

VALIDATION OF BRIEF MEDICATION QUESTIONNAIRE (BMQ) INDONESIAN VERSION IN DIABETES MELLITUS PATIENTS

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ABSTRACT

Background : Diabetes Mellitus (DM) is a chronic metabolism disorder which need a high level of adherence to receive a better control of blood glucose. One of instruments that can be used for screening of adherence is a Brief Medication Questionnaire (BMQ).

Objective : The research aimed to test the validation and reliability of the BMQ in Indonesian Version in public health center.

Methods : This research used observational descriptive design which was conducted in *Puskesmas Kotagede 2* and *Puskesmas Umbulharjo 2*. The inclusion criteria were all diabetic patients which used pharmacologic therapy (antidiabetic oral or insulin) for minimum 3 months, willing to be respondent, and not illiterate patients. There were 43 patients in the research who had inclusion criteria.

Outcome measured : Validity and reliability of BMQ in Indonesian Version.

Result : This research showed that the characteristic of patients with diabetes mellitus are most common at the age of 40-60 years old (58%), with female (72%) which higher than men, and most patients were already using antidiabetic drugs since 1-3 years ago (49%). BMQ validation test showed that most of the questions do not match with the criteria for convergent validity. The reliability test of the questionnaire BMQ showed that the value of Cronbach's alpha in the three domains (regimen screen, belief screen, and recall screen) were less than 0.70.

Conclusion : Validity and reliability result of BMQ in Indonesian Version still require further testing in different disease, with high amount of patients, and in other location such as hospital.

Keywords : Diabetes mellitus, *Brief Medication Questionnaire*, Adherence

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder with multiple etiologies and requires a multidisciplinary handling with drug therapy and non-drug therapy. Perkeni 2006 stated that the World Health Organization (WHO) predicted a rise number of diabetic patients in Indonesia from 8.4 million in 2000 to 21.3 million in 2030. With that data, Indonesia was in the ranked fourth over the world for the number of people with diabetes after the United States, India, and China according Reputrawati in Hans (2008). Diabetes mellitus is a chronic disease that does not cause death directly, but it will be dangerous if it is not managed appropriately. Diabetes melitus needs a high level of adherence in order to maintain the level of blood glucose from patients and prevent possible complications. The number of patients who do not adhere to the treatment



associated with polytherapy and the number of medications which will be used in a day (Cramer, 2004).

There are many questionnaires to assess patient adherence for diabetes patient, but the gold standard has not found yet. Brief Medication Questionnaire (BMQ) is one tool that has a high sensitivity and specificity for screening the patient's adherence. It can be useful to know the problem of non-compliance of patients from a variety causes, such as the complex treatment regimens (Svarstad *et al*,1999).

BMQ also can be used to determine the previous patient's adherence. The 2 items of the question which called as 'belief scale' are about the effects of the drug and whether it has disturbing effects during treatment or not, and 2 other items called 'recall scale' which are determining the possibility of patient who had difficulty in remembering. Therefore, by using BMQ, researchers can identify patients who have a potential of non-adherence with the treatment, and pharmacists also can screen for patients who really need to be given with counseling.

The good quality of the instrument is an instrument which has a high validity and reliability. It is playing an important role in producing valid and reliable data which can affect the quality of our results. Instruments which have poor validity and reliability, will produce a false conclusion (Muljono, 2002).

The purpose of this study was to test the validation and reliability of the BMQ in Indonesian version in order to produce valid and reliable questionnaire that to be used for research.

METHODS

Subjects

Subjects were all diabetic patients at the *Puskesmas Kotagede 2* and *Puskesmas Umbulharjo 2* in May-July 2014 which received pharmacological therapy for the treatment of Diabetes Mellitus (Oral Anti-Diabetic (ADO) or insulin) and met the inclusion criteria. The inclusion criteria were all diabetic patients which use pharmacologic therapy (ADO or insulin) for minimum 3 months, willing to be respondent, and not illiterate patients.

Research Data Collection

Data collection was began with giving informed consent to patients who met the inclusion criteria and requesting the approval from. The questionnaire was distributed to patients who had been willing to participate in this study. The data that collected were patients' characteristics and patients' adherence measured by BMQ.

Analysis of Results

Pearson correlation was used to analyze the validity of BMQ. Convergent validity was fulfilled if the coefficient of Pearson correlation was above 0.40, whereas the discriminant validity was fulfilled if the coefficient of Pearson correlation was less than 0.40 (Zhao & Kanda, 2000). Coefficient of Cronbach alpha ($>0,7$) was used as parameter of reliability.

RESULT AND DISCUSSION

In this study, we recruited 43 patients who diagnosed with diabetes mellitus type2 at the *Puskesmas Kotagede 2* and *Puskesmas Umbulharjo 2* for 3 months and met the inclusion criteria

a. Validity Test

Validity test was used to measure the precision and accuracy of the instrument in the measurement process. Table 1 shows the results of validity test of the BMQ.

Based on Table 1, it is known that there are some questions that meet the criteria for convergent validity. If the value of correlations between items of questions more than 0.40, it means that the question match with the criteria for convergent validity. Some questions do not match with the criteria for convergent validity are question number 2, 8b, 8c, 8d for regimen screen domains, number 9 for belief screen domain and number 11a for recall screen domain.

Table 1. The Result of Validity Test of BMQ

| | Regimen Screen | Belief Screen | Recall Screen | Access Screen |
|-----------------|----------------|---------------|---------------|---------------|
| Question No.2 | ,123 | ,105 | ,234 | - |
| Question No.8b | -,350* | -,121 | ,097 | - |
| Question No.8c | ,011 | ,065 | ,359* | - |
| Question No.8d | ,017 | -,136 | -,030 | - |
| Question No.8e | ,501** | ,502** | ,113 | - |
| Question No.9 | -,264 | -,191 | -,132 | - |
| Question No.10 | ,249 | ,828** | -,345 | - |
| Question No.11a | ,116 | -,068 | ,335 | - |
| Question No.11b | - | - | - | - |
| Question No.11c | - | - | - | - |

The questions that meet the criteria of convergent validity are question number 8e which is a question for regimen screen domain, and question number 10 which is a question for belief screen domain. It seems that the question number 11b and 11c can not do the validation test because all patients answered no (0) to a question about the difficulty buying or looking for medicine. So, the next test could not be performed.

Some questions also have a closed relationship with another domain. For instance, question number 2, 8c, 8d, and 9. The questions number 2 and 8c are closely related to the recall screen though it do not meet the criteria for convergent validation because it is less than 0.40. Question number 8d are closely related to the belief screen though it do not meet the criteria for convergent validation because it is less than 0.40. And the other is question number 9 which is closely related to the regimen screen though it do not meet the criteria for convergent validation because it is less than 0.40.

b. Reliability Test

Reliability test is a test that shows the reliability of an instrument when it is used in other occasion. Reliability test results can be seen in Table 2.

Table 2. The Result of Reliability Test

| Screen | Cronbach's Alpha |
|----------------|------------------|
| Regimen Screen | 0,169 |
| Belief Screen | -0,458 |
| Recall Screen | -0,129 |

Table 2 indicates that the value of Cronbach's alpha for the three domains is less than 0.70. It means that the Indonesian version of BMQ is less acceptable in this study.



The result of validity and reliability test in this study is different with the previous studies. Previous research in Portuguese language version showed that the result of sensitivity and specificity of BMQ was better than MGT (The Morisky-Green Test). That study was conducted in patients with hypertension in 206 patients (Ben *et al*, 2012).

The result of the validity test in this study is also different with the results on previous study using BMQ and MEMS. The previous study was conducted on 43 patients which were using angiotensin-converting enzyme inhibitors such as enalapril and captopril. In that study, the results showed that the BMQ was more sensitive than others and it would be useful to identify and diagnose any problems of compliance (Svarstad *et al*, 1999). Difference results in this study with previous study maybe due to any differences in the sample, number of samples, the culture of the community, also the different of standard treatment.

CONCLUSION

The validation result of BMQ shows that most of the questions do not meet the criteria for convergent validity, and the reliability test of BMQ shows that the value of Cronbach's alpha for the three domains (regimen screen, belief screen, and recall screen) is less than 0.70. Validity and reliability result of BMQ in Indonesian version still require further testing in different disease, with high amount of patients, and in other location such as hospital.

DISCLOSURE: -

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