factor analysis, which seeks to define the interrelationships among variables in a simple manner, is a useful approach to assessing construct validit [33] and is frequently used to develop questionnaires [34]. Initially,

TABLE 4 Validation methods used in instruments available to measure QoLHSSW.

	Work Alienation	Leiden QWLSI	BQNWL	WRQoL	Walton QWL (adaptation)	ProQOL 5	QWLSI (Quebec)	NQWL	ProQOL-21	Short version of ProQOL	Nurses' QWL	NQOLS
Overall scale reliability												
Composite reliability (CR)				✓	✓	✓		✓	✓		✓	✓
Cronbach's alpha	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
Pearson correlations between items in an instrument			✓					✓			✓	✓
Factor analysis												
Component labels analysis				✓			✓	✓		✓	✓	✓
Confirmatory factor analysis (CFA)	✓	✓		✓			✓	✓		✓	✓	✓
Metric invariance model										✓		
Principal components analysis (PCA)/exploratory factor analysis (EFA)								✓			✓	✓
Structural equation modeling (SEM)				✓							✓	✓
Model fit												
Adjusted goodness-of-fit index (AGFI)/Goodness-of-Fit Index (GFI)		✓		✓							✓	
Average variance extracted (AVE)											✓	
Chi-squared difference test				✓						✓	✓	✓
Comparative fit index (CFI)										✓	✓	✓
Discriminate validity: square root of AVE											✓	
Incremental fit index (IFI)											✓	

TABLE 4 (Continued)

	Work Alienation	Leiden	QWLSI	BQNWL	WRQoL	Walton QWL (adaptation)	ProQOL 5	QWLSI (Quebec)	NQWL	ProQOL-21	Short version of ProQOL	Nurses' QWL	NQOLS
Interscale correlations (shared variance)							✓						
Non-normed fit index (NNFI)		✓			✓								
Root mean square error of approximation (RMSEA)		✓			✓					✓	✓	✓	✓
Standardized root mean square residual (SRMR)											✓		✓
Tucker–Lewis index (TLI)												✓	✓
Variance inflation factor (VIF)												✓	
Content validity													
Configural model			✓		✓		✓	✓			✓	✓	
Content validity ratio (CVR)/Lawshe test, Qualitative expert reviews			✓					✓					
Correlation among items											✓	✓	
Cross-cultural validity: correlation between different language versions instrument			✓					✓					
Degree of divergence: social desirability scale			✓					✓					
Differential Item Functioning (DIF)									✓				
Discriminant validity: comparison of data of different sample			✓					✓				✓	

TABLE 4 (Continued)

	Work Alienation	Leiden	QWLSI	BQNWL	WRQoL	Walton QWL (adaptation)	ProQOL 5	QWLSI (Quebec)	NQWL	ProQOL-21	Short version of ProQOL	Nurses' QWL	NQOLS
Multiple regression & stepwise deletion procedures	✓												✓
Rasch model										✓			
Scalar model											✓		
Sensitivity to change			✓					✓					
Test-retest			✓					✓					
Weighted Least Square (WLS-MV)													

Abbreviations: BQNWL, Brooks Quality of Nursing Work Life; NQOLS, Nursing Quality of Life Scale; NQWL, Nurses' QWL; ProQOL 5, Professional Quality of Life 5; QoLHSSW, quality of life of healthcare and social services workers; QWL, Quality of Work Life. "✓" = test was done for the corresponding instrument.

PCA (orthogonal rotation named exploratory factor analysis-EFA) was used to extract the factors for the factor analysis. Kaiser's criterion (with eigenvalues greater than 1) was used to assist in determining the number of factors needed.

Work Alienation [19] applied factor analysis to test validity in the measurement of self-estrangement. The analysis of the self-estrangement items, along with those of powerlessness, meaninglessness, and several other work dimensions, showed that the items formed a distinct factor.

The factors extracted from EFA can be confirmed through CFA [35] i.e., CFA is often tested after EFA to reduce the number of items and to determine the predominant components in the proposed measuring instrument. These combination test methods were both used in Nurses' QWL [27] and WRQoL [22].

The third category is model fit (i.e., the extent to which the model used suits the data to reflect the reality to derive accurate information or prediction while minimizing the possible errors or residuals). Different model fit indices were analyzed by at least one instrument: the adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), goodness-of-fit index (GIF), incremental fit index (IFI) and Tucker–Lewis index (TLI). A model fit index should be close to unity when the model is superior (Bentler and Bonett, 1987; Bentler, 1992). Five out of the 13 instruments reported the root mean square error of approximation (RMSEA). The RMSEA should be less than 0.08 for an efficient and effective model [36].

The last category includes two methods. One is cross-cultural validity (i.e., helps in assessing the capacity of an instrument to perform in a context—culture, language or environment—different from the one in which it was initially created), which is used to test an instrument that is translated into different languages. A correlation between different language versions of the instrument was applied in the QWLSI [5] and QWLSI (Quebec) [15]. The other method corresponds to qualitative expert reviews/professionals' opinions. Both the WRQoL [22] and the Nurses' QWL [27] applied it, but in slightly different ways. During the item generation of WRQoL [22], qualitative expert reviews were used to assess the content validity of the measure. A panel of 6 experts considered the original items and removed irrelevant or ambiguous items and then provided advice on the questionnaire design. For the Nurses' QWL [27], the measuring instrument was circulated among 12 subject experts to obtain their opinions about the content mentioned and the content intended. Of the 12 experts, some gave essential feedback and others gave nonessential feedback. Based on the number of respondents who gave essential feedback and the total number of experts, the content

validity ratio (CVR) was measured using the formula proposed by Lawshe [37]. If the CVR is more than 0.56, it indicates that the content of the design instrument is relevant, according to Wilson et al. [38] and Lawshe [37]. For Nurses' QWL [27], the CVR was 0.67.

3.5 | Score interpretation

Table 5 presents how to interpret the scores based on these instruments. Generally, the instruments were designed or developed to measure the quality of work life through a number (score) or a range of numbers (scores). Depending on the features, the scores may be categorized into three groups.

The first group is a "linear" relationship between the score and the quality of work life. The term "linear" is not a strictly statistical definition but means that the score scale may directly represent the quality level. QWL was measured with total scale scores and subscale scores. It has two directions (positive/negative): a higher score with higher QWL or a higher score with lower expectations. Five instruments belong to this group. BQNWL [21] was designed so that the actual range could be compared with a possible score range. WRQoL [22], NQWL [24], and Nurses' QWL [27] indicate that the higher the score is, the higher the QWL, with reversed response scores for negative statements. Work Alienation [19] examined self-estrangement at work; the higher the score is, the lower the expectations and importance along with perceptions of work dimensions.

The second group includes multiple factors. ProQOL 5 [23] and ProQOL-21 [25] measure compassion satisfaction, burnout, and secondary traumatic stress with different levels, such as high, moderate, and low. Derived from the levels of these three dimensions, five statements were combined to measure a worker's situation and work setting. For example, high compassion satisfaction, moderate to low burnout, and secondary traumatic stress represent a person who receives positive reinforcement from his or her work.

The third group is gap, goal, and rank. This score was developed in the QWLSI [5] and its application, the QWLSI in Quebec [15]. Each item of the QWLSI is measured using a visual analog scale-type dial. One side represents the ideal situation, and the other side represents the worst possible situation. Participants use arrows to indicate the location of the current status and the status they would consider satisfactory. Therefore, the gap score is calculated as the mean distance between the current state and the goal state for each item. The goal score represents the mean distance between the desired situation (goal) and the ideal situation, and the rank score is the mean ranking for the items and reflects the priority assigned to the respective area of work life.

4 | DISCUSSION

This work addressed the main features in the development of a self-reported measure of QWL in the specifically targeted population of healthcare and social service workers. Ten original instrument development articles and three adaptation instruments were studied in detail through the four aspects of instrument elaboration: characteristics, development, validation, and score interpretation. Most were developed "to assess the quality of nursing/healthcare workers' lives" and targeted nurses and the working population at large. The aspects of QWL that were considered by the instruments have some common features. The aspects included in most of the instruments were work conditions, job satisfaction, stress at work, relationship/balance, and career development. The survey method was adopted to collect the data. The most frequently used questionnaire design was the 5-point Likert scale. Various validation methods were used, including reporting Cronbach's alpha for overall scale reliability; factor analysis to test the construct validity; different model fit indices to test the model superiority; different language comparisons to test cross-cultural validity; and qualitative expert reviews to assess the content validity.

One of the targets of our review was to recommend instruments for Quebec healthcare and social service workers. In this setting and to help in future applications, we analyzed the features of these instruments. The recommendation criteria for use in this context were based on the specific application for Quebec QoLHSSW (i.e., bilingual English-French), applicable for all healthcare social service workers, widely used, and previously tested and validated. Considering that some instruments were designed and developed many years ago, it is unlikely that we recommend them since methodological standards were different and generally less sophisticated. However, only two instruments were developed before the year 2000 and they scored quite well to COSMIN (i.e., Work alienation and Leiden Quality of Work Life Questionnaire).

The following instruments can be considered appropriate. First, the **NQWL** [24] combined qualitative and quantitative approaches in the instrument development process. A final version of the NQWL questionnaire was produced through an instrument identification pilot and a questionnaire pilot study by focus-group work and expert validity. The instrument considers 6 meta-dimensions, which is the average number of dimensions among all

TABLE 5 Interpretation of the use of instruments available to measure QoLHSSW.

Instruments	Score interpretation and result	Features suited for Quebec QoLHSSW application (strengths/limitations)
Work Alienation	**Score**: the lower the score, the higher the expectation. **Result**: demographic factors and individual work values appeared to interact with the work situation to produce different levels of self-estrangement.	**S**: to examine self-estrangement at work **L**: work alienation concept is the focus
Leiden Quality of Work Life Questionnaire	**Score**: NA **Result**: analysis indicated that the questionnaire measures 11 work characteristics.	**S**: to measure work characteristics and the outcome variable of job satisfaction **L**: based on occupational stress models
QWLSI	**Score**: 1. Global scores (1) *gap: score (−100, 100). Higher scores, poorer QWL.* (2) *goal: score (0, 100). Higher scores, goals that are further from the ideal.* (3) *rank: score (0.12, 2). Higher scores, higher importance of the domain.* 2. The conversion of gap scores to percentiles (1) *>50th percentile: good QWL* (2) *(25th to 49th) percentile: improvement is desired* (3) *<25th percentile: problem* **Result**: given the lack of consensus concerning the solutions, a new definition of QWL was developed.	**S**: a dynamic construct & visual design **L**: statements are eligible to be defined as a goal; the impossibility of utilization if there is no computer
BQNWL	**Score**: higher total scores indicate better work-life quality. **Result**: assessments focus on identifying opportunities for nurses to improve their work and work environment while achieving the organization's goals.	**S**: specific score range to compare **L**: based on sociotechnical systems theory
WRQoL	**Score**: higher percentiles indicate better quality of working life (negative questions had reversed scores). 10–30: Lower QoWL; 40–60: Average QoWL; 70–99: Higher QoWL. **Result**: 23-item, six-factor measurement model of work-related quality of life.	**S**: psychometrically valid and reliable quality of working life scales; contain items theoretically relevant to nonwork issues **L**: concurrent and discriminant validity were not tested; Second version is currently being tested
Walton's QWL model (adaptation)	**Score**: an average over/lower score of 3 would be considered positive/negative or factors of satisfaction/dissatisfaction in the work environment. **Result**: to propose an adaptation that allows, through clarifying questions and a more objective scale of answers, its application to people with a low schooling level, guaranteeing reliable results.	**S**: satisfactory psychometric characteristics, application to people with lower schooling level; high internal consistency compared to the original model **L**: low schooling level
ProQOL 5 (Stamm's ProQOL)	**Score**: different levels of compassion satisfaction, burnout and secondary traumatic stress combine into five statements to measure a worker's situation and work setting. **Result**: a data bank of 1289 cases created from multiple studies; years of data collection and practice-based evidence have provided useful information on the system and individual levels.	**S**: these framework statements are already proven to be available when identifying a worker's risk condition under pressure **L**: addresses difficulties in separating burnout and secondary/vicarious trauma

(Continues)

TABLE 5 (Continued)

Instruments	Score interpretation and result	Features suited for Quebec QoLHSSW application (strengths/limitations)
QWLSI (Quebec)	**Score**: similar to QWLSI. **Result**: information about recruitment and retention factors and quality of work life in a rural emergency department.	**S**: applied from the latest version and added items as research target needed; visual analog scale-type dial designed survey **L**: data collection was difficult, and a larger study will require strategies to improve recruitment, such as a paper alternative
NQWL	**Score**: the higher the score, the higher QWL is, with reversed response scores for negative statements. **Result**: the development of a questionnaire that is valid and reliable for examining the quality of the working life of nurses. Six scales with 33 factors were identified.	**S**: combined qualitative and quantitative approaches in the instrument development **L**: further study is necessary to test the weights and confirm the identified interactor relationships and apply a statistical method to examine the validity of the research framework
ProQOL-21	**Score**: score interpretation was the same as Stamm's ProQOL, but the scoring approach was modified. **Result**: use of the Professional Quality of Life scale's burnout and secondary traumatic stress scales may require caution, while the revised compassion satisfaction and fatigue scales provide robust measurement options for practitioners and researchers.	**S**: robust measurement based on Rasch analysis **L**: further research must be directed to iterating additional items that address the notable gaps and measurement shortfalls for the subscales
Short version of ProQOL	**Score**: to be defined **Result**: Study 1: the Short ProQOL showed an adequate internal structure and invariance across the countries studied. Study 2: the Short ProQOL showed adequate internal structure and reliability and was related to coping with death, self-compassion, and self-care.	**S**: to help facilitate the application of harmonizing measurements and its use for cross-cultural comparisons and occupational health monitoring; compared to the long form of the ProQOL, it solved the reliability problems; the CFA model showed an appropriate factorial structure fit **L**: did not study the content or face validity of the retained items
Nurses' QWL	**Score**: the higher the score, higher the QWL is, with reversed response scores for negative statements. **Result**: The nine factors of the Nurses' QWL measuring instrument are reliable and statistically valid.	**S**: a valid instrument to measure the QWL of nurses, which will help to build a strategic plan to improve the retention rate and attract a talented workforce to hospitals. **L**: data were collected from 474 nurses due to poor responses and time constraints.
NQOLS	**Score**: the higher the score, the higher satisfaction with NQoL. **Result**: The psychometric properties of NQOLS was assessed. NQOLS is a simple, reliable, lean tool for measuring nurses' overall QoL.	**S**: an interesting and easy-to-apply scale, grasping specific dimensions of NQOL, examined its psychometrics characteristics. **L**: derived from a single-country survey of the phenomenon, an international validation and cross-cultural adaptation is required.

Abbreviations: BQNWL, Brooks Quality of Nursing Work Life; NQOLS, Nursing Quality of Life Scale; NQWL, Nurses' QWL; ProQOL 5, Professional Quality of Life 5; QoLHSSW, quality of life of healthcare and social services workers; QWL, Quality of Work Life.

selected instruments, and it generally covers comparable information: organization, work, self-actualization, inter-relationship, self-efficacy, and vocational concepts.

Second, the ProQOL is a widely used instrument in the literature. In our 13 selected articles, there were three instruments: ProQOL 5 [23], ProQOL-21 [25], and a short version of ProQOL [26]. These instruments focus on the combination of compassion satisfaction, burnout and secondary traumatic stress with a specific statement for the results. These framework statements are already proven to be available when identifying a worker's risk condition under pressure. The short version is said to

have a better structure and psychometric properties, but its interpretation is still in development.

Third, the QWLSI [5] has been applied in a pilot study of rural emergency department nurses and physicians in Quebec [15]. Although the pilot had a small sample size ($n = 20$), the original instrument development procedure was tested for content validity, internal consistency, discriminant validity, and sensitivity to change. In particular, with regard to cross-cultural validity, correlation between different language versions is important for Quebec as questionnaires would be designed both in English and French. Another outstanding strength is that it is a dynamic construct and visual design. Generally, the most frequently used instrument is the 5-point Likert scale (e.g., 1 = *very dissatisfied* to 5 = *very satisfied*), while for the QWLSI [5], participants use a circle and a box to indicate their satisfaction by pulling the arrows and choosing between the vivid pictures. It is comparatively intuitive and clear, especially if the survey is conducted on a computer.

Fourth, WRQoL is recommended for application in Quebec. It also contains items theoretically relevant to nonwork issues. Although the concurrent and discriminant validity were not tested, this instrument is based on a theoretical framework, is comparatively easy to interpret and presents high validity.

Considering the criteria used to recommend these four instruments (see above), does not preclude to consider the context in which they may be used. Consequently, researchers in Quebec will also need to consider the content of the instruments (i.e., if it fit with what they intend to measure) and its applicability in their context (e.g., complexity to administer, length to respond, number of items, cost).

The average quality of the studies constituting this review was considered acceptable and allowed a clear description of the process used. Tables 6 and 7 present the quality of the different studies using the COSMIN grid, which allows an evaluation of the quality of the studies according to different criteria (e.g., content validity, consistency, and reliability). Four levels of response are allowed, ranging from "very good" to "inadequate" depending on the criteria assessed. Table 6 provides the proportion of responses for each possible level of response and the different criteria in the grid. On average, 74.08% of the various criteria assessed were rated as "very good," 10.73% were rated as "very good," and 11.02% were rated as "doubtful or undetermined." Only 4.17% of the criteria were rated on average as "inadequate." More details are provided for each instrument in Table 7. Obviously, these rates were based on how much evidence was presented by the original creator(s) when published or posted in

TABLE 6 Analysis of the quality of studies included using the COSMIN grid (%).

Instruments	References	Very good	Adequate	Doubtful/ undetermined	Inadequate
Work Alienation	Mottaz [19]	72.73	5.45	20.00	1.82
Leiden Quality of Work Life Questionnaire	Van der Doef and Maes [20]	83.13	7.23	9.64	–
QWLSI	Martel and Dupuis [5]	69.44	13.89	11.11	5.56
BQNWL	Brooks et al. [21]	66.10	6.78	11.86	15.25
WRQoL	Van Laar et al. [22]	81.48	12.96	5.56	–
Walton's QWL model (adaptation)	Timossi et al. [17]	52.63	13.16	7.89	26.32
ProQOL 5 (Stamm's ProQOL)	Stamm [23]; ProQOL.org	86.84	5.26	7.89	–
QWLSI (Quebec)	Bragard et al. [15]	69.09	5.45	21.82	3.64
NQWL	Hsu [24]	82.14	10.71	7.14	–
ProQOL-21	Heritage et al. [25]	72.15	10.13	17.72	–
Short version of ProQOL	Galiana et al. [26]	72.50	21.25	6.25	–
Nurses QWL	Nanjundeswaraswamy [27]	69.57	17.39	13.04	–
NQOLS	Sili et al. [16]	3.28	85.25	9.84	1.64

Abbreviations: BQNWL, Brooks Quality of Nursing Work Life; NQOLS, Nursing Quality of Life Scale; NQWL, Nurses' QWL; ProQOL 5, Professional Quality of Life 5; QoLHSSW, quality of life of healthcare and social services workers; QWL, Quality of Work Life.

TABLE 7 COSMIN risk of bias assessment.

Instruments available to measure QoLHSSW	Work Alienation	Leiden Quality of Work Life Questionnaire	QWLSI	BQNWL	WRQoL	Walton's QWL model (adaptation)	ProQOL 5 (Stamm's ProQOL)	QWLSI (Québec)	NQWL	ProQOL-21	Short ProQOL	Nurses QWL	NQOLS
Overall COSMIN Score	Very good	Very good	Adequate	Adequate	Adequate	Doubtful	Very good	Adequate	Very good	Very good	Very good	Adequate	Very good
PROM development	Very good	Very good	Very good	Very good	Very good	Very good	Very good	Very good	Very good	Very good	Very good	Very good	Very good
Content validity	Adequate	Very good	Doubtful	Doubtful	Adequate	Adequate	Adequate	Adequate	Adequate	Adequate	Adequate	Adequate	Doubtful
Structural validity	Adequate	Adequate	Doubtful	Inadequate	Adequate	Doubtful	Adequate	Adequate	Adequate	Adequate	Very good	Adequate	Adequate
Internal consistency	Doubtful	Very good	Inadequate	Adequate	Adequate	Doubtful	Adequate	Inadequate	Adequate	Very good	Adequate	Doubtful	Very good
Cross cultural validity/ Measurement invariance	Doubtful	Adequate	Inadequate	Doubtful	–	–	Doubtful	Inadequate	–	Adequate	Adequate	–	–
Reliability	Adequate	Very good	Doubtful	Adequate	Adequate	–	Adequate	Adequate	Adequate	Adequate	Very good	Doubtful	Doubtful
Measurement error	Very good	Adequate	Doubtful	Adequate	Adequate	–	Doubtful	Adequate	Doubtful	Adequate	Very good	Adequate	Adequate
Criterion Validity	Doubtful	Very good	Adequate	Doubtful	Adequate	Adequate	–	Inadequate	Very good	Adequate	Very good	Adequate	Adequate
Hypotheses testing for construct validity	–	Very good	Doubtful	Adequate	Doubtful	–	Adequate	Adequate	Very good	Very good	Adequate	Adequate	Adequate
Responsiveness	–	Adequate	Doubtful	Very good	Adequate	Doubtful	Adequate	Doubtful	Adequate	Very good	Adequate	Adequate	Very good

Note: "–" means not assessed based on COSMIN recommendations.

Abbreviations: BQNWL, Brooks Quality of Nursing Work Life; NQOLS, Nursing Quality of Life Scale; NQWL, Nurses' QWL; ProQOL 5, Professional Quality of Life 5; QoLHSSW, quality of life of healthcare and social services workers; QWL, Quality of Work Life.

official websites. For a given instrument, how well it was described (which could be limited by word counts of journals, for example), or how much was accessible to the public might limit the assessed percentage as well.

As mentioned above, there is evidence limitation as we applied the COSMIN grid, especially for the assessment of content validity which is a major point in the development process of instruments. Based on the accessible contents, the content validity (9 items) varies on their relevance, comprehensiveness, and comprehensibility. For the assessment of design and data analysis, most of the instruments were rated at the "very good" level, such as "design requirements" (items 1 and 2), "evaluate in an appropriate number of patients or professionals" (item 4), "use an appropriate approach to analyse the data" (item 8), and "involve at least two researchers in the analysis" (item 9); while for the assessment of interviewer recorded (items 5, 6, and 7), such as "use skilled interviewers," "interview guide," "record meetings," no instrument reported all three. The most discussable was about the target discipline or population, i.e., "include professionals from all relevant disciplines" (item 3). For example, two instruments, Leiden Quality of Work Life Questionnaire and QWLSI, were originally built for the working population. Statistically speaking, all relevant disciplines would be considered. Leiden Quality of Work Life Questionnaire was thus applied to a sample including blue-collar and white-collar professionals. While other instruments, NQWL and short ProQOL for example, targeted hospital nurses, and healthcare professionals. From the view of this systematic review, the purpose was to recommend instruments that suit HSSWs. These instrument measures thus all matter to this target population.

Another point relates on how to interpret the results of the various tests reported in Table 4 with the methodological quality of the studies conducted. However, this is beyond the scope of this review as well as the COSMIN grid that simply consider if tests were conducted appropriately.

5 | CONCLUSION

This systematic review reported 13 instruments that can be used to measure quality of life at work for HSSW. This work provides a better understanding of the characteristics of these instruments, their development and validation methods, and a comparison of the dimensions used. In the specific context of Quebec, these instruments appear better suited for

HSSW, namely, NQWL, the short version of ProQOL, QWLSI (Quebec), and WRQoL.

CONFLICT OF INTEREST STATEMENT
The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT
All data are publicly available. Data will be available to the corresponding author upon reasonable request.

ETHICS STATEMENT
Not applicable.

INFORMED CONSENT
Not applicable.

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REFERENCES
1. McGill Nursing Collaborative. Global Shortage of Nurses. 2019. Retrieved from: https://www.mcgill.ca/nursing/files/nursing/nurse_shortages.pdf
2. Wyonch R. Help Wanted: How to Address Labour Shortages in Healthcare and Improve Patient Access. Toronto: C.D. Howe Institute: Commentary 590. 2021. Retrieved from: www.cdhowe.org
3. Bolweg J. Job design and industrial democracy (International series on the quality of working life). Vol. 3. Leiden: Nijhoff Social Sciences Division; 1976.
4. Mirkamali SM, Thani FN. A study on the quality of work life (QWL) among faculty members of University of Tehran (UT) and Sharif University of Technology (SUT). Procedia Soc Behav Sci. 2011;29:179–87. https://doi.org/10.1016/j.sbspro.2011.11.223

5. Martel J-P, Dupuis G. Quality of work life: theoretical and methodological problems, and presentation of a new model and measuring instrument. Soc Indic Res. 2006;77:333–68. https://doi.org/10.1007/s11205-004-5368-4

6. Pennisi PRC, Alves NC, Michelin PS, Medeiros-Souza L, Herval ÁM, Paranhos LR. The quality of life of family health professionals: a systematic review and meta-synthesis. Rev Bras Enferm. 2020;73(5):e20190645. https://doi.org/10.1590/0034-7167-2019-0645

7. Vasiliki K, Dafni K, Panayota S, Chrysoula L. Factors that influence nurses' work-related quality of life: systematic literature review. Nurs Care Res. 2020;58:226–41.

8. Khatatbeh H, Pakai A, Al-Dwaikat T, Onchonga D, Amer F, Prémusz V, et al. Nurses' burnout and quality of life: a systematic review and critical analysis of measures used. Nurs Open. 2022;9(3):1564–74. https://doi.org/10.1002/nop2.936

9. Aromataris E, Munn Z. Chapter 1: JBI Systematic Reviews. In: Aromataris E, Munn Z, editors. JBI Manual for Evidence Synthesis. JBI; 2020. Retrieved from: https://synthesismanual.jbi.global; https://doi.org/10.46658/JBIMES-20-02

10. Moher D, Liberati A, Tetzlaff J, Altman D. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. BMJ. 2009;339:b2535. https://doi.org/10.1136/bmj.b2535

11. Page M, McKenzie J, Bossuyt P, Boutron I, Hoffmann T, Mulrow C, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71. https://doi.org/10.1136/bmj.n71

12. McGowan J, Sampson M, Salzwedel DM, Cogo E, Foerster V, Lefebvre C. PRESS Peer Review of Electronic Search Strategies: 2015 guideline statement. JCE. 2016;75:40–6. https://doi.org/10.1016/j.jclinepi.2016.01.021; http://www.jclinepi.com/article/S0895-4356(16)00058-5/pdf

13. Mokkink L, Prinsen C, Patrick D, Alonso J, Bouter L, Terwee C, et al. COSMIN study design checklist for patient-reported outcome measurement instruments. 2019. Retrieved from: https://www.cosmin.nl/wp-content/uploads/COSMIN-study-designing-checklist_final.pdf

14. Feinstein AR, Cicchetti DV. High agreement but low kappa: I. The problems of two paradoxes. JCE. 1990;43(6):543–9. https://doi.org/10.1016/0895-4356(90)90158-l

15. Bragard I, Fleet R, Etienne A-M, Archambault P, Légaré F, Chauny J-M, et al. Quality of work life of rural emergency department nurses and physicians: a pilot study. BMC Res Notes. 2015;8:116. https://doi.org/10.1186/s13104-015-1075-2

16. Sili A, Maria M, Fiorini J, Zaghini F, Barbarnelli C. Nurses' quality of life scale: validation and psychometric properties. Eval Health Prof. 2022;45(3):249–59. https://doi.org/10.1177/01632787221075660

17. Timossi L, Pedroso B, Francisco A, Pilatti L. Evaluation of quality of work life an adaptation from the Walton QWL model. *Xin International Conference on Industrial Engineering and operations management*. Rio de Janeiro, Brazil; 2008.

18. Walton R. Criteria for quality of work life. In: Davis Le, editor. Quality of working life: probems, projects and the state of the art. New York: Macmillian; 1975. p. 91–104.

19. Mottaz CJ. Some determinants of work alienation. Sociol Q. 1981;22(4):515–29. https://doi.org/10.1111/j.1533-8525.1981.tb00678.x

20. Van der Doef M, Maes S. The Leiden quality of work questionnaire: its construction, factor structure, and psychometric qualities. Psychol Rep. 1999;85:954–62. https://doi.org/10.2466/pr0.1999.85.3.954

21. Brooks BA, Storfjell J, Omoike O, Ohlson S, Stemler I, Shaver J, et al. Assessing the quality of nursing work life. Nurs Adm Q. 2007;31:152–7. https://doi.org/10.1097/01.NAQ.0000264864.94958.8e

22. Van Laar D, Edwards JA, Easton S. The Work-related Quality Of Life scale for healthcare workers. J Adv Nurs. 2007;60(3):325–33. https://doi.org/10.1111/j.1365-2648.2007.04409.x

23. Stamm B. The Concise ProQOL Manual. 2nd ed. Pocatello: ID: ProQOL.org; 2010.

24. Hsu M-Y. A quality of working life survey instrument for hospital nurses. J Nurs Res. 2016;24(1):87–99. https://doi.org/10.1097/jnr.0000000000000098

25. Heritage B, Rees CS, Hegney DG. The ProQOL-21: a revised version of the Professional Quality of Life (ProQOL) scale based on Rasch analysis. PLoS One. 2018;13(2):e0193478. https://doi.org/10.1371/journal.pone.0193478

26. Galiana L, Oliver A, Arena F, De Simone G, Tomás JM, Vidal-Blanco G, et al. Development and validation of the Short Professional Quality of Life Scale based on versions IV and V of the Professional Quality of Life Scale. Health Qual Life Outcomes. 2020;18(364):364. https://doi.org/10.1186/s12955-020-01618-3

27. Nanjundeswaraswamy, T. Nurses quality of work life: scale development and validation. JEAS. 2021;38:371–94. https://doi.org/10.1108/JEAS-09-2020-0154

28. Dupuis G, Martel J-P, Voirol C, Bibeau L, Hébert-Bonneville N. Rapport sur la qualité de vie au travail—Bilan des connaissances: L'inventaire systémique de qualité de vie au travail (ISQVT©). Rapport du Centre de liaison sur l'intervention et la prévention psychosociales - CLIPP. 2010.

29. Sili A, Biagioli V, Caruso R, Zaghini F. [Measuring Nurses' Quality of Life: adjustment of Satisfaction Profile (SAT-P)]. Prof Inferm. 2018;71(3):160–72. https://doi.org/10.7429/pi.2018.713160

30. Majani G, Callegari S, Pierobon A, Giardini A, Viola L, Baiardini I, et al. A new instrument in quality-of-life assessment. Int J Ment Health. 1999;28(3):77–82. https://doi.org/10.1080/00207411.1999.11449463

31. Bagozzi RP, Phillips LW. Representing and testing organizational theories: a holistic construal. Adm Sci Q. 1982;27(6):459–89. https://doi.org/10.2307/2392322

32. Nunnally J. Psychometric Theory. 2nd ed. New York, NY: Mc Graw Hill; 1978.

33. Waltz C, Strickland O, Lenz E. Measurement in nursing research. 2nd ed. Philadelphia, PA: Davis Company; 1991.

34. Field A. Discovering statistics using SPSS for Windows. London, England: Sage; 2002.

35. Özpehlivan M, Acar AZ. Development and validation of a multidimensional job satisfaction scale in different cultures. Cogent Soc Sci. 2016;2(No.1):1237003. https://doi.org/10.1080/23311886.2016.1237003

36. Browne M, Cudeck R. Alternative ways of assessing model fit. In: Bollen K, Scott Long J, editors. Testing structural equation models. Newbury Park, CA: Sage; 1993. p. 1–9.

37. Lawshe CH. A quantitative approach to content validity. Pers Psychol. 1975;28(4):563–75. https://doi.org/10.1111/j.1744-6570.1975.tb01393.x

38. Wilson FR, Pan W, Schumsky DA. Recalculation of the critical values for Lawshe's content validity ratio. Meas Eval Couns Dev. 2012;45(3):197–210. https://doi.org/10.1177/0748175612440286

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.