Reliability and Factor Analysis of WHOQoL-100 Questionnaire for Drug Addicts in Guilan, Iran

Bahman Akbari, Maziar Andalib[2], Sarah Andalib[3], Katayoun Khakbiz[3], Houra Safarpour[3]

[1]Department of Clinical Psychology, Rasht Branch, Islamic Azad University, Rasht, Iran
[2]M.Sc. Psychology, Shahid Chamran University of Ahwaz, Iran
[3]M.Sc Student, Science and Research Branch of Islamic Azad University of Guilan, SRBIAU, Rasht, Iran

ABSTRACT

Substance abuse is an important public health problem that directly affects millions of people worldwide and has serious economic, health and social consequences. The aim of this study is to explore the psychometric properties of WHOQoL-100 instrument as self-reported by drug users. Sample of 115 drug addicts were randomly selected from the total drug abusive population in Guilan, a northern province of Iran. The measurement tool for assessing the addicts' quality of life was the World Health Organization's WHOQoL-100 questionnaire. Statistical analysis was performed by SPSS-16 software. Reliability of each Domain of the questionnaire was calculated. Cronbach's alpha for all domains except two of them were high for both male and female groups. Factor analysis was then performed and factor loadings were obtained by means of Varimax analysis. This study, for the first time about drug addicts in Iran, demonstrates that WHOQoL-100 constitutes a reliable research instrument for evaluating the Iranian population of substance users in a northern province of Iran, namely Guilan.

KEYWORDS: Quality of life, WHOQoL-100, Drug addicts, Psychometric property, Reliability

INTRODUCTION

The World Health Organization has recently produced a generic quality of life measure, WHOQOL-100, which as well as multidimensionality, has also been referred to as a multilingual, and generic instrument developed in more than 15 international centers.[13-18] The World Health Organization Quality of Life Group defines QOL as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns"[17]. However, there is controversy over the meaning of this concept, and there is no consensus about its definition (Carr and Higginson 2001; Fischer et al. 2001a, b; Moons et al. 2006; Taillefer et al. 2003). Various professions create their own interpretations, with little resemblance and much fragmentation in-between disciplines (Farquhar 1995; Rapley 2003).

There is a wide variety of other tools which measure quality of life in healthy, disabled and drug dependent people, such as SF-36, QLQ, WHOQoL-BREF, (and more specifically for drug addicts:) WHOQoL-HIV and IDUQOL [4,19] to name but a few.[1,5,9,11] However, among these instruments, WHOQOL-100 is one of the most popular questionnaires to evaluate different aspects of QOL for both healthy adults and drug addicts. This tool consists of 100 items which break down into twenty-four facets, which can be further sub-divided into six major domains, namely Physical capacity, Psychological, Social relationships, Environment, Independence and Spirituality -or an alternative 4 domain model, with Independence combined with Physical, and Spirituality combined with Psychological Dimension (R.E. O'Carroll, 2000). Following this powerful tool, the world of psychology and psychiatry has recently witnessed a notorious increase and a great interest in finding the psychometric properties of WHOQoL-100 in different countries and for different populations[2,3,6,10] At much the same time researchers in Iran are also showing interest to carry out psychosocial and physical wellbeing projects by means of WHOQoL-100 (Karimlou et al. 2011). [19]

From the other hand, substance abuse is a challenging problem which has conquered both developed and developing countries like Iran. It is increasingly recognized as "a chronic, relapsing disorder, which is nonetheless recoverable and hence requires a continuing care perspective rather than an episodic treatment approach" (Brindis and Theidon 1997; McLellan et al. 2000). Relatively few studies have been published concerning QoL among drug users (Smith and Larson 2003, Maeyer et al. 2009, Zubaran et al. 2012)[20] and amongst the very few works published on this issue, most of them are limited to aspects of health-related factors (De Jong et al. 2007; Torrens et al. 1997; Garg et al. 1999; Rudolf and Watts 2002), despite the fact that several authors have demonstrated that QoL is a broader and therefore more useful concept (Cummins 2005; Schalock 1996; Maeyer et al. 2009), in such a way that both WHOQOL-100 and WHOQOL-BREF have recently been proposed as useful additions to the clinical researcher's arsenal[7].

In all these few studies, quality of life (QOL) of drug abuse subjects has shown to be as low as psychiatric disorder patients (Vaarwerk and Gaal, 2001). Researchers have proved a negative effect of psychotropic drug use on QoL[8] (Stein et al. 1998; Ventegodt and Merrick 2003), but it remains unclear whether this can be attributed to the drug use itself or to the negative life events that may have induced drug use. Also, drug users' scores for physical health have proved to be similar to other populations with chronic problems while their mental health scores are usually much lower. This is associated with the strong co-morbidity between substance abuse and psychiatric symptoms (Millson et al. 2004; Smith and Larson 2003). Quality of Life in HIV-positive injecting drug users is also investigated (Preau et al., 2008). Preau and his colleagues argue that some factors such as access to treatment, co-morbidities and immuno-virological characteristics or side-effects of treatment, and patterns of drug use and treatment for opiate dependence may affect the quality of life in these addicts. Although one study has reported that without treatment, QOL of substance users decreases (Margolese et al., 2006), some have shown that at 1- year follow-up, most patients remain in a stable remission and substance use does not necessarily affect parts of their lives such as work participation rate (Bell et al., 2002). Some authors have suggested that stigmatization is a cause of QOL decrease in substance users. Changes in living environment, societal opinion, and social life of opioid-dependent individuals may be other causes. There are also other factors that may affect QOL (Mendlowicz and Stein, 2000). Negative influences of drug dependence on major organ systems (Stoermer et al., 2003) may indirectly decrease QOL. The experience of symptoms may be another cause.

Finally it is noteworthy to know that QOL data of substance users may be pretty much useful for policy makers, program administrators, and program evaluators as benchmarks.

METHODS

The objective of this study was to evaluate the reliability of the World Health Organization Quality of Life Instrument (WHOQoL-100) among drug addicts who live in Guilan province in northern Iran.

A cross-sectional study was developed. A sample of 115 participants from inpatient and outpatient treatment facilities were selected randomly and were asked to complete the WHOQoL-100 Questionnaire. This sample was comprised of 75 male (%69) and 39 (%34) female subjects, with ages ranging from 17 (a woman) to 62 (a man) years. Only one person did not fill the whole questionnaire in the accurate manner, i.e., only 1 option for each item. So the total number of respondents reduced to 114.

Research Tool

The WHOQOL-100 has been developed from an extensive pilot test of some 300 WHOQOL questions in 15 centers around the world. Data from this pilot testing on over 4.500 subjects enabled the 100 best questions to be selected according to set criteria.[13] These questions respond to the definition of Quality of Life as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. WHOQoL-100 has 100 questions with a 5-Likert scale for each item (1. Not at all, 2. A little, 3. A moderate amount, 4. Very much, 5. An extreme amount). This tool has 25 facets that each contains 4 questions. Finally, these 25 facets will converge in such a way that 6 domains will come out of them. Since, the final results just get out of the last category, i.e., the domains, in this paper we have only worked on the reliability of these domains that include: Physical, Psychological, Level of independence, Social relationship, Environment, and Spirituality. WHOQoL-100 is normalized once, by Karimlou and his colleagues, for the Iranian society (Karimlou et al., 2011) with quite high and suitable validity and reliability. Therefore we have had worked through the once-normalized questionnaire and have normalized this inventory further for the drug abusive society in Iran.

RESULTS

Reliability (Internal Consistency)

The internal consistency indices for the six domains of the WHOQoL-100 instrument are presented in Table 1. Regarding these findings one can conclude that all the domains of the WHOQoL-100 met or exceeded the minimum level of acceptable internal consistency of 0.7. For the total sample, the maximum level of the obtained reliability was related to the psychological domain (Cronbach's alpha=0.877)

Tables 1 and 2 Above: Cronbach's alpha for different domains of the Persian version of WHOQoL-100 for drug addicts (N =114); Below: Pearson correlation between each two domains, two-tailed, (N =114)

Domain	Number	Mean	SD	Min-Max	C'alpha
1. Physical	114	13.47	2.98	6.67-18.62	.839
2. Psychological	114	13.59	2.56	7.60-18.60	.877
3. Level of independence	114	14.37	2.29	9.00-20.00	.820
4. Social relationship	114	12.64	2.62	7.00-18.00	.788
5. Environment	114	11.38	1.87	6.88-15.75	.824
6. Spirituality	114	13.50	3.68	5.00-20.00	.783

As said earlier above, the highest Cronbach's α belongs to the second domain which pertains to the level of independence. We may also compute two-tailed Pearson correlations between each two domains as follows ([**]: significant in 0.001 level of significance)

	D.1	D.2	D.3	D.4	D.5	D.6
D1.Physical	—					
D2.Psychological	0.678[**]	—				
D3.Level of independence	0.744[**]	0.718[**]	—			
D4.Social relationship	0.369[**]	0.568[**]	0.280[**]	—		
D5.Environment	0.377[**]	0.561[**]	0.302[**]	0.542[**]	—	
D6.Spirituality	0.154	0.441[**]	0.320[**]	0.027	-0.037	—

The highest positive correlation is between Physical and Level of independence domains (0.744), and the least correlation belongs to the relationship between Spirituality and social relationship (0.027). There is only one negative correlation between Spirituality and Environment (-0.037) which may simply imply that the worse the environment, the higher the need for spiritual dealings or feeling.

FACTOR ANALYSIS

Factor analysis in the first step was performed for the 100 question items of WHOQoL-100. 25 factors were extracted that may be analogous to the 25 facets with each containing 4 items. Factor analysis was then performed for both the 25 facets (24 + General) and the 6 domains. Results showed that the total number of facets could simply be reduced to 7. Figure1 shows the relevant Scree plot for the facets, as below
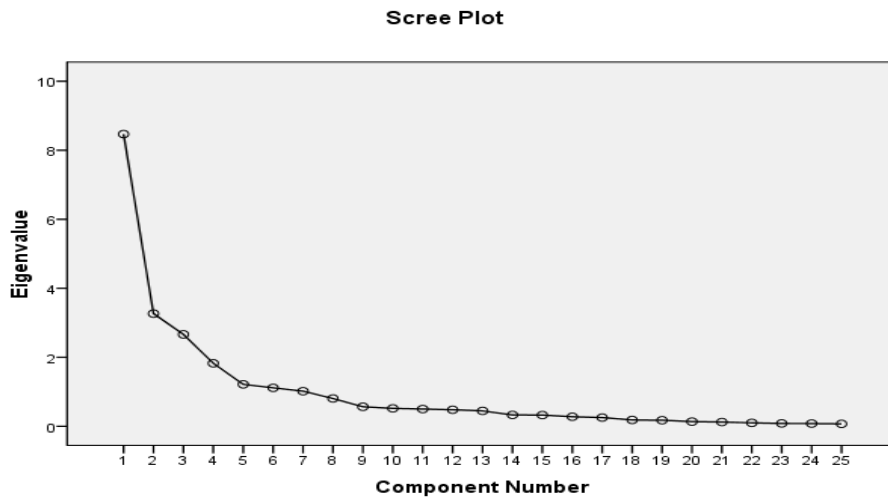

Figure 1 Scree plot for the 24 Facets: 7 factors are extracted (as the elbow depicts)

As with the factor analysis for the six domains, we used Varimax rotation and also depicted the Scree plot (Fig. 2). Scree plot has its elbow at the second factor that implies 2 factors are extracted.
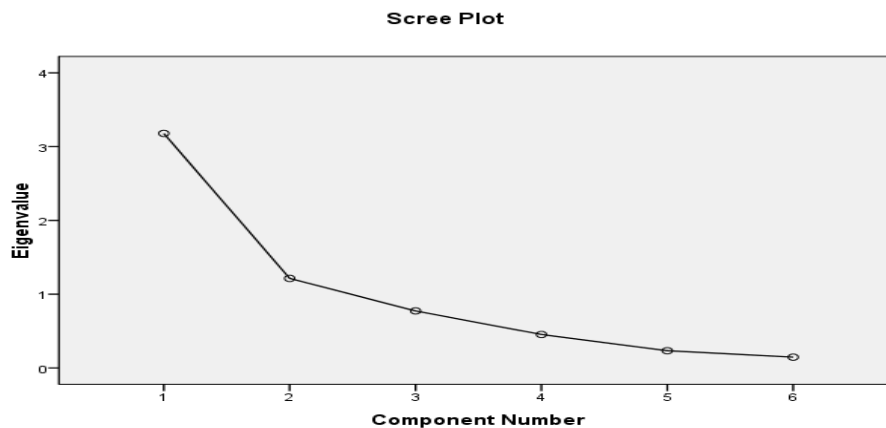

Figure 2 Scree plot for the six Domains: 2 factors are extracted (as the elbow depicts)

The results of Varimax (orthogonal) rotation are depicted below and two matrices (a) and (b) show the factor loadings and the share (%) of each factor in the total variance, respectively:

(a)   Rotated Component Matrix

	Component	
	1	2
Domain1	.643	.511
Domain2	.731	.587
Domain3	.796	.350
Domain4	.119	.810
Domain5	.080	.847
Domain6	.782	-.279

Extraction Method: PCA.
Rotation Method: Varimax with Kaiser Norm.

(b)   Total Variance Explained

Cmpnt	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
D1	3.179	52.989	52.989	2.215	36.916	36.916
D2	1.214	20.234	73.222	2.178	36.306	73.222
D3	.773	12.881	86.103			
D4	.454	7.562	93.665			
D5	.234	3.892	97.557			
D6	.147	2.443	100.000			

Table 3 Factor analysis numeric results: (a) Rotated component matrix, and (b) Share of total variance

As shown above in the right side of Table 3, we can conclude that these two extracted factors have nearly the same share of the total variance i.e. 36-37 percent of it. Also, in the left side of the chart, we can see that Domain 1 (physical) has the greatest share of the total variance and the least quota goes to Domain 6 (spirituality) such that the cumulative variance before this sixth domain may well contain 97 percent of the total variance.

Conclusion

In recent years, the WHOQOL-100 has undergone acceptable worldwide testing on its psychometric aspects. In the present study, reliability of different domains was calculated and the results showed quite suitable levels of Cronbach's alpha that all of them were higher than the threshold 0.700. Factor analysis of the total items, facets and domains extracted 25, 7, and 2 components, respectively. The interesting point is that the total number of facets is also 25 that equal the factors number extracted by factor analysis for all the questions, i.e., 100 questions. Scree plots for the facets and domains factor analysis were also depicted and the factor loadings were calculated. It is worthy to mention that it was the first time for a Persian version of WHOQoL-100 questionnaire to be factor analyzed in an Iranian society of drug addicts.

One of the limitations of this research was the small sample size 115. Only one person did not answer the questions accurately i.e., with more than one answer for each question, and hence was deleted from the survey.

Since the WHOQoL-100 has proved a reliable device in this study, in the next step we will be going to examine the validity of the Persian version of this questionnaire for drug addict society in the same city than that of this research, and then we will have the complete psychometric properties of this tool.

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