Turkish Version of the Motivation for Changing Lifestyle and Health Behavior for Reducing the Risk of Dementia Scale

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ABSTRACT

Objective: This methodological study evaluates the validity and reliability of the Motivation for Changing Life Style and Health Behavior for Reducing the Risk of Dementia scale in Turkish. **Methods:** The study enrolled 220 individuals aged 40 years and older between September 2017 and June 2018. The Kendall *W* analysis and content validity index were used for validity; test-retest and confirmatory factor analyses were used for the reliability analysis. **Results:** The Turkish version of the Motivation for Changing Life Style and Health Behavior for Reducing the Risk of Dementia scale has valid content. The Cronbach α coefficient of the scale was .809, and the subscales were in the ranges of .781 to .609. A statistically significant, positive correlation was found between the test and retest scores. **Conclusions:** These results show that the scale has validity and reliability for use in the Turkish population.

Keywords: dementia, health behavior, lifestyle, scale

The prevalence of dementia is increasing in parallel to an aging world population.[1] The interest in finding efficient strategies to prevent dementia has gradually increased, as there are no modifying treatments in dementia, and pathological findings may be seen years and even decades before symptoms begin.[2] There are studies examining awareness of how lifestyle may prevent dementia and approaches to change the behaviors of individuals.[3–5] In these studies, it has been observed that individuals are unable to establish a relationship between a healthy lifestyle (balanced nutrition and regular physical activity) and dementia.[3,6,7] Another notable finding is that the majority of individuals are not aware that the risk of developing dementia can be reduced.[6]

Studies emphasize that an increase in knowledge about healthy behaviors does not necessarily lead to more healthy lifestyles.[7,8] The disjunction between information and behavior compels us to explore the kinds of motivation that might give rise to these lifestyle changes. Studies conducted in Turkey have generally aimed to investigate the demographic characteristics, social situations, and care of individuals with dementia.[9] No study has examined the levels of knowledge and behavioral tendencies existing within society for the purpose of reducing the risk of dementia. In Turkey, there is no tool that can be used to measure the awareness, beliefs, attitudes, and motivation with regard to changing one's lifestyle to prevent dementia, creating an obstacle in implementing such studies. Adapting these measurement tools into Turkish may help measure how much motivation there is to change lifestyle and engage in healthy behaviors to reduce the risk of dementia.

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This study tested the validity and reliability of the Turkish version of the Motivation for Changing Lifestyle and Health Behavior for Reducing the Risk of Dementia (MCLHB-DRR) scale, which was designed for the purpose of evaluating beliefs and attitudes concerning lifestyle and behavioral changes in dementia.

Increased knowledge about healthy behavior doesn't necessarily change behavior.

Methods

This psychometric study evaluated the validity and reliability of the MCLHB-DRR scale in Turkish. The sample size suggested in scale validity and reliability studies is 5 times more than the number of items in the scale.[10] An estimated sample size of 135 to 270 represents between 5 and 10 times the 27 items in the scale. Between September 2017 and June 2018, there were 220 individuals aged 40 years and older recruited from a primary care clinic, using nonprobability convenience sampling. Individuals who were able to speak and understand Turkish, were literate, and agreed to participate voluntarily were included in the study. The exclusion criteria for individuals were having dementia or psychiatric disorders, and visual and/or hearing impairments. All individuals had face-to-face contact with the researchers. A sociodemographic information form created by the researchers based on a literature review and the MCLHB-DRR scale were used for data collection.

The MCLHB-DRR scale was developed in Australia to assess beliefs and attitudes about lifestyle and health behavioral changes to reduce the risk of dementia among middle-aged and older individuals. The scale contains 27 items, and all items are rated on a 5-point Likert scale from 1 ("strongly disagree") to 5 ("strongly agree''). The scale includes 7 subscales: ''perceived susceptibility" (items 1, 4, 13, and 18) reflects individuals' perceived risk of developing dementia in their lifetime, "perceived severity" (items 6, 8, 9, 15, and 22) reveals anxiety and stress about risk of developing dementia, "perceived benefits" (items 2, 10, 12, and 14) explains individuals' perceptions regarding possible benefits associated with changing lifestyle and health behaviors to decrease the risk of dementia, "perceived barriers" (items 5, 7, 16, and 27) reflects individuals' perceptions of possible barriers to changing lifestyle and health behaviors to reduce the risk of dementia, "cues to action" (items 3, 19, 21, and 25) reveals individuals' perceptions regarding the social effect of changing lifestyle and health behaviors to reduce the risk of dementia, "general health motivation" (items 11, 20, 23, and 24) explains the process of placing value on individuals' general health and well-being, and "self-efficacy" (items 17 and 26) reveals the individuals' confidence about changing their lifestyles and health behaviors to reduce the risk of dementia.[11] The scores obtained from each item of the scale are added up. The total score ranges from 27 to 135. Higher scores indicate higher motivation to change lifestyle and health behaviors to reduce the risk of dementia. No studies concerning the adaptation of the scale to different cultures could be found in the literature.

Ethical Considerations

Written permission was obtained from Sarang Kim to adapt the MCLHB-DRR scale for the Turkish population and to use the scale in this psychometric study. Ethical approval for the research was obtained from the Ethical Committee of Dokuz Eylül University, and written permission was received from the directorate of the primary care clinic. Individuals were informed about the aim and design of the study. The participants' oral and written consent was received.

Translation of the MCLHB-DRR Scale

Initially, the language validity of the scale was analyzed to test the validity of the scale for the Turkish language. The scale was translated from English into Turkish by the researchers. The researchers then collaboratively created the Turkish scale (Supplemental Digital Content 1, available at http://links.lww.com/JNN/A160). The test items from the original version to translate were decentered (meaning) translation. The forward-translated version was then back-translated by a professional bilingual translator unfamiliar with either the English or Turkish version of the scale to ensure the accuracy of the translation. The translated English form and the original form were compared by the researchers. The author of the original version of the scale was consulted about items that were unclear. No items were changed. The final version of the scale was sent back to the author for approval.

Content validity was confirmed by 9 experts, 3 of whom were academic nurses who were experts in dementia care, one of whom was also expert in psychometric analysis; one was an academic nurse who was an expert in psychometric analysis; two were geriatricians who were experts in dementia care; and three were clinical nurses who were experts in dementia care. The experts' opinions were assessed by using Davis technique.[12] The scale-level content validity index

(S-CVI) and item-level content validity index (I-CVI) were calculated. In the Davis technique, experts rank their opinions as follows: 1 (''it is not appropriate''), 2 (''it should be made more appropriate''), 3 (''it is appropriate but needs minor changes''), and 4 (''it is very appropriate''). In this technique, the number of experts who scored 3 or 4 is divided by the total number of experts to calculate the I-CVI. The average I-CVI across items defines the S-CVI (averaging method). The levels of concordance of the expert opinions were examined using nonparametric Kendall *W* analysis.

The MCLHB-DRR scale was readministered to 34 individuals within 2 to 3 weeks after the first application to evaluate test-retest reliability.[13] The internal consistency of the scale was evaluated using the paired *t* test. The reliability and validity testing of the original version yielded Cronbach α coefficients of .552 to .776 for the original version of the MCLHB-DRR scale.[11]

After language and content validity was confirmed, a pilot study was conducted with 20 individuals conforming to the sampling criteria and the scale took its final shape. Preapplication data were not used in the research reported here. It was recommended that the scale be assessed in a small pilot study, in which scales be administered to a group of 20 to 30 persons not included in the sample.[10]

Statistical Analysis

Analysis was conducted using descriptive statistics and the appropriate reliability and validity tests using the SPSS 22.0 and AMOS 24.0. The concordance of the expert opinions was tested by Kendall *W* analysis. Confirmatory factor analysis (CFA) was used for the construct validity. For CFA, the authors analyzed Pearson χ^2, degree of freedom, root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), comparative fit index, and normal fit index as the GFIs. The Cronbach α value was calculated for the reliability analyses. Test-retest reliability was analyzed using Pearson correlation and paired samples *t* test.[10,13] The significance level was .05 or less.

Results

The mean (SD) age of the individuals included in the study was 57.64 (12.02) years; 69.5% (n = 153) were female, 75.0% (n = 165) were married, 62.7% (n = 138) were retired or unemployed, and 63.6% (n = 140) reported their income status as ''my income is equal to my expenses.'' We found that 69.6% (n = 153) were living with their spouse or their spouse and children and 51.8% (n = 114) had at least 1 chronic disease.

Validity Analyses

There were no statistically significant differences between scores given by the experts for each item (for MCLHB-DRR scale: Kendall $W = 0.223$, $P = .06$). Thus, no item was excluded from the scale. The CVI of the MCLHB-DRR scale was found to be 0.99. The I-CVIs for 27 items were in the ranges of 0.88 to 1. The S-CVIs for 6 subscales were found to be 1.0, whereas for the perceived barriers subscale, it was found to be 0.97. The lower limit of acceptability for a CVI is 0.80.[14] An I-CVI of 0.78 or higher and an S-CVI of 0.90 or higher are the minimum acceptable indices.[10]

According to the results of the CFA, the factor loads for the perceived susceptibility subscale were between 0.67 and 0.84; for perceived severity, between 0.31 and 0.81; for perceived benefits, between 0.38 and 0.71; for perceived barriers, between 0.41 and 0.83; for cues to action, between 0.59 and 0.83; for general health motivation, between 0.61 and 0.78; and for self-efficacy, between 0.73 and 0.75 (Supplemental Digital Content 2, available at http://links.lww.com/JNN/A161). The GFIs of the model were found to be as follows: GFI = 0.84, normal fit index = 0.78, comparative fit index = 0.88, incremental fit index = 0.89, $\chi^2 = 550.98$, $df = 303$, $P < .001$ and RMSEA = 0.061.

Reliability

The Cronbach α value calculated for the MCLHB-DRR scale (27 items) was .809, and the values calculated for the subscales were as follows: for perceived susceptibility, the value was .609; for perceived severity, .733; for perceived benefits, .655; for perceived barriers, .775; for cues to action, .774; for general health motivation, .781; and for self-efficacy, .718 (Table 1). The item subscale score correlation for perceived susceptibility was 0.481; for perceived severity, 0.630; for perceived benefits, 0.625; for perceived barriers, 0.545; for cues to action, 0.754; for general health motivation, 0.228; and for self-efficacy, 0.552.

The total scale score of the 34 participants was 85.76 (16.92) for the test and 87.23 (18.91) for the retest (Table 2). There was no difference between the test and retest mean scores of the MCLHB-DRR scale ($t = -0.605$, $P = .550$). A statistically significant, positive, and moderate correlation was found between the test and retest scores ($r = 0.692$, $P < .001$).

Discussion

The World Health Organization emphasizes the necessity of raising awareness to prevent dementia.[1] It is important to know the level of awareness and the

TABLE 1. Reliability Analysis of the MCLHB-DRR and Subscale Scores (N = 220)

MCLHB-DRR Subscales	Cronbach α	Mean (SD)	Range
Perceived susceptibility	.609	10.80 (4.12)	4–38
Perceived severity	.733	14.15 (4.71)	5–25
Perceived benefits	.655	15.20 (3.31)	5–20
Perceived barriers	.775	9.83 (4.17)	4–20
Cues to action	.774	10.26 (4.46)	4–20
General health motivation	.781	16.37 (3.02)	6–20
Self-efficacy	.718	7.12 (1.90)	2–10
Total	.809	84.07 (14.52)	43–127

Abbreviation: MCLHB-DRR, Motivation for Changing Lifestyle and Health Behavior for Reducing the Risk of Dementia.

beliefs, attitudes, and motivation in a society with regard to maintaining a lifestyle, which prevents dementia before conducting any interventions in this area. No measurement tool for this had previously been developed in Turkey nor adapted into Turkish. The lack of a measurement tool for these concepts is a barrier to conducting studies. This is the first study evaluating psychometric properties of the MCLHB-DRR scale using Turkish individuals.

The translation–back-translation method was applied in assessing the language validity of the MCLHB-DRR scale. The most popular method used for the validity of measurement tools is content validity.[15] The CVI of the MCLHB-DRR scale was found to be 0.99. The I-CVIs for 27 items were detected to be in the range of 0.88 to 1. For the I-CVI and S-CVI values of instruments, investigators should look for agreement of 80% or more among reviewers.[16] The I-CVI and S-CVI results show that the Turkish version of MCLHB-DRR scale and the items on it have content validity. For this reason, no item was removed from the scale. The experts agreed that the content was both appropriate and adequate for the purpose. Kendall *W* analysis was also conducted to evaluate the expert opinions, and it was determined that there was no significant difference between the expert opinions ($P = .06$, Kendall $W = 0.223$). Kendall *W* values near 0 mean that there is virtually no agreement, and values near 1 mean that there is perfect agreement.[17] Consequently, we determined that expert scores were at a consistently low level with regard to one another.

Confirmatory factor analysis is used to determine the evidence of validity of an instrument for use in a different culture.[18] The CFA revealed that the factor loads of the subscales of the MCLHB-DRR scale were greater than 0.30; the division of the χ^2 value by the degree of freedom was 1.818, their GFI was 0.84, the adjusted GFI was 0.80, and the RMSEA was 0.061. The CFA results for the original scale show that the factor loads of the MCLHB-DRR scale were greater than 0.30, the division of the χ^2 value by the degree of freedom was 2.379, their GFI was 0.91, and the RMSEA was 0.047. The literature states that factor loads must be greater than 0.30.[18] The division of the χ^2 value by the degree of freedom should be between 1.0 and 5.0 for acceptable fit.[19] A GFI of greater than 0.90 is ideal, and an adjusted GFI of greater than 0.1 is also ideal, as is an RMSEA close to 0.06 or less.[18] The CFA results showed that the data were consistent with the model and confirmed the factor structure.

The results here are similar to the results of the original scale. Cronbach α coefficient was found to be .80 for the total scale and greater than .61 for the

TABLE 2. Retest Analysis of the MCLHB-DRR and Subscale Scores (N = 34)

Subscales	Test[a]	Retest[a]	*t*	*a*	*r*	*P*
Perceived susceptibility	10.94 (3.70)	9.88 (3.85)	1.966	0.099	0.531	.001
Perceived severity	12.91 (4.26)	13.94 (4.56)	−1.431	0.162	0.550	.001
Perceived benefits	15.38 (2.83)	16.20 (3.07)	−1.612	0.117	0.494	.003
Perceived barriers	11.82 (3.72)	10.88 (4.14)	1.648	0.109	0.647	< .001
Cues to action	12.64 (4.14)	12.58 (5.15)	0.086	0.932	0.653	< .001
General health motivation	15.14 (3.50)	16.35 (2.82)	−2.527	0.016	0.633	< .001
Self-efficacy	6.91 (1.71)	7.38 (1.74)	−1.588	0.122	0.500	.003
Total	85.76 (16.92)	87.23 (18.91)	−0.605	0.550	0.692	<.001

Abbreviations: *a* = Pearson correlation; MCLHB-DRR, Motivation for Changing Lifestyle and Health Behavior for Reducing the Risk of Dementia.
[a]Mean (SD).

subscales. In the original scale, the Cronbach α values ranged from .608 to .864.[11] A Cronbach α coefficient greater than .60 is acceptable.[20] The Cronbach α values obtained in this study indicate that the scale has high reliability.

In the test-retest analyses, there was a positive and significant correlation between the test-retest scores of the subscales ($P < .05$). The coefficient of the correlation between test and retest should be at least 0.20.[21,22] In this study, the test-retest reliability coefficients of the scale and subscales were positive and greater than 0.20 ($P < .005$). This study thus revealed that the test-retest results were similar, except for the general health motivation subscale. Motivation is a multidimensional and dynamic factor that is affected by social relations. A person's motivation is considerably affected by the support received from his/her family, friends, and social environment. It is believed that the subdimension of "motivation" may also vary over time. These results showed that individuals responded similarly to the items in scale and that the items accurately represented the subject and were understandable.

Limitations of the Study

The study was performed in 1 region of Turkey and was carried out with individuals aged 40 years and older; younger age groups were not included in the study.

Conclusion

These results show that a translated version of the MCLHB-DRR scale is a valid, reliable, and suitable tool for use with individuals aged 40 years and older in Turkey. The lack of evidence of the usefulness of pharmacological treatments in the prevention of dementia and the importance of lifestyle changes are emphasized in literature.[2–7,23,24] Information alone, however, is not enough for individuals to adopt a healthy lifestyle. For this reason, it is important to determine how motivated individuals are. By using this scale, neuroscience nurses will be able to determine individuals' level of motivation and engage in appropriate initiatives to enable individuals to implement healthy lifestyle behaviors.

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