Consideration of self-medication as a medication error

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Abstract

Self-medication is using medications without a doctor's prescription. Self-medication is an essential part of any health care system. The healthcare system of all countries relies heavily on the ability of an informed public to self diagnose certain ailments and to treat them successfully and inexpensively with non-prescription drugs. They are the most prevalent means for treating the majority of common health problems in the United States. There are over 80 therapeutic categories of drugs which can be grouped in 12 broad therapeutic classes [4].

The main objective of this study was to measure the self- medication at community pharmacies in terms of magnitude of self-medication among Taif University students and also general population in Taif city at western area of KSA, size and different types of commonly dispensed drugs and pharmacist adherence to regulations. In addition, this study will try to determine advantages and disadvantages of self-medication and their effects on healthcare. The study is conducted by using questionnaires as a tool to collect the data regarding self-medications. 500 questionnaires were successfully collected 400 collected from university students and general population; the other one hundred related to pharmacists at community pharmacies. The total frequent use of self-medications was 62.65% while the previous side effect from using of drugs represents 18.9 % for all the studied groups. Anti-inflammatory (85%), cold and flu medicines (75-85%) and cosmetics (60-70%) were the most commonly dispensed drugs while appetite suppressants (15%) and sedatives (5%) were the least administered ones. The two main reasons for using medications are previous experience from similar complaint (75.25%) and lack of time to visit doctors in clinics (72.1%). The main sources of drug information are reading drug pamphlet (65.8%), pharmacist (56.5%), television and internet (53.7%). The excess use of medications can be limited by increasing consumer awareness (33.1%), by applying restriction of dispensing drugs without prescriptions (32.6%), by legalizations (63.5%) and finally by limiting physician expenses (21.9%).

Keys Words: Medication errors, self-medication, Healthcare, Over-the counter.

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1- Introduction

Self-medication is an essential part of any health care system [1]. The healthcare system of all countries relies heavily on the ability of an informed public to self diagnose certain ailments and to treat them successfully and inexpensively with non-prescription drugs [2,3]. They are the most prevalent means for treating the majority of common health problems in the United States. There are over 80 therapeutic categories of OTC drugs which can be grouped in 12 broad therapeutic classes [4].

Over the past two decades the Food and Drug Administration (FDA) has approved that there is a trend for increasing use as more drugs including doxylamine, chlorpheniramine, ibuprofen, hydrocortisone topical (0.25 and 0.5%) and many others [2,3] move from prescription to OTC status. The World Health Organization reported that more than half of all medications are prescribed, dispensed, sold or used incorrectly. Hamel *et al.* have reported that the incidence of false diagnosis and treatment complications were higher in patients who medicate themselves as compared to those who consulted a physician [5-7]. OTC retail sales totalled $17 billion in 2010 [8]. Currently, 35% of adult Americans use medications on a regular basis [9]. The Centre for Drug Evaluation and Research (CDER) division of the Food and Drug Administration (FDA) regulates OTC medications to ensure that they are properly labelled, their benefits outweigh, their risks, their potential for misuse and abuse is low, and that health practitioners are not needed for their safe and effective use. However, there are risks associated with this uses, incorrect self-diagnosis, delaying diagnosis and treatment of serious illnesses (delay in seeking advice from a healthcare professional), increased risk of drug-drug interactions, increased risk of adverse events when not appropriately used, potential for misuse and abuse [10, 11].

The US Food, Drugs and Cosmetics act defines a non-prescription drug as a drug for which directions for safe use by the public can be written [12]. It does not necessarily mean that these drugs are without danger. Like prescription drugs, OTC drugs may produce serious adverse effects, lead to allergic reactions, interact with other drugs, produce physical and psychological dependence and mask serous medical disorders which may require. immediate attention [13]. A study conducted in the eastern province of Saudi Arabia by Al-Freihi (14] draws attention to the potential for drug misuse due to the lack of adherence to this regulation governing the dispensing of drugs by community

pharmacies. Studies conducted in nineteen European countries have shown that self-medication with antibiotics are common. Higher rates of self-medication were found in Eastern and Southern Europe compared to North and West Europe where more strict regulations pertaining to drug dispensing are in act [7]. Self-medication is believed to be pronounced in a larger extent in developing countries where no such regulations are enforced. For example, studies describing self medication and storage in Jordan, Egypt, [15,16]. Pakistan [l7], Sudan [18], Nigeria [19,20], India [21], and Malaysia also suggest considerably high rate of non doctor consultation and self-medication practice [22].

Common OTC drugs include pain relievers; analgesics; allergy medications as antihistaminic, cold and cough remedies, antacids, diet drugs, laxatives and vitamins [23]. Caution is needed with any medication owing to the lack of awareness of the active ingredients present in it. In addition, self treatment delays diagnosis by masking the disease and may lead to various complications and subsequently poor prognosis [24]. A study in community pharmacies revealed that 72% of drugs dispensed were over-the counter requested by the client or recommended by the pharmacist [25], while another study revealed that 22.3 % of drugs dispensed were recommended by the patient himself or his relatives and friends [26]. Hazards are risk of a dangerous rise in blood pressure from taking weight-loss drugs; possible addiction to stimulant, skin cancer by using hydrocortisone creams [27]. Antacids can interfere with absorption of other drugs, large doses of dextromethorphan, a cough suppressant found in many OTC cough remedies; has been reported to cause drowsiness and difficulty in breathing [28].

2-Materiels et Methods

The main objective of this study were to measure the self-medication at community pharmacies in terms of, commonly dispensed drugs, pharmacist adherence to regulations and the magnitude of self- medication in Taif city. In addition, this study will also assess public or special populations toward the usage of medicines at western area of KSA. This work will try also to determine worseness or benefits of self-medication and their effects on healthcare.

2.1-Study design

A cross-sectional study was conducted using questionnaire as a tool to assess public or special populations toward the usage of self-medications. These questionnaires were

classified into two groups

2.2- The first group: questionnaire Sample (n = 400) for: University students at Taif University (age: 15-25): It is subdivided into:

a) Medical students whether males (n = 90) or females (n = 64).

b) Non-medical students whether males (n= 80) or females (n = 51).

c) General population (age: 25-45) whether males (Sample n=75) or females (n =50) in Taif city at western area of Saudi Arabia.

2.3- The second group: Questionnaire for pharmacists at community pharmacies in Taif city at western area of Saudi Arabia to measure the self-medication at community pharmacies (n=100). One hundred pharmacists have participated in this study. Most of of them were expatriates (83 Egyptian, 2 Indian, 14 other nationalities) holding a bachelor degree in pharmacy. In terms of experience about 40 (40 %), were with experience of 2-5 years, while others 60 (60%) were with experience more than five years.

2.4- Data collection tool of questionnaires

The questionnaires were developed after extensive literature search in the known databases [29-31]. The two questionnaires were developed and revised carefully through an expert team of researchers. The questionnaires were translated into Arabic language and then, were piloted on 20 respondents to obtain their feedback on the questionnaire draft; the respondent's comments were taken in consideration in the final draft of the questionnaire in this study. The first questionnaire (Arabic) was used to collect data from University students at and general population in Taif city at western area of Saudi Arabia about the use of self-medication, the frequency of using them, type of medication requested by students, reasons for requesting it, some individual behaviours in illness, knowledge of potential hazards of drugs, pharmacist instructions when dispensing drugs and the opinion of students on how to limit the problem of misuse of drugs. The second questionnaire (Arabic) was used to collect data from pharmacists at community pharmacies to measure the rates of dispensing medications and also to identify the most commonly used medications such as anti-inflammatory, analgesics, antibiotics, GIT drugs, vitamins, anti- tussives, eye drops and drugs for weight loss or appetite suppressants. Data were collected from Taif University and general population in the public areas such as shopping malls and health centres in addition to community pharmacies at western area of Saudi Arabia.

3- Results

The description of the studied sample is represented m Table (1), the sample comprises three groups: Group 1 (University Medical students): 36.0 % of the studied sample and it involves students belong to medical colleges e.g. pharmacy and medicine.

Group 2 (University non-medical students) 32.75% of the studied sample and it involves students from other non-medical colleges. Group 3 (General population): 31.25% of the studied sample and it involves people from general population. It was noticed also that 41.25%> of the studied sample was females; age of university students ranged from 15-25 years represent 68.75% of the studied sample as presented in table 1 and figure 1.

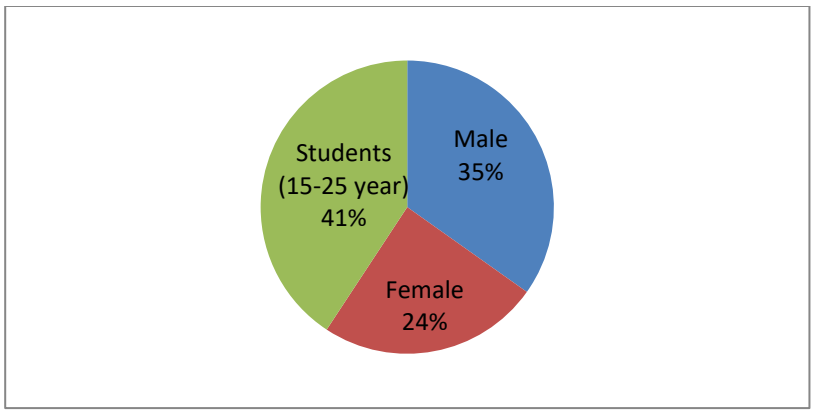

Figure 1. Profile of the studied sample

Table l. Description of the studied sample

Items	Number n=400	%
Sex		
Male	235	58.75
Female	165	41.25
Group		
Medical students	144	36.0
Non medical students	131	32.75
General population	125	31.25
Age		
Students (15-25 year)	275	68.75
General population (25-45 year)	125	31.25

Through analysis of Figure (2), it was observed that the total frequent use of OTC medications was 62.65% of the studied sample. Moreover, it was noted that male's non medical students (71.25%) showed a higher frequent use of OTC drugs than females (60.7%). Table (2) revealed that previous side effect from using of drugs represent 18.9 % for all the studies groups.

Table 2. Frequency and side effects for using self-medications

Character	Females %	Males %	Total %
1-Frequency of using self-medications			
Medical students	64.6 (n=64)	68.75 (n=80)	62.65
Non Medical	60.7 (n=51)	71.25 (n=80)	
General population	56.0 (n=50)	54.6 (n=75)	
2- Previous side effect from drugs			
Medical students	10.9 (n=64)	17.5 (n=80)	18.9
Non Medical	15.6 (n=51)	22.5 (n=80)	
General population	16.0 (n=50)	29.3 (n=75)	
3- Know that drugs may have risks			
Medical Students	75.0	60	62.5
Non Medical	66.6	65	
General population	62.0	46.6	

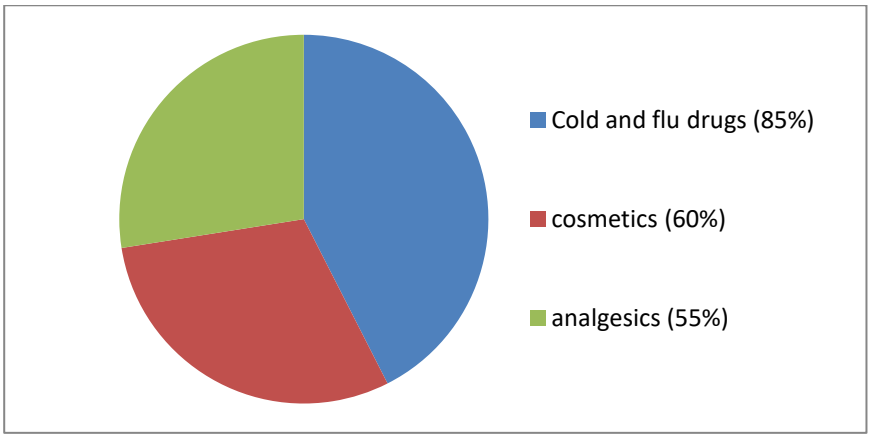

Figure 2 . Frequency of the most using self-medications

Moreover, the present study examined the rate of dispensing of OTC drugs at community pharmacies following two pathways: The opinion of pharmacists having more than 5 years' experience which are illustrated in Figure 3. Rate of dispensing of non-prescribed drugs by pharmacists more than 5 years' experience (GIT drugs=dugs for diarrhoea, colic, heartburn, antacids). Figure 2 demonstrated that the percentage of dispensing drugs were: Cold and flu medicines (85%) > cosmetics (60%) > analgesics and antibiotics (55%) > GIT (50%) > skin drugs, antihistamines, antitussive, anti-inflammatory (45%) > analgesics, antibiotics (35%) > vitamins (20%) > appetite suppressants (15%) > anti-osmotic (10%) > sedatives (5%).

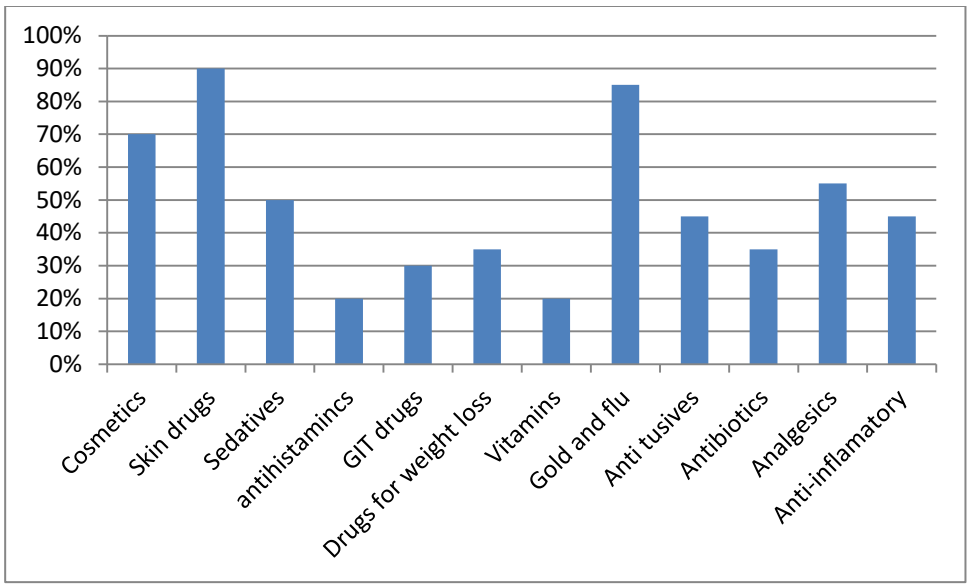

Figure 3. Dispensing of OTC drugs at community pharmacies

Dispensing of OTC drugs at community pharmacies by pharmacists less than 5 years' experience were: Anti-inflammatory (850/0) > cold and flu medicines (75%) cosmetics (70%) > GIT drugs, anti-tussive, analgesics, (65%) > analgesics and antibiotics (55%)> skin drugs, antibiotics (450/0) > vitamins (400/0) > antihistaminic (35%),> anti-osmotic (25%), appetite suppressants (15%), sedatives (5%). Table 3 referred to reasons for using OTC medications among medical, non medical and population groups. Several reasons were reported in this study such as previous experience from similar complaint (75.25 %); 2) lack of time to visit doctors in clinics (72.1 0/0) which represent the two main reasons for using OTC medications. On the other side, very low percentage of consumers relay their uses of medications to two reasons which were fear from doctors

visits (14.8 %) and financial reasons (21.9%). Moreover, the reasons related to pharmacy services and trusting of the pharmacist's knowledge represent 5l.7% and 56.6%, respectively (Table 3). The routine use of antibiotics by subjects complaining of fever and sore throat is a common pitfall as stated by physicians.

Table 3. Reasons of using Self-medications.

Reasons of medication	Medical Student %	Non Medical student %	General population %
Feeling of complaint	67.1	73.1	65.3
From similar complaint	62,1	77.4	70.8
Prophylaxis certain diseases	77.6	49,2	51.2
Fear from doctors visits	33.5	14.3	20.8
Financial reasons	9.6	21.5	27.8
Lack of time to visit doctors	16.6	74.7	73.1
Trusting of pharmacist's	68,8	63.4	49.2
Good pharmacy services	57.0	65.2	52.0

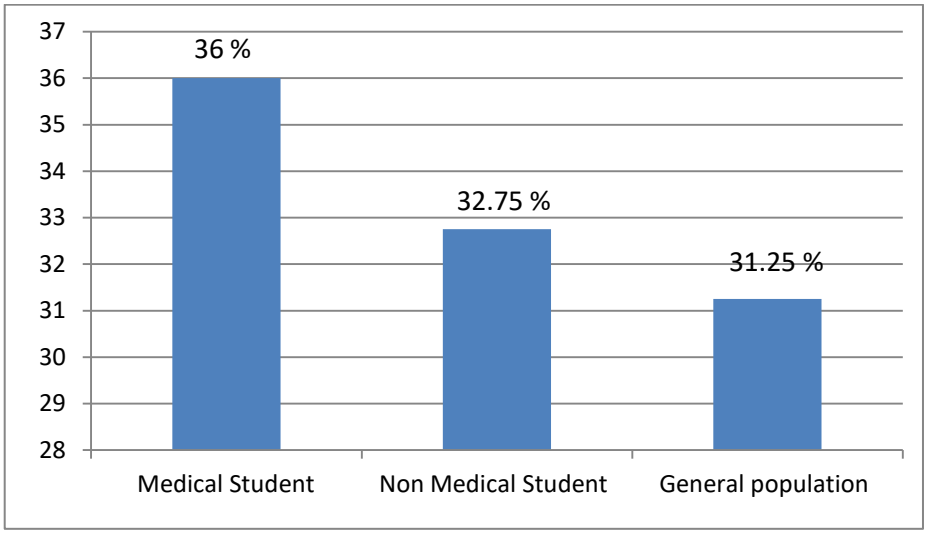

Figure 4. Reasons of using Self-medications.

This behaviour was inquired in the present study and the results showed that 95.0% of the male medical students use antibiotics immediately when complaining of fever and sore throat. It was noticed also that 53.1% female medical students complete antibiotic course even symptoms disappear while 97.5% of male medical students stop

antibiotic course when symptoms disappear (Table 4). Moreover, 83.75% of male non medical students request the cold remedy recommended by the pharmacist without consulting doctors (Table 4). Figure 4 present the means reasons of using drugs by the 3 types of samples, which are nearly similar.

Table 4. Common practice of consumers in illness

Self-medication	Medical Students %	Non Medical %	General population %
1. Complaining of fever **or** Common cold and sore	**64.6**	**63.2**	58.6
2. Antibiotics immediately without doctor's visit	**69.5**	**60.8**	**72.4**
3. Stop antibiotic course symptoms disappear	**39.5**	**38.4**	**35.8**
4. Complete antibiotic course	**76.3**	**36.3**	**37.2**
5. Use cold remedy package	**44.2**	**81.6**	**75.3**

The pharmacist behaviour when dispensing drugs shows that 67.4 of pharmacists ask for physician's prescriptions when dispensing drugs and 67.3 % of pharmacists give information to the consumer regarding dose and side effects of requested drugs, while 30.3 % of them give no information at all. Different sources of drug information are illustrated in Table (5) whereas reading OTC drug pamphlet is the main source and represents 65% of studied sample, followed by pharmacist (56.5%) and finally television and internet (53.7%).

Table 5. Sources of drug information

Sources of drug information	Medical Students %	Non Medical %	General population %
1. Drug pamphlet	53.3	68.6	68.75
2. Pharmacists	40	74.5	62.5
3. Friends	41.3	29.4	41.25
4. Television and internet	34.6	52.9	97.5
5. Hospitals	37.3	35.2	26.25
6. Journals and books	34.6	13.7	46.25
7. Schools and university	29.3	31.3	41.25

However, the least source for drug information is journals and books which represent 29.9 % of the studied sample. It was noticed also that 97.5% of male medical

students prefer obtaining drug information from television and internet. Moreover, 75% of female medical students obtain drug information from drug pamphlet while 74.5% of female non medical students prefer pharmacist as a source of drug information.

Table 6. Opinion of consumers regarding the excess of drugs use

Type of sample	Males %	Females %
	Consumers awareness	
Medical Students	78.0	75.0
Non Medical	68.75	60.7
General population	58.6	60.0
	The absence of legislations	
Medical Students	73.75	73.4
Non Medical	75	45.0
General population	56	58.0

Ranking of those responsible for limiting the problem of" excess use of medications is shown in Table (6). The main person responsible was the consumer himself by increasing his awareness (33.1%), pharmacists through the restriction of dispensing drugs without prescriptions (32.6%) as shown in Table 5, the Ministry of Health by applying legalizations (63.5%): and lastly physicians by limiting their expenses (21.9 %) as shown in Table 3.

4- Discussion

As increasing number of drugs are being sold over the counter, there is a growing need for both the safety of these drugs and their interactions with prescribed drugs to be carefully monitored [32]. In the present study, the total frequent use of self-medications was 62.65% of the studied sample. Moreover, it was noted that male's non medical students (71.25%) showed a higher frequent use of drugs than females (60.7%) as indicated in Table 2. Previous study performed in Saudi Arabia showed that self-administration of medication by female school students was highly prevalent. 38% of the students have used OTC medications [33]. Another study conducted at community pharmacies in Riyadh, Saudi Arabia demonstrated that out of the 347 patients surveyed, 89 obtained their drugs by prescription, 147 obtained O'TC drugs, and 111 customers

purchased cosmetics and similar items. A total of 153 and 188 drugs were dispensed on prescription and over the counter, respectively. 35.1% of drugs dispensed over the counter, there were drugs which should be dispensed on prescription only [35]. Despite that a high percentage of students stated they were oriented with the hazards of non prescribed drugs (62.5%, Table 2), yet frequent use was common. This is a negative attitude and may be due reading the product label of drugs (65.8%, Table 6) before using it. The opinion of pharmacists can be classified according to their experience into two groups. The first group represents pharmacists having more than 5 years experience. The second group represents pharmacists having less than 5 years experience. The study demonstrated that the percentage of dispensing of drugs at community pharmacies by pharmacists more than 5 years' experience are less than the pharmacist with less years experience. It is clear that Anti-inflammatory (85%), cold and flu medicines (75%) cosmetics (70%) , GIT drugs, antitussives, analgesics, (65%) are the most widely dispensed drugs through pharmacists less than 5 years' experience but anti-osmotic (25%), appetite suppressants (15%) and sedatives (5%) are the drugs of lesser use. Thus, it can be concluded that the two groups of pharmacists reported that anti-inflammatory (85%), cold and flu medicines (75-85%) and cosmetics (60-70%) are the most widely dispensed drugs while appetite suppressants (15%) and sedatives (5%) are the least administered ones. A study conducted at community pharmacies demonstrated that analgesics/antipyretics and dermatological drugs were the drugs dispensed most commonly over the counter, while antibiotics were the most common drugs dispensed on prescription [35]. Another study performed among a sample of Students (Medicine, Commerce and Art) in Egypt reported that OTC analgesics (43.8%), vitamins (28.3%), antibiotics (27.5%), and antitussive drugs (23.8%) were the most common OTC medications requested by the subjects. Analgesics were more frequently used by females, while antitussives were more frequently used by males [27]. the drugs administered by self prescription among students were analgesics, antibiotics and tonics [34]. Benjamin et al found that 60% of analgesics and non-steroidal anti-inflammatory drugs were requested by name by the clients themselves [25). Regarding reasons for using an OTC medication, nearly 75.25%, mentioned that the presence of a complaint which previously occurred to them was the reason, however, this depends on the patient's experience with what they considered similar illness and not the physicians' diagnosis and it might be a

quiet different illness. Moreover, 72.1% of the patients have no time to visit doctors in clinics. Some patients are afraid from doctor's visits (14.8%) which are indicated in Table 3. Individuals seek the advice of the pharmacists (56.6 %) most probably to save the expenses of medical advice or to save time of waiting in the clinics. As for reasons that drive people to self treat themselves, financial reasons were an important issue. Some patients may not be able to use over-the counter drugs appropriately for certain diagnoses or chronic conditions or in high risk situations.

In the present study, 95.0 % of the male medical students use antibiotics immediately when complaining of fever and sore throat. It was noticed also that 53.1% female medical students complete antibiotic course even symptoms disappear while 97.5% of male medical students stop antibiotic course when symptoms disappear (Table 4). Other study performed in Saudi Arabia showed that self-administration of antibiotics by female school students was highly prevalent (43.5%) [34]. Health education is needed regarding hazards of antibiotics and precautions in their use. The study reveals significant incidence of misuse and abuse regarding antibiotic sale by community pharmacies [36]. The most of pharmacists (67.4%) ask for physician's prescriptions when dispensing drugs, however, some pharmacists (30.3%) gave no information on drugs to consumers (Table 5); this is probably due to workload of dispensers. Giving detailed advice may be difficult in a busy pharmacy. The cold remedy drug package recommended by the pharmacists for treating symptoms of common cold was frequently used by consumers in this study (76.3%, Table 4). Our finding is consistent with the study performed on female school students in eastern Saudi Arabia which revealed that television is main source of drug information [34]. Another study performed in Taif city at western area of KSA [37] confirmed our finding whereas it was reported that television and internet have the highest effect on consumers as represented by 63.8% and 56.2%, respectively. In the present study, the problem of excess use of self-medications drugs can be limited through. four pathways which are: By increasing the consumer awareness (33.1%), by applying legalizations (63.5%) of the Ministry of Health as indicated in Table 7, by limiting Financial reasons which is represented by (21.9%) in Table 3 and by restriction of dispensing drugs without prescriptions (32.6%) through pharmacists and as our previous studies concerning the medication errors (38-40).

5- Conclusion

This study demonstrated the size of problem of self-medications in Taif city of KSA whereas the total frequent use of self-medications was 62.65%. Moreover, 18.9 % of the respondents complain from side effect due to using of drugs. Anti-inflammatory (85%), cold and flu medicines (75- 85%) and cosmetics while appetite suppressants (15%) and sedatives (5%) were the least administered ones. Reading drug pamphlet (65.8%), pharmacist (56.5%), television and internet (53.7%) are the main sources of drug information. The excess of self-medications can be limited by, increasing consumer awareness (33.1%), by restriction of dispensing drugs without prescriptions (32.6%), by applying legalizations (63.5%) and limiting physician expenses (21.9 %). Regarding these results, it is preferred to consider self-medication as medication errors.

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