Knowledge and Attitudes Regarding the Self-Use of Pain Medications in Saudi Arabia: A Cross-Sectional Study

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Abstract

Objective: The objective of the study was to examine the knowledge and attitudes of the population in the Kingdom of Saudi Arabia regarding the use of over-the-counter (OTC) analgesics. Methods: A prospective cross-sectional study used an electronic survey questionnaire comprising 18 questions. An electronic survey was distributed through social networking sites during the period from November 1 to November 15, 2014, followed by data analysis. Results: Data from 1808 questionnaires were collected and analyzed. The results showed that 61% of the participants used analgesics without prescription; 67% used analgesics only for severe pain; 72% stated that analgesics could be administered with other medications; 68% reported that analgesics had an antipyretic effect; and only 1% reported that they had an anti-inflammatory effect. Further, 80% of the participants had the habit of reading drug product information and 77% were careful about the expiry date. Conclusions: The general population showed inadequate knowledge and attitudes toward OTC analgesics. Therefore, more programs to increase awareness and health education among patients are needed.

Keywords: Kingdom of Saudi Arabia, knowledge, over-the-counter analgesics, self-use of pain medications

Introduction

One of the major reasons for the unnecessary use of drugs is self-medication using over-the-counter (OTC) drugs. Causes of this behavior may be associated with economic situations or social habits that force people to take medications without a physician’s diagnosis.[1] Nonsteroidal anti-inflammatory drugs (NSAIDs) are among the most widely used OTC analgesic drugs.[2] These drugs are self-prescribed, even though they can induce side effects.[3,4] Nearly 20% of the patients cannot tolerate NSAIDs because of heartburn, abdominal pain, or diarrhea. Chronic NSAID use may cause duodenal or gastric ulcers.[5] Furthermore, unintended overdose of paracetamol could cause liver failure and poses serious side effects.[6]

Although the burden on the medical service sector has decreased because of the use of OTC analgesic medications, some problems have emerged. These problems are related to the pharmacological effects of drug misuse, adverse effects due to overdoses, and economic costs associated with drug misuse.[7] Pain medications need to be selected based on the type, cause, and severity of pain.[8] Self-medication with OTC analgesics is reported as a community health problem affecting numerous people worldwide.[9,10] A study conducted in central Saudi Arabia reported that 41.8% of OTC medications involved analgesics.[11]

Therefore, the public needs to have increased awareness regarding OTC analgesic medications. To establish a public awareness program, it is essential to study population knowledge and attitude regarding OTC analgesics to identify risk factors for a target audience. Thus, this study aimed to examine knowledge and attitudes among the population in Saudi Arabia regarding the use of OTC analgesics.

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METHODS

Study design
This cross-sectional study was conducted to assess the knowledge and attitudes of a sample of the general population in Saudi Arabia regarding the use of OTC analgesics from November 1 to November 15, 2014. The study protocol was approved by the King Abdul-Aziz University’s Hospital Ethics Committee.

Population
The sample size was calculated based on the prevalence of OTC analgesic use as mentioned by Aljadhey et al.,[11] using an error margin of 5%, a confidence interval of 99%, and Saudi population size of 33,582,116. Participants included males and females in Saudi Arabia aged between 18 and 60 years. Participants were invited to take part by sending each of them a link to the electronic survey questionnaire through several social networking sites.

Questionnaire
The study used an electronic questionnaire comprising 18 questions. The questionnaire was written in two versions (English and Arabic) and reviewed by a bilingual expert. The Arabic version was distributed to ten randomly selected undergraduate medical students as a pilot survey to assess the questionnaire’s reliability. In addition, the questionnaire was reviewed by two pharmacologists to evaluate its reliability. The aim of the study and confidentiality were clarified in a statement at the beginning of the questionnaire, including a statement that the questionnaire is considered being a participation agreement. The participants did not receive any reward or payment for participation. The link to the questionnaire was accessible from November 1 to 15, 2014. Only completed questionnaires were included in the study. The questionnaire was composed of three parts, as shown in Table 1.

Statistical analysis
Statistical analysis of the data was performed using Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA) for Windows 23.0 software package. Data were presented as frequencies and percentages for each answer.

RESULTS

Demographic characteristics of participants
A total of 1808 questionnaires were collected and analyzed. As shown in Table 2, most patients were females (72%). More than a third of the participants (37%) were aged between 26 and 35 years, and 72% of the participants were married. University graduates accounted for 68% of the population, whereas only four participants were noneducated. Occupations of the respondents were represented approximately equally by students, government workers, and others such as businessmen and retired workers. About 36% of the participants had an average monthly income of >10,000 Saudi Riyals, whereas only 13% had an average monthly income of <3000 Saudi Riyals.

Participants’ knowledge regarding the use of analgesics
As shown in Table 3, analgesics without prescriptions were used by 71% of the participants. The top three most frequently used OTC analgesics in the study population were Adol (hydrocodone–acetaminophen), fevadol (paracetamol), and ibuprofen, with a frequency of 35%, 28%, and 10%, respectively. The majority of the participants (80%) agreed that analgesics are harmful to pregnancy.

| Table 1: Main topics addressed by the study questionnaire |
|----------------------------------------------------------|
| Part | Main questions |
| Part I: demographic data | Participants were asked about their (1) age, (2) sex, (3) marital status, (4) level of education, (5) field of work, and (6) monthly income. Participants were also asked if they had any chronic medical condition. |
| Part II: knowledge regarding analgesics | Participants were asked about (1) sources of painkiller prescriptions, (2) frequently used painkillers, (3) whether painkillers harm pregnancy, (4) indications for painkiller use, (5) their adverse effects, (6) knowledge of the correct dose of painkillers, (7) appropriate age to use aspirin, and (8) time of intake of painkillers. |
| Part III: Attitudes regarding the use of analgesics | Participants were asked about (1) symptoms requiring painkiller use without consultation, (2) severity of pain forcing painkiller use, (3) reading product information before using painkillers, and (4) knowing the expiration date of painkillers. |

| Table 2: Demographic data of the study participants (n=1808) |
|-------------------------------------------------------------|
| Characteristics | Frequency (%) |
| Age (years) | |
| 15-25 | 582 (32) |
| 26-35 | 677 (37) |
| 36-45 | 353 (20) |
| 46-59 | 154 (9) |
| ≥60 | 42 (2) |
| Gender | |
| Male | 509 (28) |
| Female | 1299 (72) |
| Marital status | |
| Unmarried | 510 (28) |
| Married | 1298 (72) |
| Education level | |
| Uneducated | 4 (0) |
| Primary | 23 (1) |
| Intermediate | 83 (5) |
| Secondary | 466 (26) |
| University | 1232 (68) |
| Occupation | |
| Student | 550 (30) |
| Governmental workers | 661 (37) |
| Other | 597 (33) |
| Average monthly income | |
| <3000 | 240 (13) |
| 3000-5000 | 356 (20) |
| 5000-10,000 | 568 (31) |
| >10,000 | 644 (36) |

Participants were asked about (1) symptoms requiring painkiller use without consultation, (2) severity of pain forcing painkiller use, (3) reading product information before using painkillers, and (4) knowing the expiration date of painkillers.
Table 3: Participants’ knowledge regarding the use of analgesics (n=1808)

| Question                                      | Frequency (%) |
|-----------------------------------------------|---------------|
| Source of painkillers                         |               |
| Prescription                                  | 523 (29)      |
| Recipe from a pharmacist                      | 702 (39)      |
| Advice from friend or relative                | 455 (25)      |
| Media                                         | 80 (4)        |
| Other                                         | 48 (3)        |
| The most frequently used OTC painkiller       |               |
| Panadol                                        | 120 (7)       |
| Fevadol                                       | 696 (38)      |
| Adol                                          | 501 (28)      |
| Lenadol                                       | 20 (1)        |
| Tylenol                                       | 106 (6)       |
| Ibuprofen                                     | 178 (10)      |
| Advil                                         | 122 (7)       |
| Sabofen                                       | 46 (3)        |
| Voltaren                                      | 8 (0)         |
| Aspirin                                       | 2 (0)         |
| Solpadeine                                    | 6 (0)         |
| Rofenac                                       | 3 (0)         |
| Painkillers can cause harm to pregnancy       |               |
| Yes                                           | 1448 (80)     |
| No                                            | 360 (20)      |
| Other indications of painkillers              |               |
| Reduce the fever                              | 1224 (68)     |
| Help to get sleep                            | 9 (0)         |
| Fatigue                                       | 5 (0)         |
| Flu symptoms                                  | 490 (27)      |
| Anti-inflammatory                             | 11 (1)        |
| Blood thinner                                 | 69 (4)        |
| Adverse effects of painkillers                |               |
| Peptic ulcer                                  | 774 (43)      |
| Shortness of breath                           | 339 (19)      |
| Allergies                                     | 528 (29)      |
| Drug-drug interactions                        | 167 (9)       |
| Do you know the correct dose that you need    |               |
| from the painkillers?                         |               |
| Yes                                           | 1383 (76)     |
| No                                            | 425 (24)      |
| Appropriate age for a child to use aspirin    |               |
| <12                                           | 184 (10)      |
| ≥12                                           | 1624 (90)     |
| Timing of intake of painkillers               |               |
| With meals                                    | 1652 (91)     |
| On empty stomach                              | 156 (9)       |

were asked if they were aware of other indications of analgesics (other than pain), 68% were aware that analgesics could be used as antipyretics, and 27% were aware of the effective use of analgesics to relieve flu symptoms. Still, only 1% acknowledged the anti-inflammatory effects of analgesics. Forty-three percent of the participants knew that analgesics might cause peptic ulcers as an adverse effect. Ninety percent of the participants believed that analgesics must not be given to children aged <12 years. Only 9% of the participants believed that analgesics could be taken on an empty stomach, whereas the majority of participants (90%) were aware that analgesics must be taken with meals.

Participants’ attitude regarding the use of analgesics

Data on participants’ attitudes regarding the use of OTC analgesics are summarized in Table 4. When participants were asked about the symptoms for which they could take OTC analgesics without medical consultation, 50% of them stated headaches, followed by 32% who stated menstrual pain as a symptom. Sixty-seven percent of the participants used analgesics only for severe pain. Seventy-two percent of the participants stated that analgesics could be administered with other medications. Eighty percent of the participants had the habit of reading the drug product information, whereas 77% were careful about the expiry date.

Discussion

Our study results revealed a widespread self-medication with OTC analgesics among this population, with users exhibiting inadequate knowledge and attitudes regarding OTC analgesics.

The present study showed that females used OTC pain medications more frequently than males and were more knowledgeable than males, which is consistent with other studies conducted on different populations such as Norwegian and American. This general observation may be because pain perception in females differs from that in males, indicating that females comparatively need more painkillers. Further, most OTC analgesic users were between 26 and 35 years of age, with 30% being students. Almalak et al. reported that 48.1% of university students used OTC analgesics and found that 76% of the respondents reported receiving therapeutic doses. On the contrary, Wongrakpanich et al. showed that OTC analgesics were used more commonly among >60-year-old individuals. However, the direct comparison between studies is difficult due to the differences in methodologies.

Thirty-eight percent of the respondents used fevadol without a prescription, 28% used Adol, 10% used ibuprofen, and a negligible number used aspirin as an OTC analgesic. Paracetamol was the most common OTC analgesic used in the Norwegian and the USA studies. However, these results differ from those reported by Wolf et al., who surveyed athletes and found that 80% of them self-administered ibuprofen, whereas paracetamol and aspirin were used by 29% and 71%, respectively. The differences in results are more likely because Wolf et al. conducted their research on athletes who were commonly suffering from muscle/joint pain, whereas in our study, headache was the most common cause for the use of OTC analgesics.

Seventy-one percent of our study participants used OTC analgesics without prescriptions. This prevalence is comparable to that observed in an earlier study which reported that 87.2% of medical students use analgesics without prescriptions. An
The alarming finding was that three-quarters of the respondents in this study reported taking analgesics concomitantly with other drugs, putting them at risk of analgesic drug–drug interactions. Therefore, physicians should be encouraged to inquire about the use of OTC analgesics routinely.

Individuals self-medicate by obtaining OTC medicines from pharmacies. However, this may be harmful because of inaccurate or insufficient knowledge about the use, indications, adverse effects, and contraindications of some OTC drugs.

**Conclusions**

We conclude that inadequate knowledge and attitude regarding the use of OTC analgesics are prevalent among individuals in Saudi Arabia. The US Food and Drug Administration has established an awareness program regarding the safe use of OTC analgesics. The need for local awareness programs is emphasized for increasing knowledge among the public about taking analgesics based on prescriptions and discontinuing the habits of self-prescription. Thus, we believe that the findings of our study are valuable in recognizing the target audience and the health education program.

**Study limitations**

The main limitation in the present study was the use of an online questionnaire, which enabled a selective sample of the population to use it and excluded those who do not use computers.

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**Availability of data and material**

Data that support the findings are available in “figshare,” http://doi.org/10.6084/m9.figshare.5500237.

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**Conflicts of interest**

There are no conflicts of interest.

**REFERENCES**

1. Schmiedl S, Rottenkolber M, Hasford J, Rottenkolber D, Farker K, Drewelow B, et al. Self-medication with over-the-counter and prescribed drugs causing adverse-drug-reaction-related hospital admissions: Results of a prospective, long-term multi-centre study. Drug Saf 2014;37:225-35.
2. Moore N, Pollack C, Butkerait P. Adverse drug reactions and drug-drug interactions with over-the-counter NSAIDs. Ther Clin Risk Manag 2015;11:1061-75.
3. Koffeman AR, Valkhoff VE, Celik S, W't Jong G, Sturkenboom MC, Bindels PJ, et al. High-risk use of over-the-counter non-steroidal anti-inflammatory drugs: A population-based cross-sectional study. Br J Gen Pract 2014;64:e191-8.
4. Brune K, Patrignani P. New insights into the use of currently available non-steroidal anti-inflammatory drugs. Pain Res 2015;8:105.
5. Coelho-de-Souza LN, Gomes ST, Abdon AP, Campos AR. Physical therapists understanding and attitudes toward non-steroid anti-inflammatory drugs. Br J Anaesth 2013;111:52-8.
6. Roberts E, Nunes VD, Buckner S, Latchem S, Constanti M, Miller P, et al. Paracetamol: Not as safe as we thought? A systematic literature review of observational studies. Ann Rheum Dis 2016;75:552-9.
7. Cooper RJ. Over-the-counter medicine abuse—a review of the literature. Subst Use 2013;18:82-107.
8. Marco CA, McGervey M, Gekonde J, Martin C. Pain scores among ED patients: Correlation with desire for pain medication. Transl Unio Toledo J Med Sci 2014;41:1-4.
9. Ibrahim NK, Alamoudi BM, Baamer WO, Al-Raddadi RM. Self-medication with analgesics among medical students and interns in King Abdulaziz University, Jeddah, Saudi Arabia. Pakistan J Med Sci 2015;31:14-8.
10. 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;12:315-26.
11. Aljadhayy H, Assiri GA, Mahmoud MA, Al-Aqeel S, Murray M. Self-medication in Central Saudi Arabia. Community pharmacy consumers’ perspectives. Saudi Med J 2015;36:328-34.
12. Dale O, Borghgrevink PC, Fredheim OMS, Mahie M, Romundstad P, Skartveit S. Prevalence of use of non-prescription analgesics in the Norwegian HUNT3 population: Impact of gender, age, exercise and prescription of opioids. BMC Public Health 2015;15:461.
13. Bartley EJ, Fillingim RB. Sex differences in pain: A brief review of clinical and experimental findings. Br J Anaesth 2013;111:52-8.
14. Almalak H, Albluwi AI, Alkhelb DA, Alsahel HM, Khan TM, Hassali MAA, et al. Students’ attitude toward use of over the counter medicines during exams in Saudi Arabia. Saudi Pharm J 2014;22:107-12.
15. Wongrakpanich S, Wongrakpanich A, Melhado K, Rangaswami J. Comprehensive review of non-steroidal anti-inflammatory drug use in...
the elderly. Aging Dis 2018;9:143-50.

16. Nelson AP, McQuarrie DA. The effect of discrete charges on the electrical properties of a membrane. J Theor Biol 1975;55:13-27.

17. Wolf DA, Miller TW, Pescatello LS, Barnes C. National collegiate athletic association division I athletes’ use of nonprescription medication. Sports Health 2011;3:25-8.

18. El Ezz NF, Ez-Elarab HS. Knowledge, attitude and practice of medical students towards self medication at Ain Shams University, Egypt. Prev Med Hyg 2011;52:196-200.

19. Valerić Z, Tregubenko P. Using over-the-counter and other prescription medications to potentiate opiates in the USA: Literature review. Med Public Heal Asp OTC Med Misuse J Alcohol Drug Depend Subst Abus 2019;5:12.

20. Mehuys E, Crombez G, Paemeleire K, Adriaens E, Van Hees T, Demarche S, et al. Self-medication with over-the-counter analgesics: A survey of patient characteristics and concerns about pain medication. J Pain 2019;20:215-23.

21. Carrasco-Garrido P, de Andrés AL, Barrera VH, Jiménez-Trujillo I, Fernandez-de-las-Peñas C, Palacios-Ceña D, et al. Predictive factors of self-medicated analgesic use in Spanish adults: A cross-sectional national study. BMC Pharmacol Toxicol 2014;15:36.

22. Administration USF and D. Drugs@FDA: FDA Approved Drug Products. Safe Use of Over-the-Counter Pain Relievers and Fever Reducers; 2018. Available from: https://www.fda.gov/drugs/resourcesforyou/consumers/buyingusingmedicinesafely/understandingover-the-countermedicines/safeuseofover-the-counterpainrelieversandfeverreducers/default.htm. [Last accessed on 2018 Jul 20].