Psychometric properties of the Indonesia version religious health fatalism questionnaire in diabetic foot ulcer outpatients

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Abstract

Background: Religious health fatalism belief that health outcome is only determined by God without seeking treatment. Tools are needed to measure fatalism among patients with chronic disease, especially diabetic foot ulcer (DFU) patients. The aim of this study was to conduct psychometric test of religious health fatalism questionnaire (RHFQ) including translation, validation, reliability, and cut-off point among DFU out-patients.

Design and methods: This study employed cross sectional design, using self-report questionnaire. Data were collected from diabetes clinic in five hospitals, Indonesia. The inclusion criteria were patients who had history of DFU more than 2 years. Total sample in this study was 184 patients. This study was conducted from April to June 2021. Permission to use the RHFQ was permitted by the original author. We conducted translation and adaptation questionnaire to Bahasa. We employed reliability test with internal consistency, construct validity, and convergent validity. Construct validity was evaluated using exploratory factor analysis (EFA). Cut-off point RHS was analyzed using receiver operating characteristic (ROC). ROC was evaluated using correlation score between total score RHFQ and CDRISC-25 Indonesia version. Previous study mentioned that resilience is a predictor of religious. The Cronbach's alpha for RHFQ Indonesia version was adequate.

Results: EFA showed adequate with Kaiser–Meyer-Olkin (KMO) value of 0.72 and the Bartlett's test of sphericity was significant. According to ROC curve analysis, the cut-off point at a score 67.5 indicated the best sensitivity and specificity.

Conclusions: RHFQ Indonesia version had reliability and validity for screening religious health fatalism among DFU outpatients.

Keywords

Questionnaire, religious health fatalism, diabetes

Introduction

Diabetic foot ulcer (DFU) is potentially complication of diabetes, and it can be life threating.[1] The burden of DFU patients very high, such as more frequent to visit hospital as well as most commonly admitted at hospital compare with diabetic patients without foot ulcer.[2] These conditions will increase the economic expenditure[3] as well as mental health problems such as depression[4] and anxiety among DFU patients.[5] Depression and anxiety will decrease self-adherence among DFU patients and increase morbidity and mortality.[6,7]

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Religious beliefs affect health behavior. It has significant impact on self-adherence, especially among patients with chronic diseases[8] such as diabetes.[9] Individuals who have religious health fatalism tends to give up easily. Fatalism is negatively correlated with self-adherence and positively correlated with seeking treatment[10] and belief that health outcome is only determined by God without seeking treatment.[11] Health education and health promotion for individual with religious health fatalism is needed. So it was required tool to understand this fatalism.

Tools are needed to measure religious health fatalism and screen fatalism among patients with chronic disease,[12] especially among DFU patients. This tool can be used for public health strategies, to prevent fatalism and increase self-adherence.[13] Several tools have been created to assess fatalism among patients with chronic diseases such as the Powe ism Inventory for cancer patients[14] and also fatalism scale with dimension of predetermination, luck, and pessimism.[15] In addition, the religious health fatalism questionnaire (RHFQ) was widely used to determine health fatalism related health behaviors. RHFQ had good validity and reliability.[11] RHFQ has never been translated into Bahasa and based on our knowledge, no study has been conducted to evaluate the psychometric test. So, the aim of this study was to conduct psychometric test of RHFQ, including translation, validation, reliability, and cut off point among diabetic foot ulcer (DFU) out-patients.

Methods

Participants and setting

This study employed cross sectional design, using self-report questionnaire through Google-Form. Data were collected from outpatients from diabetes clinic in five hospitals, South Kalimantan, Indonesia. The inclusion criteria were patients who had history diabetic foot ulcer (DFU) more than 2 years based on Wagner Scale, aged 18–75 years old. The exclusion criteria was patients disagreed to participate in this study. Total sample in this study was 184 patient and RHFQ had 17 parameters. It was recommended to include 5–20 observations for each parameter. The minimum sample that we need in this study was 85.[16]

Instruments

Resilience (CD RISC-25). Resilience was measured using Connor-Davidson Resilience Scale-25 (CD RISC-25) Indonesian version.[17] We already granted from original author CD RISC 25 consist of 25 items and 7 domains, including hardiness (items 5, 10, 11, 12, 22, 23, 24), coping (items 2, 7, 13, 15, 18), adaptability/flexibility (items 1, 4, 8), meaningfulness/purpose (items 3, 9, 20, 21), optimism (items 6, 16), regulation of emotion and cognition (items 14, 19), and self-efficacy (items 17, 25). Higher score indicates higher resilience, and lower score indicates

that individual tends to depress, anxious, and post-traumatic stress disorder. This original questionnaire had good convergent validity and adequate reliability with Cronbach alpha 0.902.[18]

Religious health fatalism questionnaire (RHFQ). Religious was measured using religious health fatalism questionnaire (RHFQ) created by Franklin et al. We already get permission to use this questionnaire. This questionnaire was used to assess health fatalism and preventive health behavior. It is 17-item test and consist of three dimensions: (1) Belief that God will provide good health (Item number 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11) was used to measure individual belief that God will provide health, (2) The destined plan (items 12, 13, 14, and 15) was used to measure that health was determined by God, (3) Helpless inevitability (items 16 and 17) was used to assess about individual had no control over one's own health. This scale was used Likert scale from 1 = strongly disagree to 5 = strongly agree. Total score between 17 and 85. Higher score indicates fatalism. The original RHF has acceptable validity and reliability.[11]

Ethical consideration

This study was granted by the ethics committee of Ulin Hospital, Banjarmasin, Indonesia. Number: 13/III-Reg Riset/RSUDU/21.

Procedures

This study was conducted from April to June 2021. Permission to use the RHFQ and CD RISC 25 Indonesia version was permitted by the original author. We conducted translation and adaptation English questionnaire to bahasa based on previous studies.[13,19] The initial step was forward translation from original version into Bahasa; expert panel to review the result of translation, namely two expert panel who have expertise in nursing and psychology reviewed after translation into Bahasa, then we conducted back translation from bahasa to English and compare the result with the original one, and the last we conducted pilot study to 50 DFU Patients to examine whether the Bahasa questionnaire was understood by them. In the end, we tested final version of questionnaire to assess psychometric test using google form. The researcher asked the hospitals for permission to conduct this study. After getting permission, the researcher explained the study and asked the informed consent to participate in the study. The participants were allowed to withdraw from the study. Only the researchers who can access the answer of participants.

Statistical analyze

All analyze used SPSS (version 22) for windows. Descriptive statistics were computed to evaluate minimum and maximum value, mean and standard deviation (SD).

Inter-item correlation and item-total correlation was calculated using Pearson correlation; correlation more than 0.2 means satisfactory.[16] We employed reliability test with internal consistency, the cronbach alpha more than 0.5 was considered reliable.[20,21] Validity tests in this study were construct validity and convergent validity. Construct validity was evaluated using exploratory factor analysis (EFA), with principal components extraction and varimax rotation, using Kaiser–Meyer–Olkin (KMO) and Bartlett's test of sphericity indicators.[22] KMO value must greater than 0.5 and Bartlett's test of sphericity must be significant ($p < 0.001$).[23,24]

Confirmatory factor analysis (CFA) was used to evaluate the structural model fit of RHFQ. Goodness of fit was tested using AMOS software and it was evaluated using goodness of fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI) >0.9[25] and root-mean-square error of approximation (RMSEA) ≤ 0.10.[26] Convergent validity was evaluated using factor loading, average variance extracted (AVE) and composite reliability (CR). Factor loading >0.32,[27] composite reliability (CR) >0.70[28] meanwhile average variance extracted (AVE) >0.50; or AVE >0.40 if CR>0.60.[29] Cut-off point RHS was analyzed using ROC (receiver operating characteristic). ROC was evaluated using correlation score between total score RHFQ and CDRISC-25. Previous study mentioned that resilience is a predictor of religious.[30]

Results

Characteristic of participants

Table 1 showed the characteristic of participants. Age was most predominantly by participant's age 51–60 years old (41.3%) and most participants were female. Most of participant's religion was Muslim (Islam) (98.4%). The proportion of education was predominantly by participants with high school degree (50%). 66.3% participants did not work and 64.7% had income less than IDR 3.000.000. Most of participants have health insurance and have been suffering Diabetes Mellitus about 1–5 years. 49.5% participants have been using oral diabetes medication. In terms of hospital 54.9% participants were outpatients from Ulin Banjarmasin hospital.

Score RHFQ Indonesian version

Table 2 showed the average score of RHFQ Indonesian version items. The highest mean values for item RHFQ 1, it was 4.25 (If I just pray to God about my health, He will work it out), whereas the lowest mean score for item RHFQ 15 (Sometimes someone can be ill because of disobedience to God). The mean total score of RHFQ was 66.1.

Table 1. Demographic characteristics of the participants ($n = 184$).

Characteristic	Mean (SD)	n	%
Age (years)	54.81		
20–30		1	1.1
31–40		11	6.0
41–50		41	22.3
51–60		76	41.3
61–70		44	23.9
>71		10	5.4
Gender			
Male		74	40.2
Female		110	59.8
Religion			
Islam		181	98.4
Non-Islam		3	1.6
Education			
Not school		10	5.4
Elementary school		58	31.5
High school		92	50
Bachelor degree		24	13
Occupational status			
Work		62	33.7
Not work		122	66.3
Income per month			
<Rp 3,000,000		119	64.7
>Rp 3,000,000		65	35.3
Health insurance			
Yes		174	94.6
No		10	5.4
Long suffer diabetes (year)			
<1		25	13.6
1–5		108	58.7
5–10		32	17.4
>10		19	10.3
Treatment of diabetes			
Insulin injection therapy		40	11.4
Oral diabetes medication		91	49.5
Insulin injection and oral diabetes medication		38	20.7
Not using Insulin injection or oral diabetes medication		15	8.2
Hospital			
Anshari Shaleh Banjarmasin hospital		38	20.7
Ulin Banjarmasin hospital		101	54.9
Damanhuri Barabai hospital		21	11.4
Nirwana hospital		10	5.4
Boeyasin Peaihari hospital		14	7.6

Reliability

Cronbach alpha for internal consistency RHFQ Indonesia version was 0.0.707 with delete item (0.691–0.724) (Table 3).

Table 2. Average score of religious health fatalism questionnaire (RHFQ) Indonesia version.

Dimension RHFQ	Min	Max	Mean	SD
Factor 1				
RHFQ 1	2	5	4.25	0.54
RHFQ 2	1	5	3.93	0.86
RHFQ 3	2	5	4.17	0.58
RHFQ 4	2	5	4.17	0.48
RHFQ 5	1	5	4.01	0.76
RHFQ 6	1	5	4.23	0.67
RHFQ 7	2	5	4.30	0.55
RHFQ 8	2	5	4.25	0.62
RHFQ 9	1	5	4.03	0.70
Factor 2				
RHFQ 12	1	5	3.87	0.71
RHFQ 13	1	5	4.01	0.64
RHFQ 14	1	5	4.16	0.54
RHFQ 15	1	5	3.10	1.17
RHFQ 16	1	5	2.88	1.19
Factor 3				
RHFQ 10	1	5	3.73	1.04
RHFQ 11	1	5	3.25	1.20
RHFQ 17	1	5	3.61	0.96
Total	39	82	66.01	5.82

Factor structure, construct validity, convergent validity

Exploratory factor analysis was conducted to evaluate construct validity of 17 items RHFQ. Kaiser–Meier–Olkin was 0.72 and the Bartlett's test value of sphericity was $p < 0.001$. In addition Table 4 showed correlation between total score RHFQ Indonesian version and CDRISC-25 Indonesia version was significant ($p < .05$). Table 3 showed, principal component indicated three factor model that had Eigen value greater than 1. The factor loading of 17 items RHFQ Indonesia version were greater than 0.32, it was indicated favorable convergent validity. Factor 1 consist of nine items with explained variance 24.921%, factor 2 consist of three items with explained variance 8.95%, factor 3 consist of three items with explained variance 12.24%. The AVE factor 1, 2, 3 were 0.418, 0.40, and 0.461, respectively. In addition CR score for three factors 0.863, 0.748, and 0.704, respectively, which indicate acceptable convergent validity.

Confirmatory factor analysis

CFA was conducted to validate the structure of RHFQ Indonesia version. Root-Mean-Square Error of Approximation (RMSEA) = 0.09 (Figure 1).

Cut-off point determination

Receiver operating characteristic (ROC) curve was used to measure cut off point for RHFQ Indonesia version. Area below 0.757 indicated global score of RHFQ was 67 (Figure 2). This score had sensitivity and specificity for measured religious health fatalism among DFU patients.

Table 3. Correlation coefficient item Religious Health Fatalism Questionnaire (RHFQ) after varimax rotation.

RHFQ dimension	Factor loading	Eigen values	Cumulative variance explained (%)	Item-total correlation	Cronbach's alpha if item deleted	AVE	CR
Factor 1		4.237	24.921			0.418	0.863
RHFQ 1	0.597			0.390	0.695		
RHFQ 2	0.446			0.446	0.691		
RHFQ 3	0.683			0.553	0.681		
RHFQ 4	0.766			0.513	0.687		
RHFQ 5	0.646			0.531	0.681		
RHFQ 6	0.783			0.521	0.682		
RHFQ 7	0.688			0.437	0.691		
RHFQ 8	0.637			0.568	0.679		
RHFQ 9	0.497			0.409	0.693		
Factor 2		1.522	8.950			0.40	0.748
RHFQ 12	0.629			0.419	0.693		
RHFQ 13	0.729			0.509	0.685		
RHFQ 14	0.632			0.516	0.684		
RHFQ 15	0.395			0.342	0.719		
RHFQ 16	0.647			0.319	0.724		
Factor 3		2.076	12.214			0.461	0.704
RHFQ 10	0.830			0.404	0.703		
RHF 11	0.736			0.390	0.713		
RHFQ 17	0.392			0.439	0.695		
Total				1	0.707		

Table 4. Correlation total score RHFQ and CD RIS 25.

	Total CDRIS 25
Total RHFQ	0.374 **

**p < 0.05.

Discussion

The aim of this study was to conduct psychometric test of RHFQ, including translation, validation, reliability, and cut off point among Diabetic Foot Ulcer (DFU) out-patients. The results showed that RHFQ Indonesia was a stable instrument to measure religious health fatalism and similar with original RHFQ.[11]

Reliability

Cronbach alpha of RHFQ Indonesia version was 0.707. The result showed that RHFQ Indonesia version had acceptable internal consistency and similar with original RHFQ,[11] it was 0.79. Previous study from Turkey showed that the cronbach alpha for RHFQ was 0.93.[31] However previous studies recommended that cronbach's alpha >0.5 was considered reliable.[20,21]

Construct validity and convergent validity

RHFQ Indonesia version was supported by construct validity. Exploratory factor analysis was used to extract 17 items of RHFQ. Compare with the original RHFQ, the
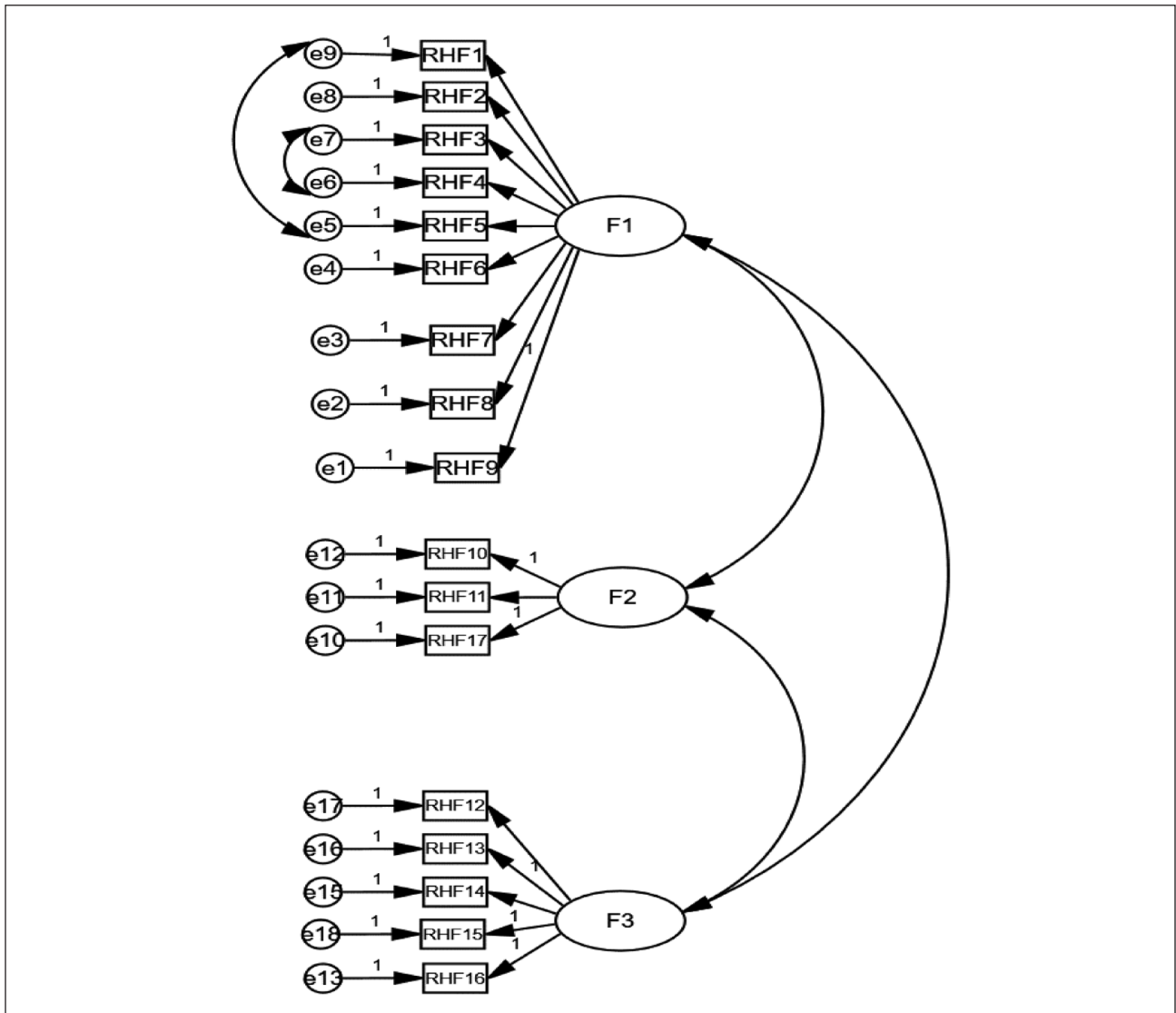

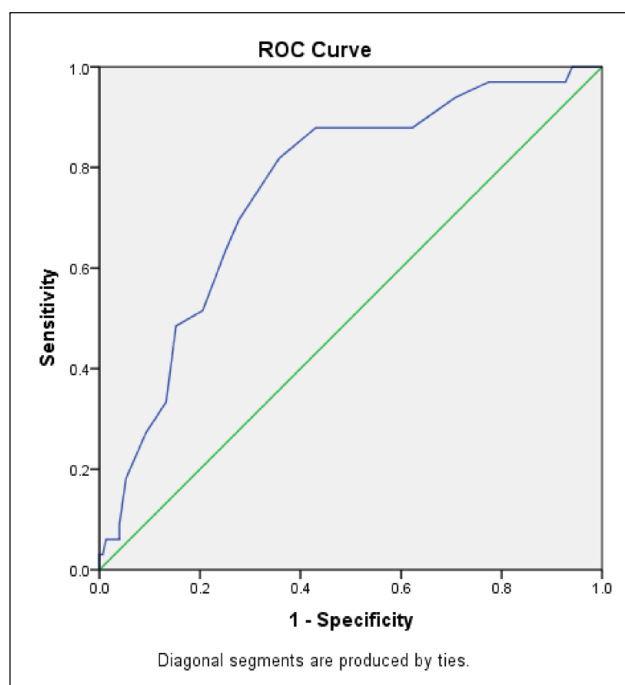**Figure 1.** Factor structure from Religious Health Fatalism Questionnaire (RHFQ) with RMSEA: 0.09.

Figure 2. Notes area below the ROC curve 0.757, standard error 0.404; asymptotic sig. <0.001, lower bound 0.670; and upper bound 0.843.

results of this study showed that some changes in the factor structure, however, all items was supported by factor loading more than 0.32.[27]

The first factor of RHFQ original version consists of items 1–11. While the Indonesian version, the first factor consists of items 1–9. The second factor of RHFQ original version, consists of four items (item 12, 13, 14, and 15). While the Indonesian version has five items (item 12, 13, 14, and 15) with additional item 16. The third factor for the original version, consists of item 16 and 17. While the Indonesian version had three items (item 10, 11, and 17). Items in each factor of the RHFQ Indonesia version similar with original version. However, there were some changes in three items, such as item 10: I trust God not man, to heal me, item 11: if person has enough faith, healing will occur, healing will occur without doctor to do anything. Both of items were included in Helpless inevitability dimension. This condition may occur because the characteristic of respondent of DFU patients that often visit health services. They also feel worry due to the complications[5] or the risk of amputation.[32] This situation makes them helpless and only trust their condition to God.

We also conducted confirmatory factor analysis (CFA) to assess construct validity from RHFQ Indonesia version. Structure model of RHFQ Indonesia version was measured using indices, especially RMSEA. RMSEA was used to evaluate model and it was recommended ≤0.1.[26] This RHFQ had adequate model with factor loading more than 0.32 (Figure 1).

Receiver operating characteristic (ROC)

Receiver operating characteristic curve showed that RHF has a cut-off point of 67 (Figure 2). This is the first study to determine religious health fatalism scores in DFU patients. Previous studies showed that the higher score indicates the more fatalism. This study showed that score ≥67 means high fatalism or they believe that God control health.[11,31] This situation must also be interpreted carefully according to the culture of each country[33] because most of participants were Muslim (Islam), so they believe that God control everything, However, Islam still emphasize to make effort in everything as well before giving up to God.[34]

This study had limitation, such as the heterogeneous sample in length of suffering DFU and the age of participants, and thus, length of suffering DFU had effect on anxiety and how to control their health. However this study showed that RHFQ Indonesia version was valid and reliable to measure Religious health fatalism.

Contributions

The authors contributed equally.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics approval and consent to participate

This study was granted by the ethics committee of Ulin Hospital, Banjarmasin, Indonesia. Number: 13/III-Reg Riset/RSUDU/21.

Patient consent for publication

We asked participants to fill the informed consent.

Significance for public health

Religious health fatalism affect health behavior. Religious health fatalism belief that health outcome is only determined by God without seeking treatment. Tools are needed to measure religious health fatalism and screen fatalism among patients with chronic disease, especially diabetic foot ulcer (DFU) patients. Tools are needed to measure religious health fatalism and screen fatalism among patients with chronic disease. This tool can be used for

public health strategies, to prevent fatalism and increase self-adherence. This study, therefore, aims to evaluate psychometric properties of Religious health fatalism questionnaire (RHFQ) including translation, validation, reliability, and cut off point among DFU out-patients. So it can be used to screen health fatalism and to prevent it.

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