Validity and reliability of Persian version of quality of life questionnaire in people living with HIV/AIDS (WHOQOL-HIV-BREF)

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Abstract

Introduction: The aim of this study was to assess validity and reliability of Persian version of quality of life (QOL) questionnaire in people living with human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) (WHOQOL-HIV-BREF).

Material and methods: A total of 150 HIV/AIDS patients who were referred to Fasa and Larestan Behavioral Disease Counseling Centers were recruited into the study. WHOQOL-HIV-BREF questionnaire was completed by trained interviewers. Reliability of questionnaire was measured using Cronbach’s a coefficient. Construct validity was assessed by item-scale correlation method, and criterion validity was determined with discriminant validity and convergent validity.

Results: Cronbach’s α was computed above 0.8 for all dimensions of the questionnaire. Item-convergent validity ranged from 0.38 to 0.83. QOL score was higher in AIDS patients compared with HIV-infected individuals in all dimensions (p < 0.01).

Conclusions: The findings of this study show that WHOQOL-HIV-BREF questionnaire provide acceptable validity and reliability for measuring QOL among Persian-speaking HIV/AIDS-infected patients in Iran.

HIV AIDS Rev 2021; 20, 4: 270-274
DOI: https://doi.org/10.5114/hivar.2021.111877

Key words: HIV, AIDS, validity, reliability, Persiane.

Introduction

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) are chronic and debilitating illnesses, imposing a significant burden on patient quality of life (QOL) and causing physical, mental, and financial harms [1]. According to the World Health Organization, globally, about 36.9 million people were living with HIV in 2017 (95% CI: 31.1-43.9) [2], and Iran is one of the countries with the most noteworthy HIV/AIDS rate in the Middle East [3]. Moreover, HIV/AIDS is estimated to be account-
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Validity and reliability of the questionnaire must be measured [6]. However, in this study, the common questions between questionnaires 1 and 2 were translated independently, and translations are very similar. English version of the questionnaire was translated into Persian by an epidemiologist and 2 English language specialists. Then, a single Persian version was prepared. In the next step, the Persian version was translated into English by 3 English language specialists, and out of these three versions, a final English version was prepared and compared with the original English version of the questionnaire.

Study population

According to Fayer et al., a sample size of 100 to 400 individuals was considered appropriate for assessing reliability

Table 1. Demographic and clinical features of the participants

| Variables          | n (%) |
|--------------------|-------|
| Gender             |       |
| Male               | 84 (65.1) |
| Female             | 45 (34.9) |
| Marital status     |       |
| Single             | 66 (51.2) |
| Married            | 48 (37.2) |
| Widow              | 6 (4.7) |
| Divorced           | 9 (7.0) |
| Education level    |       |
| Under diploma      | 69 (53.5) |
| Diploma            | 54 (41.9) |
| Academic           | 6 (4.7) |
| Place of living    |       |
| Urban              | 81 (62.8) |
| Rural              | 48 (37.2) |
| Stage of disease   |       |
| HIV infection      | 93 (72.1) |
| AIDS               | 36 (27.9) |
| Total              | 129 (100) |

Material and methods

This was a cross-sectional study. In order to appropriately employ a questionnaire that originate from different country and language, the following steps should be followed: 1) translate and back translate the questionnaire, and match with an original version; 2) cultural adaptation of questions, and a correction if the question is unclear; 3) validity and reliability of the questionnaire must be measured [6].

Data collection instrument

WHOQOL-HIV-BREF is a 31-item instrument, in which 26 questions are similar to those of WHOQOL-BREF questionnaire and 5 items are devoted to AIDS/HIV. This questionnaire is divided into six broad domains of quality of life, including physical domain, psychological domain, levels of independence, social relationships, environment, and spiritual domain. The first two questions of the scale are unrelated to QOL domains and assess overall attitude of individuals towards QOL and health status [15]. Each item of WHOQOL-HIV-BREF is rated on a 5-point Likert scale, scored from 1 to 5 in most questions, with score 1 meaning ‘very poor impression’ and score 5 denoted as ‘very good positive impression’. In questions where a higher score does not mean a better quality of life, when calculating their scores, the scores of the answers are reversed. To calculate the score of each domain, the score of the questions in each domain is added together and divided by the number of questions in that domain, and then multiplied by 4. Each dimension score ranges from 4 to 20, where 4 is the worst and 20 is the best position in that dimension [15].
and validity of QOL questionnaires [17]. We used convenience method, and 129 HIV/AIDS patients were selected from Fasa and Larestan Behavioral Disease Counseling Center. In each of the two centers, a trained psychologist collected the required data. In this study, inclusion criteria were at least 18 years of age and lack of chronic concomitant disease.

**Validity, reliability, and statistical analysis**

Expert opinions were used to confirm face validity and content validity, with two epidemiologists, two infectious disease specialists, a nursing specialist, and a health education specialist, who confirmed face and content validity of the questionnaire.

Factor analysis was used to identify all dimensions of the questionnaire and compare it with the original version of WHOQOL-HIV-BREF. Factor analysis compared our Persian-language questionnaire with the original version, and determined whether identified dimensions in the Persian-language questionnaire with the original version, of the questionnaire.

### Table 2. Result of factor analysis by varimax rotation

| Question                                                        | Component |
|----------------------------------------------------------------|-----------|
| 1 Pain and discomfort                                           | 0.677     |
| 2 Bothered by any physical problems related to HIV              | 0.726     |
| 3 Dependence on medication or treatment                         | -0.232    |
| 4 Positive feeling                                              | 0.419     |
| 5 Religion, spirituality, and personal beliefs                  | 0.335     |
| 6 Forgiveness and blame                                          | -0.129    |
| 7 Concerns about the future                                     | -0.056    |
| 8 Death and dying                                               | -0.260    |
| 9 Thinking, learning, memory, and concentration                 | 0.336     |
| 10 Physical safety and security                                 | 0.291     |
| 11 Physical environment                                         | 0.153     |
| 12 Energy and fatigue                                           | 0.684     |
| 13 Bodily image and appearance                                  | 0.225     |
| 14 Financial resources                                          | 0.218     |
| 15 Social inclusion                                             | 0.289     |
| 16 New information and skills                                   | -0.270    |
| 17 Leisure activities                                           | 0.275     |
| 18 Activities of daily living                                   | -0.236    |
| 19 Sleep and rest                                               | 0.509     |
| 20 Work capacity                                                | -0.319    |
| 21 Mobility                                                     | -0.053    |
| 22 Self-esteem                                                  | 0.284     |
| 23 Personal relationships                                       | -0.173    |
| 24 Sexual activity                                              | -0.122    |
| 25 Social support                                               | 0.017     |
| 26 Home environment                                             | 0.062     |
| 27 Health and social care: accessibility and quality             | 0.080     |
| 28 Transport                                                    | 0.020     |
| 29 Negative feelings                                            | -0.172    |

*Extraction method – principal component analysis. Rotation method – varimax with Kaiser normalization. a – rotation converged in 8 iterations.
1 – physical health; 2 – psychological health; 3 – level of independence; 4 – social relationships; 5 – spiritual/religion/personal beliefs; 6 – environmental health*
Item-convergent and item-discriminant validity were calculated for inter-item and item-domain correlations using Spearman’s correlation coefficient test. The item-convergent validity was 100% in all dimensions (Table 3). All items of the questionnaire had a correlation coefficient higher than 0.4 with their own dimension \((p < 0.05)\). The score for item-domain correlation was lower in irrelevant dimensions than in relevant dimension (item – discriminant validity). These results reflected acceptable construct validity of the Persian-language WHOQOL-HIV-BREF.

Cronbach’s \(\alpha\) was computed higher than 0.8 for all dimensions, indicating adequate measure of internal consistency and acceptable reliability of the questionnaire. The total QOL scores and scores of all QOL dimensions were higher in PLWHA than in HIV-infected individuals, demonstrating clinical validity of the questionnaire, as shown in Table 4.

Clinical validity was also assessed through comparing the score of all dimensions of WHOQOL-HIV-BREF between HIV-positive subjects and AIDS patients using Mann-Whitney U-test. In addition, to assess validity of the questionnaire in terms of internal consistency, Cronbach’s a coefficient of all dimensions of the questionnaire was calculated.

### Results

A total of 129 PLWHA were recruited into this study, of whom 84 (65.1%) patients were males. The average age of the patients was 30.01 ± 8.96 years, ranging from 22 to 56 years. The mean duration of infection was 5.64 ± 4.17 years. In addition, minimum duration of HIV infection ranged from 1 to 19 years. Other characteristics of the participants are presented in Table 1.

Table 2 shows the results of factor analysis based on varimax and oblimin rotations. Accordingly, all identified dimensions in the Persian version of WHOQOL-HIV-BREF were similar to the original version. Furthermore, all items displayed factor loadings above 0.4 in their dimensions. However, 5 items (item No. 6, 9, 12, 21, and 24) had a factor loadings above 0.4 in their own dimension as well as other irrelevant dimensions, with a lower factor loadings in irrelevant dimensions.

Item-convergent and item-discriminant validity were calculated for inter-item and item-domain correlations using Spearman’s correlation coefficient test. The item-convergence validity was 100% in all dimensions (Table 3). All items of the questionnaire had a correlation coefficient higher than 0.4 with their own dimension \((p < 0.05)\). The score for item-domain correlation was lower in irrelevant dimensions than in relevant dimension (item – discriminant validity). These results reflected acceptable construct validity of the Persian-language WHOQOL-HIV-BREF.

Cronbach’s \(\alpha\) was computed higher than 0.8 for all dimensions, indicating adequate measure of internal consistency and acceptable reliability of the questionnaire. The total QOL scores and scores of all QOL dimensions were higher in PLWHA than in HIV-infected individuals, demonstrating clinical validity of the questionnaire, as shown in Table 4.

### Discussion

Factor analysis revealed that all identified dimensions for the Persian version of WHOQOL-HIV questionnaire were similar to the original WHOQOL-HIV-BREF (Table 2). However, questions No. 6, 9, 12, 21, and 24 displayed a factor loading greater than 0.4 in two dimensions, while factor loading for the item was higher in its’ dimension compared with other dimensions.
Item convergent validity was above 0.4 for all items, and scores for discriminant validity of all items were lower in their own domain, indicating acceptable construct validity of items of the questionnaire.

The findings of this study suggest that all dimensions of the questionnaire displayed a very good internal consistency and reliability. Cronbach’s α was higher than 0.7 in all dimensions, which was a recommended and acceptable value. These results were also observed in Malaysian, Vietnamese, Brazilian, and Thai versions of WHOQOL-HIV-BREF. The lowest Cronbach’s α coefficient was obtained in the spiritual dimension, which could be attributed to limited number of items and/or item contents of this dimension. Moreover, a lower reliability of this dimension has been reported in other studies.

According to the results of the present study, WHOQOL-HIV-BREF demonstrated moderate to high item-domain correlations (Table 3). These results are supported by Saddki et al. in Malaysia [18] and Neemon et al. in Taiwan [19].

In this study, the clinical validity of the WHOQOL-HIV questionnaire was measured. The QOL scores in all dimensions and the overall score of WHOQOL-HIV questionnaire were less among PLWHA than in HIV-positive individuals, showing a good validity of the questionnaire and an indicator of severity of the disease.

This study was conducted in two cities located in Fars province, which is a small proportion of the population of Iran. However, their culture is to a large extent similar to Persian speakers in Iran, and this questionnaire can most likely be used in other Iranian Persian speakers. Therefore, it is clear that in non-Persian speakers of Iran, the use of this questionnaire is not recommended, even though they can also speak Persian.

The use of convenience sampling was the only limitation of the present study. This can reduce external validity, because only those HIV/AIDS patients who received treatment and counseling were enrolled into the study, therefore the results cannot be generalized to all HIV/AIDS patients. It should be noted that there are some patients who are not recognized and not under treatment.

Conclusions

The results of this study showed that the Persian version of WHOQOL-HIV-BREF provide the sufficient validity and reliability for assessing QOL in Persian-speaking HIV/AIDS patients in Iran.

Conflict of interest

The authors declare no conflict of interest.

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