



Reliability and validity of a Turkish version of the hypertension self-care profile

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The purpose of the study was to develop a Turkish version of the Hypertension Self-care Profile and to examine its reliability and validity. The sample consisted of 200 adults with hypertension. Internal consistency was estimated by calculating the Cronbach alpha coefficient and item-total score correlation regarding item reliability. The test-retest reliability for estimating the stability was estimated using intraclass correlation coefficient. Exploratory factor analysis and confirmatory factor analysis were used for the factor construct validity. Internal consistency reliability coefficients ranged from 0.937 to 0.942. The test-retest reliability was between 0.730 and 0.766. Item-total correlations had a range of 0.491 to 0.758. Single factor with an eigenvalue >1 was extracted for each scale. The Turkish version of the Hypertension Self-care Profile has been successfully translated and cross-culturally adapted to Turkish population. (J Vasc Nurs 2020;38:149-155)

INTRODUCTION

Hypertension (HTN) is frequently and increasingly seen in Turkey and throughout the world.¹⁻³ Because of the complications which it causes, it is an important public health problem with a high rate of mortality, with HTN-related complications causing the deaths of approximately 9.4 million people annually in the world.^{1,2} HTN is a prevalent condition, which increases with age.³ Rates of HTN morbidity and mortality are progressively increasing in Turkey.³ Despite advances in the diagnosis and treatment of HTN, blood pressure control varies from 13.0% to 72.0%.⁴ In Turkey, the BP control rate was 8.1% in 2003 and, although it had risen to 28.7% in 2012, it is still not at the desired level.³

Self-care is defined as being able to initiate and perform the necessary activities at the right time to preserve an individual's health, life, and well-being.⁵ Lack of self-care threatens the health and well-being of patients.⁵ It is important for a hypertensive individual to carry out self-care activities, such as using medication regularly to control blood pressure, stopping smoking, controlling weight and regularly performing physical activity, measuring blood pressure at home, attending checkups, moderating the consumption of alcohol, restricting salt intake, following a DASH diet, and coping with stress.^{6,7} It has been reported that not performing these self-care activities leads to an increase in the rate of complications and death related to HTN.^{6,7}

Evaluation of self-care by hypertensive patients in Turkey is frequently performed using the Self-care Agency Scale and the Medication Adherence Self-efficacy Scale.^{8,9} While the Medication Adherence Self-efficacy Scale focuses on compliance with drug treatment, the Self-care Agency Scale focuses on general self-care which has a limited generalizability.^{8,9} However, self-care assessment should not be restricted to adherence with drug treatment but should include adherence with lifestyle changes.^{7,10} Because there is no comprehensive scale to assess self-care in hypertensive patients, self-care evaluation can be ineffective by nurses.

The Hypertension Self-care Profile Scale (HBP SCP) was based on Orem self-care model and motivational interviewing.¹⁰ Orem's model explains how individuals perform deliberately regulatory self-care actions such as medication taking or physical activity.^{5,10} Motivational interviewing is rooted from social cognitive theory and the health belief model.¹⁰ Motivational interviewing is focused on promoting patient's own motivation for change and on enhancing the confidence to make behavioral changes.¹¹ Motivation and self-efficacy have been significant predictors of behavior changes such as eating healthier foods, increasing activity levels, adhering to medication regimens, and quitting smoking. Therefore, motivation and self-efficacy are key components of self-care.¹⁰⁻¹³

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Healthy behavior change is necessary to prevent complication or improving blood pressure control for individuals with HTN. Health behavior change can be a hard and time-consuming process for patients; therefore, patients may need to support.^{12,13} The level of adequate motivation and self-efficacy can promote behavior change.¹⁰ For example, patients having high levels of self-efficacy are more likely to positively appraise their capability and are thus more likely to have better management of medication adherence, lifestyle modifications, blood pressure monitoring, and stress management. Similarly, patients having high levels of motivation are more likely to initiate and maintain recommended health behavior.^{10–13} To help patients change their behavior, nurses should measure the level of patient's motivation and self-efficacy for change through a self-reported scale. There is no comprehensive scale in Turkey to measure multiple domains of self-efficacy and motivation in self-care intervention; therefore, the HBP SCP scale could fill an important gap in the literature. Higher scores obtained from the HBP SCP scale indicate higher levels of self-efficacy and motivation. Thus, nurses could evaluate objectively the outcomes.

One of the greatest advantages of the scale is that it can be used by patients with a low educational level.¹⁰ The education level is low in Turkey. In 2017, 43% of adults (25- to 64-year-olds) have only been educated to primary level and this rate is higher in aging population.¹⁴ Poorly educated patients may have difficulty understanding certain questions, or they may interpret questions differently from highly educated patients, potentially leading to biased responses.¹⁵ It is thought that the HBP SCP can be easily understood and the questions easily answered by hypertensive individuals whose education level is low. Moreover, the self-reporting scale is a method which is inexpensive to use for developing countries and is practicable for use in terms of time and effort.¹⁵ HBP SCP has reported good reliability and validity data for other language versions, thus suggesting adaptability to other cultures.^{16–18}

Self-care activities (ie, a healthy diet, regular physical activity, medication adherence, and weight management) are not adequate among HTN patients in Turkey.^{8,9,19} Furthermore, Turkey has a rapidly aging population and the prevalence of HBP in Turkey is rising.³ The aging population rate was 7.5% in 2012, whereas it had risen to 8.7% in 2018; this rate is expected to rise to 16.3% by 2040.²⁰ Nurses need to evaluate the effectiveness of self-care intervention in people with HTN.

METHOD

Aim

Given that there is no scale in Turkey to evaluate self-care in patients with HTN, the purpose of this study was to develop a Turkish version of the HBP SCP through the translation of the new HBP SCP from English into Turkish. In addition, the aim of this study was to assess the validity and reliability of the translated Turkish HBP SCP.

Sample and design

This cross-sectional descriptive study was conducted in northwest Turkey, from February to May 2018. Patients with HTN were recruited through convenience sampling from 7 inter-

nal disease outpatient clinics of a university hospital in northwest Turkey. The inclusion criteria for the participants included the following: 1) being aged 18 years or older, 2) being on antihypertensive medication(s), 3) having been diagnosed with primary HTN, and 4) being able to read and write in Turkish. Excluded subjects were those with secondary HTN, pregnant women, those with an acute or terminal condition (eg, stroke, diabetes, heart failure, myocardial infarction, kidney failure, or cancer), those with a psychiatric diagnosis, or those taking other drugs that could increase blood pressure.

Of the 250 patients invited, 10 refused to participate in this study, and 40 were excluded because of cancer (n = 16), kidney failure (n = 8), diabetes (n = 10), and linguistic barriers (n = 6). Therefore, a total of 200 patients were enrolled in the present study. To evaluate the test-retest reliability, a subgroup (n = 75) of the enrolled participants completed the scale again within a two-week interval.

Instruments

Sociodemographic and clinical questionnaire contained closed-ended question on demographic and clinical details such as the patient's age, gender, educational level, employment, duration of HTN, and the number of medication.^{9,10}

Hypertension Self-care Profile. The instrument was developed using the Orem self-care model and the motivational interviewing by Han et al. There are three subscales of the HBP SCP—Behavior, Motivation, and Self-efficacy. Each is a 20-item Likert-type scale that assesses self-care practices (rarely/never = 1, always = 4), motivation for behavior change (not important = 1, very important = 4), and confidence (not confident = 1, very confident = 4) in HTN self-care related to lifestyle modifications, medication adherence, etc.^{10,16–18} Each of the three scales is scored separately, resulting in scoring ranging from 20 to 80. A higher score represents better self-care of a patient with HTN.¹⁰ Concurrent and construct validities of the original HBP SCP were adequate. The Cronbach alpha coefficients ranged from 0.83 to 0.93. The scales can also evaluate the self-care of patients with low levels of literacy.¹⁰

Translation and cultural adaptation process

The HBP SCP was first translated into Turkish by a professor in internal diseases nursing and a bilingual language expert. The 2 translated versions were analyzed and synthesized. No differences in meaning were detected. This version was back translated into English by a medical expert and a bilingual language expert. The HBP SCP was evaluated with respect to grammatical, syntax, and semantic suitability by a Turkish language expert, a medical expert, and a professor in internal diseases nursing. No differences in meaning were detected. It was decided that no changes would be made and all 60 items in the questionnaire would be included in the final form of the Turkish version of the HBP SCP—behavior, motivation, and self-efficacy.

Linguistic adaptation

Pilot testing was conducted with 30 patients who were not included in the sample of the study to assess comprehensibility. The comprehensibility rate was calculated.²¹ The

TABLE 1

RELIABILITIES OF HBP SCP SCALES

| Scale | Cronbach's alpha (n = 200) | Item-total correlation (n = 200) (Range) | Intraclass correlation coefficient (n = 75) |
|-----------------------------|----------------------------|--|---|
| HBP SCP–Behavior Scale | 0.938 | 0.539–0.742 | 0.730 |
| HBP SCP–Motivation Scale | 0.937 | 0.491–0.758 | 0.758 |
| HBP SCP–Self-efficacy Scale | 0.942 | 0.526–0.728 | 0.766 |

HBP SCP = Hypertension Self-care Profile Scale.

comprehensibility rate of the HBP SCP was 0.0032. Patients with HTN found this version to be relevant, clear, comprehensible, and easy to complete.²¹ During pretesting, patients did not exhibit difficulty understanding any of the items of the HBP SCP. Thus, language equivalence was achieved and the Turkish version was given its final form.

Content validity

To confirm content validity, the instrument was sent to 12 nursing researchers who were experts in the field. They were asked to assess each question for comprehensibility and give it a score of 1 for “not suitable”, 2 for “somewhat suitable, but the item must be brought into a suitable form”, 3 for “quite suitable, but small changes need to be made”, or 4 for “completely suitable”.²² Then, for each item, item content validity index (I-CVI) is computed as the number of experts giving a rating of either 3 or 4, divided by the number of experts. Content validity index for scales (S-CVI) was calculated as the average I-CVI value. It is stated that the CVI value must be over 0.78.²² The content validity indices of the HBP SCP–Behavior Scale, the HBP SCP–Motivation Scale, and the HBP SCP–Self-efficacy Scale were 0.93, 0.91, and 0.97, respectively, demonstrating that the experts were in agreement; it was decided not to make any basic changes. In this way, it was accepted that the statements on the scale fitted Turkish culture.

Data collection procedure

The questionnaires were collected from the patients during their visits to the outpatient clinics in the university hospital. To determine test–retest reliability, we asked patients to complete questionnaires twice. The first questionnaire included the HBP SCP and clinical and sociodemographic questionnaire. The second questionnaire included only the HBP SCP. Participants were asked to complete the second questionnaire 2 weeks after the first test.

Written permission was obtained from the ethics committee (No.9/6), the hospital (No. 98024045/604.02.02), professor Hae-Ra Han, and patients. This study was conducted in consideration of the Declaration of Helsinki.

Data analysis

Analyses were conducted using SPSS, version 20 (SPSS, Inc, Chicago, IL), and AMOS, version 21. Internal consistency was estimated by calculating the Cronbach alpha coefficient

and item-total score correlation regarding item reliability. The test–retest reliability for estimating the stability was estimated using intraclass correlation coefficient (ICC).²³ An ICC above 0.70 was considered to be satisfactory.²³ The value >0.30 was used as the criterion for the item-total correlation.²³

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used for the factor construct validity. Factor loading for each item was predicted to be >0.40. In the CFA, chi-square goodness test (χ^2/df), goodness-of-fit index (GFI), non-normed fit index (NNFI), standardized root mean square residual (SRMR), comparative fit index (CFI), and root mean square error of approximation (RMSEA) were examined as goodness-of-fit indices. We assumed that $\chi^2/df \leq 2.0$, GFI ≥ 0.90 , NNFI ≥ 0.90 , CFI ≥ 0.90 , SRMR < 0.10 , and RMSEA ≤ 0.08 indicated acceptable fit.²⁴

RESULTS

Characteristics of patients

The mean age of the patients was 58.25 ± 14.6 years, 50.5% were female, 74.5% were not working, 73.0% had a medium/high income, and 72.0% were educated to primary school level. The mean duration of HTN was 11 ± 9.4 years. Patients were taking a mean of 2 ± 1.2 antihypertensive medications.

Reliability analysis

The Cronbach alpha coefficient for internal reliability of the HBP SCP–Behavior Scale was found to be 0.938 and the ICC was 0.730 for the test–retest. The item-total score correlations of the scale were found to be between 0.539 and 0.742 (Table 1). The HBP SCP–Motivation Scale's Cronbach alpha coefficient for internal reliability was 0.937 and the ICC was 0.758 for the test–retest two weeks later. The item-total score correlations of the scale were found to be between 0.491 and 0.758 (Table 1). The Cronbach alpha coefficient of the HBP SCP–Self-efficacy scale was 0.942 for internal reliability and the ICC was 0.766 for the test–retest. The item-total score correlations of the scale were found to be between 0.526 and 0.728 (Table 1).

TABLE 2

FACTOR LOADING OF THE HYPERTENSION SELF-CARE PROFILE SCALE (N = 200)

| <i>Hypertension Self-care profile scale</i> | <i>Behavior Scale</i> | <i>Motivation Scale</i> | <i>Self-efficacy Scale</i> |
|--|---|--|---|
| <i>Items</i> | <i>How often do you do the following?</i> | <i>How important is it to you to do the following?</i> | <i>How confident are you to do the following?</i> |
| Take part in regular physical activity (eg, 30 minutes of walking 4–5 times per week)? | 0.651 | 0.621 | 0.747 |
| Read nutrition facts label to check information on sodium content? | 0.643 | 0.536 | 0.667 |
| †Engage in activities that can lower stress (eg, deep breathing, meditation)? | 0.675 | - | - |
| †Forget to fill your prescriptions? | 0.757 | - | - |
| †Forget to take your blood pressure medicine? | 0.617 | - | - |
| †Monitor situations that cause a high level of stress (eg, arguments, death in the family) resulting in blood pressure elevation? | 0.753 | - | - |
| Replace traditional high-salt foods (eg, canned soups, Oodles of Noodles) with low-salt products (eg, homemade soups, fresh vegetables)? | 0.636 | 0.712 | 0.709 |
| Limit use of high-salt condiments (eg, ketchup)? | 0.690 | 0.651 | 0.569 |
| Eat less than 1 teaspoon of table salt per day (6 grams)? | 0.667 | 0.770 | 0.738 |
| Eat less foods that are high in saturated (eg, red meat, butter) and trans fat (eg, lard, shortening)? | 0.778 | 0.796 | 0.765 |
| Use broil, bake or steam instead of frying when cooking? | 0.754 | 0.685 | 0.617 |
| Read nutrition label to check information on saturated (eg, butter, red meats) and trans fat (eg, lard, shortening)? | 0.645 | 0.739 | 0.755 |
| Replace traditional high-fat foods (eg, deep fried chicken) with low-fat products (eg, baked chicken)? | 0.766 | 0.608 | 0.662 |
| Limit total calorie intake from fat (less than 65 grams) daily? | 0.663 | 0.569 | 0.613 |
| Eat 5 or more servings of fruits and vegetables daily? | 0.588 | 0.687 | 0.664 |

(Continued)

TABLE 2

CONTINUED

| <i>Hypertension Self-care profile scale</i> | <i>Behavior Scale</i> | <i>Motivation Scale</i> | <i>Self-efficacy Scale</i> |
|---|---|--|---|
| <i>Items</i> | <i>How often do you do the following?</i> | <i>How important is it to you to do the following?</i> | <i>How confident are you to do the following?</i> |
| Practice moderation in drinking alcohol daily (2 glasses or less for men; 1 glass or less for women)? | 0.639 | 0.732 | 0.751 |
| Practice nonsmoking? | 0.673 | 0.620 | 0.652 |
| Check your blood pressure at home? | 0.629 | 0.621 | 0.600 |
| Keep your weight down? | 0.666 | 0.750 | 0.759 |
| *Take your blood pressure medicine? | - | 0.763 | 0.746 |
| *Get your prescription filled? | - | 0.647 | 0.661 |
| *Try to stay away from anything and anybody that causes stress? | - | 0.674 | 0.698 |
| See a doctor regularly? | 0.679 | 0.657 | 0.723 |

*These items are included only in the "Motivation" and "Self-efficacy" domains.
†These items are included only in the "Behavior" domain.

Construct validity

All of the items demonstrated moderate to strong loadings (>0.40) on each of the three scales of the HBP SCP (Table 2), indicating acceptable construct validity. According to the results of explanatory factor analysis for the HBP SCP–Behavior Scale, the Kaiser–Meyer–Olkin (KMO) value was 0.935, indicating that the sample size was suitable for factor analysis. The Bartlett test was significant ($\chi^2 = 2,018.22$; $P < .001$), indicating that factor analysis was appropriate. Principal component analyses revealed that a single factor with an eigenvalue >1 was extracted for the

scale, explaining 46.32% of the total variance in the HBP SCP–Behavior Scale. Item-factor loadings were found to be between 0.617 and 0.778 (Table 2).

According to the results of exploratory factor analysis for the HBP SCP–Motivation Scale, the KMO value was 0.939, indicating that the sample size was suitable for factor analysis. The Bartlett test was significant ($\chi^2 = 1,971.61$, $P < .001$), indicating that factor analysis was appropriate. Principal component analyses revealed that a single factor with an eigenvalue >1 was extracted for the scale, explaining 45.87% of the total variance in

TABLE 3

ADHERENCE INDICES FOR CONFIRMATION OF FACTOR ANALYSIS (N = 200)

| <i>Scale</i> | χ^2 | χ^2/df | <i>RMSEA</i> | <i>SRMR</i> | <i>CFI</i> | <i>NNFI</i> | <i>GFI</i> |
|-----------------------------|----------|-------------|--------------|-------------|------------|-------------|------------|
| HBP SCP–Behavior Scale | 36.786 | 1.951 | 0.069 | 0.060 | 0.906 | 0.905 | 0.925 |
| HBP SCP–Motivation Scale | 34.477 | 1.839 | 0.065 | 0.069 | 0.915 | 0.914 | 0.935 |
| HBP SCP–Self-efficacy Scale | 37.141 | 1.974 | 0.070 | 0.062 | 0.910 | 0.909 | 0.928 |

χ^2/df = chi-square goodness; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; CFI = comparative fit index; NNFI = non-normed fit index; GFI = goodness-of-fit index; HBP SCP = Hypertension Self-care Profile Scale.

the HBP SCP–Motivation Scale. Item-factor loadings were found to be between 0.536 and 0.796 (Table 2).

According to the results of explanatory factor analysis of the HBP SCP–Self-efficacy Scale, a KMO value of 0.941 was found, indicating that the sample size was suitable for factor analysis. The Bartlett test was significant ($\chi^2 = 2,137.31$, $P < .001$), indicating that factor analysis was appropriate. Principal component analyses revealed that a single factor with an eigenvalue >1 was extracted for the scale, explaining 48.08% of the total variance in the HBP SCP–Self-efficacy Scale. Item-factor loadings were found to be between 0.569 and 0.765 (Table 2).

Table 3 shows the confirmatory factor analysis findings of each of the three scales of the HBP SCP. The model was acceptable and fitting with regard to confirmatory factor analyses of Self-care Behavior, Motivation, and Self-efficacy scales.

DISCUSSION

The purpose of this study was to assess the validity and reliability of the translated Turkish HBP SCP. The results of this study illustrate that the Turkish HBP SCP is reliable and valid as a measure of the self-care of patients with HTN. This study observed each of the three scales to show strong internal reliability (Table 1); thus the Turkish HBP SCP can be used in clinical practice and research with confidence. Our main findings were similar to those of the other language versions of the HBP SCP in patients with HTN.^{10,16–18}

In our study, the item-total score correlations of each scale (Table 1) were above the reference value of 0.45. It is stated in the literature that the item-total score correlation of an item should be over 0.30.²³ The item-total correlation in this study exceeded the recommended standard and indicated a good homogeneity.

To determine whether the scale showed invariance by time, retest correlation was examined using ICC. In this study, ICCs for each of the scale were > 0.70 , indicating excellent stability of measures over time. ICCs of the Turkish HBP SCP were higher than the other language versions.^{17,18} While the Turkish HBP SCP was applied by the face-to-face interview method for the test–retest, the Malay and Mandarin language versions of the HBP SCP used a Web-based survey method for the test–retest. Face-to-face interview is easy compared with other interview methods. Using the technology may be a difficulty for patients with low education or the elderly. Similarly, the original HBP SCP was applied by a personal interview survey. However, test-retest was not examined for the original HBP SCP.

In construct validity, the factor load value is used when deciding on items on the scale. It is stated in the literature that the factor load values of the items must be above 0.40 when conducting factor analysis.²⁴ In our study, the item loads of each scale (Table 2) were above the reference value of 0.40. The EFA results of the HBP SCP revealed a factor structure similar to the one in the original study. However, the four items (items 1, 14, 15, and 16) on the original HBP SCP–Behavior scale had factor loadings less than 0.30. This may be because of cultural differences between Turkish and American ethnicity. Furthermore, the factor structure of the Turkish HBP SCP was confirmed through the CFA. Results indicated an excellent fit to the data, with all indexes close to the expected value (Table 3). These re-

sults confirm the theoretical framework given by Orem self-care model and the MI.

It was reported that each scale of the original English-based HTN-SCP instrument was at a level at which it could be read by individuals educated to year 6 level, and it showed good internal consistency in item-total correlation.¹⁰ In this study, 72% of the sample population were at an educational level of \leq year 5 (primary level), so it can be said that most of the samples had a low level of literacy. Even though the level of the original version is year 6, it may be said that this Turkish version was reliable and valid for people with a year 6 or lower education level.

Limitations

This study presented some limitations. First, some psychometric properties were not tested, including concurrent and discriminant validity. Second, future research is needed to assess the CFA. Therefore, we did not discuss adequately these findings with those of previous studies. Third, the generalizability of our results may be limited because the sample was enrolled from only one hospital. Moreover, most of patients had a low-level education (72.0%).

CONCLUSION

The HBP SCP has been successfully translated and cross-culturally adapted into Turkish population. The HBP SCP may help to determine the effects of such intervention on hypertensive patients' self-care activities. Health care providers can use the Turkish version of the HBP SCP to assess self-care in health care services such as hospital, nursing home, home care, and family health center. Future research should assess the HBP SCP in other ethnic samples of hypertensive patient populations with diverse education. Moreover, the HBP SCP should be tested using structural equation modeling in future research.

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REFERENCES

1. World Health Organization. A global brief on hypertension; 2013. http://apps.who.int/iris/bitstream/handle/10665/79059/WHO_DCO_WHD_2013.2_eng.pdf;jsessionid=7AE27765B919A19E3E7890C781529A4A?sequence=1. Accessed July 21, 2018.
2. Global Burden of Diseases, Injuries, and Risk Factors Study 2016. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet* 2017;390:1345–422.
3. Sengul S, Akpolat T, Erdem Y, et al. Turkish Society of Hypertension and Renal Diseases. Changes in hypertension prevalence, awareness, treatment, and control rates in Turkey from 2003 to 2012. *J Hypertens* 2016;34:1208–17.

4. Cifkova R, Fodor G, Wohlfahrt P. Changes in hypertension prevalence, awareness, treatment, and control in high, middle, and low-income countries: an update. *Curr Hypertens Rep* 2016;18(8):62.
5. Hartweg DL. Health promotion self-care within Orem's general theory of nursing. *J Adv Nurs* 1990;15(1):35-41.
6. 2018 ESC/ESH Guidelines for the management of arterial hypertension. *J Hypertens* 2019;37(1):226.
7. James P, Oparil S, Carter B, et al. 2014 Evidence-based guideline for the management of high blood pressure in adults. *JAMA* 2014;311(5):507.
8. Hacıhasanoğlu R, Gözümlü S, Capik C. Validity of the Turkish version of the medication adherence self-efficacy scale-short form in hypertensive patients. *Anatolian J Cardiol* 2012;12(3):241-8.
9. Akyol AD, Cetinkaya Y, Bakan G, et al. Self-care agency and factors related to this agency among patients with hypertension. *J Clin Nurs* 2007;16(4):679-87.
10. Han H, Lee H, Commodore-Mensah Y, et al. Development and validation of the hypertension self-care profile. *J Cardiovasc Nurs* 2014;29(3):E11-20.
11. Stanton M. Motivational interviewing and the social context. *Am Psychol* 2010;65(4):297-8.
12. Jo Bishop C, Jackson J. Motivational interviewing: how advanced practice nurses can impact the rise of chronic diseases. *J Nurse Pract* 2013;9(2):105-9.
13. Thompson DR, Chair SY, Chan SW, et al. Motivational interviewing: a useful approach to improving cardiovascular health? *J Clin Nurs* 2011;20:1236-44.
14. OECD. Education at a Glance 2017: OECD Indicators. Paris: OECD Publishing; 2017 <https://doi.org/10.1787/eag-2017-en>.
15. Lam WY, Fresco P. Medication adherence measures: an overview. *Biomed Res Int* 2015;1-12. <https://doi.org/10.1155/2015/217047>.
16. Koh YL, Lua YH, Hong L, et al. Using a web-based approach to assess test-retest reliability of the "hypertension self-care profile" tool in an Asian population. *Medicine* 2016;95(9):e2955.
17. Ngoh SH, Lim HW, Koh YL, et al. Test-retest reliability of the Mandarin versions of the hypertension self-care profile instrument. *Medicine* 2017;96(45):e8568.
18. Seow KC, Mohamed Yusoff D, Koh YL, et al. What is the test-retest reliability of the Malay version of the hypertension self-care profile self-efficacy assessment tool? A validation study in primary care. *BMJ Open* 2017;7(9):e016152.
19. Gun Y, Korkmaz M. Treatment adaptation and quality of life of hypertensive patients. *Dokuz Eylul Univ* 2014;7(2):98-108. (in Turkish).
20. Turkish Statistics Institute. Population Projections, 2018-2080; 2018. <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=30567>. Accessed June 23, 2019.
21. Çardak O, Dikmenli M, Guven SC. 7th Grade science textbook readability and compatibility with the target age level. *Int Res Higher Educ* 2016;1(1):101-6.
22. Polit D, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? appraisal and recommendations. *Res Nurs Health* 2007;30(4):459-67.
23. Grove S, Ciper D. *Statistics for nursing research: a workbook for evidence-based practice*. 2nd ed. St Louis: Elsevier; 2016.
24. Meydan CH, Şeşen H. *Structural equation modelling: AMOS application*. Ankara, Turkey: Detay Publishing; 2015. (in Turkish).