Open Access Journal [doi: 10.54584/lms.2023.31] Research Article

Life and Medical Sciences

Family Medicine Residents' Awareness of Rational Drug Use in Geriatric Patients and Their Need for a Web Application

Aile Hekimliği Asistanlarının Geriatrik Hastada Akılcı İlaç Kullanımı Farkındalığı ve Bir Web Uygulamasına Olan İhtiyaçları

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Article Info: Received; 31.01.2023. Accepted; 14.03.2023. Published; 05.04.2023.
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Cite as: Akyon ŞH, Yılmaz TE, Akyon FÇ. Family Medicine Residents' Awareness of Rational Drug Use in Geriatric Patients and Their Need for a Web Application. Life Med Sci 2023; 2(2): 61-69.

Abstract

The term polypharmacy is generally known as the simultaneous use of five or more medicines. An increase in polypharmacy is also observed with chronic diseases, which increases with age. The main complications of polypharmacy are medicine side effects, inappropriate medicine use, drug-drug interaction, and drug-disease interactions. Family physicians are the most effective physician group in coordinating medicine therapy, as they provide continuous, longitudinal, and comprehensive medical care to the individual. In this study, it was aimed to determine the need of an auxiliary web application regarding family medicine residents' awareness of polypharmacy side effects in geriatric population and to identify the barriers to rational drug use in their daily clinical practice. The research is a cross-sectional observational study, and all residents actively working in the Ankara City Hospital Family Medicine Clinic were planned to be included and were invited to the study. The study was conducted through survey application method under observation. It was determined that geriatric patients mostly referred to their "clinical experience" in rational drug use according to the participants. The obstacles faced by the participants in rational drug use were mostly in that of "not having enough knowledge" and "patient-centered medicine regulation to be difficult and time consuming". 75.3% of respondents (n=70) marked strongly agree and 18.3% marked agree (n=17) for the statement "I would like to have an easily accessible an artificial intelligence aided web application that I can use in my daily practice regarding polypharmacy side effects, such as drug-drug interactions, drug-chronic disease incompatibility, potentially inappropriate medicine (PIM) in the elderly" and the mean value of this proposition was determined as 4.65±0.7. This study showed that the resources used to detect polypharmacy and its complications were not used adequately and appropriately. Moreover, the study results present the need and demand for time-saving and facilitating auxiliary web applications to minimize PIM, drug-drug interaction, drug-chronic disease interaction in the elderly and to evaluate it in the light of current data to provide person-centered and comprehensive care in the clinician's practice.

Keywords: Family practice, Medication review, Polypharmacy, Drug interactions, Older patients.

Özet

Polifarmasi terimi genellikle beş veya daha fazla ilacın aynı anda kullanılması olarak bilinir. Yaşla birlikte artan kronik hastalıklarda da çoklu ilaç kullanımında artış gözlenmektedir. Polifarmasinin başlıca komplikasyonları ilaç yan etkileri, uygunsuz ilaç kullanımı, ilaç-ilaç etkileşimi ve ilaç-hastalık etkileşimleridir. Aile hekimleri, bireye sürekli, uzun süreli (boylamsal) ve kapsamlı tıbbi bakım sağladıkları için ilaç tedavisini koordine etmede en etkili hekim grubudur. Bu çalışmada, aile hekimliği asistanlarının geriatrik popülasyonda polifarmasi yan etkilerinin farkındalıkları, günlük klinik uygulamalarında akılcı ilaç kullanımının önündeki engellerin belirlenmesi ve bununla ilgili yardımcı bir web uygulamasına olan ihtiyacın belirlenmesi amaçlanmıştır. Araştırma, kesitsel gözlemsel bir çalışma olup, Ankara Bilkent Şehir Hastanesi Aile Hekimliği Kliniği'nde aktif olarak görev yapan tüm asistanlar araştırmaya dahil edilmek üzere planlanmış ve çalışmaya davet edilmiştir. Araştırma, gözlem altında anket uygulama yöntemiyle gerçekleştirilmiştir. Katılımcılara göre geriatrik hastaların akılcı ilaç kullanımın da en çok "klinik deneyimlerine" başvurdukları belirlendi. Katılımcıların akılcı ilaç kullanımında karşılaştıkları engeller en sık "yeterli bilgiye sahip olmama" ve "hasta merkezli ilaç düzenlemesinin zor ve zaman alması" şeklindedir. "Yaşlılarda ilaç-ilaç etkileşimleri, ilaç-kronik hastalık uyumsuzluğu, potansiyel olarak uygunsuz ilaç gibi polifarmasi yan etkilerine ilişkin günlük pratiğimde kullanabileceğim, kolay erişilebilir, yapay zeka destekli bir web uygulaması olmasını isterim" ifadesine yanıt verenlerin %75.3'ü (n=70) cevabı kesinlikle katılıyorum ve %18.3'ü katılıyorum (n=17) olarak işaretlemiş ve bu önermenin ortalama değeri 4.65±0.7 olarak belirlenmiştir. Bu çalışma polifarmasi ve komplikasyonlarının saptanmasında kullanılan kaynakların yeterli ve uygun şekilde kullanılmadığını göstermiştir. Çalışma sonuçları ayrıca, yaşlılarda potansiyel uygunsuz ilaç kullanımı, ilaç-ilaç etkileşimi ve ilaç-kronik hastalık etkileşimini en aza indirmek ve güncel veriler ışığında değerlendirmek için zaman kazandıran ve kolaylaştırıcı yardımcı web uygulamalarına olan ihtiyacı ve talebi ortaya koymaktadır.

Anahtar Kelimeler: Aile hekimliği, Polifarmasi, İlaç etkileşimleri, Geriatri, Birinci basamak hekimleri.

This article was presented as an oral presentation at the 18th Uludağ Internal Medicine Winter Congress, 7th Bursa Family Medicine Association National Congress in 2022.

Introduction

Factors such as the improvement of living standards all over the world and the development of modern medicine have led to the prolongation of human life and the global aging process, which is one of the most important demographic phenomena of the 21st century [1]. According to the data of the Turkish Statistical Institute for 2020, the population aged 65 and over increased by 22.5% in the last five years and reached 7,953,555 people in 2020 [2]. In the last five years the proportion of the elderly population to the total population increased from 8.2% to 9.5% [2].

Although the term polypharmacy has many definitions in the literature and is generally known as the simultaneous (regular) use of five or more medicines, polypharmacy is used not only in terms of the number of medicines, but also in inappropriate indications and for unnecessary use of two or more medicines [3–7]. Risk factors leading to polypharmacy can be grouped under two headings: patient-related and healthcare system-related [3,7–9]. When patient-related factors are examined, the number of medicines used for the chronic disease increases with age, therefore polypharmacy increases with age [7]. The main causes of healthcare system-related polypharmacy are the insufficient number of primary care physicians to coordinate medicine treatment, the physician's insufficient knowledge about medicine side effects and drug-drug interactions [7].

Since they provide continuous and comprehensive medical care to the individuals, family physicians are the most effective physician group in drug treatment coordination and a part of their duty is rational drug use (RDU). It is a part of quaternary protection in order not to harm the patient at any stage of the medical care [10].

In this study it is aimed to identify the obstacles of RDU in daily practice and to determine the needs for an artificial intelligence (AI) aided web application for the detected

obstacles as well as family medicine residents to have awareness and knowledge on polypharmacy side effects such as drug-drug interactions, drug-disease incompatibility, and potentially inappropriate medicine (PIM) use in elderly patients, since family medicine residents will encounter to geriatric population in their clinical practice and encounter frequently.

Material and Method

Ethics committee approval (Document Date: 22/12/21, Document Number: E.Kurul-E2-21-1084) from the local research ethics committee for research and informed voluntary consent forms were obtained from the participants local research ethics committee for the study.

The research is a cross-sectional observational study. A questionnaire was conducted with all resident physicians actively working in Ankara City Hospital Family Medicine Clinic during the 2021-2022 academic year. The reason why the population was composed of family medicine residents was that their probability of encountering geriatric patient population, where polypharmacy is more common, both in the home healthcare service during their education and in daily outpatient practice, is relatively higher than other branches. The questionnaire was applied to resident physicians by survey method under observation during their Family Medicine clinic specialization training time.

At the beginning of the questionnaire, sociodemographic information of the participants such as age, gender was questioned. In the rest of the questionnaire, a total of 3 separate sections were created in which awareness and approaches of family medicine residents were questioned about PIM, drug-drug interactions, and drug-disease interactions for geriatric patients. In all 3 sections of the questionnaire, resident physicians were questioned using a five-point Likert scale with multiple choice answers (1: Strongly Disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly Agree) and scored between 1-5 on their awareness of RDU.

In the first section, the participants were questioned about the resources they can refer from the current literature and scored their awareness of international criteria, their level of knowledge on PIM lists for geriatric patients, also how effectively they use these resources in clinical practice, and what are the barriers in this regard.

In the second section, the participants were questioned about the resources they refer to and scored their awareness and knowledge of the patients' drug-drug interaction, also how sensitive they were in their daily practice, and what are the barriers in this regard.

In the third section, the participants were questioned about sources they refer to and scored their awareness and knowledge of the patients' current medication evaluated together with the chronic diseases in the patient examination and finding drug-disease interaction, also how effective they were in their daily practice, and what are the barriers in this regard.

Statistical analysis

The statistical analysis of the questionnaire was performed with SPSS Statistics program with Version 28 (IBM, Chicago, USA) and the statistical significance level was accepted as $p<0.05$.

In descriptive statistics, numerical data are given as mean and standard deviation, and categorical data are given as numbers and percentages. Conformity of continuous variables to normal distribution was examined by Kolmogorov-Smirnov test.

In the analysis of categorical variables, chi-square and Fisher chi-square significance tests were used. Whether the mean difference was significant between the two independent groups was tested using the independent samples t-test.

Results

59.2% (n=93) of 157 resident physicians actively working in Ankara City Hospital Family Medicine Clinic during the 2021-2022 academic year participated in this study. 72% (n=67) of the participants were female, 28% (n=26) were male, and the number of women was significantly higher. The mean age was 29.7±4.7 years and the ages ranged from 24 to 45 years. The mean total professional experience of the participants was 5.04±4.8 years, and the duration of family medicine residency was 2.31±1.1 years.

The awareness level of the participants about the PIM criteria in geriatric patients was questioned using a five-point Likert scale (presented in Table 1). The knowledge of the criteria for the use of PIM in geriatric patients was questioned and the results are given in Table 2. 55.9% (n=52) of the participants stated that they had never heard of any criteria before. Of the participants who knew the criteria before 44.1% (n=41), 85.4% (n=35) stated that they learned it during their residency training and 14.6% (n=6) during medical school. The knowledge of the criteria for the use of PIM in geriatric patients was questioned and the results are given in Table 2.

Table 1. The participants' awareness level on the criteria for the potentially inappropriate medication in geriatric patients.

	1*	2	3	4	5	Mean value
I have sufficient knowledge about potentially inappropriate medication criteria and rational drug use in the geriatric patient group.	n=7 7.5%	n=17 18.3%	n=52 55.9%	n=16 17.2%	n=1 1.1%	2.87±0.8
I evaluate every geriatric patient I come across in my daily practice in terms of inappropriate medication, based on relevant criteria, and make medication adjustments	n=3 3.2%	n=25 26.9%	n=35 37.6%	n=28 30.1%	n=2 2.2%	3.01±0.9
I evaluate every geriatric patient I come across in my daily practice in terms of inappropriate medication, not based on relevant criteria, and make medication adjustments, if necessary.	n=6 6.5%	n=37 39.8%	n=25 26.9%	n=23 24.7%	n=2 2.2%	2.76±0.97

*1: Strongly Disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly Agree.

Table 2. Participants' knowledge of international criteria used to detect potentially inappropriate medication in geriatric patients.*

International Criteria	n	%
Beers Criteria	26	28
Stopp/Start Criteria (Screening Tool of Older Person Prescription/Screening Tool to Alert doctors to Right Treatment)	26	28
The EU(7)-PIM List (European Union list of potentially inappropriate medications)	4	4.3
Priscus Criteria	1	1.1
FORTA Criteria (**F**it f**OR** **T**he **A**ged)	1	1.1
IPET Criteria (Improved prescribing in the elderly tool)	1	1.1
Other	0	0

*Multiple options can be selected.

In the second part, the awareness level of the participants about the drug-drug interaction was questioned using a five-point Likert scale, and the results are presented in Table 3.

In the third part, the awareness level of the participants about the drug-disease interaction was questioned using a five-point Likert scale, and the results are presented in Table 4.

Table 3. The participants' awareness level of drug-drug interaction in geriatric patients.

	1*	2	3	4	5	Mean value
I have sufficient knowledge about drug-drug interactions in geriatric patient group.	n=7 7.5%	n=26 28%	n=53 57%	n=7 7.5%	n=0 0%	2.65±0.7
I make medication arrangements for every geriatric patient I come across in my daily practice by referring to the relevant resources in terms of drug-drug interactions.	n=4 4.3%	n=27 29%	n=37 39.8%	n=23 24.7%	n=2 2.2%	2.91±0.9
I make medication adjustments for every geriatric patient I come across in my daily practice according to my clinical experience without consulting the relevant resources in terms of drug-drug interactions.	n=8 8.6%	n=26 28%	n=33 35.5%	n=24 25.8%	n=2 2.2%	2.85±0.98

*1: Strongly Disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly Agree.

Table 4. Participants' awareness level on drug-disease interaction in geriatric patients.

	1*	2	3	4	5	Mean value
I have sufficient information about drug-chronic disease incompatibility in geriatric patient group.	n=5 5.4%	n=28 30.1%	n=42 45.2%	n=18 19.4%	n=0 0%	2.79±0.82
I research drug-chronic disease incompatibility and make medication arrangements based on relevant guidelines for every geriatric patient I come across in my daily practice.	n=6 6.5%	n=31 33.3%	n=39 41.9%	n=15 16.1%	n=2 2.2%	2.74±0.9
I evaluate and make medication arrangements for every geriatric patient I come across in my daily practice in line with my own clinical experience for drug-chronic disease incompatibility.	n=4 4.3%	n=23 24.7%	n=38 40.9%	n=27 29%	n=1 1.1%	2.98±0.87

*1: Strongly Disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly Agree.

It was questioned which resource(s) the participants referred to in each of the three categories when evaluating PIM, drug-drug interaction, and drug-disease interaction in geriatric patients in their daily practice, and the results are presented in Table 5. While evaluating the PIM in their patients, 65.6% (n=61) of them, with the highest rate, stated that they referred to their own clinical experience.

While evaluating their patients' drug-drug interaction, it was seen that 62.4% of the participants referred to their clinical experience with the highest rate, and for the participants (n=55; 59.1%) who stated that they referred to websites and applications, the online sites are UpToDate Lexicomp (80%), Medscape (40%), WebMD (20%), Vademecum Online (12.7%) and ilacdata application (3.6%), respectively.

Table 5. The participants' rates of reference to resources in the fields of potentially inappropriate medication, drug-drug interaction, and drug-disease interaction for rational drug use in geriatric patients.*

	PIM	drug-drug interaction	drug-disease interaction
My clinical experience	n=61; 65.6%	n=58; 62.4%	n=62; 66.7%
Medicine leaflets	n=56; 60.2%	n=51; 54.8%	n=54; 58.1%
Websites and applications	n=47; 50.5%	n=55; 59.1%	n=35; 37.6%
Medicine books	n=28; 30.1%	n=31; 33.3%	n=37; 39.8%
National and international guides	n=20; 21.5%	n=24; 25.8%	n=28; 30.1%
International inappropriate drug criteria in the elderly patients	n=13; 14%	-**	-**
Drug interaction warnings in the e-prescription system	-**	n=28; 30.1%	-**
I'm not evaluating	n=5; 5.4%	n=4; 4.3%	n=8; 8.6%

*Multiple options can be selected. **This option is not provided as an option in the relevant section. PIM; potentially inappropriate medication

In addition, while the RDU approaches of the participants on geriatric patients were evaluated in terms of PIM, drug-drug interaction and drug-disease interaction in their daily practice, the barriers they experienced in front of RDU were questioned separately for each of the three sections, and the results are presented in Table 6.

At the end of the questionnaire, the proposal "drug-drug interaction with polypharmacy side effects, drug-chronic disease incompatibility, PIM in the elderly and RDU is important to me" was questioned using the five-point Likert method and the mean value was found to be 4.3±0.8. 75.3% of respondents (n=70) marked strongly agree and 18.3% marked agree (n=17) for the statement "I would like to have an easily accessible an artificial intelligence aided web application that I can use in my daily practice regarding polypharmacy side effects, such as drug-drug interactions, drug-chronic disease incompatibility, PIM in the elderly" and the mean value of this proposition was determined as 4.65±0.7.

In addition, the average values of the participants' responses to "I would like a web

application" proposition with a five-point Likert were calculated and compared with their responses to the obstacles they experienced for RDU in all three sections. Thus, it was tried to be revealed which obstacles cause the need for this web application more. Accordingly, the highest average scores of the participants who wanted a web application for polypharmacy were significantly the following four RDU barriers proposals: "Accessing up-to-date and reliable source from multiple sources is difficult", "Evaluating multiple sources at the same time and patient-specific drug regulation take time", and that is "difficult to do" and lastly, "Hearing it before but not knowing how to access to resources or applications" ($p<0.001$), respectively.

Table 6. Distribution of the positive responses of the participants to the relevant proposals regarding the obstacles they face in rational drug use in geriatric patients.*

	PIM	drug-drug interaction	drug-disease interaction
Criteria/guide/applications to be unheard of previously	n=52; 55.9%	n=26; 28%	n=25; 26.9%
Hearing it before but not knowing how to access resources or applications	n=27; 29%	n=51; 54.8%	n=17; 18.3%
Evaluating multiple sources at the same time and patient-specific drug regulation are difficult to do	n=17; 18.3%	n=37; 39.8%	n=35; 37.6%
Evaluating multiple sources at the same time and patient-specific drug regulation take time	n=15; 16.1%	n=41; 44.1%	n=42; 45.2%
Accessing up-to-date and reliable sources from multiple sources is difficult	n=7; 7.5%	n=23; 24.7%	n=28; 30.1%
Related applications are to be paid for	-**	n=10; 10.8%	n=6; 6.5%
Sources/criteria and applications to be in a foreign language	n=7; 7.5%	n=24; 25.8%	n=17; 18.3%

*Multiple options can be selected.
**This option is not provided among the potentially inappropriate medication (PIM) section options.

The answers given for when and how they learned the relevant international criteria in the approach to PIM and their answers to the statement "I would like to have a web application" were compared with the average score of the participants. Thus, the relation between the need for a web application and the received training was analyzed. Accordingly, the mean score values of the answers to the statement "I would like to have a web application" and corresponding training periods were as follows: the average score of the answers was 4.53±0.94, 4.63±0.52, and 4.79±0.36 for "those who did not receive training on the criteria before", for "those who received training on the license period", and for "those who received training during the residency training period", respectively. These results show a significant difference ($p<0.001$), and it was found that this need arises mostly during the residency training period, that is, during the period when residents are seeing geriatric patients mostly in their practice. It was observed that those who did not receive any training are not even aware of their needs in this regard.

Discussion

The concept of "deprescribing", which is the process of gradually discontinuing inappropriate drugs and should be supervised by a healthcare professional, is an important part of RDU and its purpose is to reduce the side effects of polypharmacy by ensuring the rational use of drugs [11,12]. This process requires attention, time, awareness, special skills and knowledge [7,11,12]. The ideal examination time was determined by the World Health Organization as 20 minutes minimum and a short consultation length is likely to adversely affect patient healthcare and physician workload and stress [13–15]. In recent conditions, it is not very possible for a physician to evaluate the patient holistically and to apply all protection steps appropriately due to the reasons such as the examination time to be determined as 5-10 minutes and the excess number of patients without appointment, and this brings along many iatrogenic problems [14,15]. In a qualitative study conducted in 2017 in Australia, health professionals, mostly family physicians, were

questioned about the obstacles they face in the management of multimorbidity and polypharmacy in elderly patients and it was concluded that, as an important factor in drug regulation, the biggest obstacle to make a joint decision with the patient is time constraint [16]. This situation was also revealed in the results of this study. One of the main obstacles faced by the participants in their practices regarding RDU was the option "evaluating multiple sources at the same time and making medication arrangements for patients take time and are difficult".

Between the years 2000-2019, 40 studies on "prescribing interventions for elderly" were systematically reviewed [17]. As a result, for family physicians, the most important barriers on "deprescribing" and RDU were "lack of evidence-based guidelines to use in practice in case of multiple diseases due to the fact that evidence-based guidelines focus on single disease management" and "lack of helpful decision-making systems and tools" [17]. In this study, the majority of the participants marked "strongly agree" and "agree" for the proposition "I would like to have an AI aided web application that will provide a holistic assessment of the patient's age, medications and chronic diseases". When the mean value of the answers given by the participants to this proposition with a five-point Likert scale was calculated, it was found to be 4.65±0.7. In addition, in practice the most common obstacles faced by the participants who want a web application for polypharmacy are mostly "accessing up-to-date and reliable sources from many sources is difficult" and "evaluating more than one source at the same time and making a medication arrangement for the patient is difficult and takes time". In this study, the participants stated that they refer to websites with a rate of 59.1% when evaluating drug-drug interactions, and they stated that they refer to UpToDate and Medscape sites at the highest rate. There are web applications for drug-drug interaction detection, however there are a few applications, or not at all, for PIM detection and drug-disease interaction in the elderly. As found in the literature, existing helpful web applications (*tools*) only provide information about the interaction of the drugs used by the patient with each other, rather than evaluating the patient holistically with their diseases and age [6]. According to these results, the study presents the need and demand for time-saving and facilitating auxiliary web applications to minimize PIM, drug-drug interaction, drug-chronic disease interaction in the elderly and to evaluate it in the light of current data to provide person-centered and comprehensive care in the clinician's practice [7].

In the study conducted in Australia in 2021 to determine the awareness of doctors and medical students about polypharmacy and "deprescribing", the awareness of medical students was found to be much lower than doctors, and it was seen that students' awareness increased after a little training on polypharmacy [18]. In this study, of those who had previously received training on PIM in elderly patients, 85.4% stated that they learned it during their residency training and 14.6% during medical school. Moreover, the mean values of the answers given by the five-point Likert scale to the proposition "I would like a web application" by the participants, who previously received training on PIM criteria in geriatric patients, was higher than the mean values of the answers given to the same proposition by the participants who did not receive any training on this subject, and during their training period in specialization and in their practical applications it was determined that this desire had the highest mean value, and was statistically significant. This situation shows that the need for helpful and facilitating web applications increases as the residents' awareness of the RDU and their need in practice increase.

Over the last thirty years, criteria to determine PIM in elderly have been published around the world. Beers' criteria, which are the most important of these criteria, have been widely adopted and studied in many countries [19–21]. In this study, the most common criteria that participants knew about PIM in the elderly were Beers and Stopp/Start criteria, and it can be said that the results were similar to the literature.

In this study, the proportion of the participants applying the PIM criteria was found to be 14% only. When evaluating geriatric patients, the participants stated that they refer to clinical

experience, medicine leaflets and websites at the highest rate. As a result of the qualitative systematic review study that investigated the barriers to "deprescribing" on PIM in elderly patients by clinicians, published in 2014, identified the most common barriers to be "lack of awareness" and "not paying attention even in the case of awareness" [22]. In a study conducted in Germany [23], in which health professionals took part, the barriers and facilitators of the Stopp/Start criteria used in daily practice were questioned. Among the obstacles related to the health system, the lack of time was identified as one of the important factors. Furthermore, the follow-up of a patient by a physician was stated as one of the facilitating factors [23]. Similar to the literature, due to the highest reference rate to clinical experience in RDU, in this study it was concluded that the awareness of the participants was low in terms of the relevant international criteria for PIM in elderly patients, and even if they were aware, they were not used effectively in practice. The mean values of the answers in all three parts of the questionnaire given by the participants to the proposition "I have sufficient knowledge on PIM/drug-drug interaction/drug-disease interaction for my geriatric patients", on a five-point Likert scale, was below 3 points, which we considered as the median. Also, the mean values of the answers given to the proposition "I regulate medication by consulting the relevant resources about PIM/drug-drug interaction/drug-disease interaction" was below 3 points, indicating that the participants think that they do not have sufficient knowledge on RDU, however they regulate medication based on their own experiences without consulting the references. This situation poses a risk both for the patient's health and satisfaction, and for the physician's professional and job satisfaction.

The fact that almost all of the references on RDU in this study were published in a foreign language is one of the obstacles to RDU in the clinician's practice. Therefore, this study showed that auxiliary applications should be prepared in the national language, and it is necessary to create and make them widespread to help health professionals in their daily practice.

The main limitations of our study are that the study was conducted in a single center and our sample size was not sufficient.

Conclusion

This study showed that relevant international criteria and guidelines on RDU in detecting polypharmacy and its complications were not used adequately and appropriately by family medicine residents. It was found that the main obstacles to this are the difficulty in managing the related process and the fact that it takes a lot of time. It is important to use the criteria and guidelines in practice more often for prevention of polypharmacy side effects such as drug-drug interactions, drug-disease interactions, and detection of inappropriate medications. The criteria and guidelines for this need to be rearranged by healthcare providers in terms of advanced age and multimorbidity, according to international standards and taking the nations' unique situations into account. In addition, it is a necessity for all physicians, especially family physicians, the auxiliary applications to become widespread to enable these resources to be more easily accessible in clinical practice. It was found that specialization education and practices bring this need to the forefront and cause awareness. This study offers a solution proposal to bring a web application into daily practice as it will be effective in managing the related issues.

Conflict of interest: The authors declare that there is no conflict of interest. The authors alone are responsible for the content and writing of the paper. **Financial disclosure:** There is no financial support for this study.

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