Quality of work life in doctors working with cancer patients

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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...
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.

![Figure 1. Example of item of QWLSI.](image-url)
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.
Table 3. Multiple regressions between medical residents’ QWLSI scores and emotional exhaustion and job stress (enter method) \( (n = 113) \)

<table>
<thead>
<tr>
<th>Quality of work life (QWLSI)</th>
<th>Standard β coefficient</th>
<th>( r ) value</th>
<th>( P ) level</th>
<th>Simple ( r )</th>
<th>Semi-partial ( r )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional exhaustion (MBI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>0.206</td>
<td>2.254</td>
<td>&lt;0.05</td>
<td>0.180</td>
<td>0.204</td>
</tr>
<tr>
<td>Gap</td>
<td>0.282</td>
<td>2.821</td>
<td>&lt;0.01</td>
<td>0.253</td>
<td>0.255</td>
</tr>
<tr>
<td>Range</td>
<td>-0.021</td>
<td>-0.214</td>
<td>NS</td>
<td>0.077</td>
<td>-0.019</td>
</tr>
<tr>
<td>Job stress (JSS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>0.173</td>
<td>1.997</td>
<td>&lt;0.05</td>
<td>0.125</td>
<td>0.171</td>
</tr>
<tr>
<td>Gap</td>
<td>0.370</td>
<td>3.896</td>
<td>&lt;0.001</td>
<td>0.399</td>
<td>0.335</td>
</tr>
<tr>
<td>Range</td>
<td>0.109</td>
<td>1.142</td>
<td>NS</td>
<td>0.247</td>
<td>0.098</td>
</tr>
</tbody>
</table>

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.

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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References


