Short Communication

Use of over the counter medications among adolescents

Antesar M. Boshhiha*, Zahia M. Boshaiha, Asraa T. Yousuf, Hanan A. Sad

Department of Pharmaceutics, Faculty of Pharmacy, Benghazi University, Benghazi, Libya

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***Corresponding Author**
Antesar.Boshheha@uob.edu.ly

Abstract

Improper use of medicines may carry possible health dangers and more evidence continues to stand that adverse drug reactions to medicines are common but often preventable. Self-medication phenomena with over the counter medicines is common among people. It is regarded as essential issue of self-care. Over the counter medicines use such as analgesics among children and adolescents is continuously increasing in Libya. This constitutes an important public health concern. The aim of this study is to focus on adolescent's self-medication phenomena about the over the counter medicines that teens frequently used to treat minor and serious diseases. This work collected information throughout survey-comprised number of questions for the teenagers bought medicines from private pharmacies at two different secondary schools in Benghazi city, Libya, without prescription. The sample size was 120 students, 58 males and 62 females in age range of 15-18 years. Data collected from questionnaire were analyzed for pattern of medicine use. Male adolescents bought toothache and muscle-spasm medicines more frequently than female adolescents. On the other hand, female adolescents administered more over the counter medications monthly than males. The use of over the counter medicines has been found highly rated and exaggerated among secondary school teenagers. In conclusion, adolescents have to be educated regarding over the counter medicine use in Libya. The need for promoting the appropriate use of medicines healthcare system is an important issue. This can be achieved through an educational strategy involved different public sectors such as health and education authorities.

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Introduction

Medicines could be divided into two categories: prescription medicines and over the counter (OTC) medicines that can be dispensed to consumer with and without prescription, respectively. In some countries, there is a third category known as pharmacy-only-medication (also known as behind the-counter medicines) which does not require medical prescription but does require consultation with pharmacist [1]. There are several reports in the literature of prescription-only medications being sold without prescription in many countries and online [2].

Prescription medicines must pass through many clinical trial phases approval by the Food and Drug Administration (FDA) and monitored for safety and side effects even after the medicine is on the market [3]. FDA monitors OTC medicines but it is not as strict as the process prescription medicines must go through.

Although OTC medicines are available without consulting with prescriber or pharmacist, the patient needs to be aware of these medicines still carry health risk [3]. Some OTC medicines could cause drug interactions with prescription medications or strengths the drug`s adverse effects. It is important to mention to prescriber or

pharmacist about all of the OTC medicines being used and to follow the recommended dosing instructions on the label [3]. OTC medicines are usually required to have little or no abuse potential, although in some areas medicines such as codeine are available as OTC (usually in strictly limited formulations or requiring paperwork or identification to be submitted during purchase) [4]. Over the time, medicines that prove themselves safe and appropriate as prescription medicines may be switched from prescription to OTC via FDA as diphenhydramine, cimetidine and Loratdine in the United States and Ibuprofen in Australia [4]. It is occasionally that OTC medicines be withdrawn from the market as result of safety concerns. For example, phenylpropanolamine, ranitidine and viagra were withdrawn from multiple markets [5, 6].

Self-medication has defined by World Health Organization (WHO) as the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms [7]. Self-medication has advantages for healthcare systems as it facilitates better use of clinical skills of pharmacists, increases access to medication and may contribute to reducing prescribed medicine costs associated with publicly funded health programs [8]. However, increasing availability of non-prescription medicines may encourage patients to believe that there is medicine treatment for every ailment. Furthermore, the use of such products may delay or mask diagnosis of serious illness [9]. The increased risks of interactions and adverse reactions and of self-treatment being undertaken when medical aid should have been sought [10]. There is also potential for misuse and abuse of such products [11]. Misuse is using OTC products for legitimate medical reason but in higher doses or for longer period than recommended, e.g. taking more of analgesics than recommended to treat headache [12].

Pharmacists and medicine dispensers are the final link between medication and patients. Sometime public finds pharmacist as an easily accessible and acceptable source of advice and suggestion. Pharmacists could play an important role in modifying the behavior of patients as far as self-medication is concern. They can also provide appropriate, understandable and relevant information to patient about their medications and various types of OTC [13]. There has relatively been little systematic research on the topic, partly due to the perception that misuse or abuse of OTC medicines is not as problematic as other types of medicine abuse [14]. Work on abuse and misuse focused mainly on the views of pharmacists and public opinion work on community pharmacy services have not investigated inappropriate use of OTC medicines [15]. The misuse of medical products, prescription and OTC, is of increasing concern globally [16]. This may be related to their increased availability, inexpensive cost and perceived safety [17]. The public must be educated on the type of illnesses that are to be self-diagnosed and medicated and about the pitfalls and hazards of OTC [18]. Although legislation does exist in certain countries around medication supply, in many cases, it is not strictly enforced. One can usually buy almost any medication, with the exception of narcotics and major tranquilizers from community pharmacies [19]. The medicines most frequently used through self-medication are analgesics and antipyretics, non-steroidal anti-inflammatory medicines and antimicrobial agents [20].

Adolescents, defined by WHO to be persons aged 10-19, are particularly vulnerable during the transition from childhood to young adulthood. It is a time when adolescents experience an increased need for a sense of belonging and acceptance among their peers [21]. It is early in adolescence when parents and caregivers typically begin to transfer responsibility for independent self-medication at about age 11 or 12 and shift increasingly more as the child ages [22]. Adolescents are, therefore, assuming greater autonomy in medication self-management at a time when they are balancing significant changes in themselves and their environment. Adolescents' false perceptions of OTC medication safety have likely contributed to the increase in misuse [23]. Easy accessibility to OTC medications likewise contributes to adolescents' false perceptions that they are safer than those requiring a prescription. OTC medications can be purchased in absence of patient counseling or assistance from pharmacists [24]. Thus, the aim of this study is to monitor on adolescent's self-medication phenomena about the over the counter medicines that teens frequently used to treat minor and serious diseases.

Materials and methods

A self-prepared survey was comprised of 17 questions distributed to students from two different secondary schools and they fill it voluntary. The initial questions designed to obtain demographic data concerning the participated students. The rest part of the questions was concerning special questions to define frequency of the medicines bought without prescription. The number of the students was 120 students, 58 male students and 62 females in age range of 15 - 18 years old. The secondary schools located in Benghazi, Libya. The questionnaires in

Arabic language were voluntary distributed during 2021. Descriptive analysis, including frequency and percentage, were used to estimate prevalence of use of prescription medications, over the counter medications or dietary supplements; concurrent medication use and medication interactions among the entire student sample and stratified by adolescent's gender. The response to all questionnaires collected and analyzed with SPSS program, version 2012.

Results and discussion

This study was carried out for secondary school students (aged 15–18 years old) to monitor the pattern of medicines used without prescription. The student's response to the survey questions was more from the male students at first year secondary school in comparison to the second and third year students. However, female students at the second year of the secondary school were more responsive to survey questions than the female students in the first and third year students, respectively. The age of 18 years is particularly relevant for medicine use due to the transition from adolescence to the legal definition of adulthood [18]. This study attempts to highlight the most frequently used medicines and the reasons for use, as well as focused on self-medication phenomena in Libya, particularly in case of medicines requiring medical prescription. In this study, it was clearly noted that female adolescents used medicines from the private pharmacies without prescription more frequently than male adolescents does. This might be due to the female may need more analgesics than other OTC medicines for other purposes. There has been a trend for the public to perceive OTC medicines to be safer than prescription medicines [25] but it has been recognized that OTC medicines have the potential for harm risk as well as for benefit use [26]. This may result in what has variously been referred to as misuse or abuse of OTC medicines and their potential cause of addiction and dependency [17].

Figure 1 shows male adolescents bought toothache and muscle-spasm medicines from private pharmacies more frequently than female adolescents. This frequently use might be correlated to the heavy physical exercise that mostly carried out by male adolescents. However, female adolescents bought headache medicines, which might be related to the pain associated with menstrual cycle pain and migraine that occur with females. Male adolescents tend to buy more other medicine directly from private pharmacy than females, which might be related to some reasons connected to social life issues over the last 10 years. There is also variation between the adolescent's gender in buying medicine from private pharmacy directly which might be associated with different reasons according to gender and their manner of life-style. The most common illness for the purchase of OTC medicines among adolescents was pain which included dental pain and body pains. This is in line with the previous study conducted by Nagaraj et al. [27]. Other illnesses as headache, gastrointestinal problems as diarrhea, constipation, respiratory illness as cough and fever [28].

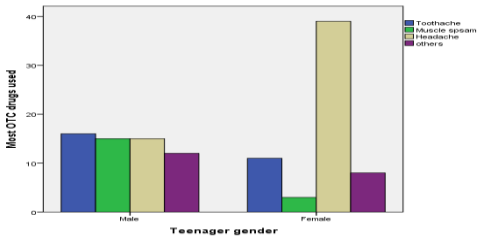

Figure 1: Teenager gender and classes of OTC medicines used

With regard to comparison between male and female adolescents towards medicine use frequency. The present findings clarify that male adolescents use more OTC medicines daily and weekly than females. Additionally, the female adolescents administered more OTC medicines monthly than males which might be authorised to occurrence of fatigue and mensuration in females. Generally, women are more likely to concurrently use dietary supplements [18].

When contraceptives are excluded from the analyses, females continue to significantly used more medicines than males [29]. During this study, the reasons for using medicines without prescription among teenager gender are varied as shown in **Table 1**. The male adolescents bought the medicines for time saving and when they know the medicine more frequently than that of the females. Moreover, female adolescents bought the medicines for other reasons than time saving more frequently than that the males.

Table 1: Teenager gender and reasons of using medicine without a prescription

Teenager gender	Reasons of using medicines without prescription			Total
	Time saving	Patient know the drug	Other reasons	
Male	17	30	11	58
Female	11	37	14	62
Total	**28**	**67**	**25**	**120**

At Libyan pharmacies, people sometimes purchase medicines that require medical prescription without it, therefore, not complying with the mandatory requirement of presenting and withholding medical prescription. Lack of control in the dispensing of prescription medicines is a

matter of concern for the regulatory agency from the Libyan authorities.

Table 2 shows female teenagers experience more side effects of using medicines without prescription in comparison to male teenagers. Females experience more side effects; this might be due to more consuming of medicines without prescription monthly than the male teenager as shown in the previous results.

Table 2: Teenager gender and experiencing drug side effects after use

Teenager gender	Experiencing a drug side effects		Total
	Yes	No	
Male	14	44	58
Female	7	53	60
Total	**21**	**97**	**118**

Generally, the source of the teenager's information about medicines is predominantly from the physicians to the female teenagers than male teenagers (**Figure 2**). The female teenagers have more information about medicines from frequent visiting to the private pharmacists than males. Also, male teenagers have more informations about medicines from friends and internet than females have.

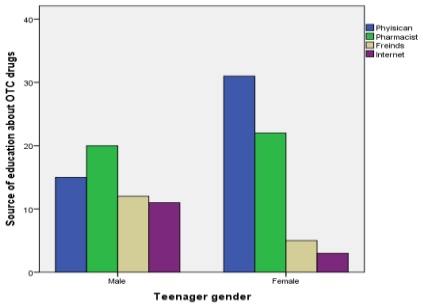

Figure 2: Teenager gender and source of education about OTC medications

Indeed, it appears that female teenagers trust physicians and pharmacists more than the males who depended more on the friend`s information and the different web sites present at social media. The present study shows a slight difference in male adolescent behavior towards painkiller tablets, whereas 30 males take painkillers and 28 did not use it. This might be due to life-style or the environment surrounding male adolescents. There is significant difference in female adolescent behavior for using painkillers. In general, male adolescents used painkiller medicines more frequently than females. The most often used painkillers to treat acute conditions were analgesics, which are OTC medicines that are quite safe with rational use. Although use of more than one type of painkillers may participate in appearance of medicine side effects. The widespread use of this class of medicines is an evidence to educate people on the risks of overuse or misuse of painkillers and the importance of proper diagnosis and adequate treatment of pain to prevent persistent or recurrent conditions [30]. On the reverse, a previous literature study suggested that women may be more likely to use painkillers due to menstrual pain [31]. It is also possible that women generalize their knowledge of the efficacy of OTC for menstrual pain to other types of pain that they may experience [30]. The tendency of medicine leaflet reading is more with female adolescent's group than that with male's group. This indicates that the education levels in female adolescents are might be higher than that in male adolescents. Naturally, female adolescents are more careful in using medicines than males.

This study showed that most male respondents did not try to read the leaflets of their medications. Some adolescents are suffering from chronic diseases as obesity or diabetes mellitus, therefore, pharmacist should ask teenager customers if they suffering from any disease before dispensing medicine to avoid expected complications. In comparison between male and female adolescents who have chronic illness, the male adolescents appear suffering from chronic diseases more than females. With respect to the body mass index, the differences only regarding overall medicine use in males; obese adolescents used 30% more medicines than those with normal body mass index. Physically active adolescents used less medicine than those who are not. However, a small difference was found between them disappeared after stratifying by gender. Subsequently, no differences in self-medication regarding body mass index and level of physical activity were reported [30].

Table 3 displays that female adolescents used concomitant drugs with the requested OTC medicines for medical reasons without prescription more frequently than that in males. The majority of two teenager genders have no tendency to use other medicines for medical reasons without prescription. This suggests an absence of expected drug-drug interaction between the OTC and other medicines used for clinical reasons (which were not evident at this study). These results reverse the findings obtained from the previous question which suggest that male adolescents suffer more from chronic disease than females. Therefore, they were expected to use more concomitant medicines with the OTC medicines. The female adolescents encourage others for using medicines

depending on their previous experience more frequently than the male adolescents.

Table 3: Teenager gender and concomitant use of other medicines due to chronic disease

Teenager gender	Experiencing a drug side effects		Total
	Yes	No	
Male	11	47	58
Female	24	37	61
Total	**35**	**84**	**119**

In a general view, it indicates that adolescents have confidence in themselves to some extent through their ability to advise others to use medicine based on their previous experiences. Several psychosocial and socio-environmental factors are associated with narcotics use among adolescent. In relation to substance abuse, participants were asked if they have ever used illegal medicines. The results of the previous use of narcotics among teenager genders suggested that narcotic medicine use in female adolescents is less frequently compared to males and in both teenager genders. The rate of narcotics use was quite low. Those results show that morals and ethics of the Libyan adolescents are very high enough to prevent them from such misuse with narcotics. Violence towards pharmacists was reported at Yemen as some teens cited examples of weapons being used to force pharmacists to sell prescription medicines as tramadol and alprazolam [31].

This study displays that male adolescent's family history for medicine addiction is more frequent than that with females. Those results suggested that family history of medicine addiction is one of the most effective factors for the addiction between teenager genders. The main reasons for presence of family history of using narcotic could be the need of calmness, chronic disease like tumors and escapism from pressures and daily problems. This study has some limitations. First, a larger sample size would likely make the findings more representative. Childhood [15-16 years] abuse and neglect in the background of medicine abuse is strong predictor of initiation of medicine use which needs to be targeted specifically by public health policies. In order to reduce the impact on children that seem to be most affected by these behaviors [32].

Conclusion

Adolescents are one of the largest groups of OTC medication consumers. Using of OTC and non OTC medications by teenagers are increasing in the last few years. Increasing the availability of OTC medicines may enhance the adverse drug reaction in adolescents. It also sheds light on a need of improvements in prescribing practice to physicians and pharmacists. A national plan should be implanted for pharmacists and doctors to play a major role to map the potential for such intervention development and evaluation of medicine misuse by adolescents.

Ethical issues

Including plagiarism, Informed Consent, data fabrication or falsification and double publication or submission have completely been observed by authors.

Author's contribution

A.M. Boshhiha and Zahia M. Boshaiha have designed the study, contributed data analysis tools, performed interpretation of data, and revised manuscript for important intellectual context. A.T. Yousef and H.A. Sad have collected data, contributed data analysis, and drafted the manuscript. All authors have approved the final version of the manuscript.

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Conflict of interest

The authors declared no competing interest.

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