Using the Accreditation Canada Quality Worklife revalidated Model to predict healthy work environments

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Abstract

Background The relevance of improving quality worklife in implementing healthy workplaces successfully has been demonstrated by both the Canadian Health Services Research Foundation and Accreditation Canada. In partnership with Accreditation Canada, this article focuses on two issues: the relationships between quality worklife and healthy work environment, and the prediction of healthy work environments using Accreditation Canada's revalidated Quality Worklife Model.

Methods Using the 2008 and 2010 de-identified worklife data gathered among staff in organisations participating in the Qmentum accreditation program from all Canadian provinces (9,578 French-speaking and 16,398 English-speaking respondents), this article attempts to demonstrate how the Quality Worklife revalidated Model predicts healthy work environments. The revalidation of the Quality Worklife Model was done using first principal component factor analysis (FA) with direct oblimin rotations (using SPSS 16.0), followed by a confirmatory factor analyses (using LISREL 8.80) on the French and the English samples. Furthermore, multivariate analyses of variance were conducted in order to detect mean differences between the different work environment groups linked to the psychological and physical consequences.

Results The results suggest that the healthy work environment group is associated with high work adjustment, good physical and mental health as well as low absenteeism and health-related presenteeism. On the other hand, the results suggest that the poor work environment group and to a less significant extent the subthreshold work environment is associated with low work adjustment, poor physical and mental health and high absenteeism and health-related presenteeism.

Conclusion The proposed model suggests that by categorising the Quality Worklife scores in three work environment groups based on a sample set of 11 quality worklife items, it becomes possible to predict employees' risk of having poor work adjustment, poor mental and physical health, and poor work-related behaviours.

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Introduction

Promoting healthy work environments is one of the five standards developed by the International Network of Health Promoting Hospitals and Health Services (HPH) (1). HPH describes healthy work environments as environments that support the development of a healthy and safe workplace and health promotion activities for staff as well (1). A healthy work environment is generally associated with lower absenteeism & turnover (2), better employee health & wellbeing (3) (lower fatigue and stress, higher satisfaction), and higher productivity (4). Recently, a widespread tendency consisting of linking quality worklife to healthy workplace has evolved without being strongly supported by evidence.

Quality worklife (QWL) and the health of the work environment are recognized as critical factors to be respected and effectively addressed in order to improve quality in healthcare services (4). This has been demonstrated in the past decade through consistent literature supporting the need to improve both the quality of worklife and the health of the healthcare environment.

In its 'Healthy Workplace Action Strategy for Success and Sustainability in Canada's Healthcare System', the Canadian Council on Health Services Accreditation states the relevance of improving quality worklife in implementing healthy workplaces successfully (4). For the Canadian Health Services Research Foundation

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(5), continuing to make quality worklife a strategic priority is leading the way to a healthy workplace.

The Quality Worklife-Quality Healthcare Collaborative (QWQHC), a pan-Canadian initiative that brings together a coalition of 11 national health partners to develop a strategy for translating evidence-based approaches to building and sustaining healthy work environments, describes QWL as 'evidence-informed processes and activities that are perceived to positively impact Quality of Worklife' (4). This is supported by the Accreditation Canada report exploring the connection between patient safety and quality of worklife (6) where quality worklife is designated to 'encompass a wide range of factors'. Contributing factors include job design, occupational health and safety, learning and development opportunities, supportive supervision, job control, schedules, and leadership commitment to employees. At the individual level, quality of worklife affects job satisfaction, worklife balance, safety, and individual health and wellness. At the organisational level, it affects absenteeism, grievances, employee commitment, and retention.

The Canadian Healthy Workplace Council states that promoting a comprehensive and integrated approach to workplace health in order to improve and sustain the health of Canadian organisations, their work environments and their employees should be a priority for leading Canadian organisations (7). For the QWQHC 'a fundamental way to better healthcare is through healthier healthcare workplaces. It is unacceptable to fund, govern, manage, work in or receive care in an unhealthy healthcare workplace'.

By using the 2008 and 2010 de-identified worklife data gathered among staff in organisations participating in the Qmentum accreditation programme from most Canadian provinces, this article attempts to demonstrate how the Quality Worklife revalidated Model predicts healthy work environments. The article focuses on two issues: the relationships between quality worklife and healthy work environment, and the prediction of healthy work environments using Accreditation Canada's revalidated Quality Worklife Model.

Methods

The Worklife Pulse
Accreditation Canada in collaboration with the Ontario Hospital Association developed the Worklife Pulse survey in 2006. The Worklife Pulse emerged from a revision of the Healthy Employee Survey, which was developed by the Workplace Health Research Unit of Brock University and the Ontario Hospital Association (8;9). The Worklife Pulse was also guided by the results of a National Consensus Meeting on Worklife Indicators, which was hosted by Accreditation Canada in Ottawa.

This 21-item tool is designed to provide a snapshot of the work environment (11 items: organisational communication, work area communication, supervision, job control, role clarity, decision making involvement, job demand, trust, learning environment, safe environment, work-life balance) as well as the individual outcomes (psychological and physical health) in healthcare organisations (10 items: job stress, overall health, physical health, mental health, job satisfaction, absenteeism, health-related presenteeism, work quality, organisation satisfaction and patient safety). All items are self-reported on Likert-type scales. The French and the English versions of the Worklife Pulse have been validated (10). In 2012, Accreditation Canada has updated and strengthened the original Worklife Pulse Tool based on a comprehensive review of the tool.

In addition to the set of standard indicators selected for QWL database collection and benchmarking, the QWQHC also recommends using the Worklife Pulse (WLP) Survey measure (4), which is grounded in the Accreditation Canada healthy workplace framework. The WLP survey (described in the methodology) which focuses on staff perceptions of quality of worklife, provides the organisations with a "snapshot" of key components of worklife quality (work environment, individual quality of work life, and organisational performance). The WLP also helps in targeting areas needing closer review by identifying areas that are exemplary as well as opportunities for improvement related to quality worklife.

Thus, the present revalidation of the Quality Worklife Model will develop a model, which will be useful not only as a quick assessment tool as it is currently used to but also as a predictive tool.

Participants
This correlational study was conducted using a sample of Accreditation Canada data collected between 2008 and 2010 with respondents from all Canadian provinces (Table 1).

Respondents from both samples occupied a variety of positions (e.g., nurses, doctors, Allied Health, technicians, managers, senior executives) within healthcare organisations in Canada. They were surveyed by their organisation as part of the Qmentum accreditation process. All participants completed the 21 Pulse survey items as well as a number of socio-demographic questions.

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Table 1 Sample characteristics

	English-speaking sample		French-speaking sample	
Sample size	N = 16,398		N = 9,578	
Gender	Female:	87.4%	Female:	80.5%
	Male:	12.6%	Male:	19.5%
Age	Younger than 30:	15.8%	Younger than 30:	16.8%
	Between 31 and 40:	23.3%	Between 31 and 40:	21.1%
	Between 41 and 50:	33.8%	Between 41 and 50:	34.2%
	Between 51 and 60:	22.5%	Between 51 and 60:	25.1%
	Older than 60:	4.7%	Older than 60:	2.8%
Years of experience	Less than 1 year:	12.6%	Less than 1 year:	8.8%
	Between 1 and 2 years:	13.8%	Between 1 and 2 years:	10.1%
	Between 3 and 5 years:	22.8%	Between 3 and 5 years:	15.2%
	Between 6 and 10 years:	17.8%	Between 6 and 10 years:	17.7%
	Between 11 and 19 years:	16.3%	Between 11 and 19 years:	18.3%
	20 years and more:	16.8%	20 years and more:	29.9%
Work schedule	Full-time:	63.1%	Full-time:	66.6%
	Part-time:	36.9%	Part-time:	33.4%
Province	New Brunswick:	9.6%	New Brunswick:	0.4%
	Newfoundland and Labrador:	0.4%	Quebec:	96.9%,
	Nova Scotia:	10.7%	Ontario:	2.7%
	Quebec:	0.8%		
	Ontario:	58.4%		
	Manitoba:	3.5%		
	Saskatchewan:	1.9%		
	Alberta:	13.2%		
	British Colombia:	1.5%		

Data analysis

The revalidation of the Quality Worklife Model was done as follows. A first principal component factor analysis (FA) with direct oblimin rotations was conducted using SPSS 16.0 followed by a confirmatory factor analyses using LISREL 8.80 on the French and the English samples. Furthermore, multivariate analyses of variance using SPSS 16.0 were conducted in order to detect mean differences between the different work environment groups linked to the psychological and physical consequences.

Results

Psychosocial work environment variable

A principal component FA with direct oblimin rotations was conducted on the 11 items of the Worklife Pulse survey pertaining to workers' psychosocial work environment. This was done with both the French and the English samples. The aim of these analyses was to deter-

mine if the 11 items designated to be describing the work environment were indeed forming one distinct variable. Results with both samples confirmed this hypothesis (Table 2).

To further confirm that these 11 items of the Worklife Pulse survey form one distinct factor, a confirmatory factor analyses using Lisrel 8.80 was conducted (Table 3). The covariance matrixes were used for these analyses as suggested by Kline (11). The one-factor hypothesis was confirmed with both the French and the English samples.

Once the one-factor structure of the 11 items describing the psychosocial work environment was confirmed, the average of the items was calculated for both samples in order to have one score. The mean for the French sample was 3.54 (SD = .76) while the mean for the English sample was 3.57 (SD = .84). Both had fairly normal distributions.

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Table 2 Principal component factor analysis

	English-speaking sample	French-speaking sample
Psychosocial work environment (11 items)	KMO = .950	KMO = .929
	Factor 1: Eigenvalue = 6.15 Variance explained = 55.93%	**Factor 1:** Eigenvalue = 5.65 Variance explained = 51.32%
Psychological and physical consequences (10 items)	KMO = .797	KMO = .784
Factor 1 (5 items): perceived job stress, job satisfaction, perceived work-quality, organisational satisfaction and patient safety	**Factor 1:** Eigenvalue = 3.54 Variance explained = 35.43%	**Factor 1:** Eigenvalue = 3.45 Variance explained = 34.54%
Factor 2 (3 items): self-rated overall, mental and physical health	**Factor 2:** Eigenvalue = 1.69 Variance explained = 16.91%	**Factor 2:** Eigenvalue = 1.68 Variance explained = 11.56%
Factor 3 (2 items): absenteeism and health-related presenteeism	**Factor 3:** Eigenvalue = 1.12 Variance explained = 11.23%	**Factor 3:** Eigenvalue = 1.16 Variance explained = 11.56%

Psychological and physical consequences

In order to determine the structure of the 10 consequences, items from the Worklife Pulse Tool, a principal component FA with direct oblimin rotations, was first conducted on both the French and the English samples. The results can be found in Table 2. The results from both the French and the English samples suggested three distinct factors. The first factor was composed of the following items: perceived job stress, job satisfaction, perceived work-quality, organisational satisfaction and patient safety. The second factor was composed of the three self-rated health items. Finally, the third factor was composed of the absenteeism and health-related presenteeism items.

Similarly to what was done with the psychosocial work environment items, confirmatory factorial analyses were conducted with both samples in order to confirm the three-factor structure found with the principal component analyses. Both the results from the French sample and the English sample supported the three-factor structure of the items (Table 3).

In order to create a score for each factor, the original scores from the perceived job stress and the job satisfaction items had to be reversed-coded. This was done in order to create a meaningful positively oriented factor. Furthermore, because different rating scales were used for the items, the original scores were standardized (centered at zero) in order to be able to compute averages. All resulted scores had good variance and were relatively

normally distributed. Tables 3 and 4 show the inter-correlations between the three factors as well as their correlations with the psychosocial work environment variable for the French and the English sample, respectively.

Proposed diagnostic model

In order to develop a diagnostic model, the psychosocial work environment variable was used to create three groups: *Healthy work environment group (HWE), sub-threshold work environment group (SWE)*, and *Poor*

Table 3 Confirmatory factor analysis

	English-speaking sample	French-speaking sample
Psychosocial work environment	χ^2 (df = 44, N = 16398) = 8030.63, p = 0.0001, RMSEA = 0.11 (0.10; 0.11), NFI = 0.97, NNFI = 0.96, CFI = 0.97, GFI = 0.92, SRMR = 0.041	χ^2 (df = 44, N = 9578) = 4588.68, p = 0.0001, RMSEA = 0.10 (0.10; 0.11), NFI = 0.96, NNFI = 0.95, CFI = 0.96, GFI = 0.92, SRMR = 0.046
Psychological and physical consequences	χ^2 (df = 32, N = 16398) = 1904.02, p = 0.0001, RMSEA = 0.060 (0.057; 0.062), NFI = 0.97 NNFI = 0.96 CFI = 0.97 GFI = 0.98 SRMR = 0.041	χ^2 (df = 32, N = 9578) = 1029.73, p = 0.0001, RMSEA = 0.057 (0.054; 0.060), NFI = 0.97, NNFI = 0.96, CFI = 0.97, GFI = 0.98, SRMR = 0.043

Table 4 Correlations between the factors from the WorkLife Pulse survey, French sample

	Psychosocial Work environment	Csq. Factor 1	Csq. Factor 2
Psychosocial Work environment	1.00		
Csq. Factor 1	.73***	1.00	
Csq. Factor 2	-.25***	-.33***	1.00
Csq. Factor 3	-.21***	-.24***	.29***

Note: *** p < .001

Table 5 Correlations between the factors from the WorkLife Pulse survey, English sample

	Psychosocial Work environment	Csq. Factor 1	Csq. Factor 2
Psychosocial Work environment	1.00		
Csq. Factor 1	.69***	1.00	
Csq. Factor 2	-.25***	-.33***	1.00
Csq. Factor 3	-.23***	-.27***	.30***

Note: *** p < .001

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work environment group (PWE). It was decided that scores below 2.5 on the psychosocial work environment variable would be assigned to the *poor group,* scores between 2.5 and 3.5 would be assigned to the subthreshold group, and finally scores superior to 3.5 would be assigned to the *healthy group* (see Table 6 for groups distribution).

Multivariate analyses of variance were conducted on both the French and the English samples in order to detect mean differences between the three groups on the three consequence factors. For both the French and the English samples, the multivariate test, as well as the three univariate tests, were all significant, thus indicating significant mean differences (see Figure 1 and Table 7 & 8).

For the English sample, the results on each factor were very similar to those found with the French sample.

Table 6 Distribution within the three work environment groups.

	Psychosocial Work environment	Csq. Factor 1	Csq. Factor 2
	% of total sample	English-speaking sample	French-speaking sample
Healthy work environment group	60%	N = 9 343	N = 5 458
Subthreshold work environment group	30%	N = 5 190	N = 3 201
Poor work environment group	10%	N = 1 865	N = 919

Table 7 Mean differences between the three work environment groups and standardised averages; French-speaking sample

	Univariate tests	Healthy work environment group Mean (SD)	Subthreshold work environment group Mean (SD)	Poor work environment group Mean (SD)
Factor 1	$F(2,9575) = 3454.48$, $p = .0001$	0.36 (.70)	-0.34 (.52) a	-0.98 (.76) ab
Factor 2	$F(2,9575) = 216.05$, $p = .0001$	-0.16 (.85)	0.20 (.86) a	0.25 (1.02) a
Factor 3	$F(2,9575) = 113.29$, $p = .0001$	-0.13 (.77)	0.13 (.84) a	0.31 (.96) ab

a denotes significantly different than healthy work environment group

b denotes significantly different than subthreshold work environment group

c denotes significantly different than poor work environment group

Table 8 Mean differences between the three work environment groups and standardised averages; English-speaking sample

	Univariate tests	Healthy work environment group Mean (SD)	Subthreshold work environment group Mean (SD)	Poor work environment group Mean (SD)
Factor 1	$F(2,16395) = 1597.76$, $p = .0001$	0.36 (.52)	-0.33 (.52) a	-0.88 (.78) ab
Factor 2	$F(2,16395) = 400.80$, $p = .0001$	-0.17 (.83)	0.19 (.87) a	0.30 (1.05) ab
Factor 3	$F(2,16395) = 344.42$, $p = .0001$	-0.14 (.76)	0.14 (.84) a	0.30 (.93) ab

a denotes significantly different than healthy work environment group

b denotes significantly different than subthreshold work environment group

c denotes significantly different than poor work environment group

These results suggest that the *HWE* group is associated with high work adjustment (Factor 1), good physical and mental health (Factor 2) as well as low absenteeism and health-related presenteeism (Factor 3). On the other hand, the results suggest that the *PWE* group, and to a less significant extent the *SWE*, is associated with low work adjustment (Factor 1), poor physical and mental health (Factor 2) and high absenteeism and health-related presenteeism (Factor 3).

Discussion

The results of the present study suggest that the measurement structure of the Worklife Pulse survey do not differ between the two samples (i.e., English and French). Both the results of the principal component analysis as well as the results of the confirmatory factorial analysis suggest the same factor structure. Specifically, one psychosocial work environment dimension and three distinct psychological and physical consequence dimensions. This further supports the validation results reported by Lavigne and colleagues (10). In addition, the use of the Pulse items in groups of items versus single items provides added value to the tool.

The proposed model suggests that by categorising the Worklife Pulse scores in three work environment groups, based on a sample set of 11 worklife quality items, it becomes possible to predict employees' risk of having poor work adjustment, poor mental and physical health, and poor work-related behaviours (i.e., absenteeism and presenteeism). This model is a useful tool in order to determine the risks associated with specific work teams or departments within an organisation. Specifically, if most employees within a work team fall into the poor work environment group, action plans would need to be

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Figure 1 Relationships between work environments groups and psychosocial factors.
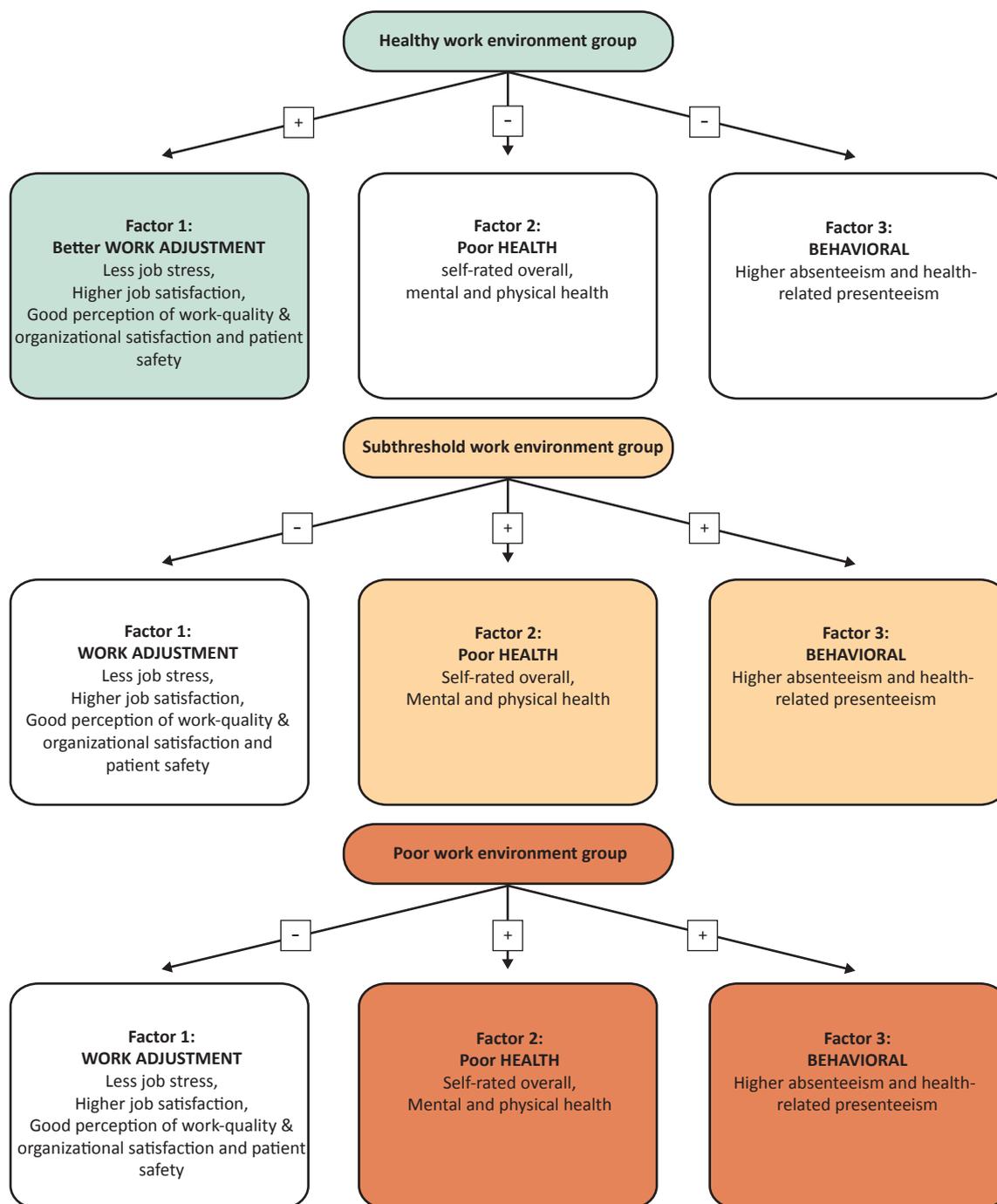
taken in order to prevent poor work adjustment, poor health and poor behavioural patterns.

This article fits with the recommendations for *'healthy workplaces for healthy workers in Canada'* highlighted by Shamian and El-Jardali (12). In their paper that provided a progress update on knowledge transfer and up-take in policy and practice as well as the next steps for the healthy workplace agenda in Canada, the authors stated that the next steps for research should also be to help the healthy workplace agenda achieve its objectives to ascertain that healthcare workers are experiencing better working conditions. This is supported by the Quality Worklife-Quality Healthcare Collaborative which agrees

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that 'every single person working in a healthcare setting is a vital contributor to a healthy and safe work environment' (13).

The organisational and individual benefits of a healthy workplace are many; including reduced health care costs, improved quality of care and organisational performance, and increased employee attraction and retention as well as employee health and wellbeing. Although this has been demonstrated in numerous studies (14), improving practice environment for healthcare workers continues to be one of the major themes, which are priority areas for research funding and policy development by numerous organisations throughout Canada (15).

Given the relevance of the matter, the American Association of Critical Care Nurses (AACN) has identified six standards to maintain a healthy work environment: a) skilled communication, b) true collaboration, c), effective decision making, d) meaningful recognition, e) appropriate staffing, and f) authentic leadership (16). The AACN states that factors that encourage healthy workplace practices should be encouraged through organisational culture. Communication in the workplace should be presented in a professional manner, parties should engage in active listening and be respectful of the perspectives of others, and information should be communicated to the appropriate person with sufficient consequential data (16).

Furthermore, there should be a sense of true collaboration within the work environment where interdisciplinary teams work within a culture of mutual respect and teamwork (16). Although staff members are encouraged to engage in collaborative practice, they should remain autonomous and supported by management (17). Decisions that are made in the organisation should be based on data analysis of causes and priorities with identified success measures being monitored (14). Factors that focus on staff members are essential to maintain healthy work environments. The needs of staff members should be attended to and staff should be allowed to make themselves a priority facilitating meaningful recognition (14). One example of this is to support staff members' attempts to develop professionally through education and performance enhancing activities (17). Staff should also be supported in practicing to their full scope guided by their professional standards and acting within their ethical standards (18).

The final element contributing to healthy work environments is authentic leadership. Management should be in a position where they are both engaged and involved with their staff members in order to effectively resolve problems that arise in the work environment (13).

Methodological considerations

The brevity of the original 21-item Worklife Pulse has the advantage of offering quick and general assessments of a working environment. However, the brevity of the Worklife Pulse survey is also its main limitation as a prediction model. Each dimension of the Worklife Pulse is assessed with a single item and may limit the predictive power of the survey when taken individually. In addition, in the Quality of Worklife Model (14) the quality of the worklife items are grouped in order to predict two groups of consequences. It offers interesting directions for further research in terms of statistical validation enabling a diagnostic measure of the quality worklife.

Dividing workers' scores into these three groups offers many advantages. First, because the present samples are very large and representative of the Canadian healthcare workers population, the relative percentages of respondents in the three groups can serve as norms for future research. Specifically, if one healthcare centre has 30% of its employees in the problematic work environment group, it can be readily clear that improvements are needed. Furthermore, we can now explore the vulnerability of the three groups to different psychological and physical consequences and thus better understand the pervasive influence of a poor psychosocial work environment.

Generalisability

A significant element of the QWQHC initiative has been to develop a mechanism for monitoring the quality of work life across Canada over time, using a common set of QWL performance indicators (4). This common measure is actually used by several healthcare organisations on an annual basis as part of their quality-improvement programmes to enable them to benchmark by tracking their own progress and comparing their results with those of similar organisations across the country (4). Highlighting the fact that there is little consistency in measures assessing quality worklife, which make it difficult for organisations to benchmark their progress, Laschinger (19) describes this innovative initiative as a major improvement.

The QWQHC approach not only allows comparisons of work-life quality in Canada, it is also used as a national report card on healthy work environments (19). As defined by both the QWQHC and Health Canada (20), a healthy work environment is 'a work setting that takes a strategic and comprehensive approach to providing the physical, cultural, psychological and work conditions that maximize the health and wellbeing of providers, improves the quality of care and optimises organisational performance'.

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Conclusion

By using the Accreditation Canada Quality Worklife re-validated Model, this article has demonstrated how the Pulse survey measures predict healthy work environments. Healthcare organisations can use the Worklife Pulse to paint not only the portrait of their worklife quality but also to predict the type of work adjustment, behavioural patterns, as well as the quality of workplace health their employees are experiencing.

Acnowledgements

Contribution Details

CS, ML-T, and GL designed the study, CS, GL, ML-T, AH, JM and BM performed the research, GL, AH and JM collected the data, CS and GL analysed the data, CS wrote the paper, and CS, GL, ML-T, JM, AH and BM edited the paper.

Competing Interests: None declared

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