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Research paper

Validity and reliability of the social support scale in chronic diseases–TR (SSCII-TR)



F. Şenuzun Aykar^a, A. Bilge^b, G. Mermer^{c,*}, S. Şahin^d

^aEge University, Faculty of Nursing, Department of Internal Medicine Nursing, Bornova, 35100 Izmir, Turkey

^bEge University, Faculty of Nursing, Department of Mental Health and Psychiatric Nursing, Bornova, 35100 Izmir, Turkey

^cEge University, Faculty of Nursing, Department of Public Health Nursing, Bornova, 35100 Izmir, Turkey

^dEge University, Medical Faculty, Department of Internal Medicine, Division of Geriatrics, Bornova, 35100 Izmir, Turkey

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ABSTRACT

Objectives: The purpose of this study was to examine the reliability and validity of the Social Support Scale in Chronic Diseases (SSCII) Scale Turkish version that was developed by Hilbert-McAllister.

Methods: This was planning a methodological study. Research group consists of 163 older persons that accepted to participate in this study and who had a chronic disease. Data were collected in 15th June–15th August 2012 period from two homes for aged in İzmir Province. The necessary ethical approval was obtained from the institutions and each participant for research.

Results: SSCII Scale was translated to Turkish for language validity. For content validity, it was obtained of experts view and it was corrected according to expert's suggestions. For content validity, Kendall goodness-of-fit Correlation test was performed (Kendall's $W_a = 0.167$, $\chi^2 = 49.337$, $df = 37$, $p = 0.084$). In reliability and validity study, first of all, total item score correlation was examined. All items were upper than 0.20 correlation limit and there were a significant relationship between total item correlation score. Scale originally has 38 items in the latest version in Turkish. For reliability of the scale, it was performed the internal consistency analysis and it was find that Cronbach's alpha coefficient as 0.89. So, the scale has an acceptable level internal consistency coefficient. For the determining of scale's time stability, it was applied to initial 32 older persons after first survey. A significant relation found between test-retest scores ($p = 0.000$).

Conclusion: SSCII Scale Turkish version is a reliable and valid scale for the Turkish community.

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1. Introduction

World Health Organization (WHO) takes into account the chronological definition of old age and considers this period as “65 and over years of age” [1].

It is expected that the number of old people will increase from 400 million in 2000 to 1.7 billion by 2050 in the developing countries. Similarly, the share of old people aged 65 and over in total population of Turkey increased from 5.7% in 2005 to 7% in 2010 (the share of people aged 60 years and over in total population became 10% at the same year) [1].

The rapid increase of old population and lifetime has brought along the need to re-handle some problems like solitude, poverty, impairment, chronic diseases, care and assistance, old age problems and aging services in detail [2]. Disease pattern changes with old age and the frequency of chronic diseases increases.

According to WHO, chronic diseases account for 60% of all deaths in world. Among these causes of death, cardiovascular diseases rank first, which is followed by cancer, chronic respiratory diseases and diabetes, respectively [3].

About 79% of all deaths in Turkey are caused by chronic diseases. When causes of death are considered by basic groups of disease, about 48% of deaths are caused by cardiovascular diseases, 13% by cancers and 8% by respiratory diseases. Considering the first 10 diseases causing death in old people 60 and over years of age, ischemic heart disease, cerebrovascular diseases and COPD take the initial three places, respectively [4]. In brief, cardiovascular diseases are important reasons of mortality and morbidity in Turkey as in other developing and developed countries [5]. In this regard, old people need social support regardless of the type of chronic disease.

There are different opinions about the definition of social support; however, all opinions agree that social support covers financial, emotional and cognitive components. Social support meets basic social needs of people like affection, commitment, self-respect and belonging to a group, and it also has positive effects on physical and mental health [6].

* Corresponding author.

E-mail addresses: fisun.senuzun@ege.edu.tr (F. Şenuzun Aykar), aysegul.bilge@ege.edu.tr (A. Bilge), gulengul.s.mermer@ege.edu.tr (G. Mermer), sevnaz.sahin@ege.edu.tr (S. Şahin).

Determining the social service needs of old people with chronic disease and prevent the possible problems that could develop in this regard forms the basis of corporate services. In this context, no scale is found in national literature to measure social support in chronic diseases. The development of these scales is important to study in old people and case detection.

2. Methods

The study was methodologically designed to determine the validity and reliability of Social Support Scale-TR (SSCII-TR) in chronic diseases. And it was conducted in Zubeyde Hanim Nursing Home of Izmir Metropolitan Municipality and Izmir Nevvar Salih Isgören Nursing Home in Turkey.

2.1. Participants

In this study, in order to determine the sample size, three-fold of items in the scale was taken [7–9]. In this regard, as there are 38 items in the scale, it was planned to be applied on at least 114 people and the scale was applied to a total of 163 people agreeing to participate in the study between 15 April and 27 November 2012. As there could be some questionnaires that cannot be included in the assessment after the application of questionnaire form, the sample size was kept larger to increase validity and reliability of the study. The written permissions of institutions and verbal permissions of people were obtained before the study. As a consequence, 116 old people from Zubeyde Hanim Nursing Home of Izmir Metropolitan Municipality (with 304 old people capacity) and 47 old people from Izmir Nevvar Salih Isgoren Nursin Home (with 95 old people capacity) could be reached. In order to determine invariance in time, the scale was re-applied to the initial 32 people three weeks after the first application.

2.2. Measures

Introductory Information Form and Social Support in Chronic Illness Inventory (SSCII-TR) were used as data collection tools in the study.

2.2.1. Social support in chronic illness inventory – (SSCII-TR)

The inventory was developed by Hilbert in 1990. SSCII was developed to provide an objective assessment of social support for people with chronic diseases and a measurement tool for quality of care. The inventory consists of 5 subgroups including intimate interaction, guidance, feedback, concrete assistance and positive social interaction [10]. For the validity and reliability of the inventory, Cronbach alpha coefficient was determined as 0.98. Intimate Interaction subscale contains 1–10 items, Guidance subscale 11–17 and 30–36 items, Feedback subscale 18–20, 37 and 38 items, Concrete Assistance subscale 21–24 items and Positive Social Interaction subscale 25–29 items.

The inventory is a 6-point Likert type scale. It can be interpreted in terms of both total score and subscale scores, and higher scores indicate positive social support.

2.2.2. Other instruments

In the Introductory Information Form developed by the researchers, there are 19 introductory questions defining socio-demographic characteristics and chronic disease condition of people.

2.3. Procedures

In the study, two stages were conducted to investigate psycholinguistic characteristics/language adaptation and psychometric characteristics (validity–reliability).

2.4. Data analysis

In the investigation of psycholinguistic characteristics/language adaptation, initially the translation method was used. As cited by Aksayan and Gozum in 2002, there should be at least two independent variables in this method. In this regard, the translation of the inventory from English to Turkish was made by two academic members and one PhD lecturer. Terms in Turkish translation were reviewed after investigating the original English terms.

In the investigation of psychometric characteristics, primarily the Kaiser-Mayer-Olkin Measure of Sampling Adequacy (KMO) Analysis was made for sample adequacy prior to Factor Analysis, and Bartlett's Test of Sphericity Analysis was used to determine whether study sample is adequate for Factor Analysis [8,12]. Expert opinion was taken for the content validity of inventory. Experts were asked to evaluate each item of the inventory over 100 points. Factor analysis was carried out for structure/concept validity.

In the reliability study, corrected formula (Point-bi-serial) of Pearson product-moment correlation was calculated for internal consistency analysis, and Cronbach alpha coefficient, Guttman split-half and Spearman-Brown reliability coefficients were calculated for analysis. The study of invariance in time was made with test-retest method, and Pearson product-moment correlation coefficient was calculated.

3. Results

3.1. Descriptive characteristics

The study results indicate that 30.1% of old people included in the study are in 75–79 years of age group ($\bar{X} = 76.56 \pm 7.26$), 63.8% are male, 43.6% are widow, 40.5% are primary school graduates, 24.5% are retired, 35% have worker insurance, 50% have an income level equal to their expenditures and 51.5% stay in nursing home and have no relative visiting or caring them.

In addition, 67.5% of individuals did not have any chronic illness, while 27.6% had hypertension. Old individuals were determined to have 2.6 ± 1.36 children on average, stay in nursing home for 5.9 ± 4.7 years and have a social support perception of 64.9 ± 39.1 over 100 points on average.

3.2. Validity results

After altering statements in line with the expert opinions about Social Support Inventory in chronic diseases, Kendall coefficient of concordance (W^a) correlation test was applied and content validity was conducted and an insignificance was detected at $p > 0.00$ level (Kendall's $W^a = 0.167$, $\chi^2 = 49.337$, $df = 37$, $p = 0.084$).

Kaiser-Meyer-Olkin measure of sampling adequacy (KMO – sample adequacy) analysis and Bartlett's test of sphericity analysis were used to test whether the inventory is adequate for Factor Analysis, and consequently, it was found statistically significant.

As a result of principal component analysis, items were found to gather in five factors. Eigenvalue of each factor was over 1. In the analysis of five-factor inventory, eigenvalues were determined as 41.345 for factor 1, 5.627 for factor 2, 4.740 for factor 3, 3.813 for factor 4 and 3.359 for factor 5. Five factors explain 58.884% of total variance.

3.3. Reliability results

Items of Social Support Inventory in Chronic Illness were found significant at $p < 0.01$ and were not excluded from the inventory (Table 1).

Table 1
Item-total score correlations of social support in chronic illness inventory.

Items	r	p
Tell me that I am going to be fine	0.55	0.000**
Comfort me by showing affection	0.51	0.000**
Help me when I need	0.50	0.000**
Express interest and concern in my well-being	0.58	0.000**
Tell be that (s)he feels close to me	0.59	0.000**
Be available to listen when I want to talk	0.57	0.000**
Listen what I think	0.65	0.000**
Console me when I am upset or sad	0.67	0.000**
Let me reach him/her when I feel bad	0.67	0.000**
Accept the way I am	0.66	0.000**
Meet all my expectations	0.60	0.000**
Give me information about how to do something	0.67	0.000**
Give me information to help me understand my situation	0.68	0.000**
Tell me who I should ask for assistance	0.67	0.000**
Tell me what to expect in a condition expected to happen	0.72	0.000**
Teach me how to do something	0.70	0.000**
Help me solving a problem	0.62	0.000**
Check with me whether I followed the advice I was given	63	0.000**
Help me understand why I did not do something well	0.70	0.000**
Give me feedback how I am handling without saying it is good or bad	0.60	0.000**
Make contribution to my income or give me money	0.39	0.000**
Give me a gift	0.47	0.000**
Do my tasks in my place	0.50	0.000**
Provide transportation for me	0.65	0.000**
Participate in some activities with me to help me get my mind off things	70	0.000**
Talk to me about my fields of interest	0.64	0.000**
Cheer me up with jokes and humors	0.65	0.000**
Share my fields of interest	0.33	0.000**
Make me count on her/him when I am worried	0.67	0.000**
Share information about recommendations of health staff	0.64	0.000**
Help me understand my illness	0.67	0.000**
Tell me who I should ask for help when I have problems with recommendations of health staff	0.71	0.000**
Tell me how useful the recommendations of health staff are for preventing complications	0.65	0.000**
Teac me how to perform the recommendations of health staff	0.70	0.000**
Talk to me about the problems I have with the recommendations of health staff	0.61	0.000**
Encourage me to take more proper care of myself	0.58	0.000**
Check whether I performed the important recommendations	0.64	0.000**
Make favorable comments when I perform the recommendations of health staff	0.70	0.000**

** $p < 0.01$.

As a result of the Factor Analysis, Social Support Inventory in Chronic Illness was determined to consist of 38 items and 5 subscales. Intimate Interaction subscale consists of 10 items (1,2,3,4,5,6,7,8,9,10), Guidance subscale consists of 14 items (11,12,13,14,15,16,17,30,31,32,33,34,35,36), Feedback subscale consists of 5 items (18,19,20,37,38), Concrete Assistance subscale consists of 4 items (21,22,23,24) and Positive Social Interaction subscale consists of 5 items (25,26,27,28,29). Cronbach alpha coefficient was determined as 0.89 in Social Support Inventory in Chronic Illness, 0.89 in Intimate Interaction subscale, 0.92, Guidance subscale, 0.84 in Feedback subscale, 0.32 in Concrete Assistance subscale and 0.33 in Positive Social Interaction subscale; in addition, total mean score of inventory was 188.70, standard deviation was 5.06, minimum was 110.00 and maximum was 262 (Table 2).

When subscale and total score correlations of the first and second applications are compared to determine invariance in time of Social Support Inventory in Chronic Illness, total score correlation of test-retest inventory was determined as $r = 30$ and no statistically significant relation was determined between test-retest except for Intimate Interaction and Guidance subscales.

4. Discussion

The study results indicate that 30.1% of old people included in the study are in 75–79 years of age group ($\bar{X} = 76.56 \pm 7.26$), 63.8% are male. While the older men live in nursing home, women live with their children in Turkey.

The insignificance detected at $p > 0.00$ level as a result of Kendal analysis of Social Support Inventory in Chronic Illness indicates that there is no statistically significant difference between expert opinions for interpreting and understanding of inventory items.

In inventory adaptation and development studies in literature, it is stated that sample size can be taken 3–10 fold of the number of items in inventory [7,8]. In a study carried out by Bag in 2003, the 21-item inventory was applied to 315 individuals. In validity and reliability studies of attitude and belief, researchers agree that sample size should be over 200 [8]. The adequacy of sample size has positive effect on validity and reliability of inventory. In this regard, analyses were conducted on 163 individuals in validity and reliability studies of Social Support in Chronic Illness Inventory. The method used for determining the sample size is consistent with literature and the study was carried out on sample group 5-fold of 38-item inventory [11].

For provide homogeneity in the study, individuals were carefully matched considering whether they have visitor in nursing home. Slightly more than half of old people (51.5%) stated that they had no visitor during their stay in nursing home, while 48.5% stated to have visitor. These findings indicate that equal distribution and necessary homogeneity were provided.

KMO value of the inventory is 0.93. Kaiser stated that as the value gets closer to 1, it is accepted perfect; on the other hand, if it is under 0.50, it becomes unacceptable [8]. In this study, KMO value was seen to be perfect. These findings represent that data show normal distribution, measurement results are not affected by sample size and sample groups is adequate and suitable for factor analysis [12].

It is determined that 38 items gathered in five factors with respect to eigenvalue over 1 as compressed to provide coherence with the original inventory in order to find out the factorial structure of Social Support in Chronic Illness Inventory and they cumulatively explained 58.884% of total variance. Each factor had an eigenvalue higher than 1.

Table 2

Item numbers, Cronbach alpha coefficient, standard deviation, minimum and maximum values of social support in chronic illness inventory and subscales.

Subscales and total scale	Items	Cronbach alpha coefficient	\bar{X}	SS	Min.	Max.
Intimate interaction	1,2,3,4,5,6,7,8,9,10	0.89	49.67	5.47371	28.00	60.00
Guidance	11,12,13,14,15,16,17,30,31,32,33,34,35,36	0.92	69.57	7.83075	40.00	84.00
Feedback	18,19,20,37,38	0.84	24.60	3.04825	14.00	30.00
Concrete assistance	21,22,23,24	0.32	19.66	5.03859	8.00	72.00
Positive social interaction	25,26,27,28,29	0.33	25.20	5.05911	15.00	77.00
SSCII-TR total		0.89	188.70	5.06	110.00	262.00

In the adaptation study carried out by Eker, Arkar and Yıldız in 2001, the number of factors was kept unchanged by respecting the original format of the inventory [13]. The methods used in their study are similar to those in the current study.

As the variance rates get higher in the analysis, factor structure of the inventory gets stronger. Variance rates changing between 40% and 60% in the analysis were accepted adequate [14].

As a result of factor analysis of original inventory by Hilbert in 1990, five factors accounting for 74.4% of total variance were determined. This study supports the findings about original inventory.

As the inventory items are significant at $p < 0.01$, no item is excluded from the inventory (Table 1). As the total correlation score of items increases, the efficacy of the question increases, as well. Correlation between 0.15–0.20 is accepted as worthless, 0.20–0.35 as an inferior degree, 0.35–0.60 as a good degree, 0.60 and over as high degree [15]. Negative total correlation of items is expected to be at least 0.20. The correlation level of 0.20 is accepted as minimum efficacy degree [7,8]. When the correlation level is under 0.20, it is decided to exclude items from inventory; however, changes in alpha coefficient and mean values should also be considered [8]. On the other hand, correlations among items are expected to be statistically significant, and when the relation is not significant, it is recommended to exclude the item [16]. In the item analysis stage of validity and reliability study made by Ugur in 2006, the items with item extraction correlation under 0.20 were not excluded from the inventory due to the conceptual process of the inventory [17]. In the validity and reliability study of Sexual Attitude Inventory by Duyan in 2004, especially three items have quite low scores in the corrected item-scale analysis [18]; therefore, the correlation levels of the relevant items with the whole inventory were calculated and they were found significant at $p < 0.001$ significance level. In this regard, items were not excluded from the scale. A similar examination was carried out in this study, and although no significance was detected between 28th item and the whole inventory, it was not excluded.

Cronbach alpha coefficient is another method used to measure the internal consistency of the inventory. The Cronbach alpha coefficients of Concrete Assistance and Positive Social Interaction subscales were found quite lower than the expected level (Table 2). This situation is considered to be related to both the number and content of items. Aydemir in 2004 reported that low item number of inventory could affect Cronbach alpha coefficient [19]. In the future studies, it will be useful to reconsider the subscales with different sample groups.

It is reported in literature that the reliability between 0.60–0.80 should be adequate to be used in researches [8]. Rhodius-Meester et al. in 2013 determined Cronbach alpha coefficient as 0.85 in the validity and reliability study of delirium inventory in old people [20]. The original study of SSCI inventory developed by Hilbert in 1990 was conducted on 190 individuals with chronic disease. The overall Cronbach alpha coefficient of the inventory was

determined as 0.98. In addition, Cronbach alpha coefficients of subscales of the inventory were determined as 0.95 for intimate interaction, 0.95 for guidance, 0.93 for feedback, 0.84 for concrete assistance and 0.92 for POSitive social interaction.

As a result of the internal consistency analyses of Social Support in Chronic Illness Inventory (item analysis, relations among item mean values, Cronbach alpha coefficient and two-half test analysis), the inventory was concluded to be reliable with internal consistency for all Cronbach alpha values except for the values of two subscales.

The inventory was applied once again on the first 32 individuals three weeks after the initial application performed to determine invariance in time of Social Support in Chronic Illness Inventory. When the correlations of subscale and total scores of the first and second applications were compared, correlation of test-retest total inventory score was found as $r = 30$ and there was no statistically significant relation except for Intimate interaction and Guidance subscales. The statistical difference could be regarded as an indicator for invariance in time. The low correlation was attributed to old age and chronic illness of the study group.

Ozmen in 2004 studies on 300 individuals and applied the inventory on 40 for re-test [21]. It is reported in literature that the number of individuals in re-test should be at least 30 [8]. In this study, this limit is exceeded. The subscales with fewer than 4 items could reduce r values [22].

5. Conclusion

As a result of validity analysis of Social Support in Chronic Illness Inventory, the inventory was concluded to have adequate validity of language, content and structure.

Reliability analysis of the inventory indicated that the current inventory is consistent with the original inventory in general. Internal consistency and time consistency of the inventory and subscales are found sufficient.

In conclusion, “Social Support in Chronic Illness Inventory” is a reliable and valid inventory for Turkish Society.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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