

AİLE HEKİMLİĞİ POLİKLİNİĞİNE BAŞVURAN HASTALARIN ANTİBİYOTİKLER İLE İLGİLİ BİLGİ DÜZEYİ VE DAVRANIŞLARININ DEĞERLENDİRİLMESİ

AN ASSESSMENT OF ANTIBIOTICS-RELATED KNOWLEDGE LEVELS AND BEHAVIORS OF PATIENTS PRESENTING TO FAMILY PRACTICE CENTERS

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Ankara Eğt. Arş. Hast. Derg. (Med. J. Ankara Tr. Res. Hosp.) Cilt / Volume: 52 Sayı / Number: 2 Yıl / Year: 2019 ISSN:1304-6187
Sayfa/Page :112-116

Geliş Tarihi / Submitted : Mayıs 2019 / May 2019

Kabul Tarihi / Accepted : Haziran 2019 / June 2019

ABSTRACT

INTRODUCTION: The aim of study is to evaluate the knowledge level and behaviors of the patients who applied to the family practice center on antibiotics.

MATERIALS AND METHODS: This is a descriptive type study. In the study a questionnaire with 43 questions was applied face to face to 250 individuals who admitted to the family practice centers evaluating the socio-demographic characteristics and knowledge and behaviors about antibiotics. Data analysis was performed by using descriptive statistical methods (mean, standard deviation, frequency) and chi-square test in SPSS 22.0 program. $p < 0,05$ was considered statistically significant.

RESULTS: The mean age of the 250 participants was $39,23 \pm 14,86$ (min=15-max=82). Of participants, 62.8% (n=157) stated that they had an infection in the last year. Of participants, 58.8% (n= 147) used antibiotics at least once. While 28.0% (n=70) had substitute antibiotics at home, 37.6% did not know the purpose of antibiotic use. The rate of non-prescription antibiotics use in the last one year was 10.0% (n=25). It was determined that young people used more antibiotics without prescription ($p < 0,01$). Men were less aware of the purpose of antibiotic use than women ($p = 0,001$), and the low-level educated group had more false information ($p = 0,011$). The most important source of information on antibiotics was doctors 62.4% (n=156). Seniors were using television and the young adults were using the internet more as source of information ($p = 0,08$; $p = 0,02$).

CONCLUSION: It was determined that the participants did not have sufficient knowledge level for rational antibiotic use and this was reflected in their behaviors. The most important factor for rational antibiotic use is physicians and there is a need for training programs that will use appropriate communication methods according to age and education level. Family physicians, who play an important role in raising the awareness of the society, should be more active in education.

Key words: Antibiotics, rational antibiotic use, patient

ÖZET

AMAÇ: Çalışma, aile hekimliği polikliniğine başvuran hastaların antibiyotiklere dair bilgi düzeylerini ve davranışlarını değerlendirmek amacıyla yapılmıştır.

GEREÇ VE YÖNTEM: Bu tanımlayıcı tipte bir çalışmadır. Araştırmada sosyo-demografik özellikleri, antibiyotik hakkında bilgi ve davranışları değerlendiren aile hekimliği merkezlerine başvuran 250 kişiye yüz yüze 43 sorudan oluşan bir anket uygulanmıştır. Veri analizleri SPSS 22.0 programında, tanımlayıcı istatistiksel yöntemler (ortalama, standart sapma, frekans) ve Ki-kare testi kullanılarak yapıldı. $p < 0,05$ istatistiksel olarak anlamlı kabul edildi.

BULGULAR: Çalışmaya katılan 250 kişinin yaş ortalaması $39,23 \pm 14,86$ (min 15-maks 82) idi. Katılımcıların %62,8'i (n = 157) geçen yıl enfeksiyon geçirdiğini belirtmiştir. Katılımcıların %58,8'i (n = 147) en az bir kez antibiyotik kullanmıştır. %28,0'ı (n = 70) evde yedek antibiyotik bulundururken, %37,6'sı antibiyotik kullanımının amacını bilmiyordu. Son bir yılda reçetesiz antibiyotik kullanım oranı %10,0 idi (n = 25). Gençlerin daha fazla reçetesiz antibiyotik kullandığı tespit edildi ($p < 0,01$). Antibiyotik kullanım amacını erkekler kadınlardan daha az biliyordu ($p = 0,001$), eğitim seviyesi düşük grup daha fazla yanlış bilgi sahibiydi ($p = 0,011$). En önemli bilgi kaynağı hekim %62,4'i (n=156) olarak görülse de yaşlılar televizyonu, genç erişkinler interneti daha fazla bilgi kaynağı olarak kullanıyordu ($p = 0,08$; $p = 0,02$).

SONUÇ: Çalışmaya katılan kişilerin akılcı antibiyotik kullanımı için yeterli bilgi düzeyine sahip olmadığı, bu durumun tutum ve davranışlarına yansdığı belirlendi. Akılcı antibiyotik kullanımı için en önemli unsur hekimler olup yaşa ve eğitim düzeyine göre uygun iletişim yöntemleri kullanılacak eğitim programlarına ihtiyaç vardır. Toplumun bilinçlendirilmesinde önemli rolü olan aile hekimlerinin eğitimde daha aktif rol almaları uygun olacaktır.

Anahtar Kelimeler: Antibiyotikler, akılcı antibiyotik kullanımı, hastalar

INTRODUCTION

Antibiotics are bioactive substances that can be produced biologically or synthetically and that stop or

kill microorganisms (1). They are widely used to treat infections of humans and animals and to support the growth of animals. Antibiotics, which have historically

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contributed significantly to the health of people, are unconsciously and widely consumed in recent years, and this threatens both individual health and the health of society and the environment (2).

Approximately 10.200 tons of antibiotics were consumed in the European Union countries, half of them was used to support growth of animals (3). Of antibiotics, 90% are excreted from the body without being metabolized. Therefore, large amounts of antibiotics can be found in the human and animal faeces in the environment (4). Antibiotics are among the most consumed drugs in our country as well. Taking the drug expenditures into account, antibiotics are the highest expenditure statement after digestive system drugs (5).

Rational drug use is defined as patients' receiving medications in doses that meet their treatments, for an adequate period, and at the lowest cost to them and their community (6). The source of error in rational drug use may be physicians, patients, nurses, pharmaceutical companies, and pharmacies (7). In this study, we examined the antibiotics-related knowledge levels, information sources, and behaviors of the patients. To reduce the irrational use of antibiotics in Turkey, we aimed to show the knowledge levels and expectations of patients presenting to family medicine centers.

MATERIAL AND METHOD

The study was carried out with the questionnaire applied to the patients presenting to the family medicine center affiliated with the public hospital in Tekirdag's Marmara Ereglisi district. The study was conducted in January 2019 for one month. Individuals under the age of 18, mentally ill patients and non-volunteers were excluded from the study. The questionnaire consisted of a total of 43 multiple choice and open-ended questions to find out about the participants' demographic characteristics, antibiotic use frequency over the past year, and knowledge level.

The participants in the 18-25 age range were grouped as young adults, 26-65 age range as middle-aged, and 66 and over as seniors. Moreover, those who were illiterate and primary and secondary school graduates were grouped as the low-educational-level group whereas those who were high school or over graduates were grouped as the high-educational-level group. Considering the minimum wage, a monthly income of 0-2050 TL for a household was considered as low-income, 2051- 4000 TL middle-income, and 4001 and above high-income.

Data were analyzed using SPSS 22.0 statistical package program. In addition to descriptive statistical methods (mean, standard deviation, frequency), the Chi-square test was used to compare data between the groups. The confidence interval was set at 95% and statistical significance at $p < 0.05$.

RESULTS

The mean age of the 250 participants was 39.23 ± 14.86

(min=15-max=82). The socio-demographic characteristics of the participants are given in **Table 1**.

Table 1 Socio-demographic characteristics of the study group

AGE	18-25	n	%
	26-65	50	20
	66 and over	183	73.2
		17	6.8
GENDER	Male	124	49.6
	Female	126	50.4
MARITAL STATUS	Married	184	73.6
	Single	63	25.2
	Divorced	3	1.2
MONTHLY INCOME	Low	76	30.4
	Average	108	43.2
	High	66	26.4
BIRTH PLACE-Regional	Thrace	81	32.4
	Others	169	67.6
EDUCATIONAL STATUS	Illiterate	8	3.2
	Primary school	71	28.4
	Secondary school	36	14.4
	High school	67	26.8
	university	68	27.2

Chronic diseases were present in 26.8% (n=67) of the participants. Of participants, 22.8% (n=57) were taking regular medication. 7.6% (n=19) had chronic heart disease, 6.0% (n=15) hypertension, 3.2% (n=8) asthma, and 1.7% (n=4) diabetes. Of participants, 5.2% (n=3) used antibiotics regularly, and 22.0% (n=55) used other drugs (antihypertensive, antidiabetic, hyperlipidemic, asthma medications).

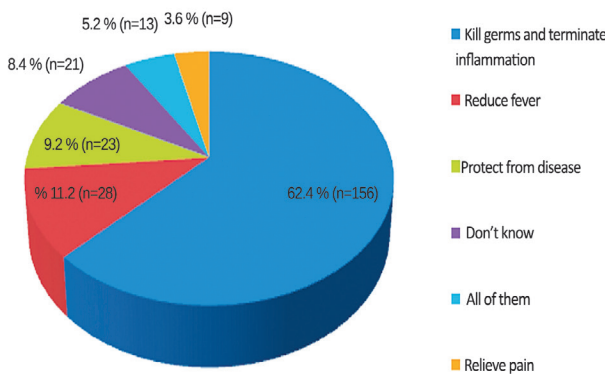
The rate of participants which presented to center for themselves was 78.0% (n=195), while 22.0% (n=55) for their children. Of participants, 38.8% (n=97) presented due to cold, 12.4% (n=31) chronic disease, 7.2% (n=18) urinary problems, 0.4% (n=1) diarrhea and 41.2% (n=103) due to other reasons.

The rate of those who stated that they had frequent antibiotics at home were 28.0% and 62.8% (n=157) stated that they had an infection or disease over the past year. Of these participants, 32.8% (n=82) had upper respiratory tract infection (URTI), 15.2% (n=38) urinary tract infection (UTI), 4.8% (n=12) lung, 2.4% (n=6) teeth, 1.6% (n=4) ear, and 1.2% (n=3) skin infection. 4.8% (n=12) had other chronic diseases. 58.8% (n=147) had used antibiotics over the past year. The rate of participants using antibiotics without prescription over the past year was 10.0% (n=25).

Of the participants, 88.2% (n=143) stated that they

used antibiotics prescribed by their doctors, 4.9% (n=8) of their own accord, 4.9% (n=8) at the advice of their family, 1.2% (n=2) nurses, and 0.6% (n=1) at the advice of pharmacists.

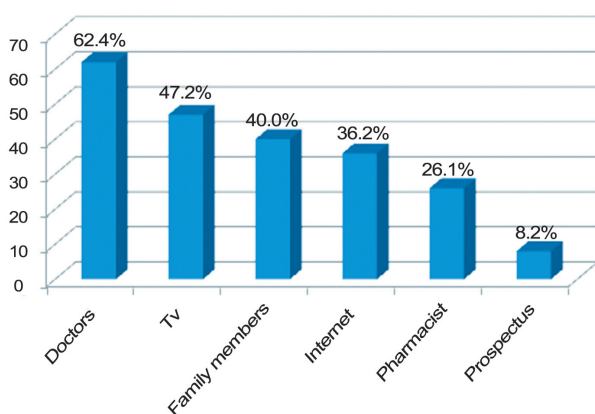
Of the participants, 28.0% (n=70) had antibiotics at home; of these antibiotics, 92.8% (n=65) were leftover, 5.7% (n=4) taken from relatives-neighbours, and 1.4% (n=1) drug sample. 17.6% (n=44) of the study group did not know the side effects of antibiotics. The answers to the question of the purpose of using antibiotics are given in **Graph 1**.



Graph 1 The answers to the question of the purpose of using antibiotics

Of the participants 141 (56.4%) stated that they used antibiotics until the end of the period recommended by their physicians, 123 (49.2%) until the complaint was over and 84 (33.1%) until all the antibiotics in the box were used.

The distribution of the antibiotics-related information sources of the participants is given in **Graph 2**.



Graph 2 Antibiotics-related information sources

While 11.2% (n=20) of the young adult group and 8.9% (n=5) of the middle-aged group used antibiotics

without a prescription, the senior group reported none. The seniors reported less antibiotic use (p=0.010). Most of the seniors stated that they stopped using antibiotics when their complaint was over (p=0.024). Although the majority of the participants considered doctors as the most important information source about antibiotics (62.4%;n=156), the elderly and the married people used television while young adults and the bachelors used the Internet as the most important information source (p=0.08; p=0.022).

It was determined that over the past year, women had more infections (p<0.01) and thus used more antibiotics at more frequent intervals (p=0.002; p=0.005). UTI was more common in women (p<0.01) than men.

Men (25.8%; n=32) were less aware of the side effects of antibiotics than women (9.5%; n=12) (p=0.001). The number of female participants who disagreed with the statements 'I stop using antibiotics when my complaint is over,' and 'I can ask my doctor to prescribe antibiotics,' was more than male participants (p=0.015; p=0.011). Married participants had more chronic diseases (p=0.02), used antibiotics more frequently (p=0.021), had more antibiotics available at home (p=0.023) and stopped using antibiotics when their complaint was over (p=0.001).

Low-educational-level group had more chronic diseases, used more medicines (p<0.01; p<0.01), and used antibiotics more frequently (p=0.01), they were less aware of the purpose of antibiotic use than the high-educational-level (p=0.011). The ratio of stopping antibiotics when the complaint was over was higher in the low-educational-level group (p<0.01).

The analysis of the responses of the participants to the antibiotic approach questions according to their level of education presented in **Table 2**.

It was determined that the participants who were born in Thrace had more chronic diseases and infections over the past year (p=0.040; p=0.021), and more URTI (p=0.031). The low-income group was less aware of the purpose of antibiotic use (p<0.01).

DISCUSSION

Antibiotics are among the most critical drug groups in the world and in our country with no rational drug use. Approximately 35% of the health budgets of developing countries are spent on antibiotics. According to 2017 health expenditure data, 11.8% of the total drug expenses were spent on antibiotics. In OECD countries, this rate is 8.1% (5).

Between 1995 and 2011, 65% of people with flu symptoms and 50.8% of people with cold symptoms used antibiotics in England (8). In 2017, the rate of antibiotic prescription by family physicians was 25% in Turkey (5).

Table 2 The analysis of the responses of the participants to the antibiotic approach questions according to their level of education

EDUCATIONAL LEVEL	I AGREE		NOT SURE				NOT AGREE				P value		
	High		Low		High		Low		High			Low	
	%	n	%	n	%	n	%	n	%	n		%	n
Colds may also improve without antibiotics.	70.4	95	73.9	85	11.1	15	13	15	18.5	25	13	15	>0,05
I stop the antibiotic when my complaint goes away.	45.9	62	67.8	78	5.9	8	4.3	5	48.1	65	27.8	33	0,02
Random use may render antibiotics ineffective.	80	108	80	92	14.8	17	13.3	18	6.7	9	5.2	6	>0,05
I can want the doctor to write antibiotics.	22.2	30	34.8	40	7.4	10	7.8	9	70.4	95	57.4	66	>0,05
I can't trust the doctor who doesn't prescribe antibiotics.	21.5	29	31.3	36	4.4	6	9.6	11	74.1	100	59.1	68	0,034
I like to use antibiotics.	7.5	10	7.8	9	3.7	5	2.6	3	88.8	119	89.6	103	>0,05

In the present study, the rate of patients who had an infection over the past year was 62.8% (n=157) and who used antibiotics at least once was 58.8%.

A study conducted in Greece reported that 74.6% of parents and 22.7% of their children used antibiotics without prescription (9). In Malta, 19% of adults and 11% of children used antibiotics without prescription (10). A study conducted in Turkey determined that 23.2% of people used over-the-counter drugs and 39.5% of them were antibiotics (11). In our study 10% of the participants stated that they used antibiotics without prescription. The fact that one out of every ten people uses antibiotics without a prescription is a significant problem. Awareness-raising of the society, the correct use of the media and the development of educational projects are essential for reducing this ratio.

In Cameroon, 14.2% of those with dental problems used antibiotics without a prescription and that women used antibiotics without a prescription more than men (12). The use of over-the-counter drugs in Turkey was found to be the highest among educated students and singles (13). Another study reported using antibiotics without a prescription as 12.9%, noting that it is more common in women, people with low incomes, and young people (14). In our study, using antibiotics without a prescription was more common in young adults. However, it did not differ according to gender, marital status, educational level, and monthly income level.

A study from Spain determined that the rate of availability of spare antibiotics at home was 37% (15). In a study conducted in Mersin, this rate was found to be 31% (13). The present study determined this rate as 28%, which is consistent with the literature. Availability of spare antibiotics at home indicates that the patients misused antibiotics and might misuse them again for future

complaints. The proper disposal of antibiotics is also vital for environmental health. To reduce these high rates, awareness-raising programs should be designed, and our society should be made aware of the rules of drug disposal.

A study conducted in China found that 31% of the participant mothers administered antibiotics when their children developed URTI while another multicenter study in Switzerland found that (in countries such as Monaco, Thailand, Turkey, and Colombia) patients with URTI expected their doctors to prescribe antibiotics (17). In the present study, female participants stated that they could ask their doctors to prescribe antibiotics more than male participants. Also, 28% stated that they did not believe that one can recover from cold without using antibiotics while 26% stated that they did not trust the doctors who do not prescribe antibiotics. Considering these data, it can be argued that 25-30% of the participants presented to the doctor with the expectation of their doctors to prescribe antibiotics, which is consistent with the literature. This indicates that some patients insist on their doctors prescribing antibiotics, that they might present to other doctors when their doctors do not prescribe antibiotics, and that it is sometimes difficult for doctors to convince their patients not to use antibiotics.

A study conducted in Malaysia found that 68% of the participants used antibiotics for fever and cough (18) while another study conducted with immigrant groups in New York found that most of the participants (78.9%) thought that antibiotics are used to relieve pain (19). In the present study, 26.4% of the participants had wrong information about the purpose of antibiotics (reduce fever, relieve pain and others) while 11.2% were unaware of its purposes. More male participants were unaware of the purpose of antibiotics than female (p=0.001). In a study conducted in Sweden, 90% of the participants

agreed with the statement 'When the person feels good, although he/she has not completed his/her antibiotic treatment, he/she can stop using the antibiotics' (20). In our study half of the participants agreed with the statement 'I stop using antibiotics when I feel good'. It was also found that female participants, low-educational-level group and low-income group stated that they stopped using antibiotics when their complaint was over more than their counterparts. On the basis of these data, we can argue that raising awareness of the principles of rational antibiotic use through structured educational programs covering people of all ages in the community or through appropriate public service announcements will be beneficial for both present-day and future generations.

In a study conducted with mothers who presented to the health centers for their children in Italy, mothers stated that their information sources about antibiotics were health professionals and their own experience (21). In a study conducted in Turkey on the information source, 49% stated that their information source was TV, 44.8% doctors, 30.5% the Internet, 40% family members, and 21.4% pharmacists (22). In our study, 62.4% stated that their information source was doctors. The fact that television is seen as the most useful information source after doctors suggests that public service announcements, which have increased in number in recent years, have been effective on the society. Especially older people watch more television, so it is expected that they will refer to television as their information source. The fact that 40.8% of the study participants referred to their family members and neighbors as their information source is both consistent with other studies in Turkey and indicates the neighboring relations arising from the traditional structure of our society (22). This fact, which can be seen as a factor in the misuse of antibiotics, suggests that the correct behavioral patterns can be disseminated more easily with the right education and awareness-raising programs.

Especially young adults, obtained information about antibiotics from the Internet. When planning training programs for young adults, it would be appropriate to use the Internet as a tool.

CONCLUSION

The present study concluded that the participants did not have sufficient information about the rational use of antibiotics. It is seen that lack of knowledge is reflected in their behaviors, leading to the irrational use of antibiotics. The most important task on the rational use of antibiotics is on the shoulders of us, doctors. Expectations and insistence of the patients lead to misuse and overuse of antibiotics. Therefore, it is vital that all health professionals, especially family physicians, pay attention to this subject and do their best to inform their patients about the rational use of antibiotics.

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