# Psychometric Properties of the QOLLTI-F questionnaire to assess quality of life in caregivers of cancer

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## ABSTRACT

**Introduction:** The objective of the present study was to assess the validity and reliability of Malay version of the Quality of life during serious illness – family carers QOLLTI-F questionnaire. **Method**: 80 Malaysian caregivers of cancer patients in an outpatient oncology clinic at Hospital universiti Sains Malaysia (HUSM) enrolled in this study. Psychometric Properties of the translated QOLLTI-F questionnaire carried out by professionals and assessed by exploratory factor analysis. Demographic characteristics of the respondents face and content validity of the Malay version recorded. **Result**: Exploratory factor analysis led to the extraction of seven factors and this was consistent with the English version. Cronbach Alpha coefficient showed good consistency of the questions within the sub-scales (Cronbach's alpha > 0.7). **Conclusion**: This study was confined to a Malaysian population. Nevertheless, the translated questionnaire demonstrated valid and reliable psychometric properties when administered to Malaysian caregivers. Future studies are needed to see if this instrument can fit other samples in different settings and populations.

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## Introduction

In Malaysia, research on the role of caregivers of cancer patients, is a relatively new development that is gaining in significance[1], as researchers begin to realize that, the impact of cancer has an equally devastating consequence on both patients as well as their caregivers [2]. The data indicates that they often experienced emotional distress, decline in physical health, social isolation, negative impacts on employment status, coronary artery disease, impaired immunity, and cognitive decline. Many of them also experienced sleep disturbances and psychiatric disorders [3-9].

In Malaysia, despite suitable support services exist within the healthcare system that can help to improve both the quality of care and quality of life of caregivers. Cancer, cardiovascular and accidents are major causes of admission to Ministry of health hospitals were cancer the most leading of death based on statistic 2008. However, in all cases, a crucial step is caregiver assessment [10,11]. This assessment process has been defined as "a systematic process of gathering information that elucidates and describes a care giving situation and identifies the particular problems, needs, resources, and strengths of the family caregiver" [12].However, this assessment process has been hampered by a lack of appropriate, validated, and sufficiently

tested measurement tools to identify caregiver needs within a clinical setting[13,14]. The need for such a tool that addressed all relevant domains either positive or negative aspects of caregiving encouraged us to validate a Malay version of the Quality of Life in Life-Threatening Illness-Family Carer QOLLTI-F questionnaire in the outpatient oncology clinic of Hospital Universiti Sains Malaysia (HUSM.

## Method

The study design was a cross-sectional survey of caregiver of Malaysian cancer patients, where the aim was to evaluate the validity of a translated (QOLLTI-F) questionnaire. The Universiti Sains Malaysia Human Ethics Committee approved this study. Written informed consents were obtained from all caregivers recruited from the outpatient oncology clinic of (HUSM.

To be eligible for this study, caregivers had to be able to understand the Malay language and be capable of giving informed consent. They also had to meet the following criteria:

1. Willing to participate in the study.
2. Male and female aged18 and above.
3. Able to comply with the caregiver definition used in this study ie: any individual who assumes the responsibility of taking care of cancer patients, as determined by the patient himself /herself but not health care professionally.
4. Cancer patients should be diagnosed at least six months, regardless of cancer stage
5. Cognitively intact

The researcher communicated with the caregivers and screened them to identify the eligibility and suitability for completing the survey or interview. The researcher excluded caregivers who were considered cognitively impaired or otherwise unsuitable for the questionnaire administration. The study procedure was explained and from those who were willing the written informed consent was obtained. The researcher was eventually able to apply the questionnaire to 80 respondents based on the minimum of 5 subjects for each item [15]. The self-administered questionnaire was applied to respondents during clinic visits before meeting the oncology specialist. Demographic and clinical characteristics, including age, marital status, education level, religion, relationship with patient, and care status were documented. The average time needed to complete the Questionnaire was 15 minutes.

### Quality of Life in Life-Threatening Illness-Family Carer Version (QOLLTI-F) questionnaire

The QOLLTI-F questionnaire was developed by the Division of Palliative Care, Departments of Oncology and Medicine, McGill University, for the purpose of measuring the quality of life in family carers of palliative care patients. The QOLLTI-F questionnaire consists of 16 items covering seven domains: environment, patient condition, carer's own state, carer's outlook, relationships, quality of care and financial worries. The response scale is an 11-point numerical rating scale (range from 0 through 10) where '0' indicates the worst situation and '10' the best situation. The mean score of each domain is calculated on data collected within the time frame of 48 hours [16].

### Translation of the QOLLTI-F questionnaire

The original English QOLLTI-F questionnaire contains 16 questions grouped into seven domains. The QOLLTI-F was translated into the Malay language by two professional translators, and back-translated by two other professional translators who also approved the content and format.

### Statistical analysis

Statistical Package for Social Science (SPSS) Version 18 was used in this study. Descriptive data analysis used to show respondents characteristics. The internal consistency was determined by Cronbach's alpha coefficient for the 16 items of the QOLLTI-F questionnaire. Alpha coefficients were obtained for the 7 domains. Internal consistency was considered significant if Cronbach's alpha approximated 0.70

The construct validity was determined by exploratory factor analysis that explored factor loading and correlations between factors and individual items. Promax method with Kaiser normalization was used to rotate the initial factor and determine the commonalities. Factor loadings were examined and the items were assigned to a subscale, then each subscale was compared with the subscales as determined by Cohen et al [16].

**Results**

**Descriptive results**

80 Malaysian subjects completed the QOLLTI-F questionnaire and were included in the analysis. Table 1 shows the socio-demographic characteristics of the respondents. It was observed that the majority were female (85%) with a mean age of 41.89 years and ranging between 18 to 78 years. About 57 % of the respondents were Malay, and a majority of the respondents claimed to be unemployed (36.3%) although their level of education extended between that of a diploma, degree or graduate qualification (37.5%).

The majority of caregivers (66.3%) reported that they provided informal unpaid care, and lived with the recipient (53.8%). Most of the respondents were parents of the recipient (35%) while a large proportion were children of the caregiver (23.8%). The rest of the respondents were a friend, spouse, and housemaid or had some other relationship with the recipient.

Table 1: Demographic characteristic

| Characteristics of data | n | % |
|---|---|---|
| **Ethnicity** | | |
| • Malay | 46 | 57.5 |
| • Chinese | 31 | 38.8 |
| • Indian | 2 | 2.5 |
| • Others | 1 | 1.3 |

Table 1: continued

| Characteristics of data | n | % |
|---|---|---|
| **Gender** | | |
| • Male | 12 | 15 |
| • Female | 68 | 85 |
| **Religion** | | |
| • Islam | 46 | 57.5 |
| • Christian | 28 | 35 |
| • Buddhest | 3 | 3.8 |
| • Hindu | 1 | 1.3 |
| • others | 2 | 2.5 |
| **Marital status** | | |
| • Married | 40 | 50 |
| • Single | 13 | 16.3 |
| • Divorced | 24 | 30 |
| • Widowed | 1 | 1.3 |
| • Missing data | 2 | 2.5 |
| **Education level** | | |
| • Illiterate | 1 | 1.3 |
| • Primary school | 13 | 16.3 |
| • Secondary school | 27 | 33.8 |
| • University-college | 30 | 37.5 |
| • Others | 8 | 10 |
| • Missing data | 1 | 1.3 |
| **Job** | | |
| • Full time | 16 | 20 |
| • Part time | 19 | 23 |
| • Jobless | 29 | 36.3 |
| • Retired | 16 | 20 |
| **Relationship with recipients** | | |
| • Spouse- partner | 17 | 21.3 |
| • Parents | 28 | 35 |
| • Children | 19 | 23.8 |
| • Friends | 1 | 1.3 |
| • housemaid | 7 | 8.8 |
| • others | 8 | 10 |
| **Living arrangement** | | |
| • With the recipients | 43 | 53.8 |
| • Separately | 37 | 46.3 |
| **Care status** | | |
| • Shared | 36 | 45 |
| • Unshared | 42 | 52.5 |
| • missing | 2 | 2.5 |
| **Care terms** | | |
| • Formal – paid | 17 | 21.3 |
| • Informal- unpaid | 53 | 66.3 |
| • Missing | 2 | 2.5 |

In general, the assistance provided by the caregivers to the recipients was in terms of meal preparation, administration of medication, laundry, toileting, and mobilization of the recipient.

In order to explore the structure of the translated QOLLTI-F questionnaire, exploratory factor analysis with an oblique rotation based on promax method was performed. In a 7-factor solution, the total matrix-sampling adequacy was 0.72. Factor 1 accounted for 31.6% of the variance, factor 2 for 17.6%, factor 3 for 8.7%, factor 4 for 8%, factor 5 for 6.9%, factor 6 for 5.6 and factor 7 for 5.3%. The overall rate of variation of initial data as interpreted by the seven factors in common amounted to 83.8%. The factor loadings were high in all items, ranging between.71 to .99. The results were excluded in instances where the loading factors for items were less than 0.30.

The first factor contained 2 items (loading value >0.3), both related to "environment", the second factor comprised four items concerned with" strain and interaction". The third factor contained two items that could be selected under the label "personal state". The fourth factor includes one item explaining quality of care. The fifth factor consisted of four items related to carer physical perception. Finally the sixth and seventh factors consisted of two and one items respectively, factor six relative to meaning of life and factor seven reflecting financial situation. As shown in pattern matrix, Table 2.

Reliability analysis was applied to the questionnaire. The overall internal consistency of the questionnaire as well as each subscale was measured by using Cronbach's alpha coefficient as shown in table 3. An alpha value of 0.78 indicated good reliability.

**Discussion**

This study examined the internal consistency and validity of the Malay QOLLTI-F questionnaire for the assessment of quality of life in caregivers of cancer patients. It is a translated version of the English questionnaire developed by Cohen et al

2007, to measure the QOL of caregivers. The questionnaire was evaluated within the context of an outpatient setting and included the caregiver's perception of the condition of another person; in this case the cancer patient was the recipient of care. The questionnaire also assessed the importance of the relationship between the caregiver and the recipient of care.

This study was confined to a population that the majority are Malay Muslims from the state of Kelantan. As the demographic profile of the respondents did not represent the Malaysian population, nevertheless the sample size was adequate in terms of validating a Malay version of the QOLLTI-F questionnaire. Moreover, a translated Malay version of the questionnaire was very useful since there is a natively Malay speaking population more than 40 million [17] that may need the kind of assessment provided by the questionnaire. All respondents in this study were conversant in the Malay language and there was an advantage added in terms of validating the questionnaire.

During the process of validation, exploratory factor analysis captured seven dimensions after forced extraction for a factor loading that was more than 0.3 were the blank areas in table 2 indicates the low loading factors for each item [18]. All the factors extracted were consequent in the original English version in terms of value [16]. Three out of seven domains totally complied with the domains from the original questionnaire. These domains are related to the environment, quality of care, and financial components. However, the rest of the items were placed in another factor due to cultural disparities and the expected differences in perspectives of the respondents which highlighted in bold as shown in table 2. Nevertheless, this did not detract from the fact that the data from this study revealed that the translated Malay version of the QOLLTI-F questionnaire is a valid and reliable instrument for the assessment of the quality of life of caregivers in the outpatient setting. Oncology nurses are uniquely positioned to play a central role in recognizing caregiver Quality of life assessment from all aspects to break the cycle of

burdening and strain. Further studies are required in order to develop a more systematic, specific and dynamic instrument to measure all related aspects of quality of life among caregiver that can eventually lead to therapeutic interventions between health care providers and caregivers.

The analysis of the reliability indicates that the 16 items of the Malay version QOLLTI-F which exhibited a measure of an acceptable internal consistency. As their Cronbach's alpha values were more than 0.75 as shown in Table3.

Similarly, the subscales also show a measure of good internal consistency as the Cronbach's alpha values were within a good to excellent range from 0.74 to 0.93 (Table 3). These results provide evidence for the suitability of the Malay version QOLLTI-F for use in populations who are conversant with the Malay language. It will also prove useful identifying quality of life issues of both caregivers and their recipients within the context of an outpatient oncology setting.

Table 2: Factor analysis of QOLLTI-F questionnaire

| Item description | Component | | | | | | |
|---|---|---|---|---|---|---|---|
| | F1 | F2 | F3 | F4 | F5 | F6 | F7 |
| 1. Over the past two days (48 hours) I was satisfied with the place …….. Was staying (home, hospital, other). | | | | | .812 | | |
| 2. Over the past two days (48 hours) I had the privacy I wanted. | | | | | .895 | | |
| 3. Over the past two days (48 hours) the condition of ……. was distressing to me. | .765 | | | | | .364 | |
| **4. Over the past two days (48 hours) the amount of control I had over my life was** | .784 | | | | | .314 | |
| 5. Over the past two days (48 hours) I had time to take care of myself. | | | .897 | | | | |
| 6. Over the past two days (48 hours) I was able to think clearly. | | | .894 | | | | |
| **7. Over the past two days (48 hours) physically I felt.** | | | | | | | .987 |
| **8. Over the past two days (48 hours) emotionally I felt.** | | .848 | | | | | |
| 9. Over the past two days (48 hours) being able to provide care or company for …… made me feel good. | | .746 | | | | | |
| 10. Over the past two days (48 hours) I was comforted by my outlook on life, faith, or spirituality. | | .708 | | .399 | | | |
| 11. Presently I feel that my life has meaning. | | .740 | | .417 | | | |
| 12. Over the past two days (48 hours) I agreed with the way decisions were made for | | | .306 | .859 | | | |
| **13. Over the past two days (48 hours) the quality of health care we received was**. | | | | .859 | | | |
| 14. Over the past two days (48 hours) I felt my interaction with……. was. | .899 | | | | | | |
| 15. Over the past two days (48 hours), overall, I felt my interaction with the other people most important to me was | .891 | | | | | | |
| 16. Over the past two days (48 hours) my financial situation has been stressful | | | | | | .862 | |

The extraction method was exploratory factor analysis with Kaiser Criterion and promax rotation. High factor loadings (0.60) are shown above. F1, F2, F3, F4, F5, F6 and F7 are factor loadings for the rotated solution. Bold font: indicates that the item shifted and placed in another domain.

Table 3: The Cronbach's alpha value for QOLTTI-F domains

| Domain | Cronbach's alpha value |
|---|---|
| Environment | 0.74 |
| Strain and interaction | 0.87 |
| Personal state | 0.93 |
| Quality of care | 0.78 |
| Meaning of life | 0.87 |
| Physical perception | 0.97 |

## Conclusion

The QOLTTI is a valid and reliable instrument in terms of loading factor analysis for the assessment of the quality of life in Malay caregivers. As the questionnaire is in Malay, researchers now have an advantage added of having a highly accessible tool for the assessment of QOL issues within the large Malay-speaking population in Malaysia and Malay speaker, where oncology nurses can assess the caregivers of cancer patient from both negative and positive aspects to break the cycle of strain and burden. Nevertheless, this study needs to be widened with a larger and more heterogenous sample size that is representative of the multiethnic population of a country like Malaysia. Such a study can provide detailed evidence of the psychometric properties of the questionnaire. We suggest adding more items to each domain instead of one item in order to strengthen the psychometric properties of the instrument and doing (test-retest) to determine the stability of instrument over time.

## Acknowledgement

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