

Knowledge and attitudes of female school students on medications in eastern Saudi Arabia

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ABSTRACT

Objectives: To assess the knowledge and attitude of female students on medications in Al-Khobar city, the eastern province of the Kingdom of Saudi Arabia (KSA).

Methods: The target population consisted of the third-grade intermediate, and all the 3 grades of secondary school female students in the Al-Khobar area, KSA. A multistage stratified sampling design was adopted at the end of 2001. At the first stage, 13 schools were selected, of which classes were selected in each level using a simple random sampling design. All students in the selected classes were included in the study. The total number of selected students was 1331 females.

Results: The mean age of students was 16.1 ± 1.7 years. Students from the government schools constituted 72.8%. Two-thirds of the students were in the secondary school grade. The Saudi single students constitute the majority. The study shows that self-administration of medications by female students was highly prevalent. Thirty-eight percent of the students have used over-the-counter (OTC) medications. Only 153 (11.5%) of the students used medications under medical supervision. Paracetamol was used as a painkiller during menstruation by a high proportion (576 students, 43.3%), while 43.5% used antibiotics during the previous year. Television was the main source of knowledge on medications and health. Age and knowledge of medication's side effects were the main variables found to be significantly associated with the use of antibiotics and OTC medications.

Conclusions: Self-administration of medication was widespread among adolescent girls. There is an immediate need to better understand, and improve the knowledge and medications usage in the schools.

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Although there will always be adolescents who need to take medications at school, however, little has been reported on what they know or do relative to medications, or how adolescents can cope with medications' use in any country.^{1,2} There was also little involvement in terms of activities, and research related to medication management in schools compared to the number of pharmacy professionals who found it an important issue.³ In the Kingdom of Saudi Arabia (KSA), school health education programs organized by the school health services are designed to educate students on many health-related issues such as health and nutritional education during puberty, women health topics, and oral and mouth health. Recently, they have adopted a wide topic on "Health-promoting Schools" (HPS). This topic is one of the World Health Organization (WHO) initiatives.⁴ The goal of the WHO global school health initiative is to increase the number of schools that can truly be called HPS.⁵ The HPS can be characterized as a school that is constantly strengthening its capacity as a healthy setting for living, learning, and working.⁴ The HPS have started in some regions in KSA, and is looking forward to cover the schools all over the country. Among the issues that HPS are focusing is influencing health-related behaviors such as knowledge, beliefs, skills, attitudes, and values. The knowledge and attitudes towards medications are examples of such behaviors that should be implemented at the HPS. In order to prepare the schools in Al-Khobar, KSA, such education should be supported.

Medication information is not yet fully explored in the health education programs in schools except for some brief leaflets, although many adolescents self-medicate, and are familiar with the use of over-the-counter (OTC) medications or medications that

are not prescribed by physicians, as revealed in many studies.⁶⁻⁸ It was reported that, in some countries, the school health curricula and programs related to the use of medications were focused mainly on preventing poisoning, substance abuse, and information on diabetes mellitus and bronchial asthma.³ Other efforts carried on as part of the school health education, in the form of 10 guidelines, intended to encourage activities that will help students (from childhood through adolescence) to become active participants in the process of using medications to the best of their abilities.⁹ The aim of this study is to assess the knowledge and attitudes of young female students in Al-Khobar, eastern province of KSA, on medications.

Methods. This study was part of a comprehensive school survey on self-reported knowledge and practice of school students and their teachers (both males and females) on risks and prevention of coronary heart disease.¹⁰ The target population consisted of the third grade intermediate, and all the 3 grades of secondary school female students in the Al-Khobar area, KSA. Inclusion criteria included both Saudi and non-Saudi students registered in schools at the time of the survey. Students registered in the first and second grade intermediate classes were not included in the study. A multistage stratified self-weighting sampling design was adopted. At the first stage, a systematic random sampling technique was used to select the schools. At the second stage, the classes were selected at each level using a simple random sampling design. All students in the selected classes were included in the study. The total number of selected students was 1331 females. The study was conducted at the end of 2001. Data was collected using a self-administered questionnaire. The questionnaire contained questions on demographic characteristics such as age, marital status, and parents' education. Data on knowledge and different aspects of medications use included side effects, reading patient medication leaflets, completing antibiotic courses, OTC medication use, and the kind of medications used for dysmenorrhea. The questionnaire was filled by students under the supervision of the first author. The fieldwork took 8 weeks. Those who were absent or on vacation were interviewed during this period, to obtain 100% response rate. A pilot study was conducted in one of the schools which was not included in the sample to test the validity of the questionnaire and organizational procedures. Reliability of the answers using the test-retest method was carried out. The Kappa statistics,¹¹ as a measure of reliability, was calculated for each question. Kappa statistic was found to range from 0.4-0.7. This was considered as fair to good reliability.¹¹ Data analysis was carried out using the Statistical Package for Social Sciences, version 13. Frequency distributions

were obtained, and the logistic regression analysis was used to identify the factors associated with the use of medications. A level of $p \leq 0.05$ was taken as the cut-off value for statistical significance.

Ethical approval for conducting the study was obtained from the Ministry of Education in the Eastern Province, the General Directorates of Female Education, and School Health Services for females in Al-Khobar, KSA. Written permission and cooperation was obtained from all schools, teachers, and students. Health education, both verbally and using educational materials, was given to the teachers and the students.

Results. The study sample included a total number of 1330 female students. **Table 1** shows the demographic characteristics of the female school students. The mean age of students was 16.1 ± 1.7 years. A total of 153 (11.5%) of the students reported that they used medications under medical supervision. A higher proportion of students ($n=502$, 37.7%) used OTC not prescribed by physicians. Nearly half of the students ($n=576$, 43.3%) used paracetamol as painkiller during menstruation, and 579 (43.5%) used antibiotics during the previous year. **Table 2** illustrates self-reported knowledge on different aspects of medications used by female students. The main source of knowledge on medications and health as reported by female students was the television (TV) (61%); other sources of knowledge are listed in **Table 3**.

Logistic regression analysis was used to identify the factors associated with the use of antibiotics and OTC medications among the female students while controlling for other variables. Twelve independent variables were entered into the model such as age, father's education, mother's education, nationality, type of school (government and private), school level (intermediate and secondary), class grade (first, second, third), marital status (married or single), reading drug information leaflet, knowledge of medication side-effects, used drugs on medical advice, and source of knowledge (newspaper, magazine, books, radio, TV, school, hospital, and primary health care centers). **Table 4** shows the variables that were found to be significantly associated with the use of antibiotics were type of school, age, knowledge of medication side-effects; sources of knowledge were newspaper and magazine. The female students who had knowledge of medication side effects were 4.4 times more likely to use antibiotics than the students who had no such knowledge. Older students were 24% more likely to use antibiotics than younger students. **Table 5** illustrates the variables that were found to be significantly associated with the use of OTC medications. These were age, knowledge of medication side effects, and the source of knowledge is school. Similarly students who had knowledge of

Table 1 - Demographic characteristics of female school students.

Demographics	n (%)
<i>Type of school</i>	
Government	967 (72.8)
Private	362 (27.2)
<i>School level</i>	
Intermediate	342 (25.7)
Secondary	988 (74.3)
<i>Nationality</i>	
Saudis	1276 (96.1)
Non-Saudis	52 (3.9)
Age (Mean±SD)	16.1±1.7
<i>Marital status</i>	
Single	1299 (98.3)
Married	22 (1.7)
<i>Father's education</i>	
Illiterate	52 (4.5)
Primary and intermediate school	357 (30.8)
Secondary school	304 (26.2)
University and higher education	445 (38.4)
<i>Mother's education</i>	
Illiterate	253 (20.5)
Primary and intermediate school	471 (38.1)
Secondary school	309 (25.0)
University and higher education	202 (16.4)

Table 2 - Self-reported knowledge on different aspects of medications used by female school students.

Different aspects	n (%)
Side-effects of medication	280 (21.0)
Reading drug information leaflet	977 (73.4)
Completing the full course of the medication	691 (51.9)
Stopping the medication when symptoms disappear	458 (34.4)
Used medication on the advice of parents only	265 (19.9)

Table 3 - Sources of knowledge on medications as reported by female students.

Source of knowledge	n (%)
Daily newspaper	468 (34.3)
Magazines	519 (39.0)
Books	374 (28.1)
Radio	296 (22.2)
Television	811 (60.9)
Primary health care centers	209 (15.7)
Hospitals	381 (28.6)
Schools	432 (32.5)

medication side-effects were 4.4 times more likely to use OTC medications than students who had no such knowledge.

Discussion. Educating female students on the ideal use of medications will encourage them to take responsibility for their own health and well-being. Education will have a major role, as those young girls will be the future mothers who will advise their adolescents in the correct use of medications. This study shows that many girls took advice from their parents. This situation is common in developing countries where parents play an important role in medication education whereas physicians and pharmacists have a limited role.^{4,6} The results of this study indicated that the female students were familiar with the use of medications as 11.5% used prescribed medications, and 38% used OTC medications. Self-medication with antibiotics and the use of pain killers, as shown in this study, is a common practice among adolescents that is reported in many studies.^{6-8,12-14} It was shown from the results that there was a misuse of antibiotics. Only half of the adolescents completed the course, while 34% stopped using it as soon as the symptoms disappeared. Education on the ideal use of antibiotics is needed in order to avoid the spread of antibiotic-resistant bacteria.^{15,16} Desai et al's⁴ study revealed that early medications' education could prevent high-risk behavior in the future. Among the 10 guidelines stated by Bush et al⁹ in their study is that, adolescents should have a right to the information that will enable them to avoid poisoning through the misuse of medications.

The present study suggests providing health education on dysmenorrhea medication to girls for safe and effective treatment. However, paracetamol is not effective for dysmenorrhea as compared to the other non-steroidal anti-inflammatory drugs.¹² It seems that from this study, paracetamol was the most common medication used for menstruation pain among adolescents. Low knowledge of the side effects of this medication and its wide availability may contribute to medication misuse. Self-poisoning among adolescents due to paracetamol is well-known, and has been documented by many researchers.^{17,18} The effect of TV is evident. Adolescent girls chose TV as their main source of health education. Unfortunately, this source is not under the supervision of any agency to ensure quality or accuracy of information. It has been reported that the advertising strategy of OTC medications is centered on the consumer awareness of the product as the primary goal. Educational commitment, however, did not seem to be blended into the promotional efforts.¹⁹ However, schools had been chosen by students among the main sources of health education, and they

Table 4 - Logistic regression analysis showing factors associated with use of antibiotics among female students.

Variables	β coefficient	SE of β	Odds ratio	95% CI of odds ratio	<i>p</i> -value
<i>Type of school</i>					
Government versus private	0.672	0.328	1.96	1.03 - 3.72	0.040
Age	0.218	0.093	1.24	1.04 - 1.49	0.019
Knowledge of medication side effects	1.491	0.332	4.44	2.32 - 8.51	<0.001
<i>Source of knowledge</i>					
Newspaper	0.769	0.301	2.16	1.20 - 3.89	0.011
Magazine	0.644	0.314	1.91	1.03 - 3.52	0.040
Constant	-3.385	1.645			

SE - standard error, CI - confidence interval

Table 5 - Logistic regression analysis showing factors associated with use of over-the-counter medications among female students.

Variables	β coefficient	SE of β	Odds ratio	95% CI of odds ratio	<i>p</i> -value
Age	0.323	0.105	1.38	1.12 - 1.70	0.002
Knowledge of medication side effects	1.480	0.374	4.39	2.11 - 9.14	<0.001
<i>Source of knowledge</i>					
School	0.807	0.331	2.24	1.17 - 4.29	0.015
Constant	-5.518	1.680			

SE - standard error, CI - confidence interval

were found to be significantly associated with the use of OTC medications.

The results of this study revealed that the use of antibiotics and OTC medications was significantly related to age and knowledge of medication side-effects as shown in **Tables 4 and 5**. Possible reasons for older students using antibiotics and OTC medications, more than younger students, might be that they started to be aware of their health and appearance, and that they started to use medications for even milder ailments. Furthermore, elderly students are more at risk of conditions such as acne vulgaris and dysmenorrhea, for which self-treatment is common. Other reasons include the influence of advertisements and mass media such as newspaper, magazines, and TV. These findings were similar to other studies which reported that self-medication among adolescents tended to increase with age.^{7,8} The students from government schools were 2 times more likely to use antibiotics than students from the private schools. A possible reason might be that the parents of private schools students are more cautious of their children's health as they are in their education. The influence of newspapers and magazines on students' use of antibiotics was also observed in this study. This result was similar to a study in the USA among college and university students, which found that the majority of the students were frequent magazine-readers, and they used

the advertised pharmaceutical products.²⁰ The study also found a significant correlation between number of advertisements seen and number of products used. The female students whose source of knowledge is school were 2.24 more likely to use OTC medications, than those reporting other sources of knowledge. This finding might be explained by the efforts from the school health services in educating students on the use of medications and self-treatment. The Centers for the Disease Control and Prevention have identified that the schools are an important setting for delivering health education to adolescents regarding main chronic diseases such as diabetes, asthma, and other health issues.^{21,22} A study that examined the self-reported use of OTC medications in the USA showed that the majority (87% of 1059 individuals) were taking at least one OTC medication.²³ Women took significantly more OTCs than did men. However, the study showed no significant associations for overall OTC use with age or with the use of health services. More studies are needed to further explore the factors associated with the use of antibiotics and OTC medications.

We conclude that self-medication is widespread among adolescent girls in Al-Khobar, KSA. Their use was associated with some misuse concerning antibiotics, and choosing the correct medications for dysmenorrhea. It is recommended that there is an immediate need

to better understand, and improve medication usage among female students. This should be implemented at schools, as one of the health-related behaviors that HPS are focusing on. This study raises the importance of providing adolescents with correct information on these medications through schools. Priority health issues and medication education should be included as part of the school curriculum.

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