

The Attitude of a Sample of Turkish Women to Antibiotic Use and Affecting Factors

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Abstract: This study was performed to determine the attitude of women to antibiotic use and factors affecting the antibiotic use in women. The sample group of the study was comprised of 217 women who were selected by a random-sampling method. Most of the women stated that they used the antibiotics prescribed by a physician; nearly half of them used the antibiotics improperly and also a quarter of them used antibiotics to treat viral infections. The proper use of drugs improved with the increasing educational and income levels. Erratic antibiotic usage was common in women.

Key words: Antibiotic use in women, irrational antibiotic use, affecting factors, attitude

INTRODUCTION

Bacterial infections, which still present a great problem for human beings today, are usually treated with antibiotics. Antibiotics are the most commonly consumed drugs in the world and resistance to them stems from their unnecessary and inappropriate usage (Birol *et al.*, 2004; Radyowijati and Haak, 2003; Goossens *et al.*, 2005; Buke *et al.*, 2005). The gravity of the problem of antimicrobial resistance continues to receive global attention, as evidenced by the pan-European meeting in Copenhagen (European Union Conference, 1998). Given this escalation in resistance and the overwhelming evidence of over use of antibiotics, the pragmatic and essential approach to control antibiotic resistance is control of antibiotic use (Ridley *et al.*, 1970; Ballow and Schentag, 1992; Meyer *et al.*, 1993).

National differences exist among countries for adherence to prescribed antibiotic treatments. Still, about 125,000 deaths occur each year due to either not finishing or incorrect use of the prescribed antibiotic treatments. United Kingdom takes the first place with a 90% adherence rate to antibiotic treatment while Türkiye takes fourth place with a 70% adherence rate. Children, adolescents and elderly people comprise the age groups which are the worst for staying with and finishing their antibiotic treatment.

Awareness of the entire community but particularly women, who are the mothers and caretakers of families, play an important role in the way antibiotics are used,

doses, duration of use and individual differences and allergy to antibiotics. Therefore, the goal of this study was to determine the attitude of a sample of Turkish women either for themselves or their children to antibiotic use and to evaluate the factors affecting the use of antibiotics.

MATERIALS AND METHODS

Sample and settings: The study determined the antibiotic use and affecting factors of antibiotic use in women living in Talas, Kayseri.

Kayseri, one of the largest cities in Middle Anatolia, is a commercially and industrially-developed city. According to the results of the General Population Census of 2000 the total population of the city of Kayseri was 1.060.432 of which 732.354 people inhabit the city centre, counties and towns while 328.078 live in villages (Prime Ministry of Turkish, 2004; Republic of Türkiye, 2004). The average household of Kayseri Province had 4.6 persons in 2000. There were 370 children per 1000 fertile women in 2000. The number of children per woman has decreased by 56% for the past 25 years. Women between the ages of "45-49" gave birth to 5.9 children in 1970, whereas the average was 4.1 in 2000 (Kayseri Kocasinan Municipality, 2004).

Totally, there are five (central) towns of Kayseri. Primarily these centers had listed and then Talas town had been determined by simple random sample method. According to the results of the General Population

Census of 2000 Republic of Türkiye, Prime Ministry Turkish Statistical Institute the total population of the Talas town was 34.879 of which 5032 married women lived in 6 district area of Talas (Prime Ministry of Turkish, 2004; Republic of Türkiye, 2004; Kayseri Kocasinan Municipality, 2004; Kayseri Talas Municipality, 2004). There are 6 primer health services, two public hospital and a few private physician offices in Talas (Kayseri Talas Municipality, 2004).

Firstly, women population was determined living 6 district area. According to the population density, of 18% infection rate (Prime Ministry of Turkish, 2004), 5% tolerance value, 0.05 alphas and beta values population of study were determined in this study. Two hundred and seventeen women who had used or given to antibiotics to their children within the last month were calculated (Table 1). And for sampling, odd number of house was chosen in each district.

Questionnaires and data collection: The data were collected with questionnaire forms arranged by the researchers. Questionnaire form composed of 44 questions was used to determine the socio-demographic features as well as attitude of the women either for themselves or their children to antibiotic use and to evaluate the factors affecting the use of antibiotics. This form was prepared according to literature (Birolet *et al.*, 2004; Radyowijati and Haak, 2003; Karna and Akalin, 1994; Farr *et al.*, 2001; Martelli and Mattioli, 2000; Erol *et al.*, 2004; Saez-Llorens *et al.*, 2000). A pilot study was conducted on 20 women who had used antibiotics to determine the validity of the questionnaire form and the last design of the questionnaire form was given after this pilot study. The women who participated in the pilot study were not included in the sampling group.

Data were collected between 3rd and 26th January 2004 using the questionnaire form with a face-to-face interview in women house. The study was made up by women who were voluntary and present at home at the time of the research. All the women who participated in the study were informed about the project orally and also their written consents were taken. All of the women agreed to participate in the study. This study was conducted in accordance with the ethical principles of the Declaration of Helsinki (Revised October, 2000).

Table 1: Calculated of sample

District	No. of women	Weight of district	No. of sample
Kiçiköy	1410	1410/5032 = 0.280	0.280×217 = 61
Bahçelievler	2459	2459/5032 = 0.488	0.488×217 = 106
Harman	670	670/5032 = 0.133	0.133×217 = 29
Han	208	208/5032 = 0.041	0.041×217 = 9
Yukari	105	105/5032 = 0.020	0.020×217 = 4
Tablakaya	180	180/5032 = 0.035	0.035×217 = 8
Total	5032		217

Data analysis: Data were analyzed using Statistical Program for the Social Sciences (SPSS, Chicago, IL) 11.0 for Windows. Descriptive statistics were generated for demographic and women's attitude to antibiotic use variables. Chi square test were carried out to compare mean differences between groups. An alpha level of p less than 0.05 was considered statistically significant for all analyses.

RESULTS

Two hundred and seventeen women who participated in the study, the socio-demographic characteristics of the women are listed in Table 2.

Twenty eight and 1/10% (28.1%) of the women used antibiotics without infectious diseases (Table 3). 55.8% of the women used antibiotics every one-three months. Side effects occurred in 16.1% of them and one of the most side effects was diarrhea (36.1%).

Fifty and 7/10% (50.7%) of the women used their antibiotics for the recommended time. The percentage of use of antibiotics advised by their neighbors who had similar symptoms was 10.6% without prescription. In addition, 31.8% of the women used the same antibiotic previously prescribed by their physician for illnesses occurring at a later time and 71.0% of them did not visit the physician after completing the antibiotic use.

It was determined that, % 65.0 of the 41 and older age women used of antibiotic intervals were not properly in this study. Nineteen and 7/10% (19.7%) of the women between 20-40 years of age used the antibiotic for the recommended time period (p<0.05) and only 30.7% of them

Table 2: Socio-demographic characteristic of women (n = 217)

Characteristics	(%)
Age in years	
20-30	37.8
31-40	25.4
41-50	23.9
51-60	10.1
>60	2.8
Educational status	
Uneducated	12
Primary/secondary school	51.6
High school/university	36.4
Marital status	
Married	81.1
Single	18.9
Income level	
High	20.3
Middle	71.4
Low	8.3

Table 3: Reasons for using of antibiotics (n = 217)

Reasons	(%)
Infectious diseases	71.0
Common cold	25.3
Pain	2.8
Don't remember	0.9

Table 4: Distribution of the age groups according to features of antibiotic use of the women

Features of antibiotic use	Age groups				p
	20-40		41 and older		
	n	(%)	n	(%)	
Usage intervals					
Properly	79	57.7	28	35.0	
Not properly	58	42.3	52	65.0	<0.05
Duration of antibiotic use					
Until the antibiotic finishes	69	50.4	45	56.3	
Until the disappearance of the symptoms	41	29.9	30	37.5	
As advised by the physician	27	19.7	5	6.2	<0.05
Using the same antibiotic with the neighbour with same symptoms					
User	38	27.7	31	38.7	
Nonuser	99	72.3	49	61.3	>0.05
Visiting the physician after antibiotic treatment					
Visiting	42	30.7	21	26.2	
Not visiting	95	69.3	59	73.8	>0.05

Table 5: The educational level according to antibiotic use of the women

Antibiotic use	Education				p
	Uneducated and primary /secondary school		High school and over		
	n	(%)	n	(%)	
Usage intervals					
Properly	59	42.8	48	60.8	
Not properly	79	57.2	31	39.2	<0.05
Duration of antibiotic use					
Until the antibiotic finishes	76	55.1	38	48.1	
Until the disappearance of the symptoms	49	35.5	22	27.8	
As advised by the physician	13	9.4	19	24.1	<0.05
Using the same antibiotic with the neighbour with same symptoms					
User	39	28.3	30	37.9	
Nonuser	99	71.7	49	62.1	>0.05
Visiting the physician after antibiotic treatment					
Visiting	43	31.2	20	25.3	
Not visiting	95	68.8	59	74.7	>0.05

visited the physician after completing the antibiotic use ($p>0.05$) than 41 years of age and older did. In addition, 41 years of age and older group used antibiotics (38.7%) advised by their neighbors who experienced similar symptoms ($p>0.05$) (Table 4).

Fifty seven and 2/10% (57.2%) of the women who uneducated or primary/secondary school graduated used the antibiotic improperly and 9.4 % of them followed the duration of antibiotic use advised by the physician than the women who graduated high school or had a higher educational level did ($p<0.05$) (Table 5).

When antibiotic usage was compared to income level, 61.1% of the women with low-income levels used previously-prescribed antibiotics to treat subsequent illness compared to the women with a higher income level ($p<0.05$).

DISCUSSION

There have been many previous studies showing erratic antibiotic usage in Republic of Türkiye and all

over the world (Biroel *et al.*, 2004; Goossens *et al.*, 2005; Sardon, 2001; Tabak, 1997). Although, in the present study most of the women stated that they used the antibiotics prescribed by a physician, nearly half of them used the antibiotics improperly and also a quarter of them used antibiotics to treat viral infections. Furthermore, it was determined that one in tenth of the women used the same antibiotics used by a neighbor for the similar illness symptoms. In the study of Buke *et al.* (2005) that was conducted on university students, 44.1% of the students used antibiotics improperly and without prescription by a physician and over 80% of the students used antibiotics for the common cold (Buke *et al.*, 2005). In a previous study conducted in nine countries to evaluate the adherence rate to antibiotic treatment in different patient groups, the mean adherence rate was found to be 69% (Tabak, 1997). In the same study, the existence of national differences was reported with regard to the correct following of antibiotic treatment (Tabak, 1997).

Concerning the results of previous studies and the present study, it is shown that erratic antibiotic use is

common. Misuse of antibiotics may result in liver and kidney disorders as well as development of resistance against antibiotics due to their improper and unnecessary use against viral infections (Rodyowijati and Haak, 2003; Goossens *et al.*, 2005; Steven, 2002; Berild *et al.*, 2001; Al-Lawati *et al.*, 2000).

Recurrence of infections may be seen due to the improper use of antibiotics that results in lower drug level in a person's circulation. In the present study, the rate of antibiotic use within the time period advised by the physician increased in the young group while decreasing in those who were older.

Approaches to health issues and increases in knowledge about healthcare are closely related to educational status. In this study, the proper use of drugs improved with the increasing educational level.

Decreases in the financial support from the national budget for health care are an important issue in developing countries. In this study, the rate of use of antibiotics already present at home was higher among women with low or very low income levels.

Limitations: This study has a number of limitations. The primary limitation is that, although the larger study was adequately powered, our sub sample of 217 women was not large enough to achieve statistical significance. Nevertheless, differences in attitude about use of antibiotic were so small. This study was also limited in not determining women behavior of erratic antibiotic use. Much more qualitative research is required about antibiotic use in women.

CONCLUSION

The results of this study have shown;

- It is essential in our country to change the legal regulations to prevent the sale of antibiotics without a doctor's decision or prescription.
- It is primarily the role and responsibility of women to administer antibiotics. Therefore, it is very important and should be a high priority to provide health education programs for women in order to create a social consciousness in our society.

REFERENCES

- Al-Lawati, A.M., N.D. Crouch and K.M. Elhag, 2000. Antibiotic consumption and development of resistance among gram-negative bacilli in intensive care units in Oman. *Ann. Saudi Med.*, 20: 324-327.
- Ballow, C.H. and J.J Schentag, 1992. Trends in antibiotic utilization and bacterial resistance. *Diagn. Microbiol. Infect. Dis.*, 15: 27S-42S.
- Berild, D., S.H. Ringerts and M. Lelek *et al.*, 2001. Antibiotic guidelines lead to reductions in the use and cost antibiotics in a university hospital. *Second Infec. Dis.*, 33: 63-67.
- Birol, L., N. Akdemir and T. Bedük, 2004. *Medical Nursing (çhastalıkları hem ireli i)*. Ankara: Sistem Offset Press.
- Buke, C., H.M. Limoncu and Ermertcan *et al.*, 2005. Irrational use of antibiotics among university students. *J. Infec.*, 51: 135-139.
- Erol, S., Z. Özkurt and M. Ertek *et al.*, 2004. The cost and dosage of antibiotic use in one day in hospitalized patients (Hastanede yatan hastalarda bir günlük antibiyotik kullanımı ve maliyeti). *Hospital Infec. J.*, 1: 45-46.
- Farr, B.M., C.D. Salgado and T.B. Karchmer *et al.*, 2001. Can antibiotic-resistant nasocomial infections be controlled? *Lancet Infec. Dis.*, 1: 38-45.
- Goossens, H., M. Ferech and R.V. Stichele *et al.*, 2005. Outpatient antibiotic use in Europe and association with resistance: A cross-national database study. *Lancet*, 12: 579-587.
- Karna, G. and E. Akalin, 1994. *Empiric Antibiotic Treatment (Empirik antibiyotik tedavisi)*. Ankara: Published by Association of Infection Disease. Güne° Press.
- Kayseri Kocasinan Municipality (on-line), 2004. Available at: <http://www.kocasinan-bld.gov.tr>. Accessed.
- Kayseri Talas Municipality (on-line), 2004. Available at: http://www.talas.gov.tr/talas_saglik_spor.asp. Accessed.
- Martelli, A. and F. Mattioli, 2000. A retrospective study showing the misuse of prophylactic antibiotics in patients under going appendectomy and cholecystectomy, *Curr. Therapeutic Res.*, 61: 534-539.
- Meyer, K.S., C. Urban and J.A. Eagan *et al.*, 1993. Nosocomial out break of Klebsiella: infection resistant to late generation cephalosporins. *Ann. Int. Med.*, 119: 353-358.
- Prime Ministry of Turkish Republic, 2004. Turkish Statistical Institute. Population and Development Indicators. (on-line). Available at: http://www.die.gov.tr/nufus_sayimi/2000tablo. Accessed.
- Radyowijati, A. and H. Haak, 2003. Improving antibiotic use in low-income countries: An overview of evidence on determinants. *Soc. Sci., Med.*, 5: 733-744.
- Report from the invitational European Union conference, 1998. On the microbial threat. The Copenhagen Recommendations. Copenhagen, Denmark.
- Republic of Türkiye, 2004. Kayseri Governorship. Social and Demographic Indicators (on-line). Available at: <http://www.kayseri.gov.tr/demografik>. Accessed.

- Ridley, M., R. Lynn and D. Barrie *et al.*, 1970. Antibiotic resistant *Staphylococcus aureus* and hospital antibiotic policies. *Lancet*, pp: 230-231.
- Saez-Llorens, X., M.M.C De Wong and E. Castano *et al.*, 2000. Impact of antibiotic restriction policy on hospital expenditures and bacterial susceptibilities: A lesson from a paediatric institution in a developing country. *Paediatric Infec. Dis. J.*, 19: 207-212.
- Sardon, Ç.Y., 2001. Use of antibiotic and patient accommodation. (Antibiyotik kullanımı ve hasta uyumu) *Hacettepe Med. J.*, 32: 342-346.
- Stevens, M.L., 2002. Antibiotics. *JAMA.*, 15: 74-80.
- Tabak, F., 1997. Antibiotic use in clinics (Klinikte antibiyotik kullanımı). *istanbul: University of Istanbul Cerrahpa a Medical Faculty Symposium of Antibiotic use in Practice*, pp: 81-90.