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A Survey on the Usage of Over-The-Counter Drugs and Related factors in Dubai, UAE

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Abstract : Over the counter drugs (OTC) are exhaustively used as self-medication, but can be related with adverse drug reactions (ADRs). The aim of the study was to evidence the stakeholder's perception on OTC mediated effects depending upon their socio-demographic, background and practicing information. Data was collected from 397 respondents residing in UAE, Dubai using structured questionnaires during the year 2017-18. Data was analyzed using GraphPad 6.0 software for statistical analysis. The magnitude of association between an exposure variable and an outcome variable was calculated using multinomial logistic regression. Results of the study, indicated that analgesics are the most frequently used category consumed in the form of OTC, followed by herbal medicines, iron tablets/folic acid/multivitamins, cough syrup, antacids, anti-biotics, sleeping pills, tranquilizers, anti-pyrectics, anti-histaminic and anti-emetics. Notably, prolong consumption of these drugs are frequently associated with significant adverse effects such as, nausea, drowsiness, vomiting, dizziness, constipation etc in the recipients. Females and graduates were recorded to have more sensitivity towards the ADR associated with OTC medications. Frequent doctor visits showed a significant co-relation with experiencing ADRs. This attitude of disbelieving in pharmacist's instructions and not reading information on leaflet has a strong co-relation with experiencing serious ADR's. Age and food habits did not show any significant co-relation to the experienced ADRs among the studied populations. In nutshell, factors viz. gender, education, frequency of visits to doctor, lack of exercise, heavy smokers exhibited strong co-relation-with frequency of ADRs with OTC drugs usage. Henceforth, pharmacist or physician could play key role in reducing-the incidences of ADRs associated with OTC drugs usage.

Key Words: Over the counter drug, adverse drug reaction, Education, Information source, Pharmacist, Disease.

Introduction

In recent times, where the population is rising sharply, people suffer equally from communicable and non- communicable disease which certainly leads to polypharmacy. This condition encourages visit to doctors, pharmacists and self-medications of non- prescription drugs especially in developing countries where healthcare is becoming expensive. Among which, non-prescription drugs, otherwise known as over the counter drugs (OTC) are those medications that can be bought by patients without consent of physician for treatment of minor ailment. According to United Nations International Drug Control Programme, OTC is a positive trend among patients in developing countries (Paul *et al.,* 2016). This was evidenced in a survey by National Social Life, Health and Aging project that globally OTC were exhaustively being utilized (Sharma *et al.,* 2017).

Prevention and treatment of various conditions are two basic functions of OTC, including but not limited to heartburn, tobacco dependence, allergies, musculoskeletal pain, common cold and headaches. Still there exist a risk of OTC usage which includes adverse drug reactions, addiction issues, inappropriate dosage and improper self-diagnosis. Mostly, self-medication of non-prescription drugs by patient is never discussed by them with physicians sometimes lead to use of non-medical purpose or abuse. Abuse is often intentional, unlike OTC medication misuse, which may be medication used for medical purposes but used incorrectly. Among various OTC medication abuse studies, cough/cold products and opiate-based combination products containing laxatives, hypnotics, analgesics, anti-histaminic, sleep aids and dextromethorphan have been highlighted to possess abuse potential. However, OTC codeine analgesics have been recorded as primary medicine with abuse potential in most of the countries (Sansgiri *et al.,* 2019*;* Paul *et al.,* 2016).

UAE (United Arab Emirates) also known as

Emirates, is a sovereign constitutional monarchy, with federation of seven countries, with an estimated population of 9 million in 2016 (Abduel karem *et al.*, 2017). Self- medication with non-prescribed drugs varies from one place to another and is influenced by factors including, availability of drugs, society, family, education, exposure to advertisements and financial burdens of maintain health systems. The major factor for growth of OTC drug market in UAE is the cost of drugs, specifically for ones without insurance coverage. In a study performed by Haddad *et al.*(2017) overall 51% of consumers were reported to use OTC drugs. But, still there is a need for developing public health system and policies to promote use of OTC in market. In another study, by Khalifa *et al.* (2017) self- medication of sedative/hypnotics (27%) and antibiotics (53%) was highly prevalent in UAE.

Notably, a core research on specific factors affecting self-medication should be conducted. In line to which, a new ideology and perspective would be drawn from the stakeholders. Several specific studies are available that concentrate on self-medication practices on adults and young adults. But, till today there is no specific literature that focuses on self-medication practices of geriatric population and their association with ADR. Moreover, a comparative study of self-medication practices of different demography can also bring a sight to this area. Henceforth, there is an urgent requirement of conducting a study that can aid different stakeholders like academicians, pharmacists, patients, physicians and pharmaceutical companies to understand the entire concept of self-medication. The aim of this study was, therefore, to identify common OTC and different factors associated with their use including adverse drug reactions (ADR). The obtained results are expected to contribute to utilisation of OTC through changes in regulation and policies in UAE.

Methodology

Study design

A descriptive cross-sectional study was conducted in UAE, Dubai with a good number of respondents to have estimation for usage of OTC medications. They were selected using convenience sampling and voluntary participation. The questionnaires were designed that directly gives an idea about their perspective and frequency of OTC consumption.

Data collection

The structured questionnaire was designed and participants were informed about the study and its purposes. The questionnaire was divided into sections based upon review of similar studies. The socio-demographic data and background characteristics of each participant like age, sex, educational qualification etc. were obtained.

Socio-economic and background information including gender, age, education, food habits, chronic disease, exercise, time spent on phone, antibiotic course and general health perceptions were characterized on the basis of qualitative scoring. Attitude was scored using various questions related to safety, adverse drug effects, interactions, usage of OTC and source of information of OTC and their validity. Finally, practice was also measured using several questions on the basis of their visit to doctors, brands, importance of reading prescriptions and cigarettes smoking. Further, the magnitude of association between an exposure variable (education, age, sex etc.) and an outcome variable (OTC drug use side effects) was calculated using multinomial logistic regression. All significant variables from the chi-square were added up one by one in the logistic regression model. Confidence intervals and/statistical significance was calculated: confidence intervals were utilized to quantify the variability of the data in our analysis.

Results

Socio-demographic and background characteristics

All 397 participants completed the interview successfully, among which, majority of them were females (58.7%) between the ages of 25-34 years (table 1). The educational level was measured in level of education attained. Many of the respondents were graduate (86%) and prefer non-vegetarian diet (32%) as food habit. Of the respondents, 84% had no chronic diseases; while diabetes and hypertension were reported in 11% and 4% of total cases, respectively. 40% of individuals exercise twice a month while 26% of them never do exercise. Only 3% used an antibiotic course last month while 97% did not preferred any course of medication. 75% regularly spent an hour on cell phone per day and thinks that their general health is very good (54%).The background information and socio-demographic information of respondents are shown in Table-1 below.

Practice of self-medication with OTC drugs

A Majority of respondents (90%) experience occurrence of ADR while only 10% are those who did not experience any ADR. Among them, 68% consume OTC every 3 months while 25% consumes OTC every 6 months. Similarly, majority (97%) of them claimed that they never visit a doctor before consuming OTC drugs while 6% respondents give one time visit to doctor (table-2). It has been noticed

Table 1: Socio-demographic and background characteristics of the respondents

Variable		Percentage (%)
Gender	Male	41
	Female	59
Age (years)	18-24	22
	25-34	32
	35-44	24
	45-54	13
	55-64	9
Education	Primary	3
	Secondary	8
	Graduation	86
	Post-graduation	3
Food habits	Vegetarian	22
	Non-vegetarian	32
	Omnivores	24
Chronic disease	None	84
	Diabetes	11
	Hypertension	4
	Cancer	1
Exercise	None	26
	Once	9
	Twice	40
	Thrice	7
	Four times	8
	Five times	5
	Six times	1
	Seven times	1
	Eight times	3
Time spent on cell phone per day	One hour	75
	Two hour	14
	Three hour	9
	More than four hour	2
Antibiotic course	None	97
	One	3
	1 hour	75
	2 hours	14
	3 hours	9
	More than 4 hours	2
General health perceptions	Extremely good	0
	Very good	57
	Good	27
	Average	16

that 61% of respondents didn't even care of brand name while consuming OTC and 58% slightly agrees to the fact of importance of reading prescription they are confident to buy OTC without prescription. 39% of respondents slightly disagree to the fact that OTC drugs causes addiction. 92% of the respondents slightly disagree on the interaction of OTC drugs with other material. Moreover, survey also reported that 54% respondents consume 10 cigarettes per day. The practice of OTC medication and related qualitative

Table 2: Other respondent-dependent variables

Variable		Percentage (%)
Adverse drug effects	Yes	90
	No	10
Frequency of OTC drug intake	Monthly	25
	Quarterly	68
	Bi-annually	7
Frequency of visit to doctors	No visit	1
	One visit	6
	Two visit	93
Significance of Brand while consuming OTC drug	Yes	39
	No	61
Importance of reading prescription	Strongly agree	16
	Agree	26
	Slightly agree	58
Addiction causing OTC drugs	Slightly agree	25
	Neutral	36
	Slightly disagree	39
Interaction of OTC drugs with other material	Slightly agree	4
	Neutral	2
	Slightly disagree	92
	Disagree	2
Cigarette smoking	Two	4
	Three	13
	Four	2
	Ten	54
	Twenty	4
	Thirty (One pack)	19
	Sixty (Two packs)	4
OTC safety	Agree	1
	Slightly agree	21
	Neutral	7
	Slightly disagree	65
	Disagree	6
Sources for information	General practitioner	31
	Pharmacist	41
	Internet	4
	Nurse	20
	Family	4
Types of information searched on internet	Diagnosis	11
	Treatment	56
	Others	33
Social media as source of information	Yes	4
	No	96
Validity of information	Agree	8
	Slightly agree	9
	Neutral	78
	Slightly disagree	2
	Disagree	3

factors of respondents are shown in Table 2 below. Of those who consumed self-medication, nearly 38% of the population consumes analgesics and approximately 21% agrees to use NSAIDs in the last month to treat pain symptoms (Fig. 1)

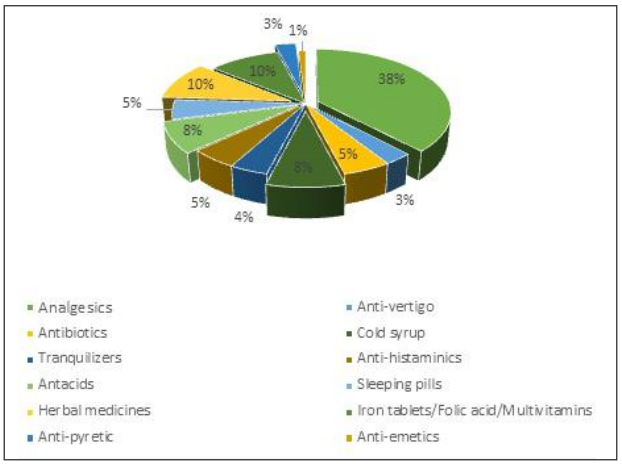

Fig. 1: Most preferred OTC classes by respondents

However, around 65% slightly disagreed that OTC drugs are safe. Most of the respondents were neutral or disagreed that OTC drugs can be addictive. Majority, 40.8% (n=162), were obtaining health information from the pharmacists, among respondents who used the internet as a health information source, 18.5% (n=74) were searching for information related to treatment. Majority, 96.0% (n=381) were not using social media to obtain or share information regarding OTC drugs. Despite of the fact, that around 65% slightly disagreed that OTC drugs are safe, most of the respondents were neutral or disagreed that OTC drugs can be addictive.

Regarding source of information and its validity, majority, 40.8%, were obtaining health information from the pharmacists among respondents who used the internet as a health information source, 18.5% (n=74) were searching for information related to treatment. Majority, 96.0% (n=381) were not using social media to obtain or share information regarding OTC drugs. 71% (n=309) were neutral about whether they trust the internet websites for the OTC drugs information and they preferred traditional information gathering techniques such as seeking the advice from the pharmacists. The goodness to fit was tested using chi square test for all categorical variables. Many variables were found to have significant relationship with the presence of side effects from OTC drugs (significance level P value < 0.05). These variables include: gender, food habits, and frequency of OTC drugs use, Doctor's visit, Antibiotics Courses, Exercise Times, time on Cell phone, Cigarettes/day, perceptions General Health, Confidence, read prescription and addiction.

These significant variables were added up in a logistic regression model one by one (Table- 3). Gender have been significantly associated with OTC drug use (p value=0.000), female was more likely to be experiencing side effects from OTC drug use than males [0.001-0.074]. Age was found to be not significantly associated with OTC drug side effects (p value=0.182). Another variable which was not significantly associated with OTC drug side effects in the chi square (bi-variate analysis). However, next factor that became significant in the logistic regression is education (p value=0.024, 95% CI 1.202-13.477). Food habits and chronic diseases also became insignificant when applied into the model (p value=0.860 and 0.267 respectively). Doctor visits was linked to OTC drug use confirming that respondents complained from multiple side effects that made them visit the doctor in the last month (p value=0.005). Other factors such as less exercise and higher cigarettes use per day were a determinant factor of the presence of side effects (signs & symptoms) (p values=0.025, 0.002 & 0.038 respectively). Brand name of the drug was thought to be important by many respondents (p value=0.012, 95% CI 1.836-145.1). We found that having more confidence to buy the OTC drugs without prescription was associated with the presence of side effects from the drug (p value=0.007). Following the instructions given by the pharmacists or from other source of use was detrimental for the presence of side effects (p value=0.024). Many respondents had the conception that OTC drug use was safe and this what made them probably use it more often and experience side effects. OTC drug use and its ability to make people addicted to it was significantly associated with the presence of side effects from OTC use (p value=0.001 and 0.008 respectively). Many respondents doubted the OTC drug ability to make them addicted to it.

Table 3: Logistic regression

Variables	Sig.	Exp (B)	95% C.I.for EXP(B)	
			Lower	Upper
Sex	.000	.006	.001	.074
Age	.182	.966	.918	1.016
Education	.024	4.024	1.202	13.477
Food habits	.860	.855	.151	4.848
Chronic diseases	.267	2.306	.527	10.098
Doctor visits	.005	33.812	2.965	385.636
Exercise times	.025	1.632	1.063	2.504
Time on mobile	.343	.625	.237	1.652
Cigarettes per day	.038	1.083	1.005	1.168
General health	.894	1.059	.453	2.474
Analgesics	.723	1.371	.240	7.840
Brand	.012	16.328	1.836	145.199
Confidence	.007	.182	.052	.633
Follow instructions	.024	3.423	1.178	9.942
OTC safe	.001	.067	.013	.348
Addiction	.008	.137	.032	.599

Discussion

In present study, we have discussed various factors that affect OTC usage which includes sources from which the patient seeks their health- related information, and their behaviour towards the drugs. This study has also evaluated the authenticity of the source from which the consumers gain their drug related knowledge. Additionally, we have also enlightened the demographics of the users, their socio-economic backgrounds and education levels of the user. It has also distinguished the lifestyle and habits of the consumers which could be a factor for OTC drug usage, and report if such behavioural aspects of self-medication are likely to cause any OTC drug addiction.

Impact on socio-demographics (sex, age, education)

Self-medication by purchasing medicines over the counter has increased over the years, as people are now more in charge of their own health and it has its own set of merits and drawbacks, thereby, being one of the most widely studied topic worldwide (Chang *et al.,* 2016; Blenkinsopp & Bradley, 1996). To further the previous researches done on this stream, the current study was carried out to study the effects of using the OTC medication, by the exhibition of adverse drug reactions (ADR) observed by the surveyed participants. Around ~ 400 participants (n=397) were chosen to be the part of this study, particularly those who have had taken OTC medication at least one time in the past one year prior to the survey. Similar study was done previously, where, they studied the adverse effects of the drug-to-drug interaction when combined with OTC medication usage, which may cause gastric bleeding and other cardiac and renal complications when combined with certain drugs. However, they suggested that patients educate themselves about the drug interactions, and not exceed the recommended dose (Moore *et al.,* 2015).

In this study, the most predominant responders were females, which accounted for more than half of the surveyed population (58%). All ages were considered to be a part of this study, ranging from 18 years old up to 64 years old which were divided into 5 categories (table-1), however the majority encompassed the ages 25 years to 44 years (57%), followed by ages 18 – 24 years (22%) and ages 45 – 64 years (21%). All education levels were accepted to be a part of this study, which ranged from Primary School Education level to Post-Graduate level out of which majority were college graduates (86%). A risk perception study in Germany conductedalso had around 52% of female OTC drug users out of the 300 participants that they studied, to assess the OTC drug use safety in German population (Barrenberg & Garbe, 2015).

We also observed that females were significantly more likely to experience ADRs from frequent OTC drug use than males [p=0.000 CI 0.001-0.074] and education was also significant in terms of being a risk factor for observed increased side effects [p=0.0024, CI 1.202 – 13.4777]. This is in fact confirmed by a study published by Rademaker (2001), where, female patients showed an increased ADR (1.5 – 1.7 folds) than their male counter parts, which could be due to gender-related differences in pharmacokinetic, immunological, and hormonal factors (Rademaker, 2001). Moreover, Drici and Clement (2001) also stated that women are believed to be more prone to ADRs than men for the same above-mentioned reasons. Age however did not have any relation to the experienced ADRs among the studied populations, which is in contrary to the research done by Lavan & Gallagher (2016) in which they mention that as a person grows older, there is a change in their lean body mass and increase in the amount of fats in the body, which causes the drugs to react differently in older adults compared to younger ones, thus causing more adverse reactions and toxicity in older adults.

Reduced glomerular filtration rate (GFR), and other co-morbidities such as diabetes, hypertension and drug-drug interactions (due to polypharmacy) as a person ages also serve as potential risk factors to cause more adverse effects in older adults (Gottdiener *et al.,* 2000; Lavan & Gallagher, 2016). Also in a study, they found that patients with ADR-related admissions in hospitals were older than those without ADRs (Alexopoulou *et al.,* 2008).

However, to the best of our knowledge, no study has compared education related risk factor previously to assess their role in causing the ADRs.

Impact on food, exercise and mobile time

OTC drug adverse effects were not significantly different among people with varying food habits, i.e. a vegetarian, a strictly non-vegetarian and an omnivore had similar ADR patterns of OTC medication side effects in the current study. Similarly, a study assessed that the OTC consumption patterns with respect to analgesics, digestive remedies, and sun care, and found that regardless of whether a person was a vegetarian or not vegetarian, antacid consumption was rapidly growing in India (Chowdhry, 2015). In their study, both physically active and inactive people were equally prone to be admitted due to ADRs (Alexopoulou *et al.,* 2008). But as mentioned in a study, reduction in lean body mass is a risk factor for increased ADRs, which could be the case for participants of our study enjoying sedentary lifestyle (Lavan & Gallagher, 2016). Screen time or time spent using mobile phones on the other hand had no significant direct impact whether or not an OTC drug caused ADRs in such groups or not. A physically active person, who has a high metabolic rate, could cause the drug to cause more side effects. However, another study did not find any relation of physical activity and ADRs related hospital admissions (Alexopoulou *et al.,* 2008).

Impact on chronic diseases, doctor's visits and general health

Since majority of the responders in our study have confidence that their health is very good. Around 84% also claim that they have had no chronic disease at all which indicates a good health of the surveyed participants. Therefore, the ones were generally in a good health were less likely to experience any ADRs. Also, the ones who had chronic illnesses were also least likely to be associated with ADRs. This could be because the participants who were sick or had chronic illnesses already were aware of the drugs they are receiving and have not experienced any ADRs. However frequent doctor visits showed a significant co-relation to experiencing ADR, (p=0.005, CI 2.965 - 385.636].

Impact on addiction, OTC safety, smokers, confidence, brand importance, follow instructions

The duration of usage of analgesics, like other OTC analgesics had no significant impact on the ADRs of the patients assessed in this current study. Likewise, short-term, infrequent use of analgesics at OTC doses has a low risk of causing ADRs, similar to that of acetaminophen and less than that of aspirin (Moore *et al.,* 2015). It is those who perceive OTC drugs are as safe (p=0.001) or those who considered themselves addicted to one or more of the OTC drugs (p=0.008) were the ones who experienced significantly lower ADR's. Smoking however, was not associated with ADR. With those smoking a greater number of cigarettes per day experienced no different ADR, than those who were non-smokers. Opposite is the case, in which they revealed that smoking decreases the pharmacological effects of the consumed drugs (Faber & Fuhr, 2004). Also, smoking did have an impact on the pharmacokinetics of the OTC drugs, although effects of some may increase and others may decrease or be unaffected by the smoking-drug interaction (Himmelmann *et al.,* 2003). In our study, almost 84% of the respondents were obtaining medicines from the pharmacies over the counter, irrespective of brand and 55% were confident to buy them OTC without the need of any prescription. This was also proven to be significant in the logistic regression [p=0.007, CI 0.052 – 0.633]. Similar confidence level was exhibited by those studied by Brabers *et al.* (2013), of which 68% of their participants were confident about their own OTC skills, as long as they were confident, that they were safe. The over confidence that causes the ADR's among the users of OTC medications. In addition to that, 39% of the responders believed that it's not important to follow the pharmacist's instructions, and 57% believed that reading the information leaflet accompanying the drugs isn't important as well. This attitude has a strong co-relation with experiencing of the ADR's in our study [p=0.024, CI 1.178 – 9.942] (Brabers *et al.,* 2013). Similar is the case, where people take prescription drugs more seriously compared to the ones sold OTC. Which means they are more likely to follow the information of the leaflets of prescription drug, rather than OTC drugs which increases their chances of experiencing serious ADR's, due to over dosage caused by non-compliance of the instructions according to Food and Drug Authority (Bower *et al.,*2013). The usage instruction for each medicament sold whether over the counter or by prescription is essential in preventing adverse effects, and adherence to it is mandatory in order to receive the benefits of the drug at its utmost potential as well as to prevent any harm caused by it (Morrow *et al.,* 1988; McNeal *et al.,*

2010).

Conclusion

Over the counter (OTC) medication, being a vast category, nowadays plays a crucial role in maintaining health care systems. OTC are sold worldwide to help consumers for treating minor ailments without visiting clinicians for a prescription. ADR's arising from the usage of OTC medication is not uncommon. As the research demonstrated, there were many risk factors that proved to be associated with ADRs. 397 participants were recruited for the study and were assessed for 27 variables which were then statistically analyzed for experiencing ADR (Yes or No) using the Chi-square method. Out of which18 variables (all significant) were re-assessed using multinomial logistic regression method to confirm their significance.

Thus, the factors more likely to increase association of ADRs with OTC includes gender, education, frequency of visits to doctor, less exercise, higher cigarettes use per day, more confidence to buy the OTC drugs, following the instructions given by the pharmacists or from other source of use was detrimental. These correlations between OTC consumption and dependent factors gives a sight about numerous predictable and unpredictable adverse effects associated OTC usage. A strategy for increasing individual awareness regarding OTC usage to minimal and to achieve substantial health benefit without any possible adverse effects must be established in near future.

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