Rev Saúde Pública 2009;43(1):140-46

Ozlem Ozkan[I]

Onur Hamzaoglu[II]

Serdar Erdine[III]

Ecehan Balta[IV]

Mehmet Domac[IV]

Use of analgesics in adults with pain complaints: prevalence and associated factors, Turkey

Uso de analgésicos por adultos com queixas de dor: prevalência e fatores associados, Turquia

ABSTRACT

OBJECTIVE: Use of analgesics has been increasingly recognized as a major public health issue with important consequences in Turkey. The objective of the study was to determine the prevalence and patterns of analgesics usage and associated factors in adults with pain complaints.

METHODS: A cross-sectional study was conducted in 15 cities selected from five demographic regions in Turkey. The study sample population comprised 1.909 adults 18-65 age groups suffering from pain. The sampling method was multi-step stratified weighted quota-adjusted sampling. Data were collected by face-to-face interviews using a semi-structured survey questionnaire consisting of 28 questions. Odds ratios were produced by logistic regression analyses.

RESULTS: The prevalence of analgesic use was 73.1%, and it was higher in females (75.7%; $p<0.05$), in subjects 45-54 years (81.4%; $p<0.05$), in subjects in rural areas (74.6%; $p<0.05$), in subjects in northern region (84.3%; $p<0.05$), in illiterate subjects (79.1%; $p>0.05$), and in subjects of lower socioeconomic status (74.1%; $p>0.05$). One in ten of the participants used non-prescription analgesics. Non-prescription analgesics were more prevalent among the 55-65 age groups (18.1%; $p<0.05$), among female (11.6%; $p>0.05$), among the urban population (10.7%; $p>0.05$), and in subjects of lower middle socioeconomic status (13.2%; $p<0.05$). Logistic regression showed statistically significant ORs only for age groups, duration of education, socioeconomic status, and demographic regions ($p<0.05$).

CONCLUSIONS: The results showed that the prevalence of analgesic use and prescription analgesic use is high in Turkey, and their use is related to sociodemographic characteristics.

DESCRIPTORS: Adult. Pain, prevention & control. Analgesics, administration & dosage. Analgesics, therapeutic use. Socioeconomic Factors. Cross-Sectional Studies. Turkey.

[I] Nursing Department. Kocaeli School of Health. Kocaeli University. Kocaeli, Turkey

[II] Public Health Department. Medical Faculty. Kocaeli University. Kocaeli, Turkey

[III] Algology Department. Istanbul Medical Faculty. Istanbul University. Istanbul, Turkey

[IV] Turkish Pharmacists' Association. Ankara, Turkey

Correspondence:
Ozlem Ozkan
Nursing Department
Kocaeli School of Health
Kocaeli University
Umuttepe Yerleskesi, 41380
Kocaeli, Turkey
E-mail: ozlem.ozkan@kocaeli.edu.tr

Received: 5/15/2008
Approved: 8/19/2008

RESUMO

OBJETIVO: O uso de analgésicos tem sido amplamente reconhecido com um grande problema de saúde pública com importantes conseqüências na Turquia. O objetivo do estudo foi determinar a prevalência e os padrões de uso de analgésicos por adultos e os fatores associados às queixas de dores.

MÉTODOS: Estudo transversal conduzido em 15 cidades selecionadas de cinco regiões demográficas da Turquia. A amostra estudada incluiu grupos etários de 1.909 adultos (18-65 anos) que sofrem de dores. O método de amostragem seguiu estratificação com pesos ajustados para cada estrato amostrado. Os dados foram coletados em entrevistas face-a-face, usando um questionário de levantamento semi-estruturado, composto por 28 questões. Foram calculados os odds raios por meio de regressão logística.

RESULTADOS: A prevalência de uso de analgésicos foi de 73,1%, sendo significativamente ($p<0,05$) maior em mulheres (75,7%; $p<0,05$), em sujeitos de 45-54 anos (81,4%; $p<0,05$), naqueles residentes em área rural (74,6%; $p<0,05$), na região norte (84,3%; $p<0.05$), em analfabetos (79,1%; $p>0,05$), e em sujeitos de status socioeconômico mais baixo (74,1%; $p>0,05$). Um em cada dez participantes usou analgésico sem prescrição médica. A não-prescrição foi mais prevalente entre sujeitos do grupo etário 55-65 (18,1%; $p<0,05$), entre mulheres (11,6%; $p>0,05$), entre a população urbana (10,7%; $p>0,05$), e em sujeitos de classe econômica média-baixa (13,2%; $p<0,05$). A regressão logística mostrou OR significantes apenas para grupos etários, anos de estudo, status socioeconômico e região demográfica ($p<0,05$).

CONCLUSÕES: Os resultados mostraram que a prevalência de uso de analgésico e sua prescrição de uso são altas na Turquia, e esses usos são relacionados a características sociodemográficas.

DESCRITORES: Adulto. Dor, prevenção & controle. Analgésicos, administração & dosagem. Analgésicos, uso terapêutico. Fatores Socioeconômicos. Estudos Transversais. Turquia.

INTRODUCTION

The frequency of analgesic use has greatly increased over the last three decades in both developed and developing countries.[1,3,12,15,20] In Turkey, analgesics are the most frequently consumed products in treatment groups and they have accounted for 9.5% of pharmaceutical consumption by therapeutic class.[17] At individual level, one of the most common reasons is taking a prescribed and non-prescribed medicine to relieve or treat pain and their symptoms[2,5,19] and it has been reported that non-prescribed and improper use of analgesics has reached worrisome levels.[2,5,12,16] Studies have shown that the majority of analgesics are non-prescription and over-the-counter (OTC) drugs, and that painkillers have a major share among OTC drugs.[13,15,16,18] In Turkey, studies also have indicated high rates of irrational use of prescribed and non-prescribed analgesics.[4,14,17] Not only can improper or irrational use of analgesics lead to increased morbidity and mortality rates and deterioration of quality of life, but also it can give rise to misusing of health care resources and increasing of health care costs.[2,15,16] Besides, studies have shown that analgesic use is associated with national drug policies as well as individual sociodemographic and cultural characteristics and life styles.[2,3,16,18-20] Therefore, analgesic use and its characteristics are a major public health issue.

No large population-based study including a nationally representative sample has been performed to assess the prevalence and patterns of analgesic usage and associated factors in Turkey adults until 2008. While face-to-face interviews conducted in the course of drug studies are a valuable approach for obtaining reliable drug data, the studies at the local level have focused on pharmacy records, physicians' prescriptions, and specific population groups in Turkey. The present study aimed to determine the prevalence and patterns of analgesic use, and associated factors among adults suffering from pain.

METHODS

Cross-sectional study conducted between February and October 2000.

This study was part of the study of prevalence of pain among adults in Turkey.[10] The study sample population was selected from respondents (aged 18 to 65 years) suffering from pain within the last three months in the prevalence study. Since the proportion of adults over 65 years old in the general Turkish population was very low (about 5%), this group was not included in the study. Multi-step, stratified, weighted, quota-adjusted sampling was performed for selecting the subjects. The number of persons in the sample was stratified according to each demographic region (western, southern, central, northern and eastern) for 15 provinces and 45 areas of residence (rural/urban) and to gender (male/female) and determined proportional to the population. Totally, 1,909 persons aged between 18 and 65 were included in the study but due to incomplete data, 20 subjects were excluded from the analysis. Therefore, the sample size for the analysis was 1,889.

A questionnaire consisting of 28 questions, both structured and open-ended, was developed based on the literature.[2,3,7,8] Data were collected by nine trained interviewers so as to reach a predetermined quota by means of face-to-face home interviews. Written permission was obtained from governors of provinces. Respondents were also informed both verbally and in writing about the research, and those who agreed to participate were included in the study.

Sociodemographic characteristics were as follows: age (18–24, 25–34, 35–44, 45–54, and 55–65) and years of education (0: illiterate; 5 years: elementary education; 8 years: middle school education; 11 years: high school education; and 15 years: university education). Socioeconomic status (SES) was calculated using a score 1 to 5 given to family income, parental education level, parental occupation, car ownership, and housing tenure.[11] Since there were no respondents from the high SES group, the four SES groups were: lower, lower-middle, middle, and upper-middle). The term analgesics refer to medicines used to reduce pain or eliminate acute and chronic pain syndromes. Prescription analgesics were defined as medicines which have been bought from a pharmacy and prescribed by the physician.

The data were analyzed with SPSS version 13.0. In the bivariate analyses, chi-square tests were used. Variables affecting analgesic use in the respondents found to be significant in the chi-square tests were individually entered into a logistic regression model to produce odds ratios (OR). Levels of significance were expressed by means of 95% CI or as $p<0.05$.

RESULTS

Approximately 54% of the subjects were in the 25–44 age groups, 54.4% were women, 45.8% had 5 years of education and 41.8% had low socioeconomic status. The majority of the respondents lived in urban areas (70.1%) and almost half of them in the western region. Seventy-one percent of them used analgesics and this drug use was high especially among subjects: female (75.7%), in the northern region (84.3%) ($p<0.05$), aged 45–54 (81.4%) ($p<0.05$), living in rural areas (74.6%) ($p>0.05$), illiterate population (79.1%) ($p>0.05$), and with lower SES (74.1%) ($p>0.05$). The logistic regression analysis had statistically significant ORs showing that frequent analgesic use was associated to demographic region, age and gender ($p<0.05$). The risk of the analgesic use showed about 2.2-fold increase in those aged 45–54, and 2–fold increase in northern region (Table 1). Approximately 95% of those who had pain took peripheral analgesics (monopod or no steroid analgesics) and 4.4% of them took secondary analgesics (adjuvant or co-analgesics) (data not shown in Tables).

Prescription analgesic use was more prevalent than non-prescription analgesic use. One out of ten respondents used non-prescription analgesics and 10.3% were OTC medications, namely Gripin and Aspirin in Turkey. Non-prescription analgesics were more prevalent among those aged 55–65 (18.1%) ($p<0.05$), females (11.6) ($p>0.05$), living in urban areas (10.7%) ($p>0.05$), in the western region (15.4%) ($p<0.05$), and with lower-middle SES (13.2%) ($p<0.05$). Non-prescription analgesic use decreased with increasing years of education ($p<0.05$). The logistic regression showed statistically significant ORs only for age, years of education, SES, and demographic regions. The risk of non-prescription analgesic use increased about 1.7 fold in those aged 35–44, 1.3 fold in those with high school education, and 10.5 fold in the eastern region (Table 2).

DISCUSSION

The present study found that the prevalence of analgesic use was high and was associated to sociodemographic characteristics in Turkey. These findings were consistent with those of other studies.[3,715,19,20] In the present study, women had a significantly higher prevalence of analgesic use than men; while it was statistically significant, the logistic regression did not show any statistically significant ORs. Similar to our findings in Turkey, many studies have also shown there is a significant gender difference in the prevalence of analgesic use among adult population.[2,3,6,15,13,19] Studies conducted in the United States, Sweden, and Norway have shown an association between age and analgesic use.[6,7,12,16] Corroborating this finding, our study found higher prevalence of analgesic use in older ages. While some studies have indicated that there is no significant

Table 1. Prevalence of analgesic use according to sociodemographic characteristics of individuals suffering from pain included in the logistic regression analyses. Turkey, 2000.

Characteristic	Analgesic use		Total	p-value (from bivariate analyses) (x^2 test)	OR (95% CI)*	p-value (from logistic regression)
	Yes	No				
	n (%)	n (%)	n (%)			
Age group (years)						
18–24	204 (65.6)	107 (34.4)	311 (16.5)		1 (reference)	
25–34	355 (72.4)	135 (27.6)	490 (25.9)	0.000	1.389 (1.12;1.89)	0.001
35–44	382 (71.9)	149 (28.1)	531 (28.1)		1.346 (0.99;1.83)	
45–54	241 (81.4)	55 (18.6)	296 (15.7)		2.243 (1.54;3.27)	
55–65	199 (76.2)	62 (23.8)	261 (13.8)		1.637 (1.13;2.37)	
Sex						
Male	603 (70.0)	258 (30.0)	861 (45.6)	0.006	1 (reference)	0.006
Female	778 (75.7)	250 (24.3)	1028 (54.4)		0.746 (0.61;0.92)	
Years of education					-	
0	174 (79.1)	46 (20.9)	220 (11.6)			
5	616 (71.2)	249 (28.8)	865 (45.8)	0.196		
8	171 (72.5)	65 (27.5)	236 (12.5)			
11	278 (73.4)	101 (26.6)	379 (20.0)			
15	142 (75.1)	47 (24.9)	189 (10.1)			
Socioeconomic status					–	
Lower	585 (74.1)	204 (25.9)	789 (41.8)			
Lower-middle	515 (73.0)	190(27.0)	705 (37.3)	0.738		
Middle	229 (70.9)	94 (29.1)	323 (17.1)			
Upper-middle	52 (72.2)	20 (27.8)	72 (3.8)			
Area of residence					–	
Rural	421 (74.6)	143 (25.4)	564(29.9)	0.325		
Urban	960 (72.5)	365 (27.5)	1325 (70.1)			
Demographic region						
Western	669 (71.0)	273 (29.0)	942 (49.9)		1 (reference)	
Eastern	234 (71.6)	93 (28.4)	327 (17.3)	0.005	0.969 (0.73;1.29)	0.011
Northern	91 (84.3)	17 (15.7)	108 (5.7)		2.055 (1.20;3.53)	
Southern	142 (81.1)	33 (18.9)	175 (9.3)		1.694 (1.23;2.55)	
Central	245 (72.7)	92 (27.3)	337 (17.8)		1.063 (0.80;1.41)	
Total	1381 (73.1)	508 (26.9)	1889 (100.0)			

* Variables found to be significant on x^2 test were individually entered into a logistic regression model produce ORs.

association between age and analgesic use,[3,7] the difference in the present study was statistically significant as were the ORs. Furthermore, studies have found that demographic region and area of residence are associated with analgesic use,[8,9,13] a finding consistent with ours. Although some studies have shown an association between analgesic use, level of education and SES, it was not significant.[2,3,7,16] Similarly, in the present study, the prevalence of analgesic use was higher in the illiterate population and among those of lower SES, but the chi-square test and logistical regression showed no statistical significance.

Unexpectedly, prescription analgesic use was more common than the use of non-prescription and OTC analgesics in Turkish adult population. This was inconsistent with other studies.[5,18] OTC and non-prescription analgesics, which are used by adults with pain and discomfort mainly as pain management strategies, have frequently had serious consequences in terms of morbidity and mortality. However, the use of OTC analgesics has steadily increased in many countries, including western populations.[2,5,12,16,19] Since the majority of analgesics have also been widely sold without prescription and OTC in Turkey due to drug policies applied as of mid-2000, this rate is estimated

Table 2. Analgesic use patterns according to sociodemographic characteristics included in the logistic regression analyses. Turkey, 2000.

Characteristic	Analgesic use patterns		Total	p-value (from bivariate analyses) (x^2 test)	OR (95% CI)*	p-value (from logistic regression)
	Prescriptio-nanalgesics	Non-prescription analgesics				
	n (%)	n (%)	n (%)			
Age group (years)						
18–24	181(88.7)	23 (11.3)	204 (14.8)		1 (reference)	
25–34	329 (92.7)	26 (7.3)	355 (25.7)	0.000	1.560 (0.85;2.86)	0.007
35–44	353 (92.4)	29 (7.6)	382 (27.7)		1.668 (0.92;3.03)	
45–54	211 (87.6)	30 (12.4)	241 (17.5)		0.898 (0.49;1.64)	
55–65	163 (81.9)	36 (18.1)	199 (14.3)		0.691 (0.38;1.25)	
Sex					–	
Male	549 (91.0)	54 (9.0)	603 (43.7)	0.115		
Female	688 (88.4)	90 (11.6)	778 (56.3)			
Years of education						
0	145 (83.3)	29 (16.7)	174 (12.6)		0.284 (0.12;0.70)	
5	541 (87.8)	75 (12.2)	616 (44.6)	0.000	0.547 (0.24;1.25)	0.001
8	151 (88.3)	20 (11.7)	171 (12.4)		0.510 (0.20;1.27)	
11	265 (95.3)	13 (4.7)	278 (20.1)		1.269 (0.49;3.32)	
15	135 (95.1)	7 (4.9)	142 (10.3)		1 (reference)	
Socioeconomic status						
Lower	526 (89.9)	59 (10.1)	585 (42.4)		0.479 (0.26;0.89)	
Lower-middle	447 (86.8)	68 (13.2)	515 (37.3)	0.006	0.525 (0.30;0.93)	0.052
Middle and upper-middle**	264 (94.0)	17 (16.0)	281 (20.3)		1 (reference)	
Area of residence					–	
Rural	380 (90.3)	41 (9.7)	421 (30.5)	0.326		
Urban	857 (89.3)	103 (10.7)	960 (69.5)			
Demographic region						
Western	566 (84.6)	103 (15.4)	669 (48.4)		1 (reference)	
Eastern	228 (97.4)	6 (2.6)	234 (16.9)	0.000	10.532 (4.31;25.75)	0.000
Northern	86 (94.5)	5 (5.5)	91 (6.7)		4.355 (1.65;11.47)	
Southern	126 (88.7)	16 (11.3)	142 (10.3)		1.705 (0.94;3.09)	
Central	231 (94.3)	14 (5.7)	245 (17.7)		2.663 (1.47;4.82)	
Total	1237 (89.6)	144 (10.4)	1381(100.0)			

* Variables found to be significant on x^2 test were individually entered into a logistic regression model produce ORs.
** Since non-prescription analgesic use was not seen in the upper-middle SES, it was combined with middle SES.

to be higher now. The study showed that one out of ten subjects used non-prescription analgesics. This was consistent with that found in some countries,[2,20] though lower than that reported in others.[3,9,14,15,16,18,20]

Individual characteristics are also important for irrational use of OTC and non-prescription analgesics, as well as drug regulations, drug supply, and the drug industry. Many studies showed that women with pain were more likely to have recently used both analgesics and OTC analgesics than men. They reported a significant association between the use of OTC analgesics and gender.[2,3,6,15] The present study also found non-prescription analgesic use was more frequent in women than men (11.6%, 9%), but at a lower rate than that previously reported.[2,5,7,14,16] It has been suggested that this gender difference is associated to biological, psychological, and social factors.[3,7]

The present study showed that analgesic use increased with age, and non-prescription analgesic use was higher in those aged 45 years or more and the differences were statistically significant. This finding was corroborated by some previous studies.[3,15,20] Moreover, analgesic use

was more prevalent in the illiterate population. While this finding is consistent with the results of some studies,[2,13] it is inconsistent with others.[18,20]

Our study had both strengths and limitations. A major strength is that data were collected through face-to-face home interviews by nine trained interviewers under the supervision of four trained supervisors. In addition, the accuracy of self-reported analgesic use was ascertained by checking both subjects' prescriptions and medical charts. And lastly, this was the first large population-based study conducted in Turkey. However, subjects included in the sample could not be selected using a systematic or random approach, out of a list obtained prior to selection, and that the respondents were selected randomly where they lived.

In conclusion, the present study is the most comprehensive and the first published survey conducted nationwide about prevalence and patterns of analgesic use and associated factors among the adult population with pain complaints in Turkey until 2008. While analgesic use was very high in this study, non-prescription analgesic use was low. Moreover, the prevalence and patterns of analgesics use varied according to several sociodemographic factors. Further studies are needed to examine the patterns of analgesic use and associated factors. Also, national drug policies should be formulated to prevent high, unnecessary and incorrect analgesic use and awareness should be heightened to prevent unnecessary and incorrect analgesic use among health care providers and the public in this country.

REFERENCES

1. Abbot FV, Fraser MA. Use and abuse of over-the-counter analgesic agents. *J Psychiatry Neurosci.* 1998;23(1):13-34.
2. Antonov K, Isacson D. Use of analgesics in Sweden-the importance of socio demographic factors, physical fitness, health and health-related factors, and working conditions. *Soc Sci Med.* 1996;42(11):1473-1481. DOI: 10.1016/0277-9536(96)87321-7
3. Antonov K, Isacson DG. Prescription and nonprescription analgesics use in Sweden. *Ann Pharmacother.* 1998;32(4):485-94. DOI: 10.1345/aph.16409
4. Balci E, Gün I, Oztürk Y. Kayseri'de yedi saglık ocagı bölgesinde halkın agrı kesici bulundurma ve kullanım özellikleri. In: 8th National Public Health Meetings, Sivas, Turkey; 2003 Jun 23-25. p.86.
5. Catalá E, Reig E, Artès M, Aliaga L, López JS, Segúe JL. Prevalence of pain in the Spanish population: telephone survey in 5000 homes. *Eur J Pain.* 2002;6(2):133-40. DOI: 10.1053/eujp.2001.0310
6. Curhan GC, Bullock AJ, Hankinson SE, Willett WC, Speizer FE, Stampfer MJ. Frequency of use of acetaminophen, non steroidal anti-inflammatory drugs, and aspirin in US women. *Pharmacoepidemiol Drug Saf.* 2002;11(8):687–93. DOI: 10.1002/pds.732
7. Eggen AE. The Tromsø study: frequency and predicting factors of analgesic drug use in a free-living population (12-56 years). *J Clin Epidemiol.* 1993;46(11):1297-304. DOI: 10.1016/0895-4356(93)90098-L
8. Eggen AE. The use of controlled analgesics in a general population (15–59 years) the influence of age, gender, morbidity, lifestyle and sociodemographic factors. *Pharmacoepidemiol Drug Saf.* 1996;5(2):101-11. DOI: 10.1002/(SICI)1099-1557(199603)5:2<101::AID-PDS202>3.0.CO;2-K
9. Figueiras A, Caamaño F, Gestal-Otero JJ. Sociodemographic factors related to self medication in Spain. *Eur J Epidemiol.* 2000;16(1):19-26. DOI: 10.1023/A:1007608702063
10. Hamzaoglu O, Ozkan O, Erdine S, Balta E, Domac M. Prevalence of pain among adults in Turkey. *Pain Clin.* 2006;18(2):147-54. DOI: 10.1163/156856906776760489
11. Kalaycioglu S, Kardam F, Tüzün S, Ulusoy M. Türkiye icin sosyoekonomik statü ölcütü gelistirme yönünde yaklasım ve denemeler. *Toplum ve Hekim.* 1998;13(6):123-5.
12. Kaufman DW, Kelly JP, Rosenberg L, Anderson TE, Mitchell AA Recent patterns of medication use in the ambulatory adult population of the United States: the Slone survey. *JAMA.* 2002;16;287(3):337-44. DOI: 10.1001/jama.287.3.337
13. Linden KA. Pharmacoepidemiological study of medicine use among Finnish conscripts. Finland: Institute of Military Medicine; 2005[cited 2006 Sep 22]. Available from: http://ethesis.helsinki.fi/julkaisut/far/farma/vk/linden/apharmac.pdf
14. Onder E, Koca O, Oztürk S, Sabuncu Z, Soyutemiz O, Altintas H. Saglık Ocagı bölgesinde yasayan 18 yas ve üstü bireylerin agrı kesici kullanımı ve bu konudaki bazı bilgilerinin saptanması. *Hacettepe Toplum Hekimligi Bülteni.* 2002;23(1):2-4.
15. Paulose-Ram R, Hirsch R, Dillon C, Losonczy K, Cooper M, Ostchega Y. Prescription and non-prescription analgesic use among the US adult population: results from the third National Health and Nutrition Examination Survey (NHANES III). *Pharmacoepidemiol Drug Saf.* 2003;12(4):315–26. DOI: 10.1002/pds.755
16. Paulose-Ram R, Hirsch R, Dillon C, Gu Q. Frequent monthly use of selected non-prescription and prescription non-narcotic analgesics among U.S. adults. *Pharmacoepidemiol Drug Saf.* 2005;14(4):257–66. DOI: 10.1002/pds.983
17. Pharmaceutical Manufacturers Association of Turkey. Pharmaceutical market and consumption in Turkey 2005. Istanbul: IEIS; 2006 [cited 2006 Aug 22]. Available from: http://www.ieis.org.tr/asp_pages/index.asp
18. Porteus T, Bond C, Hannaford P, Sinclair H. How and why are non prescription analgesics used in Scotland? *Fam Pract.* 2005;22(1):78-85. DOI: 10.1093/fampra/cmh719
19. Turunen JHO, Mäntyselkä PT, Kumpusalo EA, Ahonen RS. How do people ease their pain? A population-based study. *J Pain.* 2004;5(9):498-504. DOI: 10.1016/j.jpain.2004.08.003
20. Turunen JHO, Mäntyselkä PT, Kumpusalo EA, Ahonen RS. Frequent analgesics use at population level: prevalence and patterns of use. *Pain.* 2005;115(3):374-381.

The study was supported in terms of funding and other technical resources by the Turkish Pharmacists' Association and the Turkish Society of Algology.