

PSYCHOMETRIC PROPERTIES OF MALAY-TRANSLATED VERSION OF “DESIRE FOR DRUG QUESTIONNAIRE” AMONG OPIOID DEPENDENTS

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<https://doi.org/10.32827/ijphcs.7.2.40>

ABSTRACT

Background: Drug craving is a subjective experience that can induce and reinforce individual to consume drugs. Desire for Drug Questionnaire (DDQ) is one of the screening tools used to measure drug craving severity in individuals with drug dependent. However, the original English version of DDQ has never been translated into Malay language nor validated in Malaysia. Thus, the objective of this study is to translate the DDQ questionnaire and to assess the psychometric properties of the translated Malay version of DDQ among opioid dependents.

Methodology: DDQ was translated from English into Malay language by language experts using forward and backward translation methods. The questionnaire was then undergone assessment for its validity and reliability. Construct validity of the questionnaire was tested using exploratory principal components factor analysis while internal consistency of the questionnaire was tested using Cronbach's alpha. Eigenvalue more than 1 was set to be the criteria for factor extraction.

Result: A total of 55 Methadone Maintenance Treatment (MMT) male clients had participated in this study. For all the 14-items in the questionnaire, the factor loading values were from 0.434 to 0.958. The exploratory principal component factor analysis for DDQ delineates all 14-items into three factors with variance of 45.51%. The Cronbach's alpha value was good with 0.86 for total score, 0.79 for factor 1, 0.81 for factor 2 and 0.75 for factor 3.

Conclusion: Malay-translated version of DDQ questionnaires has good psychometric properties. The questionnaire could be considered as a reliable instrument for assessment of drug craving level in Malay-language speaking drug dependents.

Keywords: Malay-translated DDQ, validity, internal consistency, opioid dependents, Bahasa Melayu

1.0 Introduction

Most recently reported Malaysian statistics showed an increase in number of relapses among drug abusers, from 6,379 cases in 2015 to 7,482 cases in 2017 (NADA, 2016). By definition, relapse is any usage or consumption of psychoactive substance by individuals after they had received treatment or rehabilitation programs (Fauziah & Kumar, 2009). In Malaysia, Methadone Maintenance Treatment (MMT) programs which supplied daily Syrup Methadone is the most common intervention for opioid dependents individual. However, relapse is also common among those on MMT programme, with many clients still consuming opioids even during MMT programs, irrespective of whether they had undergone period of opioid abstinence or not (Raffa et al., 2007). One of the strongest predictors of relapse is drug craving which is the intense, urgent feeling of needing or wanting drugs (Gu & Filbey, 2017).

Craving is an important reason for the unsuccessfulness of opioid treatment and is an ongoing issue of discussion in most of the opioid treatment programs, especially in the prevention of relapse (Tavares et al., 2005). Nevertheless, there are still ongoing debates on the definition of craving. Various definitions have been presented for drug craving and different approaches have been used to study this condition. Most of the literatures defined craving as the subjective desire, urge or impulse that lead individual to have high intensity to consume drugs (Marlatt & Donovan, 2005; Robinson & Berridge, 1993). Kavangh et al (2005) defines craving as cognitive and affective desire to consume drugs and is distinguishable from physiological withdrawal symptoms. Craving can trigger compulsive drug seeking behaviour which can thus, lead to addiction. Therefore, craving do play a significant role in numerous models of relapse (Sinha, 2008).

Subjective aspects of drug craving could be measured objectively by self-reported questionnaires with good reliability and internal consistency (Rosenberg, 2009). Furthermore, questionnaires are almost easy to design, low cost and easy to use. The most broadly used tool for assessment of instant drug craving is Desire for Drug Questionnaire (DDQ) questionnaire. DDQ was adapted from the Desire for Alcohol Questionnaire to assess heroin craving at the present time as a multidimensional motivational state by Franken et al (2002). Currently, there is no published article on the validation of drug craving measures for Malay speaking drug users in Malaysia. Thus, this study aim to investigate the validity and reliability of the Malay-translated version of DDQ questionnaires among male opioid dependents.

2.0 Methodology

2.1 Study Design and Participants

This study is a cross-sectional study design. Sampling technique used is simple random sampling. Since 96% of drug users in Malaysia were male, only male participants were included in this study (NADA, 2017). A total of 55 male opioid dependents were recruited from two Methadone Maintenance Therapy (MMT) clinics in Bentong, Pahang. All subjects reported opioid as their main drug of abuse and currently on daily Syrup Methadone treatment. Consent

form were signed and the study procedures were explained verbally to all the participants. Participants' information was kept as strictly confidential and their identities were kept anonymous. The inclusion criteria of participants were Malay male aged between 18-65 years old. Exclusion criteria were those who were illiterate and unable to read in Malay language. This study had ethical approval from the Medical Research and Ethic Committee (MREC), Ministry of Health (NMRR-18-1980-42518).

2.2 Instrument

2.2.1 Desire for Drug Questionnaire (DDQ)

The original English version of DDQ includes 14 questions for three main craving components, namely "desire and intention to drug use" (question 1,2,4,6,7,10,13,14), "negative reinforcement" (question 5,9,11 and 12) and "control" of drug abuse (question 3 and 8). Participants answer questions on a seven-step Likert-scale answer sheet based on what they feel or think at the moment.

This study used back-to-back translation method. The original version of DDQ were translated into Malay language and re-translated into English language by two independent expert language translators from Malaysian Translators Association, Dewan Bahasa dan Pustaka Malaysia. The translated questionnaires were checked meticulously to ensure that the language used were understandable, precise and socially accepted. DDQ were then harmonised for any language error or inconsistency until a satisfactory final version developed.

The final version of Malay-translated DDQ were distributed to 10 respondents who were MMT clients with similar sociodemographic characteristics with current participants in a pilot study done in private MMT clinic in Bandar Pusat Jengka, Pahang. The aim was to recognize any terms which could affect the understanding of the participants. After several amendment made, the final Malay-translated DDQ version was then tested for validity and internal consistency.

2.3 Procedures of Validity and Internal Consistency Testing

The questionnaires were distributed among 55 MMT clients to test for validity and internal consistency. The questionnaires were self-administered and the researcher was present to assist respondents in the events they require clarification about the questionnaires. Overall, the questionnaires were well received by the respondents.

2.4 Data Analysis

For data analysis, SPSS software version 25.0 was used. The internal consistency method was used for the final evaluation. Exploratory Principal Components Factor Analysis had been implemented to find the components of the DDQ questionnaires. All 14-items were checked for adequacy of sampling and possible correlations between the variables. Kaiser-Meyer-Olkin (KMO) measures, in which $KMO > 0.6$ with significant ($p < 0.05$) Bartlett's test of sphericity denote suitable factors for analysis. In extracting the components and interpretation of the final result, principle component by Promax rotation method was used. The criteria for the factors to be retained consist of Eigenvalue more than 1, in which prior to the scree plot curve became

horizontal line. To indicate internal consistency of the factors, Cronbach's alpha coefficient was used.

3.0 Result

3.1 Descriptive Statistics

A total of 55 male MMT clients participated in this study. Table 1 shows the sociodemographic characteristics of the participants.

Table 1: Sociodemographic Characteristics of the Participants (n=55)

Characteristics	n	%	Mean (SD)/Min-Max
Gender	55	100	
Male			
Age (in years)			28.1(4.19)/22-40
Ethnicity			
Malay	55	100	
Marital Status			
Single	32	58.2	
Married	15	27.3	
Divorce	7	12.7	
Widower	1	1.8	
Education Level			
No formal education	1	1.8	
Primary	6	10.9	
Secondary	31	56.4	
Tertiary	17	30.9	
Employment Status			
Employed	21	38.2	
Self-employed	28	50.9	
Unemployed	6	10.9	

Overall, the participants ranged between 22 to 40 years old with a mean age of 28.1 (SD=4.19). All of the participants were Malay, majority (58.2%) were single, completed secondary school (56.4%) and were self-employed (50.9%).

3.2 Construct Validity of DDQ

For the exploratory factor analysis, Kaiser-Meyer-Olkin measures was 0.826 with significant Bartlett's test of sphericity ($p < 0.001$). Table 2 shows the summary of results obtained from exploratory factor analysis of DDQ.

Table 2: Pattern Matrix Obtained from Exploratory Factor Analysis of Malay-translated version of DDQ (n=55)

	Component			Original DDQ
	1	2	3	
Q-7) I would accept to use heroin now if it was offered to me. <i>Saya akan mengambil heroin sekarang jika dihulurkan kepada saya.</i>	0.917	-0.246	0.024	1
Q-2) I would consider using heroin now. <i>Saya berkira-kira untuk mengambil heroin sekarang.</i>	0.849	-0.102	0.161	1
Q-10) I want heroin so much I can almost taste it. <i>Saya sangat menginginkan heroin sehingga saya hampir boleh merasanya.</i>	0.805	-0.070	0.230	1
Q-4) I would do almost anything to use heroin now. <i>Saya akan lakukan hampir apa sahaja untuk mengambil heroin sekarang.</i>	0.727	0.002	0.028	1
Q-1) Using heroin would be satisfying now. <i>Mengambil heroin akan memuaskan saya sekarang.</i>	0.722	0.109	-0.202	1
Q-14) I am going to use heroin as soon as I possibly can. <i>Saya akan mengambil heroin sebaik sahaja saya boleh mengambilnya.</i>	0.656	0.324	-0.283	1
Q-13) Using heroin would be pleasant now. <i>Alangkah seronoknya jika dapat mengambil heroin sekarang.</i>	0.546	-0.328	-0.505	1
Q-6) My desire to use heroin now seems overwhelming. <i>Keinginan saya untuk mengambil heroin semakin mendesak sekarang.</i>	0.469	0.235	0.285	1
Q-9) I would feel as if all the bad things in my life had disappeared if I used heroin now.	-0.135	0.891	0.074	2

Saya akan berasa seolah-olah semua perkara buruk dalam hidup saya akan hilang jika saya mengambil heroin sekarang.

Q-5) I would feel less worried about my daily problems if I used heroin now. -0.029 0.856 -0.126 2

Saya akan berasa kurang risau tentang masalah harian saya jika saya mengambil heroin sekarang.

Q-11) Using heroin now would make me feel less tensed. 0.332 0.635 0.004 2

Saya akan berasa kurang tertekan apabila mengambil heroin sekarang.

Q-12) Even major problems in my life would not bother me if I used heroin now. 0.421 0.434 -0.023 2

Sebesar mana pun masalah hidup saya, ia tidak akan mengganggu saya jika saya mengambil heroin sekarang.

Q-3) If I started using heroin now, I would be able to stop. -0.023 -0.105 0.958 3

Jika saya mula mengambil heroin sekarang, saya akan mampu berhenti.

Q-8) I could easily limit how much heroin I would use if I used now. 0.315 0.075 0.607 3

Jika saya mengambil heroin sekarang, mudah bagi saya untuk mengehadkan jumlah heroin yang akan saya ambil.

Extraction Method: Principal Component Analysis; Rotation Method: Promax with Kaiser Normalization

Extraction of components with eigenvalue more than 1, led to three components compatible with results from other literatures (Franken et al., 2002; Hassani-Abharian et al., 2016). The three-components explained 66.15% of the cumulative variance as shown below under Table 3.

Table 3: Principal Axis Factoring Analysis and the Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.371	45.510	45.510	6.371	45.510	45.510
2	1.663	11.879	57.389	1.663	11.879	57.389
3	1.227	8.762	66.151	1.227	8.762	66.151
4	0.880	6.283	72.434			
5	0.761	5.438	77.872			
6	0.695	4.962	82.834			
7	0.501	3.578	86.412			

8	0.468	3.342	89.753
9	0.339	2.424	92.177
10	0.310	2.213	94.390
11	0.277	1.977	96.367
12	0.222	1.586	97.953
13	0.164	1.172	99.125
14	0.122	0.875	100.00

The first component contains 8 questions (question 1,2,4,6,7,10,13 and 14), which investigate the participants' "desire and intention to use drug". The second component contains 4 questions (question 5,9,11 and 12), which investigate "negative reinforcement" for drug use and the third components contains 2 questions (question 3 and 8) related to "control" of drug abuse. Table 4 shows that all the three components were significantly correlated between each other.

Table 4: Correlations Matrix between Components of DDQ (n=55)

	Component 1	Component 2	Component 3
Component 1			
Pearson Correlation	1	0.540**	0.490**
Sig. (2-tailed)		0.000	0.000
Component 2			
Pearson Correlation	0.540**	1	0.440**
Sig. (2-tailed)	0.000		0.001
Component 3			
Pearson Correlation	0.490**	0.440**	1
Sig. (2-tailed)	0.000	0.001	
N	55	55	55

**Correlation is significant at the 0.01 level (2-tailed)

3.4 Internal Consistency of DDQ

The internal consistency of Malay-translated version of DDQ shows good Cronbach's Alpha values. The Cronbach's Alpha coefficient was 0.86 for total items, 0.79 for component 1, 0.81 for component 2 and 0.75 for component 3. Table 5 shows that by removing the individual items, the value of Cronbach's Alpha did not improved much.

Table 5: Value of Cronbach's Alpha if Item Deleted

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha of Item Deleted
Q1	34.22	60.618	0.543	0.854
Q2	33.95	55.460	0.762	0.840
Q3	34.04	58.073	0.398	0.861
Q4	33.65	57.786	0.621	0.848
Q5	33.20	60.422	0.447	0.856
Q6	33.55	53.919	0.722	0.840
Q7	34.05	56.312	0.592	0.848

Q8	33.55	54.253	0.673	0.843
Q9	32.82	58.114	0.447	0.857
Q10	34.05	54.793	0.783	0.838
Q11	33.27	55.091	0.704	0.842
Q12	33.76	57.110	0.633	0.847
Q13	33.95	72.608	0.395	0.902
Q14	33.49	57.143	0.601	0.848

4.0 Discussion

The Desire for Drug Questionnaire (DDQ) is a rapid instant craving measurement tool with a total of 14-items developed by Franken et al (2002). DDQ is self-explanatory and can be done in approximately five minutes without assistance. The questionnaires had a satisfactory level of validity and reliability amongst native Dutch-speaking heroin-dependent population (Franken et al., 2002). The main aim of this study was to explore the psychometric properties of Malay-translated version of DDQ among a sample of opioid-dependents individuals in MMT clinics.

This study presented that the Malay-translated version of DDQ has good validity and internal consistency. The result of exploratory factor analysis and internal consistency of each component of the questionnaires are in good conformity with the corresponding results from the original English version of Franken et al (2002). In this study, extraction of components with eigenvalues more than 1 led to extraction of three components in the DDQ questionnaires, namely “desire and intention to use drug”, “negative reinforcement” and “control” of drug abuse. These three components are consistent with Franken et al (2002). Besides, DDQ was previously translated into Persian language by Hassani-Abharian et al (2016) and it showed good validity and internal consistency as well.

To the best of our knowledge, this study is the first study to translate and validate the DDQ in Malay language among opioid dependents in Malaysia. In this study, the participants did not come across any issues in responding to the questionnaires. Participants also concluded that Malay version of DDQ were relatively easy to use. DDQ is a practical questionnaires in assessing level of craving among opioid dependents and as it is self-administered, it can be given to the patients in MMT clinics.

With regards to methodology, a total of 55 Methadone Maintenance Treatment (MMT) male clients participated and answered all questions. The sample size in this study is adequate as literatures suggested the item to respondent ratio is at least three to six respondents (Catell, 1978; Gorsuch, 1988). Besides, the nature of the data itself will fairly determine the adequacy of the sample size (MacCallum et al., 1999). The Malay-translated version of DDQ demonstrated factor loading values for all the items ranges from 0.434 to 0.958. By rule, factor loading value of 0.8 and above were considered as “high”, value of 0.40 to 0.70 were considered as “moderate” and value of less than 0.4 indicated that the items were not linked to each other (Costello & Osborne, 2005). With the factor loading values of more than 0.40, the sample size in this study were acceptable to give accurate analysis.

All three components namely, “desire and intention to use drug”, “negative reinforcement” and “control” were significantly correlated to each other. The correlations between the components were anticipated as cravings involving behaviour which can act both dependent and independent to each other (Costello & Osborne, 2005). The cumulative variance in this study was 45.51% with extraction of three factors. This indicates that 45.51% of the item variances were explained by the three extracted factors. Most of literature reported that in exploratory factor analysis, there were no specific figure of variance levels (Williams et al., 2010).

Internal consistency of the Malay-translated version of DDQ reported good Cronbach’s Alpha values. The Cronbach’s Alpha coefficient was 0.86 for total items, 0.79 for component 1, 0.81 for component 2 and 0.75 for component 3. In general, the higher the value of Cronbach’s Alpha, the higher the internal consistency. However, Schmitt (1996) reported that the value should not exceed more than able 0.95 as it indicates that the items were redundant. Most of literatures suggest that the value of Cronbach’s Alpha should be more than 0.7 (Schmitt, 1996; Williams et al., 2010). Component 3 reported lowest alpha coefficient compared to total items and other components. This lower reliability for component 3 is mainly due to the component only consists of two items. This study showed that the value of Cronbach’s Alpha did not improved much even by removing individual items. Thus, none of the items in the DDQ were removed.

One of the limitations in this study is the homogeneity of the study population as the participants were opioid dependents from specific area in Bentong, Pahang. This may affect the generalisability of the study. Furthermore, the study population was on Syrup Methadone treatment in MMT clinic, thus their views and level of cravings may have differed from the time when they were not on treatment. Hence, the selective segment of opioid dependents in this study may not be generalizable to opioid dependent population that were not on treatment. Furthermore, with the recent changes of trend of drug abuse towards crystalline methamphetamine and polydrug users instead of solely on opioids, it is suggested that DDQ questionnaires also need to be validated and can be used for other types of drug of abuse.

5.0 Conclusion

Malay-translated version of DDQ questionnaires has high psychometric properties. It could be considered as valid and reliable instruments for the assessment of drug cravings in Malay-language speaking drug dependents in Malaysia.

6.0 Acknowledgement

This manuscript is part of requirement for Doctor of Public Health (DrPH) Program in the Department of Community, Health Faculty of Medicine and Health Sciences, Universiti Putra Malaysia. We would like to thank the Director General, Ministry of Health Malaysia for his approval to publish this manuscript.

7.0 Declaration

Author(s) declare that there is no conflict of interest with the publication of this article.

8.0 Authors Contribution

Author 1: Data collection, data analysis and drafting the manuscript

Author 2: Manuscript review and editing

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