



International Journal of Scientific Research in Dental and Medical Sciences

www.ijrdms.com



Awareness of Antibiotics and Analgesics Use in Marmara University Hospital

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ARTICLE INFO

Article history:

Received 30 August 2019

Received in revised form 21 October 2019

Accepted 12 November 2019

Available online 21 December 2019

Keywords:

Analgesics

Antibiotics

Antibiotic resistance

Oral health

ABSTRACT

Background and aim: Inappropriate use of antibiotics and non-narcotic analgesics may lead to adverse side effects. This survey aimed to investigate the awareness, knowledge, and attitudes of patients regarding the dental use of antibiotics and non-narcotic analgesics.

Material and methods: The questionnaire which contained 20 questions was prepared based on similar surveys. The survey with a validated self-administered questionnaire carried out among patients administered to the Department of Endodontics of Marmara University. The questionnaires were given from and retrieved by the same operator. Patients' identities remained anonymous. The questionnaire included questions about accessibility, attitude toward usage, efficacy, side effects, resistance, and usage for dental issues.

Results: Of all questionnaires distributed, 92.5% were deemed usable. The most frequently used self-medication was non-narcotic analgesics (33%), followed by antibiotics (15%). Of the respondents, 82% reported they knew about the correct time of antibiotic use; however, only 67% of them followed that. Most of the respondents (52%) reported quitting the antibiotic use when they believed they were better. The most frequent reasons for antibiotic use were to relieve dental pain (35%), and after root canal treatment (38%). In case of swelling, 31% reported they should take a course of antibiotics before a dental visit.

Conclusion: This survey revealed the misuse of antibiotics and non-narcotic analgesics associated with many misconceptions and inadequate knowledge. Also, the necessity of antibiotics and non-narcotic analgesics to treat dental disease and after dental procedures were unclear for the respondents.

1. Introduction

With the help of antibiotics, the severity of many infections may have alleviated, or their treatment may have ensured.^[1] However, patients' inappropriate use of antibiotics may cause several side effects, ranging from gastrointestinal disturbances to anaphylactic shock.^[2] Furthermore, this inappropriate use of antibiotics may also cause an increase in resistant bacteria strains.^[2,3]

Pain is one of the main symptoms encountered in dentistry. Thus, analgesics are medications that are frequently present in the routine of dentists. The inappropriate use of analgesics may also lead to adverse effects such as side effects, drug interactions, and increases in treatment expenses.^[4,5]

Self-medication was described by the World Health Organization (WHO) as "the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms."^[6] Access to antibiotics and analgesics without prescription causes an increase in self-medication.^[7,8] The increase in self-medication is a global problem. Self-medication rate varies in European

countries^[9] Although the purchase of antibiotics without prescription is not possible in Turkey, inappropriate use of antibiotics persists as one of the significant problems. On the other hand, analgesics are sold without prescription, and this situation increases the self-medication rate.^[10,11]

The increase in antibiotic-resistant bacteria with the inappropriate use of antibiotics is one of the most significant factors threatening public health.^[12] Patients, medical doctors, dentists, and pharmacists may be responsible for the increase in antibiotic-resistant bacteria. Several factors cause this increase; incomplete antibiotic treatment processes followed or insufficient doses taken by patients^[13, 14] and the prescription of antibiotics by some doctors just to eliminate the symptoms without thinking about the increase in antibiotic-resistant bacteria^[15, 16, 17] and by other doctors to please the patients without a clear indication^[18]. Dentists prescribe antibiotics to avoid and treat odontogenic or non-odontogenic infections. However, the literature proves that antibiotics are prescribed without a sign and with excessive amounts due to insufficient information.^[17,19] The awareness in the use of antibiotics has been studied.^[1, 13, 17, 18, 19] However, these studies did not address the question about the level of self-

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<http://doi.org/10.30485/IJRDMS.2019.199805.1017>



medication in the society but the knowledge and the attitude of doctors' prescription habits. We aimed to explore the knowledge, the attitude, and the awareness of patients about the use of antibiotics and analgesics.^[20]

2. Material and methods

A questionnaire of 20 questions was given to 100 patients administered to the Endodontics Department of Faculty of Dentistry at Marmara University with dental problems. The Ethical Committee approved the study of the Faculty of Dentistry of Marmara University (Approval date and number: December 27th, 2018/258).

The exclusion criteria are; patients under the age of 18, patients undergoing antibiotic prophylaxis, patients who did not want to participate in the questionnaire, and intellectually disabled patients who could not understand and answer the questions independently.

Similar studies adapted the questions in the questionnaire.^[20, 21] The purpose of the study was explained before the distributing the questionnaires and the patients did not take part in the survey against their will. No identity information was taken from the participants. The questionnaires were distributed and collected manually by the same operator.

The questionnaire consisted of three parts; the first part included the drug intake attitudes of patients. The second part included the effects, side effects, and development of antibiotic resistance. The third part contained the information possessed by patients on drug use related to dental problems. The answers taken from the survey questions counted, and results in percentages were obtained.

3. Results

All the questionnaires that were distributed (n: 100) were collected back and were deemed usable. Individuals between the ages of 18 and 70 were included in the study, and no gender discrimination was made.

As the answer to the question about why they used non-prescribed drugs without consulting a dentist, 22% of the patients reported their inability to get an appointment, and 22% reported the long waiting periods at hospitals. While 27% of the participants stated that they read but could not understand the prospectus, 13% did not read them. The types and the frequencies of the medications and the attitudes taken by the participants for self-medication are shown in Table 1.

Table 1. Medication use attitudes of patients.

QUESTION	ANSWER	PERCENTAGE
What types of drugs have you taken in the past six months for dental problems without a dentist's prescription?	<ul style="list-style-type: none"> • Analgesics • Antibiotics • Traditional medicines • Other 	<ul style="list-style-type: none"> • 33 • 15 • 14 • 11
What is the reason for using a non-prescription medicine without consulting a dentist?	<ul style="list-style-type: none"> • Prescription not necessary • Unavailability of doctors • Long queues at hospitals • Scared • A Dental visit is expensive • Other 	<ul style="list-style-type: none"> • 10 • 22 • 22 • 5 • 12 • 5
What is your average antibiotic usage in one year?	<ul style="list-style-type: none"> • Never • 1-3 • 4-5 • More than 6 	<ul style="list-style-type: none"> • 20 • 73 • 7 • 0
Do you usually keep antibiotics stocks at home?	<ul style="list-style-type: none"> • Yes • No • Unsure 	<ul style="list-style-type: none"> • 27 • 62 • 11
Do you know about the correct time for antibiotic usage? Do you follow these times?	<ul style="list-style-type: none"> • Yes, I follow • Yes, I don't follow • No 	<ul style="list-style-type: none"> • 67 • 15 • 19
Would you stop taking antibiotics when you're feeling better?	<ul style="list-style-type: none"> • Yes • No • Unsure 	<ul style="list-style-type: none"> • 52 • 33 • 25
Do you check the expiration date before using the antibiotics?	<ul style="list-style-type: none"> • Yes • No • Unsure 	<ul style="list-style-type: none"> • 73 • 12 • 15
Do you read the instructions label of the antibiotics? Are your readings understandable for you?	<ul style="list-style-type: none"> • Yes and understand • Yes and do not understand • No 	<ul style="list-style-type: none"> • 61 • 27 • 13

While 59% of the participants believed that people could become resistant to antibiotics, only 39% thought that the use of antibiotics for periods less than the recommended by the doctors could cause antibiotic resistance to

develop. All the answers given to the participants' questions about the effects and side effects of antibiotics and the development of resistance to antibiotics are shown in Table 2.

Table 2. Antibiotics efficacy, side effects, and resistance.

QUESTION	ANSWER	PERCENTAGE
Which of them is antibiotic?	<ul style="list-style-type: none"> • Paracetamol • Aspirin • Amoxicillin • Ibuprofen 	<ul style="list-style-type: none"> • 22 • 4 • 63 • 17
Antibiotics	<ul style="list-style-type: none"> • Kill bacteria • Kill viruses • Reduce fever • Cure all infections • Other 	<ul style="list-style-type: none"> • 57 • 36 • 8 • 20 • 5
Which of the following might be the hazards associated with self-medication for dental problems?	<ul style="list-style-type: none"> • Not hazardous • Worsening of existing illness • Damage to body organs • Mental illness • Addiction • Drug resistance • Poisoning • Death • Other 	<ul style="list-style-type: none"> • 19 • 19 • 40 • 14 • 33 • 27 • 16 • 11 • 3
Can people become resistant to antibiotics?	<ul style="list-style-type: none"> • Yes • No • Unsure 	<ul style="list-style-type: none"> • 59 • 24 • 27
Can bacteria become resistant to antibiotics?	<ul style="list-style-type: none"> • Yes • No • Unsure 	<ul style="list-style-type: none"> • 58 • 21 • 22
Do you think not completing the full course of antibiotics may cause resistance to antibiotics?	<ul style="list-style-type: none"> • Yes • No • Unsure 	<ul style="list-style-type: none"> • 39 • 17 • 44
Do you think antibiotic effectiveness is reduced if a full course of antibiotics is not completed?	<ul style="list-style-type: none"> • Yes • No • Unsure 	<ul style="list-style-type: none"> • 53 • 13 • 33
Do you think antibiotic overuse leads to antibiotic resistance?	<ul style="list-style-type: none"> • Yes • No • Unsure 	<ul style="list-style-type: none"> • 54 • 6 • 40

35% of the participants stated that they believed that the antibiotics relieved toothache. When they were asked for what kind of dental problem they used non-prescribed drugs, toothache was the answer received from 30% of the participants. When and with what kind of beliefs the patients took medicines for dental problems was evaluated in the section “knowledge related to drugs for dental treatments”.

4. Discussion

Although there are many studies in our country related to awareness in drug use^[10, 17], most of them evaluate practitioners' awareness rather than society. Also, the information related to drug use in dental problems is limited in these studies. The purpose of the present study was to investigate the knowledge, the attitude, and the awareness of the patients who presented to the university hospital with dental problems related to the use of antibiotics and analgesics. The questionnaire in this study prepared by making adaptations to similar studies.^[20, 21] No age or gender information was taken from the participants. This is one of the negative parts of our research. In most related studies, it was found that women opted for self-medication

more frequently than men.^[4, 22, 23, 24, 25] Our results revealed that the most frequently used drugs for self-medication were analgesics, as was the case in previous studies.^[4, 11] The possibility to access analgesics without prescription in our country may have affected the results. 73% of the participants stated that they took 1 to 3 boxes of antibiotics per year. This frequency was also related to studies.^[26, 27]

The most frequent reasons for using non-prescribed drugs without consulting a dentist were being unable to get an appointment from a dentist and long waiting periods at hospitals. In some other studies, the length of the waiting periods at Hospitals^[20, 28] and the high appointment fees of the dentists^[4] shown as the causes of this situation. The difficulty in getting an appointment and the increase in waiting periods created due to the inadequacy of the number of dentists to meet the number of patients increase the level of self-medication.

Most of the participants (67%) told that they knew and followed the recommended course of antibiotics. On the other hand, 52% of them said that they stopped taking the antibiotics when they started to feel better. This ratio was higher than the percentages of 38.6%.^[27], 37%^[29] and 4.5%^[30]

previous studies. The rate of non-compliance to the course of antibiotics was higher, according to our survey. The use of antibiotics for periods shorter than recommended causes resistant bacteria strains to thrive.^[31] However, only 39% of the participants stated that they knew this. For the question asking whether they read the prospectus of the drugs, while 27% of the participants said that they read but did not understand them, it was understood that 13% did not read them. In other words, these people took antibiotics with the recommendations given by pharmacists or doctors or their insufficient knowledge. Patients need to be informed more about this subject to reduce the ratio of those who stop taking antibiotics early and decreasing problems such as the development of antibiotic resistance that occur as a result of this.

The development of antibiotic resistance seen as one of the important problems for health. While 59% of the participants thought that people could become resistant to antibiotics, 58% of them stated that bacteria could become resistant to antibiotics in the next question. These ratios found to be similar to those in previous studies.^[21] 54% thought that the excessive use of antibiotics could lead to the development of antibiotic resistance. 53% of those answering the questions said that taking the antibiotics for a shorter period than recommended would cause the drug's efficiency to diminish. By also considering the high percentage of answers given to the questions related to the development of antibiotic resistance, stating that they were not sure, it can be seen that the patients are confused about this subject and that they need to be informed.

Only 27% of the participants said they kept the antibiotics in stock at home, and 73% said they checked the expiry date before they took the drug. While 57% of the people who answered the questionnaire knew that the antibiotics affected bacteria, 36% thought that they affected viruses. This level of knowledge seen similarly way in related studies.^[26, 27, 30] This level of knowledge may indicate that patients can choose the wrong medication for their illnesses.

Of all participants, 81% thought that the drugs taken without prescription could be dangerous. This percentage was higher than the percentages of 66.7%^[27], 69.6%^[26], 53.9%^[29], and 77.7%^[21] obtained by previous studies.

When the patients asked for which type of dental problems they took non-prescribed drugs, the answer was toothache for 30%. To the question seeking the answer to whether antibiotics relieved toothache, 35% said "yes," and 38% said that they were not sure. In contrast, the percentage of the "yes" answer given was lower than the percentage of 71.9% obtained by Mouhieddine et al.^[27], it was higher than the percentages of 28.2% and 30.9% achieved by Sheadeh et al.^[26] and Ling Oh et al.^[29], respectively. This may explain why some patients start taking antibiotics when they experienced a toothache.

While 38% of the participants thought that the use of antibiotics was necessary after root canal treatment, 31% stated that they took antibiotics before going to the dentist in case of swelling in their faces. These percentages found to be lower than similar studies^[20]. However, this situation may explain why some patients insist on using antibiotics after endodontic treatments.

5. Conclusion

In this study, it understood that the patients had insufficient knowledge and incorrect attitudes about antibiotic use. Also, patients were considerably unconscious about the use of antibiotics in dental treatments.

We think that a more detailed perspective on the level of attitude related to the use of medicines by society should have acquired by making an extensive study encompassing a higher number of universities in Turkey.

The number of life-long programs to raise the awareness of primary doctors and the pharmacists and all health professionals taking part in the process of the indications for the use, the effects, and the side effects of drugs should have increased. Finally, health professionals should use their incentive to raise the level of knowledge, the attitude, and the awareness of the society towards the consequences of the use of drugs without a doctor's prescription.

Conflict of Interest

The authors declared that there is no conflict of interest.

Acknowledgments

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

References

1. Costelloe C, Metcalfe C, Lovering A, Mant D, Hay AD. Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. *Bmj*. 2010 May 18;340:c2096.
2. Wise R, Hart T, Cars O. Antimicrobial resistance is a major threat to public health (editorial). *BMJ*. 1998;317:609-10.
3. Gyssens IC. Quality measures of antimicrobial drug use. *International journal of antimicrobial agents*. 2001 Jan 1;17(1):9-19.
4. BAIG QA, MUZAFFAR D, AFAQ A, Bilal S, Iqbal N. Prevalence of self medication among dental patients. *Pakistan Oral & Dental Journal*. 2012 Aug 1;32(2).
5. López JJ, Dennis R, Moscoso SM. A study of self-medication in a neighborhood in Bogotá. *Revista de Salud Pública*. 2009 Jun;11(3):432-42.
6. Aljadhey H, Assiri GA, Mahmoud MA, Al-Aqeel S, Murray M. Self-medication in Central Saudi Arabia: Community pharmacy consumers' perspectives. *Saudi medical journal*. 2015;36(3):328.
7. Al-Azzam S, Al-Husein B, Alzoubi F, Masadeh M, Ali M. Self-medication with antibiotics in Jordanian population. *International journal of occupational medicine and environmental health*. 2007 Jan 1;20(4):373-80.
8. Belkina T, Al Warafi A, Eltom EH, Tadjieva N, Kubena A, Vlcek J. Antibiotic use and knowledge in the community of Yemen, Saudi Arabia, and Uzbekistan. *The Journal of Infection in Developing Countries*. 2014 Apr 15;8(04):424-9.
9. Bretagne JF, Richard-Molard B, Honnorat C, Caekaert A, Barthelemy P. Gastroesophageal reflux in the French general population: national survey of 8000 adults. *Presse medicale (Paris, France)*. 1983. 2006 Jan;35(1 Pt 1):23-31.
10. Ilhan MN, Durukan E, Ilhan SÖ, Aksakal FN, Özkan S, Bumin MA. Self-medication with antibiotics: questionnaire survey among primary care center attendants. *Pharmacoepidemiology and drug safety*. 2009 Dec;18(12):1150-7.
11. Kalyan VS, Sudhakar K, Srinivas P, Sudhakar GV, Pratap KV, Padma TM. Evaluation of self-medication practices among undergraduate dental students of tertiary care teaching dental hospital in South India. *Journal of Education and Ethics in Dentistry*. 2013 Jan 1;3(1):21.
12. Komolafe OO. Antibiotic resistance in bacteria-an emerging public health problem. *Malawi medical journal*. 2003;15(2):63-7.
13. Ochoa C, Eiros JM, Inglada L, Vallano A, Guerra L, Spanish Study Group on Antibiotic Treatments. Assessment of antibiotic prescription in

- acute respiratory infections in adults. *Journal of Infection*. 2000 Jul 1;41(1):73-83.
14. Pechere JC. Patients' interviews and misuse of antibiotics. *Clinical infectious diseases*. 2001 Sep 15;33(Supplement_3):S170-3.
 15. Metlay JP, Stafford RS, Singer DE. National trends in the use of antibiotics by primary care physicians for adult patients with cough. *Archives of internal medicine*. 1998 Sep 14;158(16):1813-8.
 16. McManus P, Primrose JG, Hammond ML, Whicker SD, Mant A, Fairall SR. Antibiotic use in the Australian community, 1990 - 1995. *Medical journal of Australia*. 1997 Aug;167(3):124-7.
 17. Kaptan RF, Haznedaroglu F, Basturk FB, Kayahan MB. Treatment approaches and antibiotic use for emergency dental treatment in Turkey. *Therapeutics and clinical risk management*. 2013;9:443.
 18. Butler CC, Rollnick S, Pill R, Maggs-Rapport F, Stott N. Understanding the culture of prescribing: qualitative study of general practitioners' and patients' perceptions of antibiotics for sore throats. *Bmj*. 1998 Sep 5;317(7159):637-42.
 19. Dar-Odeh NS, Abu-Hammad OA, Al-Omiri MK, Khraisat AS, Shehabi AA. Antibiotic prescribing practices by dentists: a review. *Therapeutics and clinical risk management*. 2010;6:301.
 20. Abu-Mostafa NA, Al-Mejlad NJ, Al-Yami AS, Al-Sakhin FZ, Al-Mudhi SA. A survey of awareness related to the use of antibiotics for dental issues among non-medical female university students in Riyadh, Saudi Arabia. *Journal of infection and public health*. 2017 Nov 1;10(6):842-8.
 21. Simon AK, Rao A, Rajesh G, Shenoy R, Pai MB. Trends in self-medication for dental conditions among patients attending oral health outreach programs in coastal Karnataka, India. *Indian journal of pharmacology*. 2015 Sep;47(5):524.
 22. Worku S, Mariam AG. Practice of self-medication in Jimmatown, Nigeria. *Ethiop J Health Dev*. 2003;17:111-6.
 23. Angeles-Chimal P, Medina-Flores ML, Molina-Rodriguez JF. Self-medication in a urban population of Cuernavaca, Morelos. *Salud publica de Mexico*. 1992;34(5):554-61.
 24. Awad A, Eltayeb I, Matowe L, Thalib L. Self-medication with antibiotics and antimalarials in the community of Khartoum State, Sudan. *J Pharm Pharm Sci*. 2005 Aug 12;8(2):326-31.
 25. Adedapo HA, Lawal AO, Adisa AO, Adeyemi BF. Non-doctor consultations and self-medication practices in patients seen at a tertiary dental center in Ibadan. *Indian Journal of Dental Research*. 2011 Nov 1;22(6):795.
 26. Shehadeh M, Suaifan G, Darwish RM, Wazaify M, Zaru L, Alja'fari S. Knowledge, attitudes and behavior regarding antibiotics use and misuse among adults in the community of Jordan. A pilot study. *Saudi Pharmaceutical Journal*. 2012 Apr 1;20(2):125-33.
 27. Mouhieddine TH, Olleik Z, Itani MM, Kawtharani S, Nassar H, Hassoun R, Houmani Z, El Zein Z, Fakh R, Mortada IK, Mohsen Y. Assessing the Lebanese population for their knowledge, attitudes and practices of antibiotic usage. *Journal of infection and public health*. 2015 Jan 1;8(1):20-31.
 28. Lawan UM, Abubakar IS, Jibo AM, Rufai A. Pattern, awareness and perceptions of health hazards associated with self medication among adult residents of kano metropolis, northwestern Nigeria. *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine*. 2013 Jul;38(3):144.
 29. Oh AL, Hassali MA, Al-Haddad MS, Sulaiman SA, Shafie AA, Awaisu Public knowledge and attitudes towards antibiotic usage: a cross-sectional study among the general public in the state of Penang, Malaysia. *The Journal of Infection in Developing Countries*. 2011;5(05):338-47.
 30. André M, Vernby Å, Berg J, Lundborg CS. A survey of public knowledge and awareness related to antibiotic use and resistance in Sweden. *Journal of Antimicrobial chemotherapy*. 2010 Apr 1;65(6):1292-6.
 31. Yagupsky P. Selection of antibiotic-resistant pathogens in the community. *The Pediatric infectious disease journal*. 2006 Oct 1;25(10):974-6.