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ORIGINAL ARTICLE

EXAMINING PRESCRIPTION DRUG USE AND HEALTH CARE ACCESS AMONG OLDER ADULTS IN RURAL AREAS: A CROSS-SECTIONAL STUDY BASED ON THE HEALTH BELIEF MODEL

Abstract

Introduction: Medication adherence is critical for achieving desired health outcomes, particularly in older rural patients with limited healthcare access. This study, structured according to the Health Belief Model explored the correlation between health beliefs regarding medication intake and adherence in older rural patients with chronic disease who used prescription medication.

Materials and Method: A cross-sectional survey was conducted with 206 community-dwelling adults aged ≥65 years in rural villages of the Gemerek district (Sivas, Turkey). Health beliefs and adherence were assessed using validated HBM and ARMS-7 scales.

Results: The structural model fitted very well overall (χ^2/df = 1.65; RMSEA = 0.041; SRMR = 0.036; CFI = 0.982; TLI = 0.976). Among the predictors, perceived barriers had a significant negative impact on medication adherence. (β = –0.31; $p < 0.01$). In contrast, perceived benefits (β = 0.39; $p < 0.01$) and self-efficacy (β = 0.36; $p < 0.01$) were positively and significantly related with regard to adherence. The other dimensions were not significant predictors.

Conclusion: These findings highlight the key role of psychosocial determinants in medication use among older adults in rural communities. To enhance medication use among older rural patients, education and counselling by primary care physicians and pharmacists should focus on reducing perceived barriers and increasing patients' self-efficacy. Implementing such targeted strategies may improve continuity of care and help older adults manage their treatments more confidently. Ultimately, strengthening these supports could contribute to better health outcomes and a higher quality of life in rural aging populations.

Keywords: Medication Adherence; Health Belief Model; Rural Population; Aged, Geriatrics.

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INTRODUCTION

In older adults with chronic diseases, the regular use of prescribed medications is important for the treatment of diseases and maintenance of quality of life (1,2). Older patients with chronic diseases living in rural areas face several difficulties in using prescription medications. Limited access to health services and low health literacy are the main obstacles to medication adherence among older patients living in rural areas (3). Rapid population aging and geographical inequalities may hinder the continuity of treatment for older adults living in rural areas (4). Studies have shown that transportation and financial barriers are the reasons why older adult patients living in rural areas have limited access to health services (5,6). These obstacles negatively affect the management of older adult patients (7). Studies conducted in different regions of Turkey have confirmed the high rates of inappropriate medication use among older adults living in rural areas (8,9). In addition to environmental factors, many psychosocial factors, such as patients' beliefs, perceptions, and motivations for using medications, greatly affect medication adherence in chronic diseases (10,11).

The Health Belief Model (HBM) provides a comprehensive framework for understanding health behaviours by integrating psychosocial determinants. The HBM is a powerful theoretical approach for investigating individuals' health behaviours. The HBM argues that individuals' health behaviours are influenced by their perceptions and beliefs about their health (12). As a psychological model, the HBM helps individuals predict various health practice behaviours, such as avoiding illness, participating in health screenings, and adhering to prescription drug treatments. According to this model, individuals with high sensitivity to their health exhibit positive health behaviours when they receive warnings that threaten their health. The HBM emphasises the role of individuals' personal beliefs and perceptions in making health-related decisions (13,14). Previous research in Turkey has not examined medication adherence among older adults in rural areas within the Health Belief Model framework. This study therefore extends the model by integrating factors such as rural isolation, limited healthcare access, and multimorbidity, offering novel insights into the psychosocial determinants of medication use in underserved elderly populations.

Many studies have reported that educational programs based on the HBM have a positive effect on medication adherence and behavioural outcomes in chronic diseases (15,16). These findings highlight the importance of psychosocial factors in promoting medication adherence. Individuals with positive health beliefs consistently demonstrate higher compliance (17,18). Few studies have examined the effects of HBM structures on medication adherence among the rural older adults with limited access to healthcare services. This study addresses this gap in the literature and aims to identify the key psychological factors affecting medication adherence. Based on this research objective, the following hypotheses were developed.

Hypotheses:

H1: Perceived susceptibility positively influences medication adherence.

H2: Perceived severity positively influences medication adherence.

H3: Health motivation positively influences medication adherence.

H4: Perceived benefits positively influence medication adherence.

H5: Perceived barriers negatively influence medication adherence.

H6: Self-efficacy positively influences medication adherence.

MATERIALS AND METHOD

Design of Research

This descriptive study was a cross-sectional quantitative study guided by the HBM. This study aimed to establish the salient factors for prescription drug-taking behaviours among older respondents from rural localities. Data collection involved the administration of structured questionnaires to establish health beliefs and psychosocial determinants of medication-taking behaviour.

Population and Sample of the Research

The population consisted of individuals aged ≥ 65 years who resided in rural towns of the district of Gemerek (Sivas Province), with at least one diagnosed long-standing disease and at least one prescription drug user on a regular basis. Older individuals with the cognitive ability to respond to the survey were considered. Patients with severe cognitive impairment, disease-preventing communication, absence of long-standing disease, refusal, or lack of informed consent were excluded. To ensure the diversity and representativeness of the population, the villages were aggregated according to their distance from the public hospital of the district, as long as the differences in access to healthcare varied. Three villages covering three distance classes were selected. In this manner, the variation in space ensured by the experiences of older adults living with varying possibilities of access was maintained.

A multistage cluster sampling method was used. In the first stage, three villages from the Gemerek district acted as clusters. In the second stage, all older persons aged at least 65 years who met the participation eligibility criteria for the study were approached to achieve diversity in healthcare facility access. To ensure population diversity and representativeness, three villages representing different distance categories were selected. The survey was administered to older adults with chronic illnesses from these three villages who visited the district public hospital for prescription refills or routine follow-up care. This approach minimized potential sampling bias and ensured the inclusion of participants with varying access to healthcare. Face-to-face questionnaires were used for the data collection. To minimize interviewer bias and ensure consistency, all data were collected by two trained researchers who had prior experience conducting community-based surveys with older adults. Before data collection, the researchers jointly reviewed each item to ensure uniform understanding and standardized administration. During fieldwork, both researchers followed the same interview protocol and provided clarifications when necessary without influencing participants' answers. Participants were informed of the purpose, procedures, and anonymity of the study, and written informed consent was obtained. Participation was voluntary, and respondents were made aware of their right to withdraw at any time of their choice. An ethical basis for anonymity and confidentiality was strictly followed. The study was conducted between March and July 2025, following the approval of the ethics committee on February 28, 2025. A total of 206 eligible participants were enrolled, offering sufficient power and extended generalisability of the results. The district of Gemerek was selected owing to its representation of the normative old-age population of the countryside and its distance from healthcare facilities, which ensured space diversity and the practicality of logistics. The study was conducted in three villages representing different distances from the district center. Although the sample was drawn from a single district, the distance-stratified cluster design ensured variability in healthcare access and socio-demographic conditions, supporting representativeness within the district. However, the findings should be interpreted with caution when generalizing to the national level.

In an a priori power analysis for the Structured Equation Model, at least 104 participants (medium effect, f_2 = 0.15, α_2 = 0.05, $power_2$ = 0.80) were needed for six HBM constructs predicting medication adherence to the Adherence to Refills and Medications Scale-7 (ARMS-7). For smaller effects of f = 0.10–0.08, at least 150–184 participants were needed. For the model complexity correction, 200 participants were included, and 206 participants were enrolled.

Data Collection Tools

This survey recorded participants' sociodemographic and clinical data, such as age, sex, marital status, education, family income, and social security. Questions regarding health and medication use, illness and medication types and numbers, disease duration, use of healthcare facilities, drug refill practices, and transportation to healthcare facilities were recorded. Medication use beliefs were assessed using the Health Belief Scale for Medication Use, a 35-item measure of six constructs: perceived susceptibility, severity, benefits, barriers, health motivation, and self-efficacy. Items were scored on a five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). The Turkish version has strong test-retest reliability with Cronbach's α = 0.91 and subscale values between 0.80 and 0.93 (19). As the scale measures general beliefs and behaviors related to medication use rather than age- or gender-specific content, it was deemed suitable for older adults. Its construct validity in this study was confirmed by CFA with excellent fit indices (CFI = 0.99, RMSEA = 0.017). The full item list of the Health Belief Scale for Medication Use is provided in Supplementary Table 1. The ARMS developed by Kripalani et al. was later adapted into Turkish by Gökdoğan and Kes through forward/back translation and expert review (20,21).

Statistical Analysis

The analyses were conducted using LISREL 8, Lavaan in R, and SPSS (v23). Missing values, outliers, and data normality were assessed.

Table 1. Sociodemographic and Clinical Characteristics of the Participants (n = 206)

Variable	Category	n	%
Gender	Female	120	58.3
	Male	86	41.7
Age (years)	65–69	62	30.1
	70–74	66	32.0
	75–79	41	19.9
	≥80	37	18.0
Education level	Primary school or less	134	65.0
	Middle/High school	52	25.2
	University or higher	20	9.8
Marital status	Married	115	55.8
	Widowed	78	37.9
	Single/Divorced	13	6.3
Number of chronic conditions	1 condition	70	34.0
	2 conditions	78	37.9
	≥3 conditions	58	28.2
Most common chronic diseases	Hypertension	144	70.0
	Type 2 diabetes	78	37.9
	Osteoarthritis	87	42.2
	Coronary heart disease	58	28.2
	Chronic Obstructive Pulmonary Disease	31	15.0
Number of medications used	1–3 medications	58	28.2
	4–6 medications	97	47.1
	≥7 medications	51	24.8
Duration of medication use	<5 years	42	20.4
	5–10 years	94	45.6
	>10 years	70	34.0
Health insurance	Social Security Institution (SGK)	143	69.4
	Bağ-Kur (Self-employed, 4B)	34	16.5
	Pension Fund (4C)	20	9.7
	None / General Health Insurance	9	4.4
Mode of transport to facility	Shared minibus	80	38.8
	Municipal bus	38	18.4
	Walking	30	14.6
	Personal vehicle	34	16.5
	Taxi	24	11.7
Travel time to hospital	<15 minutes	32	15.5
	15–30 minutes	88	42.7
	31–60 minutes	60	29.1
	>60 minutes	26	12.6
Distance to hospital	<5 km	45	21.8
	5–10 km	92	44.7
	11–20 km	49	23.8
	>20 km	20	9.7

Descriptive frequency analyses were performed for sociodemographic information and drug use behaviour. Multivariate normality was confirmed (Mardia coefficient, skewness/kurtosis). The HBM subdimensions were modelled as independent variables and ARMS-7 adherence as the outcome. Given the prior Turkish validation of both scales, confirmatory factor analysis was used to assess construct validity, and Cronbach's alpha test was used to assess reliability. The direct effects of HBM constructs on adherence were tested using structural equation modelling.

This study was approved by the Ethics Committee for Health and Sports Sciences of Erzincan Binali Yıldırım University (Session No. 02, Decision No. 02/08, 28 February 2025). The study was conducted in accordance with the principles of the Declaration of Helsinki, and informed consent was obtained from all participants. In addition, the reporting of this research followed the STROBE guidelines for cross-sectional studies.

RESULTS

Among the 206 participants, 58.3% were women, and the largest age group was 70–74 years (32.0%). Most participants had a low level of education (65.0% primary school or below), and 55.8% were married. Two-thirds of the patients reported having ≥2 chronic diseases, most often hypertension (70.0%). Nearly half of the patients used 4–6 medications daily (47.1%). Most were insured by Social Security Institution (SGK) (69.4%), travelled mainly by shared minibuses (38.8%), and reached healthcare within 15–30 min (42.7 %).

Two-thirds of the participants avoided taking medicines without a physician's advice (67.0%), although many kept unused drugs at home (69.9%). Over half of the participants (54.9 %) had difficulty reading package inserts. Social factors were evident, with 39.8% of respondents using medicines recommended by relatives or friends. Interest in digital health tools was low (28.2%), 37.9% used herbal products, and 52.0% reported over-the-counter use (Table 2).

Table 2. Participants' Medication-Related Behaviors (n = 206)

Question / Variable	Response	n	%
Do you use medications without consulting a physician?	Yes	68	33.0
	No	138	67.0
Do you keep unused medications at home?	Yes	144	69.9
	No	62	30.1
Can you read/understand the package insert?	Yes	93	45.1
	No	113	54.9
Do you take medications based on relatives' advice?	Yes	82	39.8
	No	124	60.2
Are you willing to use telemedicine/telepharmacy?	Yes	58	28.2
	No	148	71.8
Do you use herbal (phytotherapeutic) products?	Yes	78	37.9
	No	128	62.1
Do you use over-the-counter (OTC) medications?	Yes	107	52.0
	No	99	48.0

The Health Belief Scale for Medication Use and ARMS-7 Medication Adherence Scale used in this study have been validated and widely applied in the Turkish population. Their factor structures were not redeveloped; instead, their fit was confirmed using confirmatory factor analysis (CFA). Their factor structure was not re-estimated; rather, their fit was assured for this sample using a CFA. Both scales showed a good fit, exceeding the accepted thresholds (Table 3).

Table 4 presents the psychometric properties of the instrument. All instrument subscales possessed high internal consistency, as their Cronbach's alpha values varied between 0.857 and 0.950. Their composite reliabilities varied between 0.888 and 0.971, and their AVE values varied between 0.636 and 0.893, all of which were higher than the accepted values. In addition, the square root of each AVE exceeded its inter-construct correlation, thereby ensuring discriminant validity. These results confirm that the instruments are valid and reliable for determining health beliefs and medication-taking behaviours among older people residing in rural areas.

Structural path analysis showed that perceived benefits ($\beta = 0.39$, $t = 4.80$, $p < 0.01$) and self-efficacy ($\beta = 0.36$, $t = 4.50$, $p < 0.01$) were positively and significantly associated with medication adherence, while perceived barriers ($\beta = –0.31$, $t = –3.90$, $p < 0.01$) had a significant negative effect. Perceived susceptibility ($\beta = 0.05$), perceived severity ($\beta = 0.08$), and health motivation ($\beta = 0.06$) were not

Table 3. Confirmatory Factor Analysis (CFA) Fit Indices for the Scales Used in the Study

Fit Index	Excellent Fit	Acceptable Fit	Health Belief Scale for Medication Use	ARMS-7 Medication Adherence Scale
χ^2/df	$0 \leq \chi^2/df < 2$	$2 \leq \chi^2/df \leq 3$	1.058	1.142
p-value	$0.05 \leq p \leq 1$	$0.01 \leq p \leq 0.05$	0.168	0.316
RMSEA	0 < RMSEA < 0.05	0.05 ≤ RMSEA ≤ 0.10	0.017	0.026
SRMR	0 ≤ SRMR ≤ 0.05	0.05 < SRMR ≤ 0.10	0.042	0.010
NNFI (TLI)	0.97 ≤ NNFI ≤ 1	0.95 ≤ NNFI ≤ 0.97	0.99	0.99
CFI	0.97 ≤ CFI ≤ 1	0.95 ≤ CFI ≤ 0.97	0.99	1.000

Note. χ^2/df = Chi-square / degrees of freedom ratio; p-value = Probability value; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; NNFI (TLI) = Non-Normed Fit Index (Tucker–Lewis Index); CFI = Comparative Fit Index.

Table 4. Validity and Reliability of the Measurement Tools

Scale Dimension	Cronbach's α	Composite Reliability (CR)	Average Variance Extracted (AVE)	√AVE
Perceived Susceptibility	0.931	0.948	0.751	0.866
Perceived Severity	0.905	0.926	0.677	0.823
Health Motivation	0.890	0.913	0.636	0.797
Perceived Benefits	0.857	0.888	0.664	0.815
Perceived Barriers	0.917	0.933	0.699	0.836
Self-Efficacy	0.923	0.939	0.689	0.830
Taking Medication	0.950	0.971	0.893	0.945
Refilling Medication	0.914	0.947	0.855	0.923

Table 5. Structural Paths and Hypothesis Testing Results

Hypothesis	Path (HBM Dimension → Outcome)	β (Std.)	t	Result
H1	Perceived Susceptibility → Medication Adherence	0.05	1.10	Not supported
H2	Perceived Severity → Medication Adherence	0.08	1.25	Not supported
H3	Health Motivation → Medication Adherence	0.06	1.18	Not supported
H4	Perceived Benefits → Medication Adherence	0.39	4.80*	Supported
H5	Perceived Barriers → Medication Adherence	−0.31	−3.90*	Supported
H6	Self-Efficacy → Medication Adherence	0.36	4.50*	Supported

Note: β = standardized coefficient. *p < 0.05. HBM = Health Belief Model.

significant predictors ($p > 0.05$) (Table 5). Overall, the HBM constructs explained 45% of the variance in adherence ($R^2 = 0.45$), indicating that adherence among older adults was most strongly influenced by perceived benefits, barriers, and self-efficacy.

Independent-samples t-tests and one-way ANOVA were used to examine differences in medication adherence (ARMS-7) and HBM subscale scores according to sociodemographic variables (age, sex, marital status, education, insurance, etc.). Analyses were performed on data that met the normality assumptions. No significant differences were observed between any of the sociodemographic groups ($p > 0.05$)

DISCUSSION

Demographic variables such as age, sex, health insurance, transportation, and the number of chronic diseases in older adult patients did not show statistically significant differences in medication adherence ($p > 0.05$). In parallel with the findings of our study, Pan et al. reported that HBM structures, such as perceived barriers and benefits, significantly affected medication adherence in their study of older adult patients with hypertension, but demographic variables did not significantly affect medication adherence (17). Demographic variables did not exert much influence on drug intake in this sample because of the psychosocial structure depicted in the study model. Studies have shown that the explanatory effect of demographic variables on health behaviour is weakened or completely eliminated in studies established with a research model in which factors such as perceived susceptibility, perceived benefits, and barriers are included (18). These results revealed that demographic and environmental factors, as well as health beliefs and perceptions, had a stronger effect on medication adherence in older adult patients living in rural areas.

The research model established for this study determined that the three subdimensions of the Health Belief Scale (perceived benefits, perceived barriers, and self-efficacy) had significant and strong effects on adherence to medication. However, the perceived susceptibility, perceived seriousness, and health motivation dimensions of the HBM did not significantly affect medication adherence. These findings are consistent with those of previous studies established within the framework of the HBM. In studies conducted within the scope of the HBM, dimensions such as perceived benefit, barrier, and self-efficacy are often identified as the most reliable predictors of health behaviours. The effects of other dimensions of the HBM on health behaviours are weak and inconsistent (22, 23). Although perceived susceptibility, severity, and health motivation were not significant predictors in the present study, this may be because of the unique contextual and cultural factors in the rural elderly population. Many older adults with chronic illnesses may have long adapted to their conditions and, as a result, may no longer perceive their health status as a significant threat. Similar findings have been reported in previous studies based on the Health Belief Model, where constructs such as perceived benefits, perceived barriers, and related beliefs like self-efficacy demonstrated stronger associations with health behavior than susceptibility and severity (17,18,22,23). This consistency across studies supports the current findings and indicates that in older populations, medication adherence is more strongly shaped by practical and self-efficacy-related factors rather than by perceived risk or motivation.

The most striking finding of this study was that perceived barriers had a significant negative effect on the medication adherence. This result closely aligns with the existing literature, highlighting the role of perceived barriers in shaping medication adherence behaviours in older adults. Similarly, studies conducted on older adult patients with chronic diseases have reported that perceived barriers to medication and treatment adherence negatively impact adherence. Studies on older adult patients have highlighted the need to systematically identify perceived barriers to improving medication and treatment adherence (18). One of the most important findings of this study was the positive effect of self-efficacy on adherence to medication. This finding is consistent with studies showing that self-efficacy has a strong and positive effect on medication and treatment adherence (24). Similarly, the strong effect of self-efficacy on medication adherence was emphasised in a study conducted by Wang et al. on multimorbid older adult patients (25).

The results of this study provide a comprehensive perspective on the psychosocial and behavioural mechanisms affecting medication adherence in older adult patients with at least one chronic disease who live in rural areas. The importance of patient-centred interventions aimed at improving the health beliefs and perceptions of older adult patients living in rural areas to improve medication and treatment compliance has been demonstrated. These findings have practical implications for rural health care and pharmacy services. Improving medication adherence among older adults can be supported through pharmacist-led counseling, community-based education programs, and the use of telepharmacy to improve medication monitoring and access in remote areas.

Strengths and Limitations

This study has several strengths. It is one of the few studies in Turkey that applies the Health Belief Model to understand medication adherence among older adults living in rural areas. The study used validated scales with strong psychometric properties, and data were collected through face-to-face interviews by experienced researchers, which helped ensure response accuracy. However, this study has certain limitations. The study sample was limited to older adults (≥65 years of age) with chronic illnesses living in rural villages in the Gemerek district, limiting generalizability. Due to the use of self-reported assessment instruments (HBM scale, ARMS-7), recall bias and biases due to subjective perceptions are possible. Because the study used a self-reported data collection tool, the accuracy of the responses is limited by the participants' personal perceptions and statements. Although the model explained 45% of adherence variance, the remaining unexplained portion may be related to unmeasured variables such as health literacy, cognitive status, or social support. Future studies could explore these factors and examine possible mediating or moderating effects to strengthen the theoretical framework and improve model fit.

CONCLUSION

This study is one of the few evaluating drug-taking factors as a salient health outcome for those with rural residence based on the health belief model.

The findings indicate self-efficacy, perceived benefits and barriers have significant impacts on medication use for older patients with rural residence. These results have implications for education, counseling and support-oriented interventions for medication use improvement for older patients with rural residence. These findings indicate the need for practical approaches to support safer and more regular medication use in older adults living in rural areas.

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REFERENCES

1. Khaiser UF, Sultana R, Das R, et al. Medication adherence and quality of life among geriatric patients: Insights from a hospital-based cross-sectional study in India. PLoS One. 2024;19(11):e0302546. doi:10.1371/journal.pone.0302546
2. Ruksakulpiwat S, Schiltz NK, Irani E, Josephson RA, Adams J, Still CH. Medication adherence of older adults with hypertension: a systematic review. Patient Prefer Adherence. 2024;18:957-975. doi:10.2147/PPA.S459678
3. Yu P, Song X, Shi J, et al. Frailty and survival of older Chinese adults in urban and rural areas: results from the Beijing Longitudinal Study of Aging. Arch Gerontol Geriatr. 2012;54(1):3-8. doi:10.1016/j.archger.2011.04.020
4. Cakmur H. Frailty among elderly adults in a rural area of Turkey. Med Sci Monit. 2015;21:1232-1242. doi:10.12659/MSM.893400
5. Goins RT, Williams KA, Carter MW, Spencer SM, Solovieva T. Perceived barriers to health care access among rural older adults: a qualitative study. J Rural Health. 2005;21(3):206-213. doi:10.1111/j.1748-0361.2005.tb00084.x
6. Cabañero-Garcia E, Martinez-Lacoba R, Pardo-Garcia I, Amo-Saus E. Barriers to health, social and long-term care access among older adults: a systematic review of reviews. Int J Equity Health. 2025;24(1):1-13. doi:10.1186/s12939-025-02429-y
7. Horvat M, Eržen I, Vrbnjak D. Barriers and facilitators to medication adherence among the vulnerable elderly: a focus group study. Healthcare MDPI. 2024;12(17):1723. doi:10.3390/healthcare12171723
8. Berker E, Kilit TP, Özyiğit F. Evaluation of potentially inappropriate drug use in older adult outpatients using the Turkish inappropriate medication use in the elderly criteria in Kütahya Province, Turkey. Istanbul Med J. 2023;24(3):193-200. doi:10.4274/imj.galenos.2023.81226
9. Alan H, Cubukcu M, Guzel EC, Yildiz LM. Evaluation of medicine use behaviors of adult patients in a rural area: a cross-sectional study from Turkey. J Family Med Prim Care. 2024;13(12):5506-5511. doi:10.4103/jfmpc.jfmpc_53_24
10. Bilgin A, Doner A, Erdogan Yuce G, Muz G. The effect of biopsychosocial-spiritual factors on medication adherence in chronic diseases in Turkey using structural equation modeling. J Relig Health. 2025;64(1):1-21. doi:10.1007/s10943-025-02317-3
11. Emre N, Poyraz B, Özşahin A, Edirne T. Self-efficacy and medication adherence in individuals with hypertension living in rural areas. Mersin Univ Med Fak Lokman Hekim J Med Hist Folk Med. 2025;15(1):264-273. doi:10.31020/mutftd.1549558 (in Turkish)
12. Jones CL, Jensen JD, Scherr CL, Brown NR, Christy K, Weaver J. The health belief model as an explanatory framework in communication research: exploring parallel, serial, and moderated mediation. Health Commun. 2015;30(6):566-576. doi:10.1080/10410236.2013.873363
13. Subedi S, Leal Filho W, Adedeji A. An assessment of the health belief model (HBM) properties as predictors of COVID-19 preventive behaviour. J Public Health. 2023;1-11. doi:10.1007/s10389-023-02109-7
14. Kam BS, Lee SY. Integrating the health belief model into health education programs in a clinical setting. World J Clin Cases. 2024;12(33):6660-6669. doi:10.12998/wjcc.v12.i33.6660
15. Joho AA. Using the Health Belief Model to explain the patient's compliance to anti-hypertensive treatment in three district hospitals-Dar es Salaam, Tanzania: a cross section study. East Afr Health Res J. 2021;5(1):50-58. doi:10.24248/eahrj.v5i1.651

16. Wang HM, Chen Y, Shen YH, Wang XM. Evaluation of the effects of health education interventions for hypertensive patients based on the health belief model. World J Clin Cases. 2024;12(15):2578-2587. doi:10.12998/wjcc.v12.i15.2578

17. Pan Q, Zhang C, Yao L, et al. Factors influencing medication adherence in elderly patients with hypertension: a single center study in Western China. Patient Prefer Adherence. 2023;17:1679-1688. doi: 10.2147/PPA.S418246

18. Park HY, Seo SA, Yoo H, Lee K. Medication adherence and beliefs about medication in elderly patients living alone with chronic diseases. Patient Prefer Adherence. 2018;12:175-181. doi:10.2147/PPA.S151263

19. Erci B, Çiçek Z. Reliability and Validity of Drugs Use Health Belief Scale in Adult Women. Int Arch Nurs Health Care. 2017; 3:064. doi:10.23937/2469-5823/1510064 (in Turkish)

20. Kripalani S, Risser J, Gatti ME, Jacobson TA. Development and evaluation of the Adherence to Refills and Medications Scale (ARMS) among low-literacy patients with chronic disease. Value Health. 2009;12(1):118-123. doi:10.1111/j.1524-4733.2008.00400.x

21. Gökdogan F, Kes D. Validity and reliability of the Turkish Adherence to Refills and Medications Scale. Int J Nurs Pract. 2017;23(5):e12566. doi:10.1111/ijn.12566

22. Jeon HO, Chae MO, Kim A. Effects of medication adherence interventions for older adults with chronic illnesses: a systematic review and meta-analysis. Osong Public Health Res Perspect. 2022;13(5):328-340. doi:10.24171/j.phrp.2022.0168

23. Carpenter CJ. A meta-analysis of the effectiveness of health belief model variables in predicting behavior. Health Commun. 2010;25(8):661-669. doi:10.1080/10410236.2010.521906

24. Prakash DD, Lucas A, Jayaraman S, George OK, Gowri M. Medication adherence, self-efficacy, and attitude toward the management of coronary artery disease among elderly with coronary artery disease. J Indian Acad Geriatr. 2025;21(2):94-99. doi:10.4103/jiag.jiag_4_25

25. Wang W, Luan W, Zhang Z, Mei Y. Association between medication literacy and medication adherence and the mediating effect of self-efficacy in older people with multimorbidity. BMC Geriatr. 2023;23(1):378. doi:10.1186/s12877-023-04072-0

Ek Tablo 1. İlaç Kullanmaya İlişkin Sağlık İnanç Ölçeği Maddeleri

Boyut	Madde No	Madde
Duyarlılık Algısı (Perceived Susceptibility)	1	Reçetesiz ilaç kullanmaktan zarar görme ihtimalim çok yüksek.
	2	Reçetesiz ilaç kullanmaktan dolayı ilaç alerjisi (zehirlenme) olma ihtimalim yüksektir.
	3	Reçetesiz ilaç kullanırsam ölebilirim.
	4	Reçetesiz ilaç kullanırsam vücudum, organlarım zarar görür.
	5	Başkalarının önerdiği ilaçlar bana zarar verir.
	6	Zarar vereceği için benim ilaçlarımı başkalarına önermem.
Önemseme / Ciddiyet Algısı (Perceived Severity)	7	İlaç alerjisi (zehirlenme) beni korkutur.
	8	İlaçların vücuda verdiği zararları/yan etkileri düşündüğümde strese girerim.
	9	Reçetesiz ilaç alerjisini (zehirlenme) düşünmekten korkarım.
	10	Reçetesiz ilaç kullanmanın zararları/yan etkilerinde yaşayacağım problemler çok uzun bir süre devam edecektir.
	11	Reçetesiz ilaç kullanmam çevremle olan ilişkimde bana olan güveni sarsar.
	12	Bilinçsiz ve reçetesiz ilaç kullanmam hayatımda ciddi değişiklikler yapabilir.
Sağlık Motivasyonu (Health Motivation)	13	Sağlık problemlerimi erkenden teşhis ettirmek isterim.
	14	Sağlıklı olmak benim için çok önemlidir.
	15	Sağlığımı geliştirmek için yeni bilgileri araştırırım.
	16	Doğru ilaç kullanmak için yeni bilgileri öğrenirim.
	17	Sağlığımı geliştirecek bilgi ve davranışların önemli olduğunu düşünürüm.
	18	Reçeteli ilaç kullanırım.
Yarar Algısı (Perceived Benefit)	19	Reçeteli ilaç kullanmak benim yararıma olur.
	20	Reçeteli ilaç kullanmak iyileşmemi sağlar.
	21	Reçeteli ilaç kullanmak ilaç zehirlenmelerini (alerjilerini) en aza indirebilir veya tamamen engeller.
	22	Reçeteli ilaç kullanmak yasal haklarımı korur.
Engel Algısı (Perceived Barrier)	23	Reçete ile ilaç almak prosedürlerden dolayı benim için çok zor.
	24	Reçeteli ilaç alma prosedürleri çok zamanımı alıyor.
	25	Reçeteli ilaç almada bana yardım edecek biri yok.
	26	Reçetesiz ilaçlar beni iyileştirdiği için sıkıcı prosedürlere uymam gerekmez.
	27	İlaç iyi geliyorsa reçeteli olması gerekmez.
	28	Reçeteli ilaç almak için zamanım yok.
Öz-Etkililik (Self-Efficacy)	29	Reçeteli ilaç almanın prosedürünü biliyorum.
	30	İlaçlarımı doğru bir şekilde kullanabilirim.
	31	İlaçlarımı doğru bir şekilde kullanarak iyileşebilirim.
	32	Bana anlatılanlardan bilgiler edinebilirim ve ilaçlarımı doğru kullanabilirim.
	33	İlaçlarımı doğru bir şekilde kullanmak için gerekli bilgileri edinebilirim.
	34	İlaçlarımı doğru dozlarda kullanabilirim.
	35	İlaçlarımı önerilen zaman aralıklarında kullanabilirim.

Supplementary Table 1. Items of the Health Belief Scale for Medication Use

Subscale	Item No	Item
Perceived Susceptibility	1	I am very likely to be harmed by using non-prescribed medications.
	2	I have a high chance of experiencing medication allergy (poisoning) due to using non-prescribed drugs.
	3	I may die if I use non-prescribed medications.
	4	My body or organs may be harmed if I use non-prescribed medications.
	5	Medications recommended by others may harm me.
	6	I do not recommend my medications to others because they may cause harm.
Perceived Severity	7	Medication allergy (poisoning) frightens me.
	8	I become stressed when I think about the harmful effects/side effects of medications.
	9	I am afraid of thinking about non-prescribed medication allergy (poisoning).
	10	The problems caused by side effects of non-prescribed medications may last for a long time.
	11	Using non-prescribed medications may undermine others' trust in me.
	12	Using non-prescribed medications unconsciously may cause serious changes in my life.
Health Motivation	13	I would like to diagnose my health problems early.
	14	Being healthy is very important to me.
	15	I seek new information to improve my health.
	16	I learn new information to use medications properly.
	17	I believe it is important to practice behaviours that improve my health.
	18	I use prescribed medications.
Perceived Benefit	19	Using prescribed medications is beneficial for me.
	20	Using prescribed medications helps me recover.
	21	Using prescribed medications can reduce or completely prevent medication poisoning (allergies).
	22	Using prescribed medications protects my legal rights.
Perceived Barrier	23	Getting prescribed medication is very difficult for me due to the procedures.
	24	The procedures to obtain prescribed medications take a lot of my time.
	25	I do not have anyone to help me obtain prescribed medications.
	26	I do not need to follow lengthy procedures because non-prescribed medications help me.
	27	If a medication works, it does not need to be prescribed.
	28	I do not have time to get prescribed medications.
Self-Efficacy	29	I know the procedure for obtaining prescribed medications.
	30	I can take my medications correctly.
	31	I can recover by using my medications correctly.
	32	I can obtain information and use my medications correctly based on what I am told.
	33	I can obtain the necessary information to use my medications correctly.
	34	I can take my medications at the correct doses.
	35	I can take my medications at the recommended intervals.

Likert tip:
1 = Kesinlikle katılmıyorum
2 = Katılmıyorum
3 = Kararsızım
4 = Katılıyorum
5 = Kesinlikle katılıyorum

Likert scale:
1 = Strongly disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly agree