ORIGINAL PAPER

CROSS-CULTURAL ADAPTATION AND VALIDATION OF THE BAHASA MALAYSIA VERSION OF THE EATING DISORDER EXAMINATION QUESTIONNAIRE (EDE-Q)

Ramli M*, Jamaiyah H**, Noor Azimah M***, Khairani O***, Adam B**
*Kulliyyah of Medicine, International Islamic University Malaysia
**Clinical Research Centre, Ministry of Health Malaysia
***Faculty of Medicine, UKM Medical Centre

ABSTRACT

Introduction: As eating disorders such as anorexia nervosa and others are generally becoming more prevalent, it is essential to have a culturally accepted and locally validated questionnaire that is able to detect abnormal eating habits. *Objective*: To translate the Eating Disorders Examination Questionnaire (EDE-Q) into Bahasa Malaysia (BM) and to determine the construct validity, reliability and other psychometric properties of the BM version. *Method*: Two parallel forward and backward translations were done in BM in accordance to guideline. Its validation was determined by using confirmatory factor analysis among 298 secondary school children. *Results*: The BM EDE-Q had very good internal consistency with global Cronbach's alpha value of 0.879. For construct validity, majority of the items managed to produce values of more than 0.4 for confirmatory factor analysis with four unforced distinct factors detected. *Conclusions*: Analyses of reliability and validity of this BM version of EDE-Q yielded satisfactory results. The BM version produced in this study had good psychometric properties and it is applicable to the Malaysian population. Findings indicated that cultural factors in eating habits certainly influences the effort to adapt the questionnaire within a Malaysian setting.

Key words: Eating disorders, reliability, validity, Bahasa Malaysia.

Introduction

The prevalence of eating disorders such as anorexia and bulimia nervosa is low; that is between 1-2% of the worldwide population and these conditions are rarer in Asia than it is in the west[1]. The presence of these disorders is more significant in certain groups of community such as in athletes, young females and those in the higher socioeconomic society [2, 3].

In Malaysia, there is insufficient data on the prevalence of eating disorders especially among adolescents and children. Even studies related to eating habits are scarce due to unavailability of screening or measuring tools. Thus

it is crucial that a well-validated and culturally-accepted questionnaire for the Malaysian population is developed. Constructing a locally adapted questionnaire would establish a path

The characteristics of a good tool are convenient yet comprehensive in which it should be able to measure various aspects related to eating habits such as anorexic and bulimic behaviours and body disfigurement. There are several questionnaires designed to analyse abnormal eating habits such as the Eating Attitudes Test (EAT–26)[4], the Eating Disorder Inventory (EDI-2)[5], the Three Factors Eating Questionnaire (TFEQ)[6], the SCOFF questionnaire, the Eating Disorder Examination (EDE) interview[7] and the Eating Disorder Examination Questionnaire (EDE-Q)[8].

Studies had shown that there is a good level of agreement between the interview version of Eating Disorder Examination (EDE) and Eating Disorder Examination Questionnaire (EDE-Q) except in behavioural binge eating [9, 10]. The EDE-Q is a self-report version of a 36-item questionnaire derived from and scored in the same way as the interview schedule[6]. As the EDE interview schedule requires training and can be time consuming, it is not practical and quite costly to administer to a big group of people. Alternatively, as the EDE-Q is a self-administered questionnaire, it requires little training, is relatively inexpensive and is less time consuming. It can be administered in a group format [11].

As the self-administered EDE-Q is more feasible for epidemiological study, it was chosen to be validated in this study. This 36-item instrument generates four subscale scores (i.e. Dietary Restraint, Eating Concern,

for future studies on eating habits and indirectly inculcate better mental health services for children and adolescents in general.

Shape Concern and Weight Concern) as well as a global score which is the mean of the four subscales. Each subscale item is rated on a seven point system (0–6), with higher scores indicating greater frequency or severity.

Objective

The main objective of this study is to conduct a cross-cultural adaptation of the EDE-Q and to assess the reliability and validity of the Bahasa Malaysia version in Malaysian population.

Methods
Study Design:

This study was funded by the Ministry of Health Malaysia (MOH) under the MOH grant. It was a multi-centred, cross-sectional study, involving four secondary schools (i.e. SMK Taman Maluri, SMK Puteri Titiwangsa, SMK Seri Titiwangsa, SMK Setapak Indah). Within each school, the participants were selected by stratified quota sampling to represent the Malaysian population with ratio of race, gender and academic performance as main considerations. The study population consisted of adolescents, aged 12 to 17 years old that fulfilled the inclusion criteria. Consent was obtained from parents and participants. The study commenced in June 2006 and ended in December 2007.

The full protocol was approved by the Ethics Committee of Clinical Research Centre Kuala Lumpur

Hospital. All parents and subjects that participated in the study were asked to provide informed consent. The schools were selected based on the student distribution which should reflect the actual Malaysian population. Vernacular schools or schools with one predominant ethnic group were excluded.

Study Process

The study was divided into four phases. Phase 1 was the translation process where two forward and two backward translations of the original EDE-Q English version were carried out. One arm consisted of two independent bilingual medical experts while the other arm comprised of two blinded bilinguistic experts. This process was carefully done in order to ensure that there would be no alteration in the meaning, removal or addition in the sentences of the original English EDE-Q. The BM version at this phase was labelled as Pre-final BM EDE-Q. Phase 2 was intended to check for equivalence between the original English EDE-Q and pre-final BM EDE-Q. The product at the end of this process underwent pre-test using a probe technique. This pre-test was conducted on eight bilingual first-year medical students based on a focused group discussion. Phase 3 was an expert panel review. Pre-final BM EDE-Q 2 was reviewed by an expert panel to further improve the BM version of the EDE-Q and to evaluate the clarity, understandability, naturalness and adequacy of wording. Phase 4 was the reliability and validation process. For validation of the final BM version of EDE-Q, construct validity was done. The reliability of the instrument was examined using internal consistency looking at the Cronbach's alpha values. The participants' recruitment was integrated with the validation effort of the Family Environment Scale (FES) questionnaire.

Results

A total of 298 students from four schools were selected in this study and we managed to attain reasonably heterogeneous subjects to fit the socio-demographic profiles. Majority of the respondents were Malays (63.4%), followed by Chinese (28.2%) and Indians (6.7%), which corresponded to the Malaysian population (i.e., Malays – 54.1%; Chinese – 25%, Indians – 7.5% and from other races – 13.2%; as based on the 2005 census of the Department of Statistics, Malaysia)[12]. Statistically significant differences were noted for the global score of the EDE-Questionnaire with regards to gender, ethnicity and religion but not for the other variables (Table 1).

Table 1: Socio-demographic data

	No. (%)	Mean score	SD score	p-value
EDE-Q score (Range)		10.0 (0, 46.5)	8.2	
Age				
12-13	21(7.0)			
14-15	173(58.0)			
16-17	104(34.9)			
Race				
Malays	189 (63.4)	10.7	8.1	< 0.001
Chinese	84(28.2)	7.9	8.4	
Indians & others	25 (8.4)	13.7	7.1	
Gender				
Male	141 (47.3)	7.9	7.4	< 0.001
Female	157 (52.7)	11.9	8.5	
Religion				
Islam	195 (65.4)	10.8	8.1	< 0.001
Christian	11 (3.7)	8.9	12.4	
Hinduism	17 (5.7)	13.5	7.3	
Buddhism	73 (24.5)	7.5	7.7	
Others	2 (0.7)			
Academic achievement				
Excellent	36 (12.1)	19.2	9.4	0.373
Average	225 (75.5)	10.1	9.5	
Poor	37 (12.4)	12.8	10.2	
Parents' Marital status				
Married/living together	267 (89.6)	9.9	8.3	0.253
Divorced/separated	24 (8.1)	11.4	8.6	
No answer	7 (2.3)			
Parents' Income				
< RM 1000	75 (25.2)	11.5	9.1	0.700
RM 1001-5000	117 (39.3)	11.4	8.1	
> RM 5000	30 (10.1)	11.0	7.4	
Don't know	76 (25.5)			
Mother's Educational level				
Primary school	20 (6.7)	13.0	8.5	0.226
Secondary school	120 (40.3)	10.7	9.3	
Tertiary education	54 (18.0)	9.8	7.5	
Don't know	104 (34.9)			
Mother's Job Status				
Self employed	33 (11.1)	10.1	8.5	0.641
Private staff	42 (14.1)	9.2	9.0	
Government staff	60 (20.1)	10.5	7.9	
Student	163 (54.8)	10.2	8.2	
Father's Educational level				
Primary school	19 (6.4)	10.9	7.3	0.871
Secondary school	95 (31.9)	11.1	9.5	
Tertiary education	71 (23.8)	9.8	7.5	
Don't know	113 (37.9)			
Father's Job Status				
Self employed	93 (31.2)	8.9	6.6	
Private staff	97 (32.6)	10.0	9.3	
Government staff	86 (28.9)	11.0	8.5	
Student	22 (7.4)	12.4	9.2	

Reliability

The Bahasa Malaysia version was found to have a high internal consistency with global Cronbach's alpha of 0.879. The participants were highly consistent in their responses throughout the questionnaire. The version was further evaluated based on its original four sub-scales. A greater consistency was found in Shape Concern domain (0.874), followed with Weight Concern (0.775), Eating Concern (0.655) and Restrain (0.635).

Validity test

The construct validity was evaluated by using confirmatory factor analysis (CFA). The Keiser value of 0.890 with cumulative variances of 59.9% was yielded.

Tables 2: Factor loadings of every item by using Varimax rotation (Eigenvalues over 1) based on principle component of confirmatory factor analysis.

No	Item	Factor 1 Restrain	Factor 2 Shape concern	Factor 3 Eating concern	Factor 4 Weight concern
1	Restraint overeat	0.596			
2	Avoidance of eating	0.640			
3	Food avoidance	0.594			
4	Dietary rules	0.611			
5	Empty stomach	0.406			
6	Flat stomach		0.367		
8	Preoccupation with shape or weight		0.421		
10	Fear of weight gain		0.301		
11	Feeling of fatness		0.533		
23	Importance of shape		0.565		
26	Dissatisfaction with shape		0.819		
27	Discomfort seeing body		0.805		
28	Avoidance of exposure		0.741		
7	Thinking about food, eating, calories			0.763	
9	Fear of losing control, overeating			0.233*	0.669
19	Eating in secret			0.715	
20	Guilt about eating, affecting shape			0.437	
21	Social eating	0.522		0.213*	
12	Desire to lose weight				0.692
22	Importance of weight	0.596			0.175*
24	Reaction to prescribed weighing		0.709		0.082**
25	Dissatisfaction with weight		0.818		0.271*

*factor loading < 0.3

Table 2 shows that confirmatory factor analysis of all items managed to draw four unforced factors. Table 2 shows that all items except items 9, 21, 22, 24 and 25 had CFA values of more than 0.3 for their original subscales. The confirmatory factor analysis with eigenvalues over 1 and unforced factor managed to draw 4 domains.

Discussion

In general this study achieved its general objective of testing the cross-cultural adaptation of the BM version of the EDE-Questionnaire to the Malaysian teenage population. The constitution of participants represented the Malaysian population with respect to gender and racial distribution based on the 2005 census of the Department of Statistics, Malaysia[12]. A balance between the subjects in this study and the actual Malaysian population was achieved as schools' student distribution and subjects' selection were taken into consideration. Schools with multiracial students and quota sampling on subjects were based on ethnic groups. However we advocate the effort of future validation efforts of this BM version among the general adult group.

The BM version of EDE-Q produced at the end of this project had very good reliability in which the global internal consistency for the BM EDE-Q was high with all the subscales showing consistently good results. The Cronbach's alpha ranged from 0.63 to 0.87 which were comparable to other studies which had values between 0.70 and 0.93 based on various types of community. [9, 13, 14]

The translation process was conducted with extreme care according to a strict guideline. Responses from participants during pre-test and validation phase were favourable as the terms and sentences used were clear. Nevertheless confirmatory factor analysis yielded modest favourable results as only five items had CFA values below than 0.3 for their original subscales. Items 22, 24, 25 were clearly measuring weight but the result showed these items to have had better factor loading for Shape and Restrain subscales. Minor discrepancies in comparison to the results garnered by the original author [11] may be attributed to various reasons.

Firstly, the original English EDE-Q itself is still in expansion stage. Of late, more studies were done to explore the psychometric behaviours of EDE-Q. Based on the EDE-Q brief preliminary report, item 8 belonged to two subscales (i.e. Shape Concern and Weight Concern). Item 10 (*fear weight gain*) clearly involves issue pertaining to weight but it belongs to Shape Concern subscale. Therefore results of this study would add more value to the behavioural aspect of all items particularly related to the Asian context.

Secondly, the variation of certain items belonging to different subscales as compared to the original version was most likely due to the differences in the socio-cultural nature of the Malaysian and Caucasian populations. In particular, people's view and concept about patterns of eating habits may be different from one culture to another. This is evidenced by the different prevalence in eating disorders among various populations [15, 16]. In different health care systems, the definition and the importance given to health and diseases vary and this is linked to the cultural setting. Inter-country comparisons should use standard measures in assessing health status equivalently rather than identically over cultural differences [13].

Thirdly, the subjects in this study were Malaysian adolescents and this group may respond differently to the BM translated version of the EDE-Questionnaire than adults.

Nevertheless the original EDE-Q is suitable and has been tested on a young adolescent population [17]. Other favourable feature that we found in this study is that the construct validity reproduced and confirmed that there are four factors or subscales in this questionnaire. This is in line with results from other studies where consistent findings of four factors were found [17,18].

Further research may help us to entrench our understanding of the psychometric values of this version particularly with different groups of subjects. Studies on the consistency and level of agreement between self-rated questionnaire and clinical interview have high psychometric value in making it more colloquial to the general Malaysian population.

Conclusion

The translation and validation efforts produced quite acceptable outcomes. The different socio-cultural background of the studied population could explain the non-identical subscales of the BM version in comparison with the original EDE-Questionnaire. As a result of the distinct multi-racial as well as the different socio-culture in comparison with the Caucasian population, an equivalent questionnaire would perhaps be more appropriate than an identical questionnaire.

Acknowledgement

References

1. Markey CN, Markey PM. Relations between body image and dieting behaviours: An examination of gender differences. Sex Roles. 2005; 53(7/8):519-530.
2. Bulik CM, Reba LBA, Siega-Riz AM, Kjennerud RT. Anorexia nervosa: Definition, epidemiology, and cycle of risk. International Journal of Eating Disorders. 2005; 37(1):2-9.
3. Dotti JC. Eating Disorders, Fertility, and Pregnancy: Relationships and Complications. Journal of Perinatal & Neonatal Nursing. 2001; 15(2):36-48.
4. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The Eating Attitudes Test: Psychometric features and clinical correlates. Psychological Medicine. 1982; 12:871-878.
5. Garner DM, Olmsted MP, Polivy J. Development and validation of a multidimensional Eating Disorder Inventory for anorexia nervosa and bulimia. International Journal of Eating Disorders. 1983; 2:15–34.
6. Yeomans MR, Tovey HM, Tinley EM, Haynes CJ. Effects of manipulated palatability on appetite depend on restraint and disinhibition scores from the Three-Factor Eating Questionnaire International Journal of Obesity. 2004; 28(1):144-151.

7. Fairburn CG. Cooper Z. The Eating Disorder Examination (12th ed.). In C.G.Fairburn & G.T. Wilson (eds.), Binge eating: Nature, assessment and treatment 1993; 317-360. New York: Guilford Press.

8. Kristine H. Luce, Janis H. Crowther. The reliability of the eating disorder examination - Self-report questionnaire version (EDE-Q) International Journal of Eating Disorders. 1999; 25(3):349–351.

9. Luce KH, Crowther JH. The reliability of the eating disorder examination – self report questionnaire version (EDE-Q). International Journal of Eating Disorder, 1999; 25:349-351.

10. Black CMD, Wilson GT. Assessment of eating disorders: Interview vs. questionnaire. International Journal of Eating Disorders, 1996; 20:43–50.

11. Fairburn CG, Beglin SJ. The assessment of eating disorders: Interview or self-report questionnaire? International Journal of Eating Disorders. 1994; 20:43-50.

12. Department of Statistics, State/District Data Bank, Malaysia; 2005.

13. Mond JM, Ha P J, Rodgers B, Owen C, Beumont PJV. Validity of the eating disorder examination questionnaire (EDE-Q) in screening for eating disorders in community samples. Behaviour Research and Therapy. 2004; 42(5):551-567.

14. Rizvi SL, Peterson CB, Crow SJ, Agras WS. Test-retest reliability of the Eating Disorder Examination. International Journal of Eating Disorders. 2000; 28:311–316.

15. Rosen DS. Eating disorders in children and young adolescents: Etiology, classification, clinical features, and treatment. Adolescent Medicine. 2003; 14:49–59.

16. Engström I, Kroon M, Arvidsson CG, Segnestam K, Snellman K. Eating disorders in adolescent girls with insulin-dependent diabetes mellitus: A population-based case-control study. Acta Paediatrica. 1999; 88:175–180.

17. Carter JC, Stewart DA, Fairburn CG. Eating disorder examination questionnaire: norms for young adolescent girls. Behaviour Research and Therapy. 2001; 39:625-632.

18. Mond JM, Hay PJ, Rodgers B, Owen C, Crosby R, Mitchell JE. Use of extreme weight control behaviors with and without binge eating in a community sample of women: Implications for the classification of bulimic eating disorders. International Journal of Eating Disorders. 2006; 39:294–302.

Corresponding Author*: Dr. Ramli Musa, Department of Psychiatry, Kulliyyah of Medicine, International Islamic University Malaysia, Bandar Indera Mahkota, 25200 Kuantan, Pahang Malaysia.*

Email: ramlidr@yahoo.com
Tel No: (+609) 5716400 @ (+6012) 2484076
Fax No: (+609) 5716770