

Original Article

Urdu Translation and Validation of Burden Scale for Family Caregivers Short Version for Caregivers of Individuals with Drug Addiction in Pakistan

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Abstract

Objective: The study aimed to translate and validate the Burden Scale for Family Caregivers Short version (BSFC-s) into Urdu.

Study design: It was a cross-sectional study.

Place and duration of study: The study was conducted from June 1 to September 30, 2021, at the Department of Psychology, University of Central Punjab, Lahore, Pakistan.

Material and Methods: The current study was conducted in four phases. The first phase included forward and backward translation. In the second phase, language equivalence was tested on 50 bilingual participants. In the third phase, reliability analysis through Cronbach's alpha, split-half reliability, and exploratory and confirmatory factor analyses were done on a sample of 300 participants. Lastly, convergent validity was assessed using a Family questionnaire on 300 caregivers.

Results: The Cronbach's alpha was significantly high ($r = .91$), exploratory factor analysis indicated a one-factor solution with high loading values, and the confirmatory factor analysis model showed an accurate fit. Moreover, the correlation between the BSFC-s Urdu and Family questionnaires was significantly positive, showing convergent validity.

Conclusion: The BSFC-s Urdu showed sound psychometric properties and emerged as a reliable and valid tool for measuring caregiver burden.

Keywords: Caregiver burden, Convergent validity, Confirmatory factor analysis, Exploratory factor analysis

1. Introduction

Caregiver burden is a caregiver's physical, emotional, social, and financial response to their caregiving responsibilities.⁽¹⁾ There are two types of burden: objective and subjective. The objective burden includes caregiving responsibilities, such as helping, monitoring, and feeding the sick family member. Caregivers experience social, psychological, and emotional strain due to these physical chores, known as the subjective burden.⁽²⁾ The Burden Scale for Family Caregivers – Short Version (BSFC-s) is a standardized self-report instrument developed to assess the subjective burden experienced by family caregivers. It contains 10 items rated on a 4-point Likert scale ranging from 0 (strongly disagree) to 3 (strongly agree), with higher scores indicating a higher perceived burden. The BSFC-s is a brief version of

the original long-form scale and is designed for practical use in clinical and research settings. It evaluates emotional strain, health impact, feelings of overload, and perceptions of personal restriction related to caregiving. The BSFC-s has been widely used and validated in various populations, including caregivers of chronically ill and drug-dependent individuals.

According to Pearlin and colleagues,⁽³⁾ the caregiver stress model divides the caregiver burden into four dimensions. The first domain includes the demographics of the caregiver, such as the supporter of the family, age, gender,⁽⁴⁾ occupation, socioeconomic status,⁽⁵⁾ and length of caregiving.⁽⁶⁾ Men and women face caregiver burdens differently. In caregiving roles, women are more burdened than men.⁽⁷⁾ Regarding education a

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person with lower education experiences more burden. ⁽⁸⁾ Similarly, the stress of being a caregiver affects one's economic level. Financial difficulties because of spending and employment-related difficulties for caregivers who restrict their work hours are all economic effects. As one's socioeconomic position declines, so does the burden on their family. ⁽⁹⁾ Consequently, primary and secondary stressors make up the second domain of caregiver stress. Depression, anxiety, and cognitive disruption are among the fourth domain's outcomes. Changes in one of its areas can have an impact on others.

Following this, taking care of a sick family member may have a negative physical and mental impact on the caretakers. The difficult job of providing care for others has a bad effect on the caretaker's physical, psychological, and social well-being. ⁽¹⁰⁾ Besides, the burden of caregiving has been linked to poor physical and emotional health. Physical symptoms include muscle stiffness, headaches, and other stomach problems. ⁽¹¹⁾ On a psychological level, they have issues such as depression and anxiety. ⁽¹²⁾ The existing literature argues that the burden of caring significantly negatively affects caregivers' lifestyles.

Due to the time commitment required for caregiving, caregivers may experience social disengagement and detachment. As part of their caregiver job or duty, they could spend much time accompanying recipients to medical visits. ⁽¹¹⁾ Due to persistent pressures and an inability to manage independently, caregivers may become involved in a vicious cycle of needless healthcare in which they depend on the healthcare system to help reduce the burden of caregiving. ⁽¹³⁾

The current study aimed to translate and validate the BSFC-s into Urdu. The BSFC-s can be completed relatively quickly, with only ten items, making them a practical tool for researchers and healthcare professionals.

2. Materials & Methods

First, permission was obtained from the Ethical Review Committee (ERC) of the University of Central Punjab to translate the scale. The scale was translated to study caregiver burden, stigma, and expressed emotions in caregivers of individuals suffering from drug addiction (Appendix A). Subsequently, permission was obtained from the author of the scale to translate it into Urdu (Appendix B). The translation process, as outlined by Tsang and his colleagues, ⁽¹⁴⁾ was followed and consisted of several steps, each executed with precision and attention to detail.

Phase I: Translation of BSFC-s

Forward Translation

In the first step, three bilingual experts completed the forward translation in Urdu, ensuring a thorough and credible translation. A minimum of two bilingual translators are recommended for scale translation. ⁽¹⁴⁾ Therefore, the forward translations of BSFC-s was completed by language experts.

Committee of Experts

A committee of associate and assistant professors with more than six years of experience in tool development discussed the forward translation of BSFC-s. This collaborative approach ensured a diverse range of perspectives in the translation process. During the synthesis process, it is a good idea to check for semantic, idiomatic, experiential, and conceptual similarities between the translated

and original versions of scales.⁽¹⁵⁾ Henceforth, the synthesis process was completed critically, and the best-translated items in each scale were chosen. Suggestions by the experts were taken into account, and as a result, minor changes were made to the items.

Backward Translation

A backward translation of the scale is recommended for quality control checks.⁽¹⁴⁾ In the next step, backward translations of the scale were completed. Three bilingual experts reviewed the draft copy of the Urdu version of BSFC-s to ensure the content was consistent with the English version.

Committee of Experts

A committee of experts discussed the scale's backward translation again. The experts synthesized each item based on its content and meaning. After considering recommended suggestions, a final draft of the scale was prepared.

Sample

This study employed a cross-sectional research design. The sample size was calculated using the widely accepted rule of thumb for validation studies, which recommends 5 to 10 participants per item of the instrument being validated. Since the BSFC-s consists of 10 items, a minimum of 50 to 100 participants was required. To enhance statistical power and generalizability, a total of 300 caregivers of patients with drug addiction were recruited.

From May 2021 to September 2021, participants were randomly sampled and recruited from various hospitals and drug rehabilitation centers in Lahore. Prior to the commencement of the study, formal

permissions were obtained from institutes, and informed consent was obtained from participants (see Appendix C). The study included caregivers who were currently living with individuals with drug addiction. Specifically, it included parents aged 40 to 55 who had been in the caregiving role for at least six months. Additionally, only those caregivers who were physically and mentally healthy were included. Caregivers with any physical or medical diseases or other severe psychological disorders and those unwilling to participate were excluded from the study.

Among the caregivers ($N = 300$), the majority were female (82%), with an average age of 45 years ($SD = 7.7$). Most were parents (86%) of the patients, housekeepers by occupation (67%), and had primary-level education (69%). In terms of socioeconomic background, 47% belonged to the middle class, and 41% to the lower class.

The individuals with drug addiction (patients) were all male, with a mean age of 34 years ($SD = 5.4$). Most were unmarried (77%), and 41% were unemployed, while 46% were employed. The majority lived in a separate family system (59%) and resided in urban areas (99%). The most frequently reported reason for addiction was peer pressure (72%).

Instrument

Burden Scale for Family Caregivers-s

The team, Graessel and his colleagues,⁽¹⁶⁾ developed the Burden Scale for Family Caregiver's shortened form. The ten-item scale is designed to assess carers' subjective burden. A 4-point rating system is used, with 0 representing "strongly disagree" and 3 representing "strongly agree." There are 30 points available for scoring. Higher scores indicate a more significant caregiver

burden. The internal consistency (Cronbach's alpha) of the English version of BSFC-s is $\alpha = .92$.

Phase II: Cross Language Validation

Sample and Procedure

For cross-language validation, a separate sample of 50 bilingual participants were selected prior to the main validation study, comprising both males ($n = 9$) and females ($n = 41$) within the age range of 20-35 years ($M = 24$, $SD = 3.89$). These participants were not part of the main validation sample (aged 40–55) and were only included to ensure the semantic and conceptual equivalence of the translated scale versions. Instructions were given to the subjects, and a translated version was administered. One week later, on the same sample (participants), the English version of the scale was administered. Afterward, two main analyses were conducted on the data obtained: descriptive statistics to determine the average and variability of the scale scores and correlation analysis to examine the relationship between the English and Urdu versions.

Phase III: Psychometric Properties of Urdu version BSFC-s

In phase III, the scale's psychometric properties were determined through various analyses, including Cronbach's alpha, split-half and test-retest reliability, and both exploratory and confirmatory factor analyses.

Sample and Procedure

The sample comprised 300 caregivers of persons with drug addiction, 54 males (18%) and 246 females (82%) aged 40 to 55 ($M = 45$, $SD = 7.7$). For the third stage of the study, formal approval was obtained from the hospital to collect data. The target sample was administered a translated

version of the questionnaire, which took approximately 10-15 minutes to complete.

Phase IV: Validity estimation of Family questionnaire Urdu version

Sample and Procedure

The total sample comprised 300 caregivers of individuals with drug addiction: 246 (82%) female and 54 (18%) male aged 40-55 years ($M = 45$, $SD = 7.7$). Hospitals were contacted to obtain consent to use their samples for the validation procedure. The Family Questionnaire in Urdu was used with the Urdu version of BSFC-s. Every scale was administered individually, and five-minute gaps existed between each scale's deliveries.

Instrument

Family Questionnaire

The family questionnaire was developed by Wiedemann and his team.⁽¹⁷⁾ The scale has twenty items. Critical comments (CC) and emotional overinvolvement (EOI) are the two subscales that comprise the scale. A 4-point rating system is used, with 1 representing "never" and 4 representing "very often." The CC and EOI subscales have internal consistency reliability values of 0.92 and 0.80, respectively. The family questionnaire's Urdu version was employed in this study. With subscales ranging from .93 to .95, the Urdu version's Cronbach's alpha was reported as .93, which was extremely similar to the English version. The split-half correlation coefficient was discovered to be .49, and a test-retest reliability of .99 was attained.

Statistical Analysis

Using SPSS-21, descriptive statistics, reliability coefficients, and validity coefficients were calculated. Descriptive statistical analysis was done to determine scale scores' mean and standard

deviation for cross-linguistic validation. Correlation analysis identified the relationship between the English and Urdu versions (Table 1). The current study also analyzed item-total correlations (Table 2) and inter-item correlations (Table 3). To assess the internal consistency reliability of the scale, Cronbach's alpha and split-half reliability were computed. To calculate the test-retest reliability coefficient between two different scores from the same participant, Pearson's product moment correlation was used. Exploratory Factor Analysis (EFA) (Table 4) was computed to evaluate the psychometric properties of the Urdu version of the family questionnaire. Confirmatory Factor Analysis (CFA) was also calculated to test the scale's structured components (Figure 1). The scale's convergent validity was estimated by examining the correlations with the Family Questionnaire.

3. Results

For cross-language validation, descriptive statistics were calculated to determine the mean and standard deviation of the scale scores. Correlation analysis was computed to examine the relationship between the English and Urdu versions of the scale. Furthermore, the item-total correlation was tabulated.

Language Equivalence

The results given in Table 1 show a significant positive correlation between the English and Urdu versions of BSFC-s, indicating that the Urdu version of the scale is consistent with the English version.

Table 1: Linguistic Equivalence of English and Urdu Version of BSFC-s

Scales	Languages	<i>M</i>	<i>SD</i>	<i>r</i>
BSFC-s	English	12.50	6.01	.99*
BSFC-s	Urdu	12.56	6.02	

Note. BSFC-s= Burden scale for family caregivers short version; * $p < .05$

Item Total Correlation

Table 2 shows a strong item-total correlation among all items. The item-total correlation ranged from .60 to .73.

Table 2: Item total correlations of Urdu version of Burden Scale for Family Caregivers short version (BSFC-s) (N= 300)

Items	<i>r</i>
Item 1	.60
Item 2	.62
Item 3	.70
Item 4	.64
Item 5	.71
Item 6	.74
Item 7	.73
Item 8	.65
Item 9	.79
Item 10	.73

Note. BSFC-s= Burden scale for family caregivers short version

Inter-item Correlation

The inter-item correlation (Table 3) of BSFC-s was positive and ranged between .38 and .72.

Table 3: Inter-item correlation of BSFC-s

Items	1	2	3	4	5	6	7	8	9	10
1	-	.48	.45	.56	.41	.47	.52	.42	.44	.43
2		-	.44	.50	.56	.57	.47	.38	.47	.41
3			-	.46	.50	.57	.54	.55	.61	.65
4				-	.46	.51	.57	.42	.49	.46
5					-	.62	.56	.49	.65	.55
6						-	.64	.42	.68	.54
7							-	.53	.61	.55
8								-	.62	.64
9									-	.72
10										-

Note. BSFC-s= Burden scale for family caregivers short version

Cronbach's Alpha, Split-Half and Test-Retest reliability

After computation, Cronbach's alpha for BSFC-s was found to be .91, which shows that scale internal consistency is high. The split-half reliability for BSFC-s was determined to be .89. The scale test-retest reliability was assessed in the next phase. The test-retest reliability results of BSFC-s were examined using correlation coefficient statistics. Results showed a strong association between the scale's first and second administrations; for example, the total number of BSFC-s items had a .99 correlation.

Exploratory Factor Analysis (EFA)

EFA was computed to estimate the psychometric properties of the translated scale (Urdu Version). The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were performed to assess the adequacy and size of the sample. The overall KMO value was .92, which indicates that the sample is adequate for the study. Bartlett's Test of Sphericity ($X^2 = 1724.261$, $p < .001$) confirmed that the data is appropriate for factor analysis. The analysis of the component matrix showed high factor loadings for all BSFC-s items.

The analysis of EFA (Table 4) structured one factor. All the items are loaded in factor 1. The item loading sequence of BSFC-s was seen as item numbers 9, 6, 7, 10, 5, 3, 8, 4, 2, and 1, respectively, with loading values from .67 to .84.

Table 4: Component Matrix for Overall Items of Urdu Version of BSFC-s Using Varimax Rotation Method (N = 300)

Items of BSFC-s	Component
	1
Item 9	.84
Item 6	.80
Item 7	.79
Item 10	.79
Item 5	.77
Item 3	.76
Item 8	.72
Item 4	.71
Item 2	.69
Item 1	.67
Eigen values	5.781
% of Variance	57.811
Cumulative %	57.811

Note. BSFC-s= Burden scale for family caregivers Short version

Confirmatory Factor Analysis

The most reliable statistic for determining the psychometric qualities of a scale is factor analysis. The structured components of the Urdu version of BSFC-s were also tested using CFA statistics (Figure 1). The Root Mean Square Error of Approximation (RMSEA) was determined at .07, indicating that the model is acceptable. As stated in previous research, the RMSEA value of $<.08$ suggests a perfectly accepted level.⁽¹⁸⁾ The Good Fit Index was analyzed to be .96, indicating that the model is well-fitting. The model has a Normative Fit Index of .96, indicating that it is acceptable. The model also produced satisfactory fit indexes, as the values show: Tucker Lewis Index =.95,

Incremental Fit Index =.97, and Comparative Fit Index =.97.

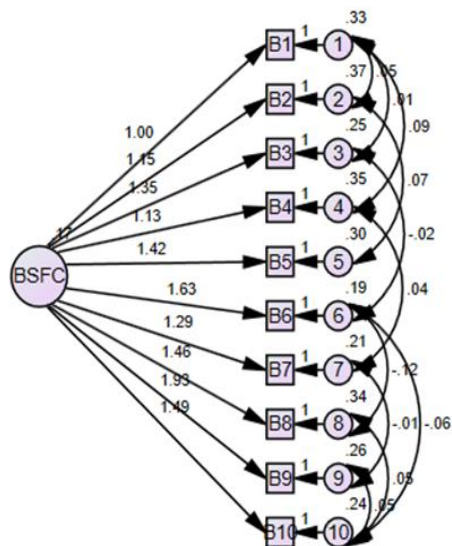


Figure 1: Measurement Model of BSFC-s Urdu

Convergent Validity

The convergent validity of the Urdu version of BSFC-s was estimated by determining correlations with FQ. Findings manifested a strong positive association ($r = .60, p < .001$) of the Urdu version of BSFC-s with the FQ scale, thus representing satisfactory convergent validity of the Urdu version of BSFC-s.

4. Discussion

The current research results lay the groundwork for the generalizability of the Urdu version of the BSFC-s in Pakistan. Scale linguistic equivalence completed through forward and backward translations. The translated version of BSFC-s was found to be substantially similar to the original version based on language equivalence properties. The high positive correlation between Urdu and the original version of the scales demonstrates this. Previous research stated that language equivalence is mandatory for linguistic comprehension, cultural

contexts and cultural expressions to ensure the translated version conveys the same intent as the original.⁽¹⁹⁾

Furthermore, high internal consistency is indicated by inter-item correlation and item-total correlations, indicating that each item measures the particular content intended to be measured. In this study, the item-total correlation ranged from .60 to .73. Literature shows that a total-item correlation greater than .30 reflects an acceptable level.⁽²⁰⁾

Meanwhile, the inter-item correlation of the Urdu version of BSFC-s was positive and ranged between .38 and .72. According to Clark and Watson,⁽²¹⁾ desirable values for inter-item correlation ranged from 0.15–0.20. In the next step, scale reliability estimation was constructed. Cronbach's alpha for BSFC-s Urdu version was significantly high, indicating higher test temporal stability. Furthermore, the strong correlation value of the overall scale and test-retest reliabilities implies that the test is consistent and reliable. Split-half reliability for BSFC-s was calculated and found to be .89. This indicates that the split-half reliability estimate of the correlation between these two total scores is significant.⁽²²⁾

According to factor analysis, the Urdu version of BSFC-s had only one component with an eigenvalue greater than 1.0, and all ten items loaded on this factor with factor loadings greater than .60. In factor analysis, an eigenvalue greater than one indicates that the factor explains more variance than any single variable in the data. This is significant because the factor accounts for much of the overall variance.⁽²³⁾

Moreover, confirmatory factor analysis evidence revealed that the Urdu version of the BSFC-s component was theoretically and psychometrically sound. Correlations with FQ were used to estimate the convergent validity of the Urdu version of the BSFC-s. There was a significant positive

association between the Urdu version of BSFC-s and the FQ scale, showing that the Urdu version of BSFC-s had good convergent validity. Subsequently, it can be asserted that caregivers with higher caregiver burdens experience more expressed emotions toward their patients.

These findings coincide with the fact of caregiving in Pakistani culture where the role of caregivers is accepted by women mainly because of societal influence and in drug addiction situations as well. Research carried out in Pakistan^(24,25) has reported extreme levels of psychological stress, stigma, social isolation among caregivers of drug addicts. The load is even aggravated by the scarcity of mental health services, social stigma of addiction, and the need to keep the family face. Addition of culture specific instruments like choice of the BSFC-s to the Urdu language can also help in early detection of caregiver stress and management of such care according to the local culture and issues.

This measure can help researchers and psychologists evaluate subjective caregiver burden in caregivers. Screening can identify caregivers at risk of health problems and adverse developments in their caregiving scenario. Caregivers must receive timely and sufficient health interventions to maintain their ability to provide care for others efficiently.

Limitations

The sample was selected from Lahore; therefore, the results may be less applicable to other parts of Pakistan with distinct socioeconomic or cultural backgrounds. Although both urban and rural caregivers are represented in the sample, the burden experienced and reported may differ depending on the cultural and socioeconomic variations between these groups. The information is based on self-reported measures, which are prone to recall and social desirability biases. Depending on how they interpret the expected

reactions, caregivers may report their load under or overreported.

Conclusion:

The Urdu version of BSFC-s is a valid and reliable instrument for assessing caregiver burden when applied to patients who speak Urdu. It has strong internal consistency and inter-rater reliability, so it might be considered helpful in clinical practice and research.

Acknowledgment:

The authors would like to express their gratitude to the Mayo Hospital staff who helped with data collection.

Disclosure /Conflict of interest:

Authors declare no conflict of interest.

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