

Psychometric properties of Diabetes Self-Management Questionnaire (DSMQ) in Urdu

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INTRODUCTION

- Globally 415 million people have been diagnosed with diabetes, and the count is predicted to reach 642 million by 2040.⁽¹⁾
- Pakistan is ranked 7th for diabetes disease burden in the world, with prevalence rate of 11% in 2011, and it is anticipated to reach 15% (14 million) by year 2030. If the present scenario continues, Pakistan is expected to move to top 4th place.⁽²⁾
- Self-management activities, like, healthy diet, regular exercise, self-monitoring of blood glucose and rational use of medication, are considered to play the key role in establishing euglycaemia.⁽³⁾
- Assessment of patients' self-management activities helps in identifying the reasons for poor glycaemic control. For this reason a standardised self-care assessment tool could be of a great value for researchers and clinicians seeking to evaluate multiple domains of diabetes patients' self-care.⁽⁴⁾
- The aim of study was to illustrate the translation process and psychometric evaluation of DSMQ's in Pakistani people with type 2 diabetes.

METHODOLOGY

- Design:** Cross-sectional survey
- Subjects:** adult age (>30 years), type 2 diabetes, diagnosed at least one year before, recent HbA1c lab test (not more than 8 weeks older from the date of interview), taking hypoglycemic medications and sufficient communication skills in the Urdu language.
- Sample size:** A target sample size of 160 patients with type 2 diabetes was estimated based on the number of items to participant ratio of 1:10.⁽⁵⁾
- Study instrument:** Urdu version of 16-item DSMQ⁽⁵⁾ was used. The survey took approximately 10-15 minutes to be completed.
- Instrument translation:** The English version of the DSMQ was translated into Urdu language using a standardised forward and backward translation procedure, as recommended by Bradley.⁽⁶⁾
- Scoring Criteria:** The scoring of the DSMQ involves summing up the scores of all items after reversing the scores of nine negatively keyed statements (so that higher scores represent more effective self-care). The scale scores are then transformed to a scale ranging from 0 to 10, where a score of 10 indicates the most effective self-care behaviour.
- Ethics:** MUHREC (Approval No.7767)
- Data Analysis:** Statistical Package for Social Science version 21® and AMOS version 21.0.0 were used to analyse the data. Both descriptive and inferential statistics were applied to attain the objectives of the study.

RESULTS

The total sample consisted of 130 patients (response rate = 81.25%) with type 2 diabetes.

Table 1. Characteristics of respondents (n=130)

Characteristics	n (%) or mean ± SD
Mean age (±SD)	51.3±10.4
Female gender (%)	57.6%
BMI (kg/m ²)	29.7±6.2
Diabetes duration (years)	8.5±7.0
HbA1c value (%)	8.6±1.9
Anti-diabetic therapy	
Exclusively insulin	14 (10.8)
Insulin combined with oral hypoglycemic agents	57 (43.9)
Oral hypoglycemic agents only	59 (45.3)

Table 2. Internal consistency and scale correlations of DSMQ

DSMQ Sub-scale	Mean item sub-scale correlation	Cronbach's α
Dietary control	0.76 (± 0.09)	0.89
Glucose management	0.79 (± 0.04)	0.91
Physical activity	0.77 (± 0.03)	0.89
Health-care use	0.67 (± 0.19)	0.73

Psychometric properties of the Urdu version of DSMQ

The mean (± SD) inter-item correlation was 0.76 (± 0.09). The overall Cronbach's α for the Urdu version of DSMQ scale was 0.96. The Spearman correlation between HbA1c and DSMQ sum scale was -0.78 (p < 0.001).

Table 2. Comparison of the DSMQ self-care activities in patients with HbA1c ≤ 7.5%, from 7.6 to 8.9% and ≥ 9.0%

DSMQ	HbA1c ≤ 7.5% (n = 49)	Sign. ^a	HbA1c 7.6-8.9% (n = 35)	Sign. ^b	HbA1c ≥ 9.0% (n = 46)	Sign. ^c	ANOVA P-value
Glucose Management	8.18 ± 1.46	‡	4.04 ± 1.71	ns	3.23 ± 2.22	‡	< 0.001
Dietary Control	7.72 ± 1.30	‡	3.62 ± 1.88	*	2.74 ± 1.55	‡	< 0.001
Physical Activity	6.96 ± 1.97	‡	2.79 ± 2.35	ns	1.81 ± 1.86	‡	< 0.001
Health-Care Use	7.14 ± 1.62	‡	4.03 ± 2.22	ns	3.45 ± 1.99	‡	< 0.001
Sum Scale	7.64 ± 1.16	‡	3.63 ± 1.74	ns	2.81 ± 1.58	‡	< 0.001

Data are M ± SD. Tests were One-way ANOVA and Scheffé Test for post-hoc group comparisons. Scheffé Test significance is expressed: * p < 0.05; ‡ p < 0.001; ns, not significant. DSMQ, Diabetes Self-Management Questionnaire; HbA1c, glycated haemoglobin; ANOVA, Analysis of Variance. a regards comparison between the first and second group. b regards comparison between the second and third group. c regards comparison between the third and first group.

Linear regression analysis revealed that only Glucose Management and Dietary Control were significantly associated with lower HbA1c values (OR = -0.42, p = 0.004 and = -0.30, p = 0.028, respectively), whereas, Physical Activity and Health-Care Use were not (p > 0.05).

Adequate fit to the data was achieved for single factor model after successively modelling all significant correlations between the items' error terms, with Chi² = 106.6, df = 84, p = 0.049; TLI = 0.98, CFI = 0.99 and RMSEA = 0.05 (90% CI 0.01 - 0.07). Whereas, a comparatively lower fit indices to data were observed in case of four factor model.

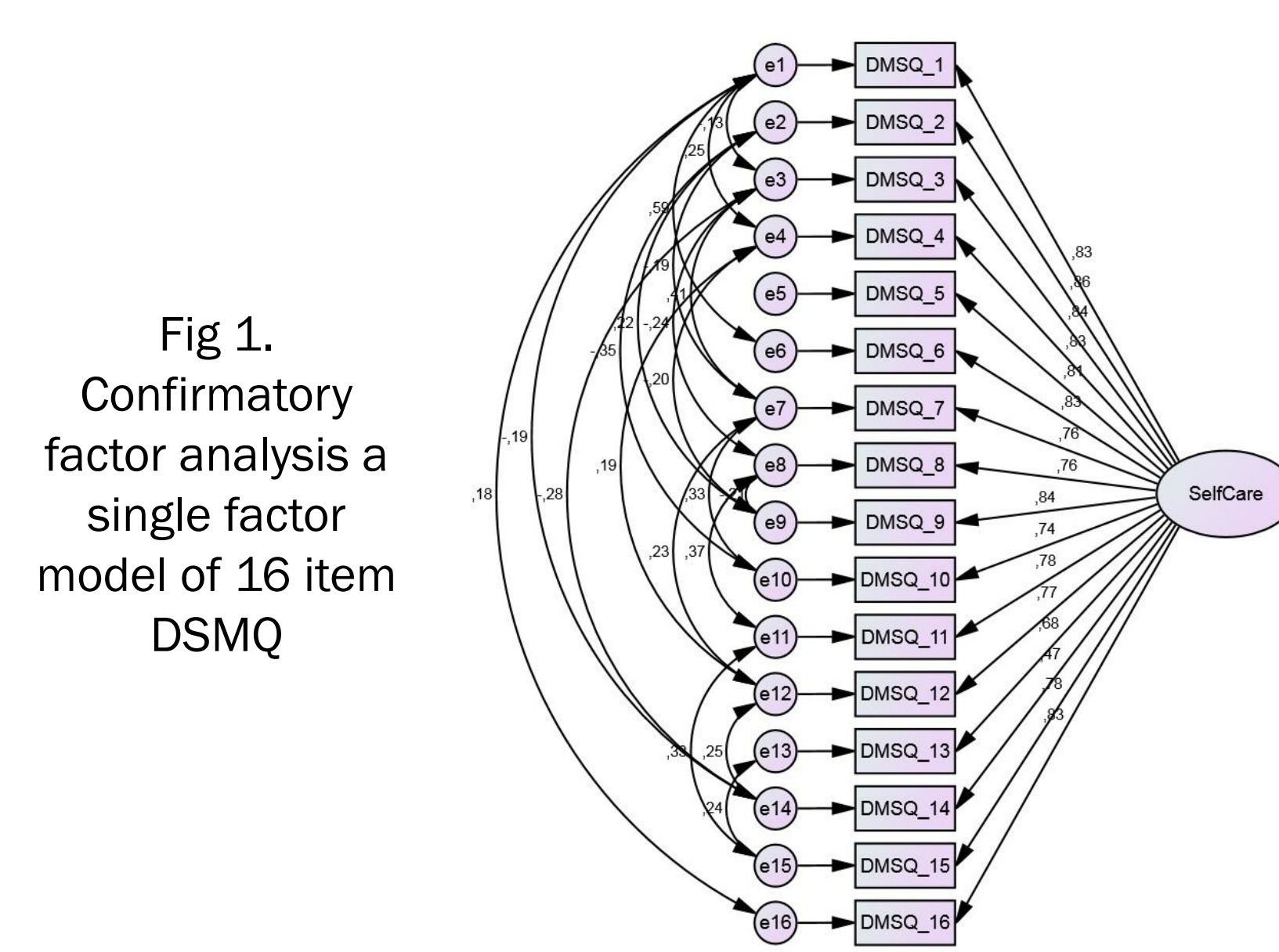


Fig 1. Confirmatory factor analysis a single factor model of 16 item DSMQ

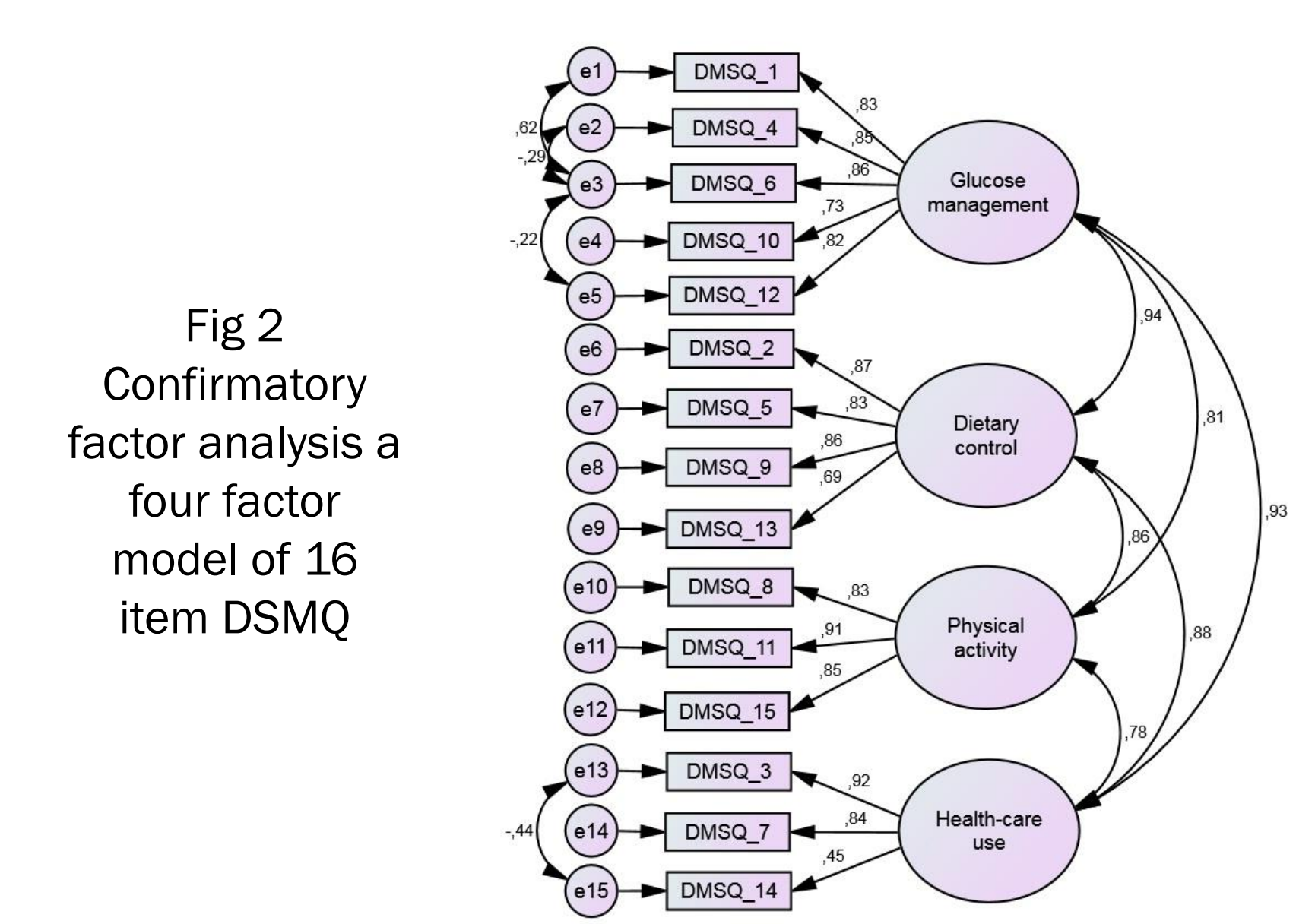


Fig 2. Confirmatory factor analysis a four factor model of 16 item DSMQ

CONCLUSIONS

- The DSMQ-Urdu version was found to be a valid and reliable tool for measuring self-care activities in type 2 diabetes patients in Pakistan.
- The Urdu version of DSMQ will be of significant value for researchers evaluating the relationship of self-management with glycaemic control and for clinicians seeking to identify their patients' self-care practices requiring improvement.

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