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ARAŞTIRMA MAKALESİ / ORIGINAL ARTICLE

Rational Drug Use in Older Adults and the Influencing Factors: A Cross-Sectional Study
Yaşlı Yetişkinlerde Akılcı İlaç Kullanımı ve Etkileyen Faktörler: Kesitsel Bir Çalışma

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ABSTRACT

Aim: This study was conducted to determine rational drug use in older adults and the influencing factors.

Materials and Methods: This cross-sectional study was conducted in the geriatric outpatient clinic a university hospital between 01 April and 30 June 2022. 513 older adults were included in the scope of the study. The data were collected through face-to-face interview method using the Older Adults Information Form and the Rational Drug Use Scale. Kolmogorov-Smirnov normality test, Mann Whitney U Test, Kruskal Wallis Test and Spearman's correlation analysis were used to assess the data.

Results: In the study, it was determined that the mean age of the older adults was 70.87±5.95 and their Rational Drug Use Scale mean score was 34.69±4.60. In addition, it was determined that the average of daily medicines taken by the older adults was 4.07±3.29 and 45% of them were polypharmacy. It was found that the older adults who had a bachelor's degree or higher education level, were living in the city centre, were taking drugs continuously and were using the prescribed drug for the recommended time had a higher Rational Drug Use Scale mean score ($p<0.05$). There was a low level of positive correlation between the number of drugs taken by the older adults and their Rational Drug Use Scale score. ($r=0.282$, $p=0.048$).

Conclusion: It was determined that the older adults had an insufficient level of knowledge about rational drug use. In this sense, it is recommended to plan training programmes by evaluating the levels of older adults' knowledge about rational drug use at regular intervals.

Keywords: Rational Drug, Polypharmacy, İnfluencing Factors, Nursing, Older Adults

ÖZ

Amaç: Bu çalışma, yaşlı yetişkinlerde akılcı ilaç kullanımını ve etkileyen faktörleri belirlemek amacıyla yapılmıştır.

Gereç ve Yöntemler: Bu kesitsel çalışma 01 Nisan-30 Haziran 2022 tarihleri arasında bir üniversite hastanesinin geriatri polikliniğinde yürütülmüştür. Çalışma kapsamına 513 yaşlı yetişkin dahil edilmiştir. Veriler, Yaşlı Yetişkinler Bilgi Formu ve Akılcı İlaç Kullanımı Ölçeği kullanılarak yüz yüze görüşme yöntemi ile toplanmıştır. Verilerin değerlendirilmesinde Kolmogorov-Smirnov normallik testi, Mann Whitney U Testi, Kruskal Wallis Testi ve Spearman's korelasyon analizi kullanılmıştır.

Bulgular: Çalışmada yaşlı bireylerin yaş ortalamasının 70,87±5,95, Akılcı İlaç Kullanımı Ölçeği puan ortalamasının 34,69±4,60 olduğu saptanmıştır. Ayrıca yaşlıların günlük ilaç kullanım ortalamasının 4,07±3,29 olduğu ve %45'inde polifarmasi olduğu belirlenmiştir. Lisans ve üstü eğitim düzeyine sahip olan yaşlı bireylerin, il merkezinde yaşayanların, sürekli ilaç kullananların ve reçete edilen ilacı önerilen sürede kullananların Akılcı İlaç Kullanımı Ölçeği puan ortalaması daha yüksek bulunmuştur ($p<0,05$). Çalışmada yaşlı bireylerin kullandığı ilaç sayısı ile Akılcı İlaç Kullanımı Ölçeği puanı arasında düşük düzeyde pozitif yönde korelasyon olduğu saptanmıştır ($r=0,282$, $p=0,048$).

Sonuç: Yaşlı yetişkinlerin akılcı ilaç kullanımı konusunda bilgi düzeylerinin yetersiz olduğu belirlenmiştir. Bu doğrultuda yaşlı bireylerin akılcı ilaç kullanımı konusunda bilgi düzeylerinin belirli aralıklarla değerlendirilerek eğitim programlarının planlanması önerilmektedir.

Anahtar Kelimeler: Akılcı İlaç, Polifarmasi, Etkileyen Faktörler, Hemşirelik, Yaşlı Yetişkinler

INTRODUCTION

Older population is regarded to be the population aged 65 and over and constitutes 9% of the world population (1). The older population in Türkiye has increased by 21.4% in the last five years, and its share in the total population increased from 8.8% in 2018 to 10.2% in 2023 (2). It is expected that the problems that arise in older adults will be reduced and their needs will be met with the aging of society (1). Chronic diseases that occur with increasing age reduce the quality of life of older adults, reduce their ability to care, and these diseases lead to polypharmacy, making it difficult to comply with treatment (3).

Being a growing global public health problem, polypharmacy is defined as the simultaneous use of five or more medicines (4). Polypharmacy is an important geriatric problem that negatively affects quality of life, increases morbidity and mortality, and elevates health expenditures (5). Rational drug use (RDU) makes it possible to prevent polypharmacy in older adults. The World Health Organisation (WHO) defines RDU as "patients' receiving medications in accordance with their clinical findings, in doses that meet their own individual requirements, for an adequate period of time, at the lowest cost to them and their community" (6).

In terms of public health, RDU is an issue that should be given priority in order to increase the safety and effectiveness of the drug used. The aim of RDU is to reduce the cost of medication, avoid drug interactions and preventable drug reactions, and enhance the quality of therapeutic care while promoting patient compliance (7,8). In this context, the condition of the older adults should be evaluated from a holistic perspective. Nurses, physicians, pharmacists and other healthcare professionals have important roles and responsibilities in drug management (9).

When drugs are not used in accordance with RDU, Irrational Drug Use (IDU) occurs and may cause especially the older to suffer commonly from harmful side effects of drugs (8). According to the results of a systematic study revealing a high prevalence of AOIC among the world countries, it was reported that the rate of antibiotic exposure of individuals was 57.1%, the rate of drugs labelled was only 32.2% while 91.5% and 90.1% of the drugs prescribed by generic name and from the essential drug list, respectively, and 67.7% of prescription drugs were distributed, and the rate of therapeutic drugs was 64.8% (10). In a study conducted in Türkiye, it was reported that the drug use habits of the older adults were irrational and more than half of them kept unnecessary drugs at home and used over-the-counter drugs (11).

A systematic review indicated that the society had an insufficient level of knowledge on RDU and some problems regarding RDU continue in Türkiye (12). For this reason, there is a need for further studies and practices to raise awareness of RDU in the society and especially in older adults, who commonly suffer from chronic diseases and use simultaneously multiple drugs (10,11). The aim of this study is to determine RDU in older adults and the influencing factors.

Research Questions

1. What is the level of knowledge of older adults regarding RDU?

2. What are the factors affecting RDU in older adults?

MATERIALS AND METHODS

Sample

The population of this cross-sectional study consisted of 808 adults over the age of 65 who applied to the geriatric outpatient clinic of a

university hospital in the last three months. In order to represent these older adults, in the power analysis conducted with the G*Power program (95% confidence interval, 0.5 effect level and 5% margin of error), it was deemed appropriate to include at least 220 older adults to sample. The study aimed to reach all of the older adults in the population without sample selection. The sample of the study consisted of adults aged 65 and over who applied to the geriatrics outpatient clinic of a university hospital between 01 April 2022 and 30 June 2022. 513 older adults who met the inclusion criteria and agreed to participate in the study were included in the sample of the study.

Inclusion Criteria: Older adults who were 65 years old and older, had cognitive competence, not have hearing problems, spoke Turkish and volunteered to participate in the study were included in the sample of the study.

Exclusion Criteria: The sample excluded older adults who were younger than 65 years of age, did not have cognitive competence, have hearing problems, not speaking Turkish, and did not agree to participate in the study.

Data Collection

The researcher collected the data through face-to-face interview method, using the Older Adults Information Form and the Rational Drug Use Scale (RDUS), after the verbal and written consent of the older adults was obtained. It took an average of 15 minutes to complete a questionnaire.

Data Collection Tools

Older Adults Information Form: The Older Information Form consists of 26 questions including age, gender, educational background, marital status, place of residence, presence of chronic disease, drugs they constantly used, and drug-related characteristics.

Rational Drug Use Scale: RDUS was developed by Demirtaş et al., in 2018 to indicate the rational drug use knowledge status of individuals. It consists of 21 items in total, including 10 straight items and 11 reverse items and is a 3-point Likert-type scale. Each item is rated using "True", "False", and "I don't know" options. The scale is evaluated over "2" points for correct, "0" point for incorrect, and "1" point for I do not know. The lowest and highest scores of the scale are "0" and "42", respectively. Higher scores indicate that the rational drug use knowledge level of individuals increases. The cut-off point of the scale is 35 points, and the rational drug use knowledge level of people who get a score of 35 points or more is considered as sufficient. In the study by Demirtaş et al., the Cronbach's alpha value of the scale was 0.789 (13). In this study, the Cronbach's alpha value of RDUS was calculated as 0.723.

Statistical Analysis

The data were evaluated using the IBM SPSS Statistics Standard Concurrent User V 21 statistical package programme. Descriptive statistics were given as number of units (n), percentage (%), mean (±), standard deviation (sd), and median (M). Data were evaluated using Kolmogorov-Smirnov normality test, Mann Whitney U test, Kruskal Wallis test, and Spearman's correlation analysis. The value of $p<0.05$ was accepted as statistical significance in the study.

RESULTS

In the study, it was determined that the older adults had a mean score of 34.69±4.60 in RDUS and they got a minimum of 17 points and a maximum of 42 points from the scale. The mean age of the older adults was 70.87±5.95, 53.8% were male,

51.1% were primary school graduates, 79.7% were married, 51.5% lived with their spouses, 64.5% had a middle income level, and 42.9% lived in the city centre (Table I).

Table I. Socio-demographic Characteristics of the Older Adults

Characteristics	n	%
Age		
x̄±sd	70.87±5.95	
M (min-max)	69.0 (65-94)	
Age group		
65-70 years	293	57.1
71-75 years	114	22.2
76-80 years	68	13.3
81 years and above	38	7.4
Gender		
Female	237	46.2
Male	276	53.8
Educational Status		
Illiterate	121	23.6
Primary education	262	51.1
High school	64	12.5
Bachelor and above	66	12.8
Marital status		
Married	409	79.7
Single	104	20.3
Person living with		
Wife	264	51.5
Wife and children	105	20.5
Alone	70	13.6
Child	67	13.1
Other (Grandchild, relative, caregiver)	7	1.3
Income status		
Good	102	19.9
Middle	331	64.5
Bad	80	15.6
Living space		
Provincial	220	42.9
County	206	40.1
Village	87	17.0

X̄: Arithmetic mean, sd: Standard deviation, M: Median, min: Minimum, max:Maximum

It was determined that 78.9% of the participants had at least one chronic disease, the average number of chronic diseases was 4.07±3.29, and 32.9% of those with chronic diseases suffered from hypertension. In addition, 83.5% of the older adults used drugs continuously and 25.7% of the older adults who used drugs continuously took antihypertensive drugs (Table II).

In the study, it was determined that the average number of drugs taken daily by older adults was 4.07±3.29 and 45% had polypharmacy. 28.1% of the older adults stopped their medication without any reason before the recommended time, 44.8% of them used over-the-counter drugs, 53.3% of these individuals used analgesics as an over-the-counter drug, and 67.9% stated that the reason for using over-the-counter drugs was the drug they used previously (Table II).

Table II. Characteristics of the Older Adults Regarding Disease and Drug Use

Characteristics	n	%
Presence of Chronic Disease		
Yes	405	78.9
No	108	21.1
Number of Chronic Diseases		
1	153	37.8
2	131	32.3
3	88	21.7
4 and above	33	8.2
Chronic Diseases*		
Hypertension	269	32.9
Diabetes	178	21.8
Heart disease	147	18.0
Respiratory Disease	67	8.3
Urinary System Diseases	58	7.2
Psychiatric Disease	31	3.7
Cancer	26	3.2
Other	40	4.9
Number of Drugs Used Daily		
1-2 pieces	126	28.8
3-4 pieces	115	26.2
5 pieces and above	197	45.0
Types of Drugs Used Continuously*		
Antihypertensives	242	25.7
Heart Glycosides	183	19.5
Antidiabetics	175	18.6
Antidiuretics	122	12.9
Analgesics	74	7.9
Bronchodilators	46	4.9
Psychiatric drugs	36	3.9
Antibiotics	28	2.9
Stomach protector	26	2.8
Other	9	0.9
Reasons to Stop Prescribed Drug Before Time*		
Leave without reason	18	28.1
Feeling heal up	15	23.4
Not feeling well	10	15.6
Side effect	9	14.0
Multiple drug use	6	9.3
Other	6	9.3

Table II. ***(continued)*** Characteristics of the Older Adults Regarding Disease and Drug Use

Questions Asked About the Prescription Drug*		
Purpose of usage	234	24.0
Usage time	215	22.1
Side effects	202	20.7
Usage dose	163	16.7
Usage	156	16.0
Other (Interaction with drugs, Equivalent, Price)	6	0.6
Types of Drugs Used Without a Prescription*		
Analgesics	198	53.3
Cold Flu	44	11.8
Muscle Relaxants	44	11.8
Stomach Protectors	40	10.7
Vitamins	33	8.8
Other	12	3.2
Reasons for Using Non-Prescription Drugs *		
Having previously used drug	194	67.9
Suggested by someone else	41	14.4
Not feeling well enough to go to the health institution	31	10.9
Think it's a simple ailment	10	3.4
Other	10	3.4
The Person Who Informed About The Drug*		
Pharmacist	312	53.4
Doctor	257	44.0
Nurse	12	2.1
Other	3	0.5

* More than one answer was given

Table III. RDUS Mean Scores of the Older Adults based on Their Socio-demographic Characteristics

Characteristics	n	RDUS $\bar{X}$±sd	Test *p*
Age group			
65-70 years	293	34.90±4.56	
71-75 years	114	34.49±4.42	KW= 1.737
76-80 years	68	34.74±4.47	0.629
81 years and above	38	33.61±5.63	
Gender			
Female	237	34.51±4.95	MW= -0,463
Male	276	34.85±4.28	0.643
Educational Status			
Illiterate	121	33.19±4.69	
Primary education	262	34.40±4.52	KW= 44.386
High school	64	36.33±4.24	**<0.001**
Bachelor and above	66	37.00±3.75	
Marital status			
Married	409	34.84±4.66	MW= -1.744
Single	104	34.11±4.32	0.081
Person living with			
Wife	264	34.74±4.69	
Wife and children	105	34.94±4.42	KW= 1.063
Alone	70	34.30±4.56	0.900
Child	67	34.58±4.55	
Other (Grandchild, relative, caregiver)	7	33.86±5.69	
Income status			
Good	102	35.18±4.48	KW= 1.599
Middle	331	34.64±4.54	0.450
Bad	80	34.28±5.02	
Living space			
Provincial	220	35.34±4.21	KW= 11.289
County	206	34.67±4.46	**<0.004**
Village	87	33.11±5.47	

n: Number, $\bar{X}$: Arithmetic mean, sd: Standard deviation, KW: Kruskal Wallis Test statistic, MW: Mann-Whitney U test statistic

Table IV. RDUS Mean Scores of the Older Adults Based on Their Drug Use Characteristics

Characteristics	n	%	RDUS $\bar{X}$±sd	Test *p*
Continuous Drug Use Status				
Using	428	83.5	34.77±4.60	MW=-2.173
Not using	85	16.5	34.28±4.64	**<0.030**
Regular Drug Use Status				
Using	469	91.4	34.79±4.58	MW=-1.623
Not using	44	8.6	33.61±4.72	0.105
Prescribed Drug Discontinuation Status				
Yes	64	12.5	32.92±5.40	MW=-2.933
No	449	87.5	34.94±4.43	**<0.003**
Status of Asking Questions About the Prescribed Drug				
Yes	367	71.5	35.04±4.23	MW=-1.604
No	14	28.5	33.82±5.34	0.109
Using Non-Prescription Drugs Status				
Using	230	44.8	34.18±4.55	MW=-2.954
Not using	283	55.2	35.11±4.61	**<0.003**
Experiencing Drug-Related Side Effects Status				
Yes	108	21.1	34.98±4.84	MW=-1.120
No	405	78.9	34.61±4.54	0.263
Informing Status About the Drug				
Yes	480	93.6	34.80±4.56	MW=-1.671
No	33	6.4	33.15±4.96	0.095

n: Number, $\bar{X}$: Arithmetic mean, sd: Standard deviation, KW: Kruskal Wallis Test statistic, MW: Mann-Whitney U test statistic

Table V. Correlation Between RDUS Scores of the Older Adults Based on Some of Their Characteristics

Characteristics	RDUS
Age	r= -0.067 p= 0.131
Number of Drugs Used Daily	**r= 0.282** **p= 0.048**
Number of Chronic Diseases	r= 0.077 p= 0.120

r: Spearman's correlation coefficient

DISCUSSION

Rational drug use includes the appropriately prescribing, dispensing, and patient use of drugs for the diagnosis, prevention, and treatment of diseases and IDU is a common problem that can be seen at all levels of care (10). In this study, which we conducted to determine the RDU and the affecting factors of older adults, it was found that the knowledge level of older adults about RDU was insufficient, most of them used 5 or more drugs, and the RDU scores of older adults with undergraduate and higher education level and living in the city center were higher. It was also determined that as the number of daily drugs used by older adults increased, RDU levels also increased. A systematic (2019) review reported that IDU is common in Europe and elderly patients had an insufficient level of knowledge about the therapeutic value of drugs (14). The studies conducted with older adults in Türkiye have indicated that the level of knowledge about drug use in older adults is insufficient (15,16). The insufficient level of knowledge of the older adults on RDU in the present study may be due to the high mean age of the older adults and the low level of education.

Due to the fact that chronic diseases increase with increasing aging, continuous drug use is also increasing (3,17-19). In the present study, it was determined that 83.5% of the older adults used drugs continuously and mostly antihypertensive drugs. In their study, Stafford et al., (2021) reported that older adults used drugs related to chronic diseases more and hypertension was the most common (20). In their study, Sayın Kasar et al., (2020) reported that 81.5% of the older adults took drugs continuously (21). Solmaz and Altay (2019) determined that the rate of using antihypertensive drugs in older adults who constantly used drugs was 45.9% (22). Excessive use of drugs in older adults may be associated with an increase in chronic diseases and health problems in individuals with increasing aging.

Polypharmacy and IDU are common problems in older adults (11). In this study, it was determined that the majority of the older adults used 5 or more drugs per day. In their systematic review, Hsu et al., (2021) reported that the prevalence of polypharmacy in the older ranged from 7 to 45% between 2000 and 2019 and polypharmacy was associated with advanced age, comorbidity, perceiving health status as poor perception, limitation in physical activity, history of falling, depression, and pain (23). In their study, Kızmaz et al., (2020) determined that the frequency of polypharmacy in older adults was 38.7% (24). It is thought that factors such as the increase in chronic diseases in the older adults, the easy access of individuals with health problems to drugs, the income status and the recommendation of the drug used are effective in the occurrence of polypharmacy.

It is thought that the level of education plays a role in negatively affecting the knowledge level of the society on RDU (12). In the present study, it was found that older adults with bachelor's degree and higher education levels had higher levels of RDU. Likewise, in their study, Yaramış and Ulupınar (2021) reported that particularly individuals with low education level needed more training on RDU (25). There are other studies reporting results similar to results of the present study in the literature (12,16).

In the study, the RDU levels of the individuals living in the city centre were found to be higher than those living in the district and village. In their study, Solmaz and Altay indicated that there was a correlation between the RDU knowledge level of adult individuals and the place of residence, and the scores of RDUS were higher in those living in the city centre (22). Unlike the present study, Yılmaz and Çıtıl (2022) reported in their study that there was no difference between the drug use status of the patients and the place of residence (26). In the present study, the reason for the level of knowledge on RDU was high in older adults living in the city centre may be associated with easier access to secondary and tertiary healthcare services and drugs.

IDU, which is a major problem in the world, brings heavy burdens to the national economy in developing countries such as Türkiye. 17.1% of the health expenditures budget in Türkiye is allocated to pharmaceutical expenditures (9). In this study, it was found that 44.8% of the older adults used over-the-counter drugs and these individuals had low levels of RDU. It was determined that older adults mostly used analgesics, cold medicines, muscle relaxants, and gastroprotective agents as over-the-counter drugs. In addition, the older adults stated that they used the same drug before and they did not feel well enough to go to the health institution as the reason for using over-the-counter drugs. In a study conducted with 2206 individuals aged 62-85 years in the United States of America between 2005 and 2011, it was stated that 38% of older adults used over-the-counter drugs (27). In their study, Kızmaz et al., (2020), revealed that 57.7% of older adults took over-the-counter drugs and the drugs they used were mostly analgesics and cold medicines (24). In their systematic review, Durmaz et al., (2021) reported that the majority of older adults used drugs without a prescription, did not take the drug on time, and discontinued to take drugs by their own decisions (28). Results of the present study are similar to the literature. In the present study, it was determined that the drugs that older adults preferred to take without a prescription were for their treatment of common symptoms (such as headache, sore throat, stomach and muscle pain). This may be due to easier access to these drugs.

In the present study, it was observed that as the number of drugs taken daily by older adults increased, their level of RDU also elevated. This finding may seem contradictory to the general concerns surrounding polypharmacy, where the use of multiple medications often leads to complications and reduced adherence. However, similar to the findings of Tang et al. (2022), who demonstrated that a structured drug management model positively influenced the knowledge and behaviors related to RDU in elderly patients (29), it is possible that the older adults in our study had developed a higher level of familiarity and adherence to their medication regimens over time due to the long-term use of the same drugs. Additionally, as noted by Şengül and Akyıl (2019), the perception of health can increase with age, which may, in turn, enhance knowledge about RDU (30). Therefore, the increased RDU levels among older adults taking multiple medications in our study could be attributed to their acquired habits and expertise in medication administration, leading to better management and rational use of their prescribed drugs.

This study has several strengths. Firstly, the inclusion of a large elderly population enhances the validity of the findings. Secondly, the face-to-face interview method used in the study allowed the participants to express their responses in more detail and accurately during the data collection process. Additionally, the study's results offer

concrete recommendations for the development of educational and intervention programs aimed at raising awareness of RDU among older adults, supporting practical applications. For these reasons, the findings of this study provide valuable insights for the development of strategies to enhance RDU in older adults.

This study has some limitations. Firstly, the study was conducted among older adults admitted to the geriatrics outpatient clinic of a university hospital, which limits the capacity of the results to represent the general older population. Secondly, the study has a cross-sectional design, which makes it difficult to establish cause-effect relationships.

CONCLUSION

In this study, it was determined that the older adults had an insufficient level of knowledge about RDU, most of them were taking 5 or more drugs, those who had a bachelor's degree or higher education level and were living in the city centre had a higher level of RDU, and the level of rational drug use increased as the number of drugs taken daily increased.

In the light of with these results, it can be recommended to plan training programmes on RDU that will create behavioural changes in older adults and to conduct practical studies to ensure their medication adherence.

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Conflict of Interest

The authors declare no conflict of interest.

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Ethics Committee Approval

The study was approved by the Non-Interventional Clinical Research Ethics Committee of Çukurova University Faculty of Medicine. Date: 04.03.2022 Decision No: 120.

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Author Contributions

Idea: İD, Design: İD, SK, Materials: İD, Surveillance: SK, Data collection and/or Processing: İD, Analysis and/or Interpretation: İD, SK, Literature review: İD, Article Writing: İD, SK, Critical Review: İD, SK

REFERENCES

1. Ministry of Development Specialization Commission Report. Aging, 2018. https://www.sbb.gov.tr/ozel-ihtisas-komisyonu-raporlari/ Accessed 29 March 2023.
2. Turkish Statistical Institute. Statistics with The Elders, 2023. https://data.tuik.gov.tr/Bulten/Index?p=Elderly-Statistics-2023-53710&dil=2 Accessed 07 August 2024
3. Kubat Bakır G, Akın S. Factors associated with management of chronic diseases in elderly. Health and Society, 2019; 19: 17-25.
4. Guillot J, Maumus-Robert S, Bezin J. Polypharmacy: A general review of definitions, descriptions and determinants. Therapie Sep-Oct, 2020; 75: 407-416.
5. İşli F. Polypharmacy in the elderly. SOYD, 2022; 3: 171-174.
6. World Health Organization. The rational use of drugs : Report of the conference of experts, Nairobi, 25-29 November 1985. https://iris.who.int/handle/10665/37174 Accessed 07 August 2024.
7. Religioni U, Pakulska T. Rational drug use in hospital settings – areas that can be changed. Journal Of Medıcal Economics, 2020; 23: 1205-1208.

8. Ercan T, Biçer DF. The evaluation of the factors affecting the knowledge levels and behaviors of consumers for rational drug use: example of Sivas. Business and Management Studies An International Journal, 2019; 7: 998-1021.

9. Turkish Medicines and Medical Devices Agency. Strategic plan for 2019-2023. https://sgb.saglik.gov.tr/TR,61665/tc-saglik-bakanligi-2019-2023--stratejik-plani.html Accessed 30 December 2023.

10. Solomon AM, Abebe GF. The pattern of medicine use in Ethiopia using the WHO core drug use indicators. BioMed Research International, 2021; 7041926: 1-11

11. Yazıcıoğlu B, Dikmetas Yardan E. Rational drug use in elderly patients in a primary care center. JPMA, 2021; 71: 1353-1356.

12. Bozdemir E, Filiz M. Rational medicine use in Turkey with the knowledge and attitudes towards systematic review of studies determination of behavior. DÜSBED, 2021; 13: 92-104.

13. Demirtaş Z, Dağtekin G, Sağlan R, et al. Validity and reliability of rational drug use scale. ESTUDAM Journal of Public Health, 2018; 3: 37-46.

14. Fialová D, Laffon B, Marinković V, et al. Medication use in older patients and age-blind approach: narrative literature review (insufficient evidence on the efficacy and safety of drugs in older age, frequent use of PIMs and polypharmacy, and underuse of highly beneficial nonpharmacological strategies). European Journal of Clinical Pharmacology, 2019; 75: 451-466.

15. Bayer N, Uzuntarla Y. Investigation of rational drug use and traditional medicine attitudes of elderly individuals with chronic diseases. J Soc Anal Health, 2022; 2: 21-27.

16. Tarhan G, Uslu AU, Kavaklı Ö, et al. Rational drug use in elderly patients. Osmangazi Journal of Medicine, 2020; 42: 130-139.

17. World Health Organization. Weekly epidemiological record Releve epidemiologique hebdomadaire. https://www.who.int/wer/2011/wer8636/en/ Accessed 22 December 2023.

18. Karan MA, Satman I. Turkey Elderly Health Report: Current situation, problems and short-medium-term solutions. Presidency of Health Institutes of Turkey Turkey Institute of Public Health and Chronic Diseases Publication No: 48569, Istanbul 2021

19. Kaya H, Turan N, Çulha Y, et al. The role of nurse in the drug management in elderly individuals. JAREN, 2018; 4: 120-126.

20. Stafford G, Villen N, Roso-Llorach A, et al. Combined multimorbidity and polypharmacy patterns in the elderly: A cross-sectional study in primary health care. Int. J. Environ. Res., 2021; 18, 9216.

21. Sayın KK, Ünal E, Çapacı S, et al. Complementary and alternative medicine use for pain among elderly persons and their attitudes. Huhemfad-Johufon; 2020; 7: 271-277.

22. Solmaz T, Altay B. Medication use in the elderly and determination of fall factors causing. Balıkesir Health Sciences Journal, 2019; 8: 129-134.

23. Hsu FH, Chen KM, Belcastro F, et al. Polypharmacy and pattern of medication use in community-dwelling older adults: A systematic review. J Clin Nurs, 2021; 30: 918-928.

24. Kızmaz M, Kumtepe Kurt B, Çetin Kargın N, et al. Investigation of polypharmacy prevalence and affecting factors in patients over 65 years presenting to family medicine polyclinic of rural district hospital. Ankara Med J, 2020; 1: 123-134.

25. İlhanlı Yaramış M, Ulupınar S. Rational drug use behaviors of individuals registered with a family health center. Ordu University Journal of Nursing Studies, 2021; 4: 10-20.

26. Yılmaz H, Çıtıl R. Rational drug use and related factors in patients admitted to a university hospital. Sted, 2022; 31: 161-171.

27. Qato DM. Wilder J, Schumm LP, et al. Changes in prescription and over-the-counter medication and dietary supplement use among older adults in the united states, 2005 vs 2011. JAMA Intern Med, 2016; 176: 473-82.

28. Durmaz S, Özvurmaz S, Kırşan Büyüktarakçı M, et al. Medication use errors in elderly: A systematic review. Turkiye Klinikleri J Med Ethics, 2021; 29: 102-10.

29. Tang Q, Wan L, Lu J, et al. Rational medication management mode and its implementation effect for the elderly with multimorbidity: A prospective cohort study in China. Public Health, 2022; 10: 992959.

30. Şengül BN, Akyıl MŞ. Investigation of rational drug use and health perception in different generations. Journal of Nursing Science, 2022; 5: 169-178.