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Editorial

EVALUATION OF FACTORS AFFECTING DRUG CHOICE OF PHYSICIANS

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Abstract: In this study, previous studied were investigated and the factors affecting the physicians' choice of medication was tried to be determined. Kahramanmaraş Sütçü İmam University electronic library, Sagem, Pubmed and Google academics were utilized in literature search conducted between November 15, 2016 and January 15, 2017. When searching, the keywords "physician's choice of drugs, physician's influence, prescriptions, prescription writing" were used in Turkish/English searches and 42 studies were found. Data were analyzed using SPSS 20.0 package program. In the studies, it was determined that 24 different factors affect the physicians' choice of drugs, and the most frequently cited factors were found to be the originality of the drug, the price of the drug, the level of education of the physicians, the drug efficacy and the socioeconomic status of the patients. In addition, these factors were grouped under three factors as technical, patient and social, factors and it was revealed that the most mentioned factor was the technical factor, whereas the least mentioned factor was the social factor in the studies.

Key Words: Drug, Prescription, Drug Choice of Physicians

Introduction

We need to explain the difference between drug and medicine to avoid the complexity of meaning in the study. Drug is a substance that is often considered a stimulant, hallucinogen and narcotic. In short it can be said that a drug is stimulating in nature and purpose, and it especially causes addiction (differencebetween.com, 05.07.2017). Medicine is a special industrial product used in the treatment of diseases with prescriptions written by physicians (Akıcı, 2013). As explained above, medicine can be taken as a type of drug (pediaa.com, 05.07.2017). As a result, drug concept has been used throughout the study because medicine is considered as one of the drugs.

Special industrial products of drug are an invaluable resource for all health care institutions and are seen as an indicator of the quality of health services in the world. The reason for this is the use of effective medicines in treatment for prevention of diseases or deaths that will occur in countries (Afriyie and Raymond, 2014). In 1985, the "rational drug use" was initiated by the World Health Organization for reasons such as managing this sector, which is very important for the countries, preventing unnecessary use of drugs and lowering the costs to the minimum. Rational drug use (RDU) is the provision of the most suitable drugs easily according to the clinical manifestation and individual characteristics of the individuals, at appropriate dosage as soon as possible, at the most affordable cost (World Health Organization, 1985). RDU has four important principles: drug efficacy, cost, suitability and safety. The efficacy refers to getting the desired effects of the medicine as soon as possible. Cost refers to low cost of treatment. Suitability refers to ease of administering the drug. And, safety refers to acceptable level of adverse effects of the drug (Nak, 2012). Twelve major corrective actions have been identified by the World Health Organization to encourage the rational drug use in all countries. These include establishing an institution that coordinates and monitors the use of drugs, exploiting clinical diagnosis and treatment guidelines, establishing a basic drug list, establishing medication and treatment boards in hospitals and regions, providing case-based pharmacotherapy training prior to graduation, providing continuous in-service training in institutions, developing the monitoring, assessment and feedback systems with the institutional framework, use of objective information sources about drugs, informing the public about drugs, avoiding unethical fiscal initiatives, implementing the appropriate and compulsory regulations and ensuring the availability of drugs and personnel (World Health Organization, 2002).

The right patient, the right medication, the right indication, the right information and the right follow-up are the basic criteria for rational drug use. Especially, the first three criteria are very important during prescribing (Toklu and Dülger, 2011). In this part, the physician factor emerges and the physician becomes primary factor in the rational drug use since the physician performs the diagnosis and writes the prescription by choosing the most appropriate drug among the available ones (Demirkıran and Şahin, 2010). Therefore, it is stated that physicians need to clearly define the problem of the patient, to identify appropriate treatment materials, to select appropriate drug treatment, to initiate the treatment, to inform, to warn, to regularly evaluate the treatment and to consider the cost when prescribing (Pollock et al., 2007). It was emphasized that non-rational prescribing resulted in increased morbidity and mortality rates, increased prices, increased adverse effects, unnecessary use of resources and reduced the

access to drugs of other vital importance and that caused antimicrobial resistance (Chatuverdi et al., 2012). For example, antimicrobial resistance (AMR) means that the microorganism, previously susceptible to antimicrobial treatment, becomes insensitive later. According to the data published by the OECD, AMR was the main underlying cause of approximately 700,000 deaths in 2014 worldwide. The AMR rate of OECD countries has been increased from 10% in 2005 to 15% in 2014. In Iceland, which is the country with the least AMR, this ratio was found to increase from 1% in 2005 to 4% on average in 2014. According to the most recent data, it was the highest in Greece (approximately 45%), followed by Turkey (about 40%). In addition, it was found that antimicrobials accounted for approximately 3% of total value of drug sales in 2014 (OECD, 2016).

In the study conducted by Denig (1994), the factors that affect prescribing of physicians have been grouped under 3 factors. These include technical factors (such as the age, behavior, education of the physician, pharmaceutical companies, scientific studies), patient factors (such as the patient's age, gender, socioeconomic status, demands) and social factors (such as health care systems and the cultural structure of the community). This classification was used as basis in this study and the factors affecting the physicians' choice of drugs was investigated.

Material and Method

Objective of the Study

The study aims to examine the studies on the factors affecting the drug choices of the physicians, to determine and analyze the factors that are believed to have the major impact on these choices.

Scope and Limitations of the Study

The scope of the research constitutes studies conducted related to the subject. Since all studies cannot be reached, the studies conducted in the last two decades were evaluated. Kahramanmaraş Sütçü İmam University electronic library, Sagem, Pubmed and Google academics were utilized in the literature search between November 15, 2016 and January 15, 2017; and, 42 studies were found in these searches. Covering only the studies in the last two decades, inability to reach all the relevant studies conducted and the inability to calculate the effects of differences in the conditions of each era (such as the socio-economic situation [welfare level] of the countries) on each study were the limitations of this study.

Research Method

Content analysis method was tried to be applied in the study. Content analysis is a research tool used to determine the presence of certain words or concept within texts or sets of texts (umsl.edu, 05.07.2017). The classification made by Denig (1994) (technical, patient and social factors) was taken as basis and the factors identified were grouped under these factors. When searching, the keywords "physician's choice of drugs, physician's influence, prescriptions, prescription writing" were used in Turkish/English searches. The results were evaluated with SPSS 20.0 program and frequency analysis was used to analyze. The most emphasized factors in the reviewed studies were examined. For this reason, it should be emphasized that "the most mentioned factor does not mean the most important factor".

Findings

In this section, 42 studies were analyzed for assessment. Table 1 below shows the author, year, sampling, and method used in these studies in detail.

Table 1. Analysis of the Studies Evaluated

Author and Year of Studies	Sampling of Study (Physician or Prescription)	Method of Study
Abulhaj vd., 2013	364 physician	Survey Method (Correlation and regression analysis)
Akici vd., 2004	53 physician	Survey Method (Correlation analysis, chi square test, t test)
Aksoy, 2005	1770 prescription	Evaluation of Prescription (One-way analysis of variance, chi square test, t test)
Arab vd., 2014	421 physician	Survey Method (T test, one-way analysis of variance)
Armstrong ve Ogden, 2006	18 physician	Information gathering with interview
Babalola vd., 2010	30 prescription	Evaluation of Prescription (Chi square test)
Başaran ve Akıcı, 2013	136 physician	Survey Method (Chi square test)
Britten ve Ukoumunne, 1997	15 physician	Survey Method (Regression analysis)
Bülbüloğlu, 2014	251 physician	Survey Method (Regression analysis)
Chew vd., 2000	131 physician	Survey Method (Chi square test)
Chua vd., 2010	87 physician	Survey Method (Chi square test)
Cosentino vd., 1999	162 physician	Survey Method (Chi square test)
Demirkıran ve Şahin, 2010	380 physician	Survey Method (T test)
Doğancı, 2015	331 physician	Survey Method (T test)
Elpiniki vd., 2013	210 physician	Survey Method (Chi square test and regression analysis)
Erah vd., 2013	2000 prescription	Evaluation of Prescription (Chi square test)
Ferreira vd., 2013	2411 prescription	Evaluation of Prescription (Chi square test)
Figueiras vd., 2000	405 physician	Survey Method (Regression analysis)
Flores ve Cuevas, 2006	121 physician	Survey Method (Chi square test)
Hossain vd., 2013	500 physician	Survey Method (Frequency distribution)
Ibrahim ve Belanger, 2015	106 physician	Survey Method (Frequency distribution)
Kamuhabwa ve Kisoma, 2015	364 physician	Survey Method (Chi square test)
Kasliwal, 2013	431 physician	Survey Method (Anova and z test)
Kayi vd., 2015	28 physician	Information gathering with interview
Kisa, 2006	156 physician	Survey Method (T test)

Hartono vd., 2014	160 physician	Survey Method (Chi square test)
Lewek vd., 2014	170 physician	Survey Method (Chi square test)
Ljunberg vd., 2007	15 physician	Information gathering with interview
Magzoub vd., 2011	87 physician	Survey Method (Correlation and regression analysis)
Narendran ve Narendranathan, 2013	50 physician	Survey Method (Frequency distribution)
Pavin vd., 2003	1350 prescription	Evaluation of Prescription (Chi square test)
Prasad vd., 2014	1070 prescription	Evaluation of Prescription (Frequency distribution)
Schumock vd., 2004	150 physician	Survey Method (Anova)
Shafi, 2014	100 physician	Survey Method (Frequency distribution)
Shamim-ul-Haq vd., 2014	260 physician	Survey Method (Regression analysis)
Soremekun ve Omitiran, 2014	504 physician	Survey Method (Chi square test)
Sumana ve Shetti, 2015	310 prescription	Evaluation of Prescription (Frequency distribution)
Supakankunti ve Yousif, 2016	197 physician	Survey Method (Regression analysis)
Sweileh vd., 2004	214 physician	Survey Method (Frequency distribution)
Öztürk vd., 2008	123 physician	Survey Method (Chi square test)
Theodorou vd., 2009	1145 physician	Survey Method (Frequency distribution)
Vançelik vd., 2006	152 physician	Survey Method (Frequency distribution)

According to Table 1, 76.19% (32/42) of the studies reached had been conducted in the last decade. It was determined that 83.3% (35/42) of the studies were conducted through the expressions of the physicians and 16.7% (7/42) were conducted by evaluating the prescriptions. It was determined that the survey method was used in 76.1% (32/42) of the studies and 40.4% (17/42) of the studies was found to choose chi-square test when analyzing the data.

In Table 2 given below, the classification method (technical factor, patient factor and social factor) determined by Denig (1994) was utilized. Technical factors are factors related to physicians and pharmaceutical companies. Scientific studies (such as articles) can be considered under this factor as well. Patient factors are patient-related factors. Patient's age, gender, socio-economic status and demands can be given as an example to this. Social factors are factors such as health care systems and the cultural structure of the society.

Table 2. Classification of Factors Affecting Drug Selection by Physicians

	Technical Factor	Patient Factor	Social Factor
Abulhaj vd., 2013	+	+	-
Akici vd., 2004	+	-	-
Aksoy, 2005	+	-	-
Arab vd., 2014	-	+	-
Armstrong ve Ogden, 2006	+	-	+
Babalola vd., 2010	+	-	-
Başaran ve Akıcı, 2013	+	-	-
Britten ve Ukoumunne, 1997	-	+	-
Bülbüloğlu, 2014	+	-	+
Chew vd., 2000	+	+	-
Chua vd., 2010	+	+	-
Cosentino vd., 1999	+	-	-
Demirkıran ve Şahin, 2010	+	-	-
Doğancı, 2015	+	-	-
Elpiniki vd., 2013	+	-	-
Erah vd., 2013	+	+	-
Ferreira vd., 2013	-	-	+
Figueiras vd., 2000	+	+	+
Flores ve Cuevas, 2006	+	-	-
Hossain vd., 2013	+	-	-
Ibrahim ve Belanger, 2015	+	+	+
Kamuhabwa ve Kisoma, 2015	+	+	+
Kasliwal, 2013	+	-	-
Kayi vd., 2015	+	+	-
Kisa, 2006	+	+	-
Hartono vd., 2014	+	+	-
Lewek vd., 2014	+	-	-
Ljunberg vd., 2007	+	-	-
Magzoub vd., 2011	+	-	-
Narendran ve Narendranathan, 2013	+	-	-
Pavin vd., 2003	+	-	-
Prasad vd., 2014	+	-	-
Schumock vd., 2004	+	-	-
Shafi, 2014	+	+	-
Shamim-ul-Haq vd., 2014	+	-	-
Soremekun ve Omitiran, 2014	+	-	-
Sumana ve Shetti, 2015	+	-	-
Supakankunti ve Yousif, 2016	+	-	-
Sweileh vd., 2004	+	+	+
Öztürk vd., 2008	+	+	-
Theodorou vd., 2009	+	+	-
Vançelik vd., 2006	+	-	-

According to Table 2, 92.82% of the studies (39/42) indicated that the technical factor is the major factor affecting the physicians' choice of drugs. This rate is followed by patient factor by 38.1% (16/42) and social factor by 16.7% (7/42). In order to better understand these factors used in classification should be examined in more detail. The factors included in the technical, patient and social factors are given in detail in Table 3 below

Table 3. Evaluation of Technical, Patient and Social Factors

Factors		Studies
TECHNICAL FACTOR	Training provided to physicians	Aksoy, 2005; Başaran ve Akıcı, 2013; Cosentino vd., 1999; Flores ve Cuevas, 2006; Figueiras vd., 2000; Kisa, 2006; Magzoub vd., 2011; Schumock vd., 2004; Supakankunti ve Yousif, 2016; Öztürk vd., 2008
	Being an original drug	Babalola vd., 2010; Bülbüloğlu, 2014; Chua vd., 2010; Hossain vd., 2013; Lewek vd., 2014; Narendran ve Narendranathan, 2013; Pavin vd., 2003; Prasad vd., 2014; Shamim-ul-Haq vd., 2014; Sumana ve Shetti, 2015
	Price of drugs	Abulhaj vd., 2013; Akici vd., 2004; Başaran ve Akıcı, 2013; Bülbüloğlu, 2014; Chew vd., 2000; Erah vd., 2013; Lewek vd., 2014; Ljunberg vd., 2007; Shafi, 2014
	Drug efficacy	Demirkıran ve Şahin, 2010; Kamuhabwa ve Kisoma, 2015; Hartono vd., 2014; Schumock vd., 2004; Shafi, 2014; Soremekun ve Omitiran, 2014; Sweileh vd., 2004; Theodorou vd., 2009; Vançelik vd., 2006
	Magazines, Articles and Brochures	Kayi vd., 2015; Kisa, 2006; Narendran ve Narendranathan, 2013; Schumock vd., 2004; Shafi, 2014; Soremekun ve Omitiran, 2014; Theodorou vd., 2009
	Experience	Armstrong ve Ogden, 2006; Başaran ve Akıcı, 2013; Bülbüloğlu, 2014; Elpiniki vd., 2013; Magzoub vd., 2011; Supakankunti ve Yousif, 2016
	Opinions of colleagues	Başaran ve Akıcı, 2013; Chua vd., 2010; Doğancı, 2015; Kayi vd., 2015; Kisa, 2006; Ljunberg vd., 2007
	Representatives	Ibrahim ve Belanger, 2015; Kayi vd., 2015; Kisa, 2006; Shafi, 2014
	Drug safety	Demirkıran ve Şahin, 2010; Erah vd., 2013; Schumock vd., 2004; Vançelik vd., 2006
	Advertisements of pharmaceutical companies	Abulhaj vd., 2013; Başaran ve Akıcı, 2013; Ibrahim ve Belanger, 2015
	Difference between public and private hospitals	Elpiniki vd., 2013; Erah vd., 2013; Kamuhabwa ve Kisoma, 2015;
	General activities of pharmaceutical companies	Figueiras vd., 2000; Kasliwal, 2013; Narendran ve Narendranathan, 2013
	Hospital policies	Ibrahim ve Belanger, 2015
	Satisfaction with medication and adherence	Doğancı, 2015
	Basic drug list	Babalola vd., 2010
	Promotions of pharmaceutical companies	Shamim-ul-Haq vd., 2014
	Number of medication in prescription	Akici vd., 2004
PATIENT FACTOR	Socio-economic status of patients	Erah vd., 2013; Figueiras vd., 2000; Ibrahim ve Belanger, 2015; Kayi vd., 2015; Kisa, 2006; Hartono vd., 2014; Sweileh vd., 2004; Theodorou vd., 2009
	Requests of patients and relatives	Abulhaj vd., 2013; Britten ve Ukomunne, 1997; Chew vd., 2000; Kamuhabwa ve Kisoma, 2015; Shafi, 2014; Öztürk vd., 2008
	The age of the patient	Arab vd., 2014
SOCIAL FACTOR	Accessibility of the drug	Ferreira vd., 2013; Kamuhabwa ve Kisoma, 2015; Sweileh vd., 2004

Whether the medicine is domestically produced	Bülbüloğlu, 2014
Health system structure	Armstrong ve Ogden, 2006
Influence of the reforms	Figueiras vd., 2000

According to Table 3, there are 17 factors under the technical factors. It was observed that the most emphasized factors in the selection of medicines by the physicians were the "originality of drugs, education of physicians, drug efficacy, experience, drug costs, drug safety and scientific studies (such as articles, journals)". When the patient factor was examined, 3 main factors were identified. In the studies, it was determined that "the socio-economic status and the demands of the patient" were the most emphasized factors. Finally, 4 main factors were identified among the social factors, and it was observed that "drug availability" was the most emphasized factor.

Discussion

One of the most common examples of non-rational drug use is inappropriate and unnecessary drug prescribing. In addition, medication errors are the second most common cause of events affecting patient safety. The inadequate education and awareness of physicians are seen as the most important reasons of this outcome (Aydın and Gelal, 2012). As a result of the assessments, it was observed that 23.80% of the studies had reported "training of physicians" as the most influential factor that affects physicians' choice. In this context, we can say that the training given at the undergraduate level and both the in-service and outside training should be provided continuously and the awareness of physicians should be increased in order to maintain RDU awareness.

Patented drugs that have proven activity as a result of serious investment and long studies are called original drugs. These drugs are protected in many parts of the world with patent protection rights and strong laws and are not allowed to produce the same drug for a certain period of time. Generic (equivalent) drugs are started to be produced after this period is over and these drugs are the same in terms of both pharmaceutical value and bioequivalence with the original drug. Particularly the countries that want to reduce their health expenditures tend to use generic drugs due to their cost advantages. Although it varies from country to country, it is known that generic drugs are 20-80% cheaper than original drugs (Çetin and Arıcıoğlu, 2009). As a result of the assessments, it was observed that 23.80% of the studies had reported "originality of drugs" as the most influential factor that affects physicians' choice. Therefore, we can say that physicians should be encouraged more to prefer generic drugs.

The main criteria affecting drug choice are "efficacy, safety, suitability and cost of treatment". That is to say, drug's ability to show the desired effects (efficacy), acceptable levels of adverse effects (safety), ease of use and availability of the drug (suitability) and the low cost induced to patients (cost of treatment) are the main criteria (İskit, 2006). As a result of the reviews, it was observed that the most influential factors affecting the physicians' choices were "drug efficacy" by 21.42%, "drug price" by 21.42%, "socio-economic status of the patient" by 19.04%, "drug safety" by 9.52%, and "availability of the drug" by 7.14%.

One of the topics that has started to be addressed in the agenda of both healthcare professionals and the public today is the promotion activities of pharmaceutical companies.

Illegal methods, such as making medication introductions through reputable scientists, biased scientific studies and giving gifts to physicians in exchange for the prescriptions of desired drugs, and even the activities within the legal framework, have begun to be seriously criticized by various circles in terms of ethics. It is known that such activities have a negative effect on the social position of the profession, the physician-patient relationship, the health of the individual and the community as well as increasing the costs (Cinaver, 2014). As a result of the evaluations made, the factors most influential in the physicians' choices were determined as "representatives" by 9.52%, "advertisements of pharmaceutical companies" by 7.14%, "general activities of pharmaceutical companies" by 7.14% and "promotions of pharmaceutical companies" by 2.38%.

Results

In this study, previous studied were investigated and the factors affecting the physicians' choice of medication was tried to be determined. In the studies, it was determined that 24 different factors affect the physicians' choice of drugs, and the most frequently cited factors were found to be the originality of the drug, the price of the drug, the level of education of the physicians, the drug efficacy and the socioeconomic status of the patients. In addition, these factors were grouped under three factors as technical, patient and social, factors and it was revealed that the most mentioned factor was the technical factor, whereas the least mentioned factor was the social factor in the studies.

It is seen that there are many individual studies related to the determination of the factors affecting the physicians' selection of medicines. In this study, these studies were examined in detail and the factors that emphasized the most were determined to arrive an overall conclusion. So it is believed that this study will contribute to the literature with doctor's selection of drugs and affecting factors of this. For future research, scope of study may be expandable with literature research and meta analysis or comprehensive research studies can be done for decider.

References

Abulhaj, E., Elsamen, A. & Alabbadi, I. (2013). Investigating the factors affecting doctor's prescribing behavior in Jordan: Anti-hypertensive drugs as an example. *European Journal of Social Sciences*, 28(2), 380-391.

Afriyie, D.K. & Raymond, T. (2014). A description of the pattern of rational drug use in Ghana Police Hospital. *International Journal of Pharmacy and Pharmacology*, 3(1), 143-148.

Akıcı, A. (2013). *Topluma yönelik akılcı ilaç kullanımı*. Sosyal Güvenlik Kurumu Başkanlığı, Ankara.

Akici, A., Kalaça, S., Gören, M.Z., Akkan, G., Karaalp, A., Demir, D., Uğurlu, Ü. & Oktay, Ş. (2004). Comparison of rational pharmacotherapy decision-making competence of general practitioners with intern doctors. *Eur. J. Clin. Pharmacol*., 60, 75-82.

Aksoy, Ş. (2005). Reçetelerin reçeteleme göstergelerine göre incelenmesi: Ankara il merkezi örneği. *Yüksek Lisans Tezi*. Ankara Üniversitesi Sağlık Bilimler Enst., Ankara.

Arab, M., Torabipour, A., Rahimifrooshani, A., Rashidian, A., Fadai, N. & Askarl, R. (2014). Factors affecting family physicians' drug prescribing: A cross-sectional study in Khuzestan, Iran. *International Journal of Health Policy ana Management*, 3(7), 377-381.

Armstrong, D. & Ogden, J. (2006). The role of etiquette and experimentation in explaining how doctors change behaviour: A qualitative study. *Sociology of Health & Illness*, 28(7), 951-968.

Aydın, B. & Gelal, A. (2012). Akılcı ilaç kullanımı: Yaygınlaştırılması ve tıp eğitiminin rolü. *DEÜ Tıp Fakültesi Dergisi*, 26(1), 57-63.

Babalola, C.P., Awoleye, S.A., Akinyemi, J.O. & Kotila, O.A. (2011). Evaluation of prescription pattern in Osun State (Southwest) Nigeria. *Journal of Public Health and Epidemiology*, 3(3), 94-98.

Başaran, N.F. & Akici, A. (2013). Aspects of physicians' attitudes towards the rational use of drugs at a training and research hospital: A survey study. *Eur. J. Clin. Pharmacol*., 69(1), 1581-1587.

Britten, N. & Ukomunne, O. (1997). The influence of patients hopes of receiving a prescription on doctors perceptions and the decision prescribe. *The BMJ*, 315, 1-13.

Bülbüloğlu, S. (2014). The influencers of prescription decision and the relationship between doctos ethnocentric tendencies and prescription decision. *PhD Thesis*. Yeditepe University Graduate Instıtude of Social Science, İstanbul.

Chatuverdi, M., Mathur, C. & Anand, S. (2012). Rational drug use-as common as common sense?.*Medical Journal Armed Forces India*, 68, 206-208.

Chew, L.D., Theresa, S., Young, O. & Hazlet K. (2000). A physician survey of the effect of drug sample availability on physicians' behavior. *J. Gen. Intern. Med*., 15, 478-489.

Chua, G.N., Hassali, M., Shafie, A. & Awaisu, A. (2010). A survey exploring knowledge and perceptions of general practitioners towards the use of generic medicines in northern state of Malaysia. *Health Policy*, 95, 229-235.

Cinaver, M. (2014). İlaç şirketlerinin pazarlama yöntemleri. *Türk Psikiyatri Dergisi*, 19(3), 310-317.

Cosentino, M., Leoni, O., Oria, C. & Michhielotto, D. (1999). Hospital based survey of doctors' attitudes to adverse drug reactions and perception of drug-related risk for adverse reaction occurrence. *Pharmacoepidemiology and Drug Safety*, 8, 27-35.

Çetin, M. & Arıcıoğlu, F. (2009). Orijinal ilaç, eşdeğer ilaç tartışmaları üzerine. *Klinik Psikofarmakoloji Bülteni*, 19, 211-213

Demirkıran, M. & Şahin, B. (2010). Pratisyen hekimlerin ilaç seçimlerini etkileyen faktörlere ilişkin değerlendirmeleri. *Hacettepe Sağlık İdaresi Dergisi*, 13(1), 1-28.

Denig, P. (1994). *Drug choice in medical practice*. University of Groningen, Holland.

Difference Between Web Site. (2017). Key Difference - Drug vs medicine. http://www.differencebetween.com/difference-between-drug-and-vs-medicine (Date of Access: 05.07.2017).

Doğancı, İ.B. (2015). Multidimensional factors on prescription behavior and their impact on prescription behavior. *PhD Thesis*. Bahçeşehir University Graduate School of Social Sciences, İstanbul.

Elpiniki, F., Eirini, C.V., Dimitra, S.P., Maria, S., Maria, R. & Souliotis, K. (2013). Knowledge and attitudes of Greek physicians towards generic prescribing after the economic crisis. *International Journal of Pharma Sciences and Research*, 4(10), 125-133.

Erah, P., Olumide, G.O. & Okhamafe, A. (2003). Prescribing practices in two health care facilities in Warri, Southern Nigeria: A comparative study. *Tropical Journal of Pharmaceutical Research*, 2(1), 175-182.

Ferreira, M., Heineck, I., Flores, L. & Camargo, A. (2013). Ratioanal use of medicines: Prescribing indicators at different levels of health care. *Brazilian Journal of Pharmaceutical Sciences*, 49(2), 329-340.

Figueiras, A., Caamano, F. & Otero, J. (2000). Influence of physician's education, drug information and medical-care settings on the quality of drugs prescribed. *Eur. J. Clin. Pharmacol*., 56, 747-753.

Flores, S., Reyes, H. & Cuevas, R.P. (2006). Influence of physician factors on the effectiveness of a continuing medical education intervention. *Fam. Med*., 38(7), 511-517.

Hartono, S., Sumarwan, U. & Suharjo, B. (2014). Model of physician decision making process on prescribing prescription drugs in Indonesia. *International Journal of Information Technology and Business Management*, 24(1), 1-10.

Hossain, M., Kawsar, S., Tanmy, T. & Yousuf, A. (2013). Assesment of influencing factors on prescription practices of physicians in Bangladesh. *International Research Journal of Pharmacy*, 4(8), 112-116.

Ibrahim, I.A. & Belanger, C. (2015). Pharmaceutical Representatives and Prescription Decisions by physicians in Suudi Arabia. *Journal of Marketing Managemet*, 3(2), 69-79.

Iskit, A. (2006). Akılcı ilaç kullanımı. *Sted*, 15(7), 3-5

Kamuhabwa, A. & Kisoma, S. (2015). Factors influencing prescribing practices of medical practitioners in public and private health facilities in Dar es Salaam, Tanzania. *Tropical Journal of Pharmaceutical Research*, 14(11), 2107-2113.

Kasliwal, N. (2013). A study of physhosocial factors on doctors prescribing behavior-an empiricial study in India. *IOSR Journal of Business and Management*, 13(2), 5-10.

Kayi, E., Atinga, R. & Ansa, G. (2015). Informational sources on pharmaceutical medicines and factors affecting medication prescriptions: Perspectives from Ghanaian physicians. *Journal of Medical Marketing*, 1, 1-6.

Kisa, S. (2006). Factors that influence prescribing decisions among Turkish physicians. *Clinical Research and Regulatory Affairs*, 23(3), 177-189.

Lewek, P., Smigielski, J. & Kardas, P. (2015). Factors affecting the opinions of family physicians regarding generic drugs – A questionnaire based study. *Bosnian Journal of Basic Medical Sciences*, 15(1), 45-50.

Ljungberg, C., Lindblad, A. & Tully, M. (2007). Hospital doctors' views of factors influencing their prescribing. *Journal of Evaluation in Clinical Practice*, 13, 765-771.

Magzoub, M., Khoja, T., Qureshi, N., Haycox, A. & Walley, T. (2011). Determinants of physicians' medication prescribing behaviour in primary care in Riyadh City, Suudi Arabia. *Eastern Mediterrenean Health Journal*, 17(2), 160-166.

Nak, A. (2012). *Akılcı ilaç kullanımı*. Sağlık Bakanlığı – İlaç ve Tıbbi Cihazlar Kurumu, Ankara.

Narendran, R. & Narendranathan, M. (2013). Influence of pharmaceutical marketing on prescription practices of physicians. *The Journal of the Indian Medical Association*, 111(1), 47-50.

OECD (2016). *Antimicrobial resistance – policy insights*, http://www.oecd.org/health/antimicrobial-resistance.htm (Date of Access: 17.01.2017).

Öztürk, İ., Avcı, İ., Coşkun, Ö., Gül, H. & Eyigün, C. (2008). Birinci basamak sağlık kuruluşunda görev yapan hekimlerin sık görülen toplum kaynaklı enfeksiyonlardaki antibiyotik seçimleri ve bunu etkileyen faktörler. *Fırat Tıp Dergisi*, 13(4), 255-260.

Pavin, M., Nurgozhin, T., Hafner, G., Yusufy, F. & Laing, R. (2003). Prescribing practices of rural primary health care physicians in Uzbekistan. *Tropical Medicine and International Health*, 8(2), 182-190.

PEDIAA. (2017). Difference Between Drug and Medicine. http://pediaa.com/difference-between-drug-and-medicine (Erişim Tarihi: 05.07.2017).

Pollock, M., Bazaldua, O. & Dobbie, A. (2007). Appropriate prescribing of medications: An eight-step approach. *American Family Physician*, 72(2), 231-236.

Prasad, N., Jagadeesh, K. & Revankar, S. (2014). Study of ratioanality of prescriptions & analysis of drugs prescribed among in patients of Mcgann Teaching Hospital, India. *IOSR Journal of Dental and Medical Sciences*, 13(7), 30-35.

Schumock, G., Walton, S., Park, H., Nutescu, E., Blackburn, J., Finley, J. & Lewis, R. (2004). Factors that influence prescribing decisions. *The Annals of Pharmacotherapy*, 38, 557-562.

Shafi, V. (2014). Prescribing behavior of physicians in Karachi, Pakistan. *World Journal of Pharmaceutical Research*, 3(3), 3528-3536.

Shamim-ul-Haq, S., Ahmed, R., Ahmad, N., Khoso, I. & Parmar, V. (2014). Factors influencing prescription behavior of physicians. *The Pharma Innovation Journal*, 3(5), 30-35.

Soremekun, R. & Omitiran, B. (2014). Factors affecting physicians' prescription and pattern of prescription in the management of secondary infertility. *African Journal of Pharmacy and Pharmacology*, 8(48), 1205-1212.

Sumana, M.H. & Shetti, S.A. (2015). Prescription analysis of drugs used in outpatient department of dermatology at tertiary care hospital. *Asian Journal of Biomedical and Pharmaceutical Sciences*, 5(46), 13-15.

Supakankunti, S. & Yousif, B. (2016). Factors influencing the general practitioners' number of prescribed drugs in national health insurance at Gezira State. *International Journal of Business and Social Science*, 7(1), 213-219.

Sweileh, W., Jaradat, N., Barham, A. & Barakat, A. (2004). Pharmacological and pharmaceutical factors affecting physician's and pharmacist's selection of drugs. *An-Najah Univ. Res.*, 18(1), 87-96.

Theodorou, M., Tsiantou, V., Pavlakis, A., Maniadakis, N., Fragoulakis, V., Pavi, E. & Kyriopoulos, J. (2009). Factors influencing prescribing behaviour of physicians in Greece and Cypus: Results from a questionnaire based survey. *BMC Health Sevices Research*, 9, 1-9.

Toklu, H.Z. & Dülger, G. (2011). Akılcı ilaç kullanımı ve eczacının rolü. *Marmara Pharmaceutical Journal*, 15, 89-93.

UMSL Web Site. (2017). An Introduction to Content Analysis. http://umsl.edu/~wilmarthp/mrpc-web-resources/content-analysis.pdf (Date of Access: 05.07.2017).

Vançelik, S., Çalıkoğlu, O., Güraksın, A. & Beyhun, E. (2006). Pratisyen hekimlerin reçete yazımını şekillendiren faktörler ve akılcı ilaç kullanım kriterlerini önemseme durumları. *Hacettepe Üniversitesi Eczacılık Fakültesi Dergisi*, 26(2), 65-75.

WHO (1985). *The rational use of drugs*. Report of the Conference of Experts Nairobi, Kenya.

WHO (2002). *Promoting rational use of medicines: Core components*. WHO Policy Perspectives on Medicines, Geneva.