Factor Structure and Item Analysis of the Perceived Quality of Life Scale among People Living with HIV

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The controversy on the operational definitions of quality of life has led to the development of a number of measures which in many cases are culture specific. This study assessed the factor structure and item analysis of perceived quality of life (PQOL) among PLHA in Nigeria. Six hundred and ten PLHA from South West Nigeria participated under condition of anonymity. The perceived quality of life scale and HIV/AIDS-related stigma and discrimination scale were used for data collection. The composite PQOL scale showed high internal consistency with alpha of .923 and standardized alpha of .925. Factors analysis revealed four factors (subscales) with eigenvalue before rotation ranging from 1.13 to 8.61 and after rotation from 2.52 to 4.27. Reliability coefficients of the four subscales (affiliation, locus of causality, personal/health efficacy and job-family interface) were significant with alpha of .870, .854, .907, .795 and standardized alpha of .873, .860, .909, and .803 respectively. A divergent validity was established while the subscales were significantly interrelated. It was concluded that PQOL scale is a valid measure among PLHA and it is a multidimensional construct. Future studies are suggested to investigate the influence and effect of the subscale on the perceived quality of life among PLHA.

Keyword: Factor structure, PQOL, HIV/AIDS, item analysis, validity

Introduction
Over the last two decades researchers have given attention to the issue of quality of life in a bid to understand what quality of life is and enhance the lives of people. The concept of quality of life has been variously defined by researchers and scholars overtime, in a rather broad definition it refers to people, individual well-being and or welfare (Diener, 1994; Oppong et al., 1988; Schuessler and Fisher, 1985). The earlier model of quality of life is the objective model which sees the concept only in terms of a predetermined level of functioning without the input of the individuals being evaluated (Olapegba, 2009). The objective perspective more or less follows the medical model whereby people are evaluated on physical health and ability to carry out day to day routine activities (Ventegodt, Merrick and Anderson, 2003). More recent research has however brought out the importance of the subjective component of quality of life (Flora, 2004; Cummins, 1997).

A number of theoretical approaches have been adopted over the years to explain perceived quality of life, prominent among them are the Maslow needs...
theory (Diener and Lucas, 2000; Diener et al., 2003; Schyns, 1998) with emphasis on the needs of individuals and relative satisfaction of those needs as forming the basis for perceived quality of life. There is also the livability theory (Veenhoven, 1995; Power, 2004; World Health Organization Quality of Life (WHOQOL) Group, 1995) focusing on absolute quality of life suggesting that there is a link between objective and subject quality of life to arrive at an overall evaluation. The integrative model of quality of life is another theoretical approach that has been used, this approach takes into consideration the argued multidimensional nature of quality of life as exemplified in the dynamic fitness model developed by Lucas (2004). The model sees human beings as very complex organisms that keep changing in terms of needs and aspirations. This complexity leads to a constant change in what is considered quality of life from time to time thereby making a static evaluation of quality of life invalid.

Although there seems to be a consensus of what quality of life is (Flora, 2004; Lucas, 2004; WHOQOL, 1995; Cummins, 1997) and may be safe to conclude that all people want a quality life (Olapegba, 2009) there still exist the challenge of a general agreement of operational definitions of quality of life (Hagerty et al., 2001; Turksever and Atalik, 2001; Veenhoven, 1996). The whole issue bothers on measurement, reliability, differences and domains of quality of life. It is important to know how people evaluate their lives and the components that are important to individuals as well as groups of people. While some studies have focused on specific domains of quality of life like relationships (Michalos and Zumbo, 2000), work (Kousha and Mohseni, 2000) and personal health (Turksever and Atalik, 2001) other studies have approached quality of life as a multidimensional construct that should aggregate self-evaluations of the various domains (Lewis and Lyon, 1986; Rogerson, 1999, Olapegba, 2009).

In considering the validity and reliability of any given measure care must be taken of cultural differences and relativity, in order words a measure that is considered valid in a particular culture may not be relevant in other cultures and as such a culturally relevant measure would be needed. In addition, population of interest may also influence the dynamics of a particular measure. These two considerations are the main justifications for the present study. People Living with HIV/AIDS (PLHA) are considered as a special population that is at the same time vulnerable. The dynamics of the condition and associated stigma and discrimination are issues already implicated in the mental health of PLHA (Olapegba, 2005; Olapegba, 2010). This study is therefore an attempt to assess the factor structure and perform item analysis of the perceived quality of life scale developed by Olapegba (2008, 2009) to determine whether or not there will be any significant correlation in the factor structure.

**Method**

**Participants**

Access to the participants was through Non-Governmental Organizations (NGOs) working with PLH under the condition of anonymity. The age range of participants was from 16 to 69 years with a mean of 37.7 ± 11.1, with regard to gender, 274 (44.9%) were males while 335 (54.9%) were females with one missing case. Thirty two (5.2%) have no formal education, 179 (29.3%) have basic primary education, 274 (44.9%) graduated from high school, 102 (16.7%) have national diploma, 13 (2.1%) have higher diploma and bachelors' degree, 9 (1.5%) have higher degrees while 1 (.2%) participant did not indicate level of education. A majority of the participants are from monogamous family background (59.0%).

**Measures**

**The Perceived Quality of Life Scale.**

The perceived quality of life scale (Olapegba, 2009) is a Likert-type scale made up of 22 items to assess self-report generic perception of quality of life; it was initially validated among the general population and now adopted to investigate perception of quality of life in a special population-PLHA. Each item on the scale receives a discrete score ranging from 1 (strongly
disagree) to 5 (strongly agree). The author reported Cronbach alpha of .87, Split-half reliability of .84 and correlation between forms of .98 in a normal population. Additionally, Principal Component Analysis (PCA) revealed 7 factors (contentment, relationship, social support, self-competence, self-health perception, environmental relationship & recreation) with eigenvalues ranging from 6.29 - 1.13 and cumulative percentage variance of 67.69. For the present study the scale was used in its original form without any form of revision to examine if there would be any dynamics in the nature and structure of the factors and the item analysis in a special population. Cronbach alpha for the present study is .923 with correlation between form of .63 and Split-half reliability of .75.

HIV/AIDS-related stigma and discrimination scale. This scale was developed by Genberg, Kawichai, Chingon, Sendah, Charivalertsak, Kenda and Celentano (2008). It is a Likert-type scale with Cronbach alpha of .70. The scale was basically used in this study to establish divergent validity with the perceived quality of life scale.

Table 1

Adjusted Item-Scale Correlation and Cronbach’s Alpha After Removing Each Item in the PQOL.

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s α if the item is eliminated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.460</td>
<td>.922</td>
</tr>
<tr>
<td>2</td>
<td>.510</td>
<td>.921</td>
</tr>
<tr>
<td>3</td>
<td>.541</td>
<td>.920</td>
</tr>
<tr>
<td>4</td>
<td>.517</td>
<td>.921</td>
</tr>
<tr>
<td>5</td>
<td>.546</td>
<td>.920</td>
</tr>
<tr>
<td>6</td>
<td>.569</td>
<td>.920</td>
</tr>
<tr>
<td>7</td>
<td>.652</td>
<td>.919</td>
</tr>
<tr>
<td>8</td>
<td>.525</td>
<td>.921</td>
</tr>
<tr>
<td>9</td>
<td>.534</td>
<td>.921</td>
</tr>
<tr>
<td>10</td>
<td>.506</td>
<td>.921</td>
</tr>
<tr>
<td>11</td>
<td>.529</td>
<td>.921</td>
</tr>
<tr>
<td>12</td>
<td>.616</td>
<td>.919</td>
</tr>
<tr>
<td>13</td>
<td>.607</td>
<td>.919</td>
</tr>
<tr>
<td>14</td>
<td>.661</td>
<td>.918</td>
</tr>
<tr>
<td>15</td>
<td>.601</td>
<td>.919</td>
</tr>
</tbody>
</table>
16 .605
17 .664
18 .651
19 .603
20 .616
21 .588
22 .551

Internal consistency
Total Sample \( \alpha = .923 \) Std \( \alpha = .925 \)

Results
Reliability
Result in table 1 above indicates the Cronbach's alpha for the whole scale (.923) is greater than the corrected item-total correlation after removing each item. Meanwhile, the corrected item-total correlation ranged from .46 to .66 for all the items.

Factor Analysis
Four factors were extracted from the factor analysis with eigenvalue for all factors greater than 1 (see Table 2). The percentage variance and cumulative variance for the factors before and after rotation are also shown in Table 2. Items 22, 21, 18, 15, 16, 19, and 17 (affiliation) combined had the highest loading with percentage variance of 39.133, followed by items 10, 11, 13, 8, 12 and 6 (locus of causality) with percentage variance of 12.166. Next are items 2, 3, 4, 1, and 5 (personal health efficacy) with percentage variance of 9.182 while items 9, 20, 7 and 14 (job-family interface) had the least loading with percentage variance of 5.134.

Table 2
Factor structure, Eigenvalues, Percentage of Explained Variance for Each Factor, and Estimate of Factor Loadings for the PQOL Scale.

<table>
<thead>
<tr>
<th>Factors</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eigenvalues and percentage of explained variance before rotation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>8.61</td>
<td>2.68</td>
<td>2.02</td>
<td>1.13</td>
</tr>
<tr>
<td>% Variance</td>
<td>39.13</td>
<td>12.17</td>
<td>9.18</td>
<td>5.13</td>
</tr>
<tr>
<td>% Cumulative variance</td>
<td>39.13</td>
<td>51.30</td>
<td>60.48</td>
<td>65.62</td>
</tr>
<tr>
<td>Eigenvalues and percentage of explained variance after rotation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>4.27</td>
<td>3.84</td>
<td>3.80</td>
<td>2.52</td>
</tr>
<tr>
<td>% Variance</td>
<td>19.42</td>
<td>17.47</td>
<td>17.28</td>
<td>11.44</td>
</tr>
<tr>
<td>% Cumulative variance</td>
<td>19.42</td>
<td>36.89</td>
<td>54.17</td>
<td>65.62</td>
</tr>
</tbody>
</table>
Factors loadings

Affiliation
22. My sex life has always been normal .80 .15 .15 -.08
21. I always sleep well .76 .23 .15 .04
18. I always find time to listen to music and watch television .70 .26 .13 .19
15. My friends are very kind and supportive .67 .12 .10 .32
16. My neighbours are very friendly with me .66 .11 .15 .30
19. I am up to date on my job .62 .02 .09 .52
17. I often do volunteer work to help in my community .55 .33 .17 .32

Locus of causality
10. My trust in God keep me going in life .084 .802 .128 .108
11. I don’t get involved in shady things .163 .800 .138 .042
13. I am contented with what I have .266 .756 .198 .055
8. Helping other gives me joy .104 .723 .097 .259
12. I have adequate control over my privacy .342 .610 .173 .156
6. My judgments and perception of issues are usually accurate .133 .505 .234 .435

Personal/health efficacy
2. I always eat balanced diet .164 .161 .877 -.022
3. I have enough strength to carry out my daily activities .144 .167 .859 .090
4. I hardly forget things .131 .139 .835 .125
1. I am in a perfect state of health .134 .059 .826 .076
5. I always do what I believe in .119 .298 .731 .115

Job-family interface
9. I enjoy my job and my family .162 .283 .026 .784
20. I find it easy to adjust to changes in my environment, job & status .562 .048 .098 .588
7. I can achieve whatever goal I set for myself .158 .522 .245 .558
14. I enjoy cordial relationship with my wife and parents .536 .214 .095 .537

Reliability of the Subscales: Item analysis to estimate the reliability of each subscale showed that the four subscales are reliable and all the items have high coefficients ranging from .542 to .824 (see Table 3).

Table 3
Adjusted Item-Scale Correlation and Cronbach’s Alpha After Removing Each Item for the four Subscales.

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s α if the item is eliminated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affiliation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>.641</td>
<td>.854</td>
</tr>
<tr>
<td>22</td>
<td>.629</td>
<td>.854</td>
</tr>
<tr>
<td>18</td>
<td>.692</td>
<td>.846</td>
</tr>
<tr>
<td>15</td>
<td>.667</td>
<td>.849</td>
</tr>
<tr>
<td>16</td>
<td>.673</td>
<td>.848</td>
</tr>
</tbody>
</table>
External validity: Using the divergent validity approach the composite PQOL scale was correlated with the HIV/AIDS-related stigma and discrimination scale and the result showed there was no significant correlation between the two.

Correlations between PQOL and its subscales: in an attempt to determine the relation between the perceived quality of life and the four extracted factors (subscales) a zero order correlation was performed. PQOL significantly correlated with affiliation (r = .87), locus of causality (r = .79), personal/health efficacy (r = .65) and job-family interface (r = .84) (see Table 4). Additionally, the four factors correlated significantly with one another (see Table 3).
Table 4
Correlations Between PQOL and its Subscales

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PQOL</td>
<td>96.96</td>
<td>13.44</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Affiliation</td>
<td>30.14</td>
<td>5.72</td>
<td>.87</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Locus of causality</td>
<td>27.35</td>
<td>3.88</td>
<td>.78</td>
<td>.52</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>4. Personal/health efficacy</td>
<td>22.49</td>
<td>3.69</td>
<td>.65</td>
<td>.38</td>
<td>.44</td>
<td>-</td>
</tr>
<tr>
<td>5. Job-family interface</td>
<td>16.96</td>
<td>3.54</td>
<td>.84</td>
<td>.72</td>
<td>.58</td>
<td>.34</td>
</tr>
</tbody>
</table>

Note: All correlations are significant at p < .01. N = 599 (for each of the variables).

Discussion
The aim of this paper was to assess the factor structure and perform item analysis of the perceived quality of life scale in a special population and vulnerable group – People Living with HIV in Nigeria. There was also an attempt to establish divergent validity of the scale by correlating it with the HIV/AIDS-related stigma and discrimination scale. The psychometric properties of the scale are presented alongside the factors that emerged.

The overall scale was shown to be reliable as a measure of perceived quality of life among PLH while each of the items was found to be reliable in measuring the construct. Result of the factor analysis conducted revealed that perceived quality of life of PLH is a multidimensional construct with four factors (subscales) and not one-dimensional. This finding is consistent with mainstream literature on perceived quality of life (Lucas, 2004; Lewis and Lyon, 1986; Rogerson, 1999). Interestingly also, Olapegba (2009) reported a multidimensional result using the same scale among a normal population, the only difference is that with the normal population the extracted factors were seven.

The first subscale is affiliation, this is a pointer to the fact that PLH in spite of their health condition have the desire to associate and make friends, this is in line with the needs theory that every human being is motivated to affiliate (Diener et al., 2003; Diener and Lucas 2000; Schyns, 1998). It may be safe to postulate that those who have the opportunity to affiliate will report a more positive perception of quality of life. Locus of causality is the second subscale that emerged from the result; this indicates that how PLH explain the cause(s) of their condition will influence their perceived quality of life. Literature has explained locus of control in terms of two extremes – internal and external (Rotter, 1966; Wallston, Wallston, Kaplan and Maides, 1976). People with internal locus of control have been said to take responsibility for their conditions and as such may come to term with adverse situations better than people with external orientation who see adverse conditions as externally caused. These two extremes going by popular literature may have influence on perceived quality of life, it is therefore suggested that further studies may examine the dynamics of locus of causality on the perception of quality of life among PLH.

The third subscale is personal/health efficacy which shows that the issue of personal health and how efficacious is the health is of paramount importance to this category of people. The quality of health services available and accessibility to these facilities are likely to influence perceived quality of life. The assurance that quality health is available will positively affect the psyche of PLH and consequently the perception of quality of life. Job-family interface is the fourth subscale; this indicates that family values, quality of family relationship and quality of relationship at work
may impact perception of quality of life one way or the other.

In addition, each of the subscales has high internal consistency meaning that they are reliable as separate measures of affiliation, locus of causality, personal/health efficacy and job-family interface respectively. Also, all the four subscales are positively correlated and the validity of the composite scale was established.

**Conclusion**

This article has clearly shown that the scale under consideration is a valid measure of perceived quality of life among PLH and it has four valid subscales (affiliation, locus of causality, personal/health efficacy and job-family interface). Each of the four subscales can stand alone as a measure of a construct with internal consistency ranging from .795 - .907. In addition, perceived quality of life has been confirmed as a multidimensional construct and not a one-dimensional construct as postulated by some authors.

**Suggestions for Further Studies**

While this article was meant to assess the factor structure and item analysis of the perceived quality of life scale among PLH it is suggested that subsequent studies will examine the influence and effect of each subscale on this special population. Additionally, treatment regimen and progression of the condition can be investigated alongside the perceived quality of life.

**References**


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Biographical Note:

Peter Olamakinde Olapegba, an Applied Social/Departmental Psychologist, is a Senior Lecturer in the Department of Psychology, University of Ibadan, Nigeria, and Fellow, Centre for Peace and Conflict Studies (FCEPACS). He holds a doctorate degree in Social/Environmental Psychology and has published extensively in internationally reputable peer review journals, in addition to paper presentations at international conferences.