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Psychometric Properties of Persian Version of Everyday Discrimination Scale and Correlation With Physical Health in Iranian Older Women

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Abstract

Objectives: Discrimination can entail important negative consequences on the health of individuals and older women could be exposed to social discrimination in different contexts, especially the family, because of their age and gender. Few studies have specifically studied the discrimination of older women and its effects on health. The aim of the present study was to translate and determine the psychometric characteristics of Everyday Discrimination Scale (EDS) in community-dwelling Iranian older women in Tehran and evaluate relationship between discrimination and health.

Materials and Methods: This research was conducted on 250 community-dwelling women aged 60 and over in Tehran, Iran. EDS was translated based on the protocol introduced by the World Health Organization (WHO). Content validity index (CVI) was assessed for content validity based on expert opinion. Construct validity of EDS was investigated using confirmatory factor analysis (CFA), and its reliability was evaluated by calculating the degree of internal consistency and stability. Mean of perceived discrimination was compared in two groups with good and poor self-rated physical health.

Results: The mean age of subjects was 67.9 ± 6.5 years. The results showed that content validity (SCVI = 0.9, SCVI/AVG = 0.91), construct validity (high correlation of each item with the factor and optimality of fitness indices in CFA) and reliability (α = 0.91, intraclass correlation [ICC] = 0.91, and test-retest correlation=0.77, $P<0.001$) of EDS tool were optimal and suitable for Iranian older women. Perceived discrimination was significantly higher in older women with poor physical health.

Conclusions: EDS has an appropriate validity and reliability in assessing perceived discrimination among Iranian older women in the context of family relationship and perceived discrimination negatively affect physical health.

Keywords: Social discrimination, Psychometric, Everyday discrimination scale, Older women, Physical health

Introduction

Discrimination is defined as the unequal and unfair behavior against individuals due to certain personal characteristics such as age, gender, race, ethnicity, and so on (1,2). Discrimination is one of the social determinant health factors with multiple negative effects on health such as physical and mental health, breast cancer, hypertension, biological dysregulation, and acute inflammation (3) which is presented in different original studies and systematic reviews (2,4). In older adults perceived discrimination also negatively affects physical health (5-7), and mental health (8,9), Cognitive function (10), mortality (11), and more incidence of coronary heart disease, stroke, diabetes and chronic lung disease (6). Most of these results are based on large representative studies in the United States and England such as HRS (Health and Retirement Study) and ELSA (English Longitudinal Study of Ageing). In a systematic review, results of 84 studies imply negative effects of discrimination on blood pressure, cardiovascular biomarkers, and cardiovascular health, but most of them focused on racial discrimination (12).

The proportion of older women is increasingly higher than that of older men. Additionally, older women are more likely to face social issues including poverty, deprivation, and discrimination (13). Although there is enough evidence about discrimination against older women in various social contexts (14,15), few studies have addressed this issue in the context of family. Different international organizations such as the World Health Organization (WHO) (16) and the Madrid Action Plan (17) have called for struggling discrimination against elderly with emphasis on older women. In addition, in Asian countries, family is the main center to provide care for the elderly (13) and it is reported more perceived discrimination and its negative effects in older women have been compared with older men (18). However, there are no relevant studies on discrimination against Iranian older adults and older women, despite the traditionally

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unequal status of older women in the family (19). To achieve this objective, primary step is presenting an efficient and accurate scale.

Among the various scales of perceived discrimination, Everyday Discrimination Scale (EDS) is the most commonly used scale of discrimination in health studies being used in large-scale studies of older adults (5,6,9). The widely used 9-item EDS, developed by Williams et al based on Essed's theory for racial discrimination (20) has many advantages compared to similar tools for measuring perceived discrimination of older women. EDS is easy to understand, concise, behavior-based, simple, and adaptable to different contexts including the family, it has been used to study other types of discrimination and in older adults (5,8,21,22). It can measure minor discriminatory behaviors which predict negative consequences better than major experience of discrimination (9). Another strength of EDS is that it avoids directly using words indicative of discrimination leading to over-reporting, as happens frequently in self-reporting discrimination questionnaires (23). There is no proper scale for studying discrimination in older adults and in health context in Iran, so this study was designed for the translation and assessment of psychometric characteristics of EDS in Iranian older women. This study pioneers the application of EDS in the family context, as well as in Iran. It also considers the many negative effects of discrimination in the elderly. Older women are more likely to be discriminated against than older men. The second goal of this study was to examine the impact of perceived discrimination on physical health.

Materials and Methods

This methodological and cross-sectional study provides an adaptation of EDS for the Iranian society and evaluates its psychometric characteristics. Participants included community-dwelling older women who referred to local community centers of Tehran Municipality. Tehran is the largest city and capital of Iran with a remarkable cultural diversity and its population consists of people from different ethnic groups including Turkish, Kurdish, Fars, Lor people, and others.

Multistage sampling was used in such a way that the 22 districts of Tehran were first geographically divided into 5 regions of north, east, west, south, and center. Then, the researcher referred to 1-2 randomly selected districts in each region to implement convenience sampling. Sample size was calculated as 200 based on the minimum sample size needed for confirmatory factor analysis (CFA) (24). Sample size was later increased to 250 in order to represent a greater variety of individuals and social characteristics. Inclusion criteria included women over 60 years of age who were able to communicate fluently in Persian language. They had no identified psychiatric or mental disorder, including cognitive problems. Sampling was carried out after obtaining the necessary permits and referring to the related municipal centers. The questionnaire was completed for all participants via interview by one of the researchers. Before the interview, the informed consent was obtained from individuals who agreed to participate in the study. In addition to EDS, a demographic questionnaire covering age, marital status, education, employment history, income, living conditions, and the like was also completed for the subjects.

Translation and Preparation

The scale translation and preparation were carried out according to the WHO protocol (25), therefore the text was translated from English to Persian after obtaining permission from the tool designer. This translation, centered on finding equivalents, was carried out by a highly competent English speaker who was familiar with the concept of discrimination in health and social sciences. Afterwards, the initial translation in a panel composed of experts in the field of geriatric, psychiatry, geriatric nursing, social well-being and health and gerontology, was reviewed and finalized. To ensure that the concepts had been translated accurately, backward translation was performed by an English-speaking translator who was familiar with Persian and had no previous acquaintance with EDS, without communicating with those involved in the initial translation. Finally, EDS was adjusted to the context of the family without changing the main concepts. The cognitive interview was conducted with ten elderly women who belonged to different age and occupations groups, levels of education, and districts in order to ensure correct understanding and satisfactory and non-disturbing questions. After the required corrections, the Persian version of the 9-item tool consisting of 5-point Likert-type response scale (Never to Always) and two follow-up questions about the cause and the persons who practice discrimination was developed.

Face and Content Validity

In order to investigate the face and content validity of the translated version of EDS, the views of ten experts in gerontology, psychology, elderly nursing, instrumentation, social health, and sociology fields were used. The face validity was evaluated qualitatively and based on the criteria of difficulty, ambiguity and harmony of items, and the proposed points were considered without making significant changes in the concepts. The content validity was performed quantitatively. The overall content validity index of the SCVI scale was assessed for the relevance, simplicity, and clarity of EDS items. The individual content validity index (I-CVI) which is CVI for each scale item and average of ICVIs (CVI/AVG) were also evaluated. In this study, the overall indices of the scale (SCVI, SCI/AVG) above 0.9 and ICVI ≥0.88 were considered appropriate and optimum (26,27). Considering that the possibility of chance agreement is not precisely excluded in CVI, the modified Kappa statistic (k^*) was calculated for all items

in order to consider the chance agreement. Considering values higher than 0.4 are considered appropriate (26).

Construct Validity

To explore construct validity of EDS, CFA was performed using Amos 21. In this study, the fit index assessment of the model included CMIN/DF, goodness-of-fit index (GFI), adjusted goodness-of-fit (AGFI), incremental fit index (IFI), comparative fit index (CFI), and oot mean square error of approximation (RMSEA). The chi-square is presented as CMIN while carrying out AMOS-based analysis (28). The RMSEA >0.1 indicates an unacceptable fit; therefore, the RMSEA <0.1 was considered acceptable (29). The optimal values of other indices included IFI ≥0.95, CFI ≥0.95, GFI ≥0.9, and AGFI ≥0.85, and the CMIND/DF <5 is considered acceptable (29-32).

Reliability

Reliability of EDS was established using the two criteria of internal consistency, by calculating Cronbach's alpha, and repeatability criterion in the retest test. In the test-retest stage, the EDS scale was performed on 15 elderly women residing in Tehran with 2 weeks intervals. While choosing these individuals, the diversity of the urban area of residence, age, marital status, education, and discrimination score was considered. The test-retest correlation was calculated, and the intraclass correlation (ICC) coefficient was also obtained.

Physical Health

Participants also were asked about general physical health as self-rated physical health by one question "How is your health in general?" (1 = "very good" to 4 = "very bad") and then this rating scale was transformed into binary categories of poor versus good health according to previous studies (7). This scale is a sensitive measurement of overall health and independent predictor for morbidity, mortality, and disability among older adults (33).

Statistical Analysis

SPSS software version 20.0 was used to determine the frequency, mean, and standard deviation of demographic characteristics, individuals' EDS score, and reliability indices (Cronbach's alpha, test-retest, and ICC), and difference of discrimination mean in two poor and good health groups. Moreover, Amos 21 was used to perform CFA. $\alpha < 0.05$ was considered as the significant level.

Results

A total of 250 older women participated in this study. The mean age of subjects was 67.9 ± 6.5 years with the age range of 60 to 90 years. The majority of subjects were married, illiterate, unemployed, housewife, and without employment history. Most of them lived alone and 48% of them did not have an independent income. Demographic characteristics of the study samples are presented in Table

Table 1. Demographic Characteristics of Elderly Women Studied

Variable	Classes	Number	Percent
Marital status	Single	2	0.8
	Married	126	50
	Divorced	10	4
	Widow	112	44.8
Education	Illiterate	61	24
	Elementary	97	39
	Secondary school	24	10
	High school	43	17
	Bachelor's degree and higher	25	10
Employment status	Housewife	201	80.4
	Retired	46	18.4
	Employed	3	1.2
Employment history	Yes	52	21
	No	198	79
Living conditions	Alone	77	31
	With the husband	57	23
	With husband and children	63	25
	With children	53	21

1. Regarding the results of the EDS-based perceived discrimination, it should be pointed out that score 0 was given to 'never' and 'rarely' while score 1 was assigned to 'sometimes', 'often', and 'always' for each item of the scale. Therefore, score 1 represents perception of discriminatory treatment in each item of the scale. Overall, 52% of subjects reported at least one case of perceived discrimination, and among the examined items, the frequency of Item No. 5 ("They treat you as if they are afraid of your appearance and behavior") was zero. The results of other items are presented in Table 2.

Validation

Content Validity

The values of overall validity indices of EDS, including SCVI (average of expert on relevance, simplicity and clarity dimensions were equal to 0.91, 0.93 and 0.9 and respectively, and the value of SCVI/AVG was 0.91, which was at optimal level. While assessing the validity of each item of EDS scale, the value of ICVI and k* was obtained as 0.83-1, and 0.79-1, respectively which was very optimal, except for Item No. 5, "They treat you as if they were afraid of your appearance or behavior" with an ICVI value of 0.7 (less than acceptable level) and k* value of 0.49 (the least acceptable level, fair: 0.4-0.59).

Construct Validity

The results of CFA are presented in Tables 3 (fit indices) and 4. The relationship between each item and the factor examined was optimal and significant. However, the weak correlation of Item No. 5 with the factor was obtained (0.07).

Reliability

The internal consistency of this scale was obtained by

Table 2. The Frequency of "Experience of Perceived Discrimination" in Older Women Living in Tehran

Items	Items of the scale	The Experience of Discrimination	
		Number	Percent
1	They treat you with less courtesy than others.	68	27
2	They will respect you less than others.	66	26
3	They provide less services for you such as feeding, giving medications, and physician visit than those given to others	65	26
4	They treat you as if you are not smart and clever	87	35
6	They treat you as if you are dishonest	27	11
7	They treat you as if they are better than you	86	34
8	They call you offensive names or insult you	61	24
9	They threaten or harass you	33	13

Cronbach's alpha 0.91 and the correlation of each item with the total score of the test was between 0.55-0.85. The lowest correlation (0.57) was obtained for Item No.6 ("They treat you as if you are dishonest"), but no result was achieved for Item No. 5 due to its zero frequency in the analysis phase. The stability of this scale was confirmed by the test-retest correlation of 0.77 and the ICC of 0.91, which is significant ($P<0.001$).

Physical Health

46.8% of older women had a poor physical health and significant differences were found between the two groups of poor and good physical health ($P=0.001$) therefore, mean of discrimination in the group with poor physical health was higher than the other group (2.56 versus 1.45). The same significant results were obtained in the statistical analysis of the relationship of each single scale item with the discrimination score ($P<0.05$).

Table 3. The Factor Loading of Each Item and the Significance of the Coefficients

	Estimate	*P*
DIS1	1.000	0.001
DIS2	1.004	0.001
DIS3	0.831	0.001
DIS4	0.725	0.001
DIS6	0.394	0.001
DIS7	0.751	0.001
DIS8	0.642	0.001
DIS9	0.488	0.001

Note. DIS is an abbreviated form for discrimination and Dis1-9 indicates1-9 items of EDS.

Table 4. Goodness-of-Fit Indices of Confirmatory Factor Analysis of EDS

Index	CMIN/DF	GFI	AGFI	IFI	CFI	RMSEA
Index score	3.32	0.948	0.890	0.977	0.977	0.09

Abbreviations: EDS, Everyday Discrimination Scale; CMIN, in AMOS the chi-square value is called CMIN; df, degrees of freedom; RMSEA, root mean square error of approximation; CFI, comparative fit index; GFI, goodness-of-fit index; AFGI, adjusted goodness-of-fit; IFI, incremental fit index.

Discussion

The current study is the first attempt to translate and validate an effective scale for perceived discrimination among the older women and the first application of Everyday Discrimination Scale in Iran. Despite the extensive use of EDS, few studies have thoroughly investigated its psychometric characteristics. Rather, they have dealt with a limited number of psychometric characteristics, or that the EDS has been sometimes treated as part of a larger scale and the results of psychometric analysis of the overall scale have been presented (34). In this study, it was observed that all indices of content validity of the overall scale, except for Item No.5, are optimal. The results of factor analysis indicated the acceptability of construct validity of EDS in the population under study. Similar to the result of EDS reliability in other studies (α ≥0.8), the reliability of this tool was assessed appropriate in the present research (8,35). The frequency of Item No. 5 was zero in the studied sample, and its psychometric indicators were poor or less than acceptable. In ELSA study which is a large and well-known study, EDS was used to study age discrimination in older adults, and Item No. 5 was removed and replaced with another item in the context of discriminatory behavior of health system staff (6) .Furthermore, this item seems to be inappropriate for investigating discrimination in the family context, where the relationships are largely based on emotions and long-term familiarity. Therefore, it is reasonable to remove this item from the EDS used in the present study.

The results demonstrated that EDS can be an appropriate tool for studying the perceived discrimination of Iranian older women in the family. The strength of this study includes the application of EDS in a community of Iranian older women with a high cultural diversity. Besides, considering that sampling was performed from different regions of Tehran, the maximum possible diversity has been observed in terms of individual, economic, and social characteristics. One of the limitations of this research concerns the use of interview method to complete the questionnaires, which was due to the 24% illiteracy rate among participants. Another limitation is related to the

lack of inclusion of community-dwelling elderly women who did not refer to the local community centers of Tehran municipality and also no objective and clinical indicator was applied for the assessment of physical health due to different scope of sampling centers.

Nearly half of older women in this study reported poor physical health. In a 59-countries international study by WHO, self-rated physical health of adult's women was lower than in men in all age groups such as ageing people (36). Poor health in groups of older women was reported between 25-34%, so level of poor health in the present study (46.8%) is higher than the global average and could reflect less attention to the health of older women in Iran.

The results also showed the poorer physical health status of older women was related to high perceived discrimination which could reflect the negative impact of discrimination on the physical health of older women. In other studies similar results have been presented in cross-sectional and longitudinal studies as the negative effects of general perceived discrimination (age, gender, race, etc) and age discrimination on the health of older adults (5-7). These studies also used the self-rated physical health scale and EDS for perceived discrimination, same as the present study.

Conclusions

The results of validity and reliability tests revealed that EDS can be used to study discrimination of older women in the family. Considering the young nature of health discrimination studies and the behavioral details were less focused by different discrimination scale even EDS, there is a need to design more efficient, comprehensive, and specialized scales, especially for older adults, according to the international recommendations. Further qualitative research could hopefully uncover more dimensions of discrimination against older women in the family and also older adults.

Considering the negative effects of perceived discrimination on health, less attention was given in Iran. Numerous negative effects of perceived discrimination on the prevalence and exacerbation of chronic diseases and even on the exacerbation of inflammatory factors such as CPR, which can lead to chronic illnesses like cardiovascular disorders, were reported in multiple studies and systematic reviews. Clinicians, in addition to identifying people with perceived discrimination, should present these people and their issues to health authorities and struggle with discrimination in a variety of ways including changing the rules. In addition, further studies in this field especially in the elderly, are suggested.

Conflict of Interests

Authors have no conflict of interests.

Ethical Issues

The study protocol was approved by the Ethics Committee of the University of Social Welfare and Rehabilitation Sciences of Tehran, Iran (USWR.REC.1393.187). The ethical considerations included willingness to take part in the study, obtaining participants' written consent, and explaining the study objectives to the subjects. It was also explained that all information would be kept confidential and the questionnaires would be filled out anonymously. Also, EDS was translated after obtaining its designer's permission.

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