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Quality of work life in doctors working with cancer patients

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Background Although studies have shown that medical residents experience poor psychological health and poor organizational conditions, their quality of work life (QWL) had not been measured. A new tool, the Quality of Work Life Systemic Inventory (QWLSI), proposes to fill the gap in the definition and assessment of this concept.

Aims To confirm the convergent validity of the QWLSI, analyse Belgian medical residents' QWL with the QWLSI and discuss an intervention methodology based on the analysis of the QWLSI.

Methods One hundred and thirteen medical residents participated between 2002 and 2006. They completed the QWLSI, the Maslach Burnout Inventory and the Job Stress Survey to confirm the correspondence between these three tools.

Results Residents' low QWL predicted high emotional exhaustion ($\beta = 0.282$; $P < 0.01$) and job stress ($\beta = 0.370$; $P < 0.001$) levels, confirming the convergent validity. This sample of medical residents had an average QWL ($\mu = 5.8$; SD = 3.1). However, their QWL was very low for three subscales: arrangement of work schedule ($\mu = 9$; SD = 6.3), support offered to employee ($\mu = 7.6$; SD = 6.1) and working relationship with superiors ($\mu = 6.9$; SD = 5.3).

Conclusions The results confirm that the QWLSI can provide an indication of workers' health well-being and of organizational performance in different areas of work life. The problem factors found among Belgian medical residents suggest that prevention should focus on reduction of work hours, development of support and change in leadership style.

Key words Burnout; cancer; job stress; medical residents; quality of work life; questionnaire.

Introduction

In the last 10 years, a growing body of literature has investigated medical residents' quality of work life (QWL) [1]. Some studies have assessed residents' mental health using psychological tools and have reported significant levels of burnout, depression and poor mental health among this population [2–8]. Other studies have also assessed the organizational conditions affecting residents by using organizational tools such as the Job Content Questionnaire [9]. These studies have reported that residents face intense work demands, time pressure, limited autonomy and work–home interference [10–15]. Some studies show significant statistical association between these organizational factors and residents' psychological health. However, these results do not reflect the residents' QWL. In fact, QWL has different meanings for different individuals, depending on their objectives and goals [1]. In 2006, Martel and Dupuis presented an historical overview of the development of the notion of QWL [16]. They concluded that, because of the lack of a clear definition of this concept from which an assessment tool could be directly derived, it had become a generic label covering factors from mental health problems to organizational factors (i.e. problems related to demands and control). These authors proposed a new tool that would assess employees' (physicians') conditions at a given time in several work domains (i.e. work schedule, working relationship with colleagues, emotional burden), their goals within these domains and the priority attributed to these domains as well as an indication of the employees' psychological health: the Quality of Work Life Systemic Inventory (QWLSI) [16].

The QWLSI is based on the theoretical model of quality of life (QOL) developed by Dupuis *et al.* [17] based on the concepts of goal, control, positive and negative feedback loops and hierarchical organization of goals in

different domains of life. Dupuis *et al.* [17] claim that human activities are oriented towards a goal, that certain goals are subordinated to others but that the ultimate goal is the pursuit of happiness, meaning a relatively stable condition over time, influenced by the individual's adaptability and a minimum of material goods [16]. They state that human behaviours are controlled and maintained by the pursuit of goals. This is a control system in which actions are taken in order to reduce the gap between the person's current state and the goals he/she has set (negative feedback loop), taking account of the fact that not all goals have the same importance (hierarchy). Based on this model, they developed a tool for evaluating general QOL, the Quality of Life Systemic Inventory [17]. Given the conceptual analogies between QOL and QWL, Martel and Dupuis [16] based their definition of QWL on this model of general QOL: 'QWL, at a given time, corresponds to a condition experienced by the individual in his or her dynamic pursuit of his or her hierarchically organized goals within work domains where the reduction of the gap separating the individual from these goals is reflected by a positive impact on the individual's general quality of life, organizational performance, and consequently the overall functioning of society' [16]. In their studies, Dupuis *et al.* have shown that a poor QWL, as assessed with the QWLSI, predicted the high emotional exhaustion of community workers assessed with the Maslach Burnout Inventory [18] and the poor work conditions of managers from a Montreal-area school board assessed with the Job Stress Survey (JSS) [19]. Moreover, the analysis of the QWLSI could provide an intervention methodology adapted to the workplace.

Considering the interest of this new tool and the psychological health of medical residents in Belgium [2], this study had three objectives. The first objective was to confirm the convergent validity of the QWLSI by determining whether a poor QWL, measured with the QWLSI, is associated with poor psychological health, as measured with the Maslach Burnout Inventory, and with poor work conditions, measured with the JSS, among Belgian residents. The second was to analyse Belgian residents' QWL with the QWLSI. The third was to discuss an intervention methodology based on the analysis of the QWLSI.

Methods

This study was part of a larger project evaluating the efficacy of a communication and stress management skills training programme. Medical residents had to speak French, work with cancer patients and be willing to participate in the training programme and the evaluation process. The training programme focused on communication skills in cancer care. All Belgian French-speaking institutions devoted to cancer care were asked to deliver an internal letter of invitation ($n = 2160$) (target population). Because of the low response rate ($n = 41$), attending physicians and heads of all medical specialties (except paediatrics and psychiatry) ($n = 117$) were contacted by phone to obtain the names of residents. A total of 544 residents (study population) from the three French-speaking universities in the country, who worked in several hospitals and clinics and at the time of the study were in a department that handled at least some cancer patients, were actively contacted by phone (sampling strategy from target population to study sample); 351 residents were met. The study was approved by each hospital Institutional Review Board.

Medical residents completed a demographic questionnaire, the QWLSI, the Maslach Burnout Inventory (MBI) and the JSS. Data were collected about residents' age, gender, marital status, medical specialty and years of work experience using a demographic questionnaire.

The QWLSI [16, 19] is composed of 33 items that asks workers about the areas of work likely to influence their general quality of life and organizational performance. Each item is measured using a Visual Analogue Scale-type dial that consists of an ungraduated circle, the upper part of which has an opening in the shape of a sector measuring approximately 20° (see Figure 1). The ideal situation is at one side of the circle and the worst possible situation at the other. Using arrows, subjects must indicate in the circle how far from a predetermined ideal their current state and a state they would consider satisfactory are located. For the calculation of the scores, the circle is divided into 13 sectors. Each sector is associated with a value. Then, in the box to the right of the figure, the person indicates whether his situation is improving or deteriorating and at what speed. Each speed is associated with a value. Finally, the importance of each item is rated on a 1 (essential to my life) to 7 (completely useless) Likert scale. Each rank is associated with a value [see Martel *et al.* (16) for more details]. QWLSI gives three main scores: gap, goal and rank. The gap score corresponding to QWL is the mean distance between the state and the goal, weighted by the speed of improvement or deterioration of each item and the item's rank. For example, a 'state' response in sector 10 gives a value of 45.5, a 'goal' response in sector 2 gives a value of 4.38, a deterioration speed of 1 gives a value of 1.09 and a rank of 1 gives a value of 2.01. Given these results, the application of the formula gives a gap score of 14.87. Higher scores represent poorer QWL. The goal score is the mean distance between the desired situation and the ideal situation and provides information about the desired level of happiness. Higher scores mean lower goals since they are farther from the ideal. The rank score is the mean rank for the 33 items and reflects the priority assigned to the various areas of life. A higher score means that a high priority has been assigned to many areas. The choice of items is based on a literature search for domains frequently encountered in the study of QWL. These items were classified using a qualitative method into eight subscales (kappa values

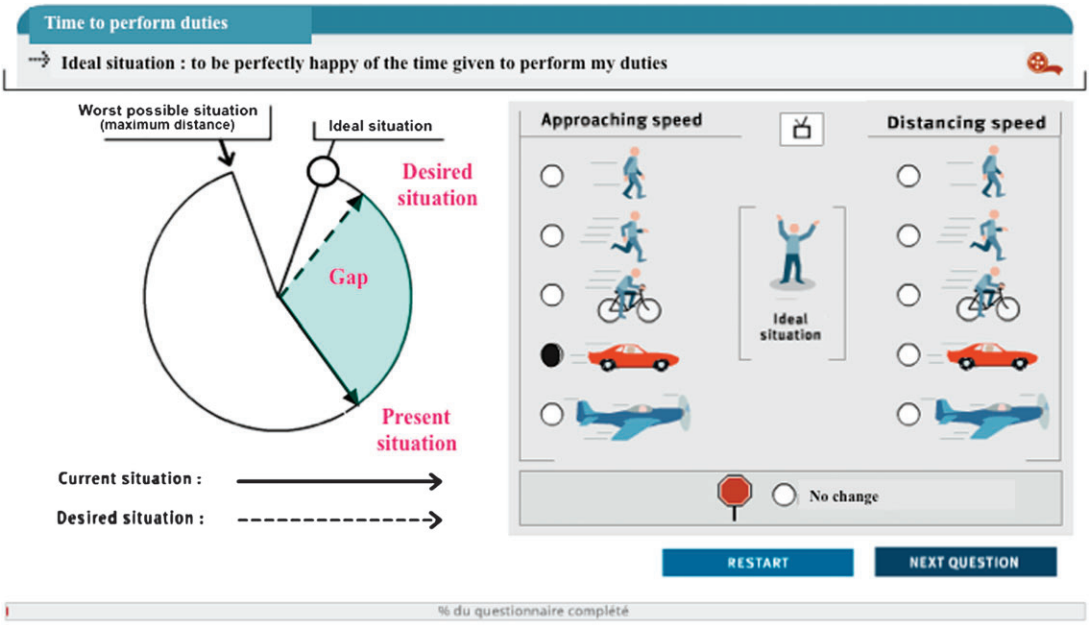

Figure 1. Example of item of QWLSI.

ranging from 0.52 to 0.87): compensation and benefits, career path, arrangement of work schedule, atmosphere with colleagues, atmosphere with superiors, characteristics of physical environment related to task, factors influencing appreciation of tasks to be done and support offered to employee. The QWLSI was created to be a tool for researchers and for companies of all kinds. The psychometric validation was done with a sample of 158 executives from a Montreal-area school board in 1999. The global consistency (Cronbach's alpha) is 0.87 and that of the subscales ranges from 0.60 to 0.82; the test–retest reliability is 0.84 ($P < 0.001$). A total of 2500 workers have completed the questionnaire in Canada, Switzerland and Belgium (i.e. firemen, teachers) [20].

The MBI [21] is a 7-point Likert scale ranging from never (0) to daily (6). The instrument assesses the three dimensions of burnout syndrome: emotional exhaustion, depersonalization and personal accomplishment. In this study, we focused on emotional exhaustion, which can be considered as the core dimension of burnout.

The JSS [22] is a validated French-translated 30-item questionnaire that assesses the perceived intensity and frequency of occurrence of job-related stressor events that are likely to affect the psychological well-being of those exposed to them during the preceding 6 months. Summing the ratings provides an overall Job Stress Index.

The statistical analyses involved two steps. First, descriptive analyses were used to describe residents' demographic characteristics and to examine QWLSI results. Then, multiple regression analyses were computed to confirm the prediction of medical residents' emotional exhaustion and job stress by QWLSI goal, gap and rank scores. The analyses were performed with SPSS for Windows, version 13.0 [23].

Results

Following the 544 residents contacted (study population), 113 residents registered for the study between 2002 and 2006 (study sample). Comparisons of these 113 participants and the other 431 residents showed no statistically significant differences for gender, medical speciality and residency setting (hospital versus clinic). Nevertheless, significant differences were found regarding the proximity of the residency setting to the place where the training was organized ($P < 0.001$). A majority of the participants (72%) worked in settings close to the place where the training was organized, while non-participants were spread all over the country.

Demographic data and psychological health are shown in Table 1. Medical residents had a mean age of 28 years old (SD = 2.9 years), 75% were female and 55% were married. Nineteen percent were in oncology (oncology, haematology and radiotherapy), 28% in gynaecology and 66% in other specialities (e.g. gastroenterology). They had 3 years of medical work experience (SD = 2.1) on average. They had treated an average of 14 patients each (SD = 27.5) in the last week. Concerning psychological health at work, almost 50% of the residents reported a high level of emotional exhaustion and a high level of job stress (mean = 83.3; SD = 30.2) when compared with the median score ranging between 59 and 64 [24].

Concerning QWL (see Table 2), residents had a main goal score of 24 on average (SD = 7.7). This means they had low goals or objectives since it is far from the ideal. They had a main gap score of 5.8 (SD = 3.1), which is average. They had a main rank score of 1.4 (SD = 0.2). All the domains have a high priority level, showing that they find it difficult to rank them.

Table 1. Medical residents' socio-demographic data and psychological variables (n = 113)

	n (%)	Mean (SD)
Socio-demographic data		
Age		28.4 (2.9)
Gender		
Male	38 (34)	
Female	75 (66)	
Marital status		
Single	35 (31)	
Married or living with partner	55 (49)	
Family	23 (20)	
Specialty		
Oncology, haematology and radiotherapy	19 (17)	
Gynaecology	28 (25)	
Internal medicine and other	66 (58)	
Medical practice (in years)		3.1 (2.1)
Medical practice in oncology (in years)		2.0 (3.0)
Psychological variables		
Emotional exhaustion (MBI)		25.9 (8.8)
Low <19	21 (18)	
Average 19–26	38 (34)	
High >26	54 (48)	
Job stress (JSS)		
Job stress index		83.3 (30.2)

Table 2. Medical residents' quality of work life (n = 113)

Quality of work life (QWLSI)	Mean (SD)
Main scores	
Goal	24.0 (7.7)
Gap	5.8 (3.1)
Range	1.4 (0.2)
Subscale scores	
Goal	
Compensation and benefits	22.4 (9.5)
Career path	22.5 (9.6)
Arrangement of work schedule	26.9 (13.8)
Working relationship with colleagues	25.5 (10.5)
Working relationship with superiors	24.1 (9.9)
Characteristics of physical environment related to task	20.7 (11.4)
Factors influencing appreciation of tasks to be done	23.3 (8.8)
Support offered to employee	26.3 (14.6)
Gap	
Compensation and benefits	6.1 (4.3)
Career path	6.6 (5.5)
Arrangement of work schedule	9.0 (6.3)
Working relationship with colleagues	3.1 (3.9)
Working relationship with superiors	6.9 (5.3)
Characteristics of physical environment related to task	5.5 (7.0)
Factors influencing appreciation of tasks to be done	4.9 (3.1)
Support offered to employee	7.6 (6.1)
Rank	
Compensation and benefits	1.5 (0.3)
Career path	1.4 (0.3)
Arrangement of work schedule	1.3 (0.4)
Working relationship with colleagues	1.2 (0.3)
Working relationship with superiors	1.5 (0.3)
Characteristics of physical environment related to task	1.3 (0.4)
Factors influencing appreciation of tasks to be done	1.4 (0.2)
Support offered to employee	1.2 (0.3)

The subscale goal scores were between 20.7 and 26.9. These goal scores were high for four subscales: arrangement of work schedule (mean = 26.9; SD = 13.8), support offered to employee (mean = 26.3; SD= 14.6), atmosphere with colleagues (mean = 25.5; SD= 10.5) and atmosphere with superiors (mean = 24.1; SD = 9.9). The subscale gap scores were between 3.1 and 9. These gap scores were high for three subscales, meaning low QWL: arrangement of work schedule (mean = 9.0; SD = 6.3), support offered to employee (mean = 7.6; SD = 6.1) and atmosphere with superiors (mean = 6.9; SD = 5.3). The subscale rank scores were between 1.2 and 1.5. These rank scores were high for four subscales: compensation and benefits (mean = 1.5; SD = 0.3), atmosphere with superiors (mean = 1.5; SD = 0.3), career path (mean = 1.4; SD = 0.3) and factors influencing appreciation of tasks to be done (mean = 1.4; SD = 0.2). The subscale concerning working relationship with superiors showed high goal and gap scores and high priority.

Multiple regression analyses were computed to examine predictors of residents' emotional exhaustion and job stress among the main scores on the QWLSI. As shown in Table 3, both emotional exhaustion and job stress were significantly predicted by the goal score and gap score.

Discussion

There were three key findings from this study. Firstly, the study confirmed the convergent validity of the QWLSI. Secondly, this sample of residents had an average QWL except for three subscales, work schedule, support offered to employee, and working relationship with superiors, for which it was low. Thirdly, given the problematic domains highlighted among Belgian residents, prevention should focus on reduction in work hours, development of support and change in leadership style.

Concerning the first objective, the results confirmed that the QWL score may help to identify certain psychological health problems among workers. This assessment of QWL makes no reference to well-being, satisfaction, etc. Each resident had to indicate his/her present condition in reference to an ideal situation that is 'to be perfectly happy with …' (for example to be perfectly happy with the clarity of my role in the organization). Then, by measuring the gap between the present situation and the desired one, we obtained a gap score that provided information about the distance between what the

Table 3. Multiple regressions between medical residents' QWLSI scores and emotional exhaustion and job stress (enter method) ($n = 113$)

Quality of work life (QWLSI)	Standard β coefficient	*t* value	*P* level	Simple *r*	Semi-partial *r*
Emotional exhaustion (MBI)					
Goal	0.206	2.254	<0.05	0.180	0.204
Gap	0.282	2.821	<0.01	0.253	0.255
Range	−0.021	−0.214	NS	0.077	−0.019
	R: 0.327; *R* square: 0.107; $F = 4.339$; $P < 0.01$				
Job stress (JSS)					
Goal	0.173	1.997	<0.05	0.125	0.171
Gap	0.370	3.896	<0.001	0.399	0.335
Range	0.109	1.142	NS	0.247	0.098
	R: 0.443; *R* square: 0.196; $F = 8.855$; $P < 0.001$				

Simple *r* means simple correlation to determine the relationship between two variables; semi-partial *r* means semi-partial correlation used with multiple regression to remove the effect of one predictor from another predictor without removing that variability in the predicted variable; *R* is the correlation between the observed and predicted values of the dependent variable; *R* square is the proportion of variance in the dependent variable which can be explained by the dependent variable; *F* value is the test statistic used to decide whether the model as a whole has statistically significant predictive capability.

person has and what they would like to have. By evaluating the QWL in this way, we can look at the association between QWL and other constructs (i.e. burnout) and avoid the confusion between QWL indices and psychological health measures.

With regard to the second objective, we analysed the main and subscale scores. This sample of residents had an average gap score (QWL). However, their QWL was very low for three subscales: work schedule, support offered to employee and working relationship with superiors. These domains constitute psychosocial risk factors that suggest the need for intervention. Moreover, residents tended to set their goals quite far from the ideal, especially in four subscales (arrangement of work schedule, support offered to employee, atmosphere with colleagues and with superiors). Usually, lower goals mean a better QWL: the act of lowering goals helps one to tolerate a gap that would otherwise be too big. However, our results showed that the farther residents set their goals from the ideal, the more emotional exhaustion and job stress they experienced. So it could be hypothesized that we are witnessing an 'unhealthy' adaptation mechanism based on lower engagement rather than on healthy adaptation. This analysis of goals allows one to highlight a process of disengagement described in the Job Demands–Resources model [25]. Moreover, the rank scores are also interesting. All domains have a high priority level, showing that residents find it difficult to rank them, especially in four subscales (compensation and benefits, career path, factors influencing appreciation of the tasks to be done and working relationship with superiors). This means that they may experience more tension when they have to allocate their time to one area instead of another because every area has the same level of importance. These results point to the main areas for improvement: reduction in work hours, change in leadership style and development of support. The subscale concerning working relationship with superiors, which had high goal and gap scores and high priority, constitutes the psychosocial risk factor that most urgently needs to be addressed. Moreover, this domain is a critical element in several models of work stress [25, 26]. Increased social support from superiors and culture of openness and tolerance could improve residents' QWL.

Concerning the third objective, the analysis of the QWLSI allows one to propose an intervention methodology. First, the analysis of gap level (compared with scores of a population of 2500 workers) helps to identify domains that may cause problems to workers (risk zone) and domains that may protect workers from the effects of domains in the risk zone (protective zone). The more an organization has domains in the risk zone, the more this organization may encounter organizational problems and the more the workers may suffer from psychological distress and burnout. Second, the analysis of goal level helps one to identify whether the domains' goal levels are too low or too high. When too many domains are low, this suggests a kind of disengagement. Third, the analysis of rank level helps us to identify priorities. Too many domains at the same high level may create stress, whereas too many domains with very low importance may suggest a kind of disengagement in the organization. Moreover, a domain for which gap, goal and level of importance are high will have to be addressed first. The identification of these factors may help to plan preventive interventions to avoid organizational crisis and prevent mental health problems. Yet the efficacy of interventions based on the analysis of the QWLSI needs to be assessed.

This study has some limitations. Physicians were enrolled voluntarily, which may limit the generalizability of our results to all Belgian residents working with cancer patients. Only those who were interested in the training programme were enrolled (selection bias). There was a very low response rate. According to the residents, there were personal and institutional barriers reasons to

participation: time limitations, training duration and assessment procedures.

With regard to the low percentage of explained variance in the regression results, it could be hypothesized that other specific stressors not included in the QWLSI (such as dealing with patients' reactions to bad news [27]) may also help explain residents' psychological health. In conclusion, this tool could be a global indicator of a person's mental health condition and working conditions. For Belgian residents, prevention should focus on reduction in work hours, development of support and change in leadership style, although these conclusions should be viewed with some caution in the light of the low response rate.

Key points

- The paper presents a new tool, the Quality of Work Life Systemic Inventory, used to measure the quality of work life of Belgian medical residents.
- This sample of medical residents had a global quality of work life in the average. However, their quality of work life was very low for two subscales: work schedule and support offered to employee.
- The paper shows that the use of the Quality of Work Life Systemic Inventory allows to predict psychological distress at work and to build interventions aiming to improve quality of work life.

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