

Original Research

# An exploration of individual knowledge and behavior for utilizing OTC drugs and dietary supplements for health enhancement: An empirical analysis from Dubai

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## Abstract

**Background:** Self-medication and acquisition of over-the-counter (OTC) drugs are emerging community health issues. Besides being a cheap alternative for treating common illnesses, the behavior entails serious ramifications, such as medication wastage, increasing pathogen resistance, and adverse drug reactions. So, the purpose of the present study was to explore and understand the consumption of commonly used OTC drugs and dietary supplements in Dubai and also assess individuals' self-care behaviors related to OTC and dietary supplements.

**Methodology:** A cross-sectional study design was adopted in the present study and 200 participants were included in this study. Data was entered and analyzed through SPSS version 22. While the chi-square test was conducted to find out significance among variables.

**Findings:** Results from the current study showed that more than a quarter of the participants (31%) were male and 69% of them were females. The prevalence of OTC drugs and dietary supplements was higher (98%) among the individuals living in Dubai. The majority of participants (80%) used analgesics as OTC drugs. Results also revealed that 35.5% of participants used vitamins on a daily basis, 11% used them on weekly basis, and 5.5% used them on monthly basis. While 79.5% of participants obtained their OTC drugs and dietary supplements from community pharmacies.

**Conclusion:** This study provides significant findings regarding an individual's knowledge and behavior for utilizing OTC drugs and dietary supplements. The result has drawn from the present study can help the policymakers, and stakeholders to promulgate and effectiveness of policies and program implementation within the country. Lastly future studies with larger samples are required for the generalizability of the study results.

## Keywords

Over-the-count; OTC; Medication; Drugs; Dietary supplements; Health; Vitamins; UAE

## INTRODUCTION

In recent years, over-the-counter (OTC) or non-prescribed medications and health supplements are widely available for citizens worldwide including in the Emirate of Dubai (United Arab Emirates; UAE).<sup>1</sup> Consumers usually use

OTC drugs and supplements without having prior knowledge about the dosage, drug-drug interactions, and contraindications. While this inappropriate use of OTC drugs and dietary supplements can increase the chances of potential side effects and may harm human health. A recent study had indicated that OTC drugs and supplements used without prescription may cause severe health complications like seizures, anemia, liver and kidney damage, heart attack, stroke, psychiatric problems, allergy, poisoning, disability, and even death.<sup>2</sup> A study carried out among school students by Barakat-Haddad & Siddiqua, (2018) reported that self-medication consumption with OTC drugs has increased rapidly in UAE.<sup>3</sup>

Analgesics like nonsteroidal anti-inflammatory drugs (NSAIDs) and peripheral analgesics are frequently purchased by adolescent's students in UAE as it is available at a lower cost as compared to prescription drugs.<sup>3</sup> The high cost of general practitioner (GP) consultation, specialist and routine health check-ups and prescriptions acts as an incentive for the individuals to use OTC drugs reflecting the high prevalence of OTC drug abuse among students in UAE.<sup>3</sup> A recent study conducted by Jairoun et al., (2020) shed light on the fact that sport nutrition supplements are being used by gym users in Dubai, as they believed that these supplements have positive effects on their body in terms of performance, exercise, and dietary supplements make them healthier.<sup>4</sup> The health

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or dietary supplements that are added as ingredients in the sports supplements are not substantiated with medical or nutritional value on the label that may cause potential side effects and contraindications. Alhomoud, Basil & Bondarev, (2016) stated that dietary supplements have substantially increased in the UAE in the last few years. Individuals are purchasing these supplements despite knowing the fact the safety and efficacy of such supplements have not yet been proven.<sup>5</sup> There is a high prevalence of self-medication of supplements by the students in Dubai believing that it helps to maintain good health and replenish adequate nutrition on a daily basis.<sup>4</sup> According to Zaghloul et al., (2014) acquisition of OTC drugs and self-medication are emerging in UAE as major health issues.<sup>6</sup> Individuals are finding OTC drugs as a cheap alternative to treat common illnesses like cold, cough, fever and purchasing products like analgesics, oral care products, antacids, gastrointestinal products, dietary supplements, vitamins, ophthalmic, and feminine care products. It becomes essential for the individuals to have proper knowledge, attitude, and practice (KAP) regarding OTC drugs to prevent risks associated with OTC drugs.<sup>7</sup>

According to Conca & Worthen, (2012) OTC, drug abuse is a serious global health issue as different classes of therapeutics, numerous dosages, and various drug delivery systems are being implicated in OTC drugs. Individuals who commonly abuse OTC drugs are likely to suffer from various health issues that can have a detrimental effect on their quality of life.<sup>8</sup> Non-prescription drug abuse can also result in significant mortality and morbidity due to potentially an acute lethal overdose that can require urgent admission to a healthcare facility for treatment and further observation. The recreational abuse of nutritional supplements, vitamins, herbal supplements, and other non-prescribed medications also causes severe complications and death among young abusers and may remain undetected in the absence of interaction with healthcare providers. It has been reported that psychiatric patients may be susceptible to OTC drug abuse such as acetaminophen which is freely available used for committing suicide due to intentional overdose in United States.<sup>9</sup>

According to Khalifeh et al., (2017) self-medication misuse in the Middle East can result in unnecessary and potential health risks for individuals.<sup>10</sup> Specific medicines like cough syrup, analgesics, antihistamines and antibiotics are available without prescription in Middle East. As discussed previously, consumption of OTC drugs and supplements growing rapidly in the UAE and is expected to continue growing and to have a value of 7% by 2019.<sup>5</sup> They could be purchased by the general population without a prescription from pharmacies in UAE. Furthermore, currently, there is a lack of empirical data on the misuse of OTC drugs and dietary supplements in Dubai, UAE. With this view, the present study is intended to estimate the consumption of OTC drugs and dietary supplements in Dubai along with commonly used

OTC drugs. Moreover, the present study is also aimed at assessing the individuals' self-care behaviors related to OTC and dietary supplements.

## METHODOLOGY

### Study design and setting

The present study has adopted a descriptive cross-sectional research design. This type of research design has been framed for developing new theories and justifying the present practices in the same manner. The descriptive research design aims to describe the outcomes or observations that have been evolved from the social point of view. The theories evolved from this research design correlate the existing variables in the research and require a descriptive method. Moreover, the present study has followed a deductive research approach (quantitative research design by utilizing deductive reasoning) as this study is determined through the surviving theories that lead towards the analysis of results that have been evolved from the existing theories. The participants included in this study were adults living in Dubai and willing to participate, without having any communication problems either due to illness or some other special reasons.

### Sample size

The sample size was calculated using the single proportion formula without correction for continuity  $n = Z^2P(1-P)/d^2$ . At 95% confidence interval, the Z statistic value is 1.96, and P, the estimated value for the particular indicator was determined to be 0.85 from a pilot study. Assuming a degree of precision (in the proportion of one,  $d = 0.05$ ), and hence the final sample size (n) was found to be 197, and to make it even total of 200 persons were included in the final study.

### Research instrument and data collection

A pre-validated questionnaire of a previous study was adopted as the study tool.<sup>11</sup> The questionnaire comprises 24 different questions and it contains both open-ended and close-ended questions. The items in the questionnaire were grouped broadly into the following two categories: (i) sociodemographic characteristics of the participants (age, gender, education, income, nationality, and academic field); (ii) While eighteen questions were about the utilization of OTC drugs and supplements. This study has used the primary data collection method for fulfilling the major objectives of the study. The primary was obtained by distributing the questionnaire through the survey. The close and open-ended questionnaire is designed keeping in mind the demographic characteristics and related variables that have been tested. The questionnaire was assessed for internal consistency (Cronbach alpha) and reliability (test-retest reliability). According to Sim et al (2016) and Fink (2013) observed that the minimum number of participants for a pilot is 10, while another study suggested that a pilot study sample should be 10%



of the sample projected for the larger parent study<sup>(12-14)</sup>. So, the sample size for the pilot is 20 and the questionnaire was pilot tested on 20 people to determine questionnaire structure and clarity of language. After the pilot testing of the questionnaire, some necessary changes were highlighted, which were incorporated in the final version of the study instrument.

### Data collection

The data was collected at public places, including shopping malls, supermarkets, public parks, buses, and metro stations. The final version of the questionnaire was used to collect data through the interview administered method from Sep 2019 to Feb 2020. A written signed informed consent form was taken from all participants who agreed to take part in this study. At the same time, an introductory letter was given to all respondents, which included a brief description of the study objectives and their importance. The data was collected through a self-administered questionnaire by trained interviewers. The confidentiality and anonymity of the participants were protected throughout the study.

### Data analysis

The present study has analyzed the results of the collected data that were collected from the response of the participants with the distribution of questionnaires through surveys. Descriptive analysis and chi-square test have been used for analyzing the collected data.

### Ethical approval

This study was approved by the research ethical committee of Dubai Pharmacy College for Girls in Dubai UAE (RSP-F-01).

## RESULTS

The demographic profile of the participants involves the analysis of age, gender, academic field, and educational level are mentioned in table 1. Results from the current study showed that more than a quarter of the participants (31%) were male and 69% of them were females. Most of the participants belonged to the age group of 20-30 years with 33.5% while another majority of participants belonged to the age group of 31-40 years with 32.5%. The majority of the participants (26%) belonged to the business field with and 24.5% belonged to the literature domain, while another major group of participants belonged to the domain of medical with 15% and 14% with engineering. Only 12% of participants were students, while 69% had completed undergraduate degree/bachelor degree and 13% were postgraduate.

### Reliability

#### Internal Consistency and test-retest reliability

Internal consistency was determined for the questionnaire and Cronbach's alpha was 0.628. While results obtained

Demographic characteristics	Frequency	Percentage
Male	62	31%
Female	138	69%
Age	Frequency	Percentage
Below 20 years	18	9%
20-30 years	67	33.5%
31-40 years	65	32.5%
41-50 years	33	16.5%
Above 50 years	17	8.5%
Academic field	Frequency	Percentage
Housewife	17	8.5%
Business	52	26%
Engineering	28	14%
Medical	30	15%
Arts	14	7%
Literatures	49	24.5%
Students	10	5%
Education level	Frequency	Percentage
Students	24	12%
Bachelor	138	69%
Postgraduate	26	13%
Others	12	6%
Total	200	100%

from the test-retest analysis indicate satisfactory reliability and stability and the value for test-retest was 0.71 ( $p < 0.05$ ).

### Prevalence of OTC drugs and dietary supplements

The prevalence of OTC drugs and supplements among the community of Dubai was 98% and only 2% of them were not using OTC drugs. The female gender (68%) was more prone towards the use of OTC drugs and dietary supplements as compared to males (30%). Moreover, participants with a bachelor's degree (68.5%) were most likely to use OTC drugs and dietary supplements. While regarding age groups, the highest prevalence rate was among age groups of 20-30 years old (33%) followed by people aged between 31-40 years old (31.5%) and 41-50 years old (16.5%). On the other hand, participants having age below 20 years and above 50 years were less likely to practice OTC drugs and dietary supplements (8.5%) as compared to other age groups. All the results regarding OTC drugs and dietary supplements are mentioned in table 2.

### Commonly used OTC drugs

The results regarding the most commonly used OTC drugs and dietary supplements among males and females have been also analyzed from the collected data (Figure



Demographic characteristics	Yes	No	p-value	
Gender			0.407	
Male	30%	1%		
Female	68%	1%		
Age	Yes	No	0.617	
Below 20 years	8.5%	0.5%		
20-30 years	33%	0.5%		
31-40 years	31.5%	1%		
41-50 years	16.5%	Nil		
Above 50 years	8.5%	Nil		
Academic field	Yes	No	0.159	
Housewife	8.5%	Nil		
Business	15.5%	0.5%		
Engineering	13%	1%		
Medical	15%	Nil		
Arts	8%	Nil		
Literatures	24.5%	Nil		
Students	4.5%	0.5%		
Education level	Yes	No		0.099
Students	11.5%	0.5%		
Bachelor	68.5%	0.5%		
Postgraduate	12%	1%		
Others	6%	Nil		

1). It has been found that most of the individuals used analgesics involving 96.8% of females and 87% of males. The second major OTC drug and dietary supplements being used were vitamins involving 60% of females and 60.9% of males. While OTC drugs against cold and flu were used by a lower number of participants involving 53.2% of females and 50.7% of males. Antispasmodics (19.4% of females and 21% of males), anti-allergies (25.8% of females and 17.4% of males), and anti-acids

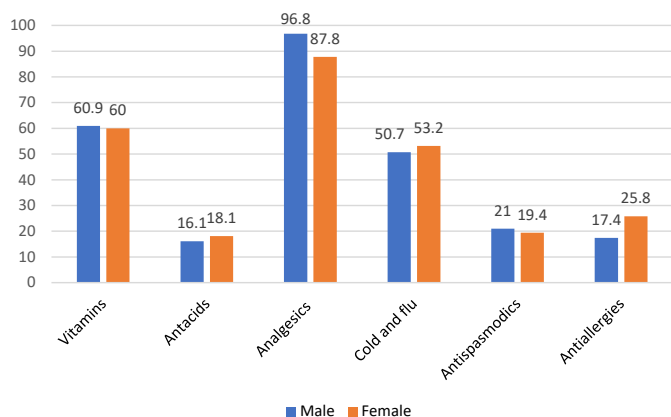


Figure 1. Commonly used OTC drugs and dietary supplements based on gender

(16.1% of females and 18.1% of males) were also used by the individuals.

### The pattern of using OTC drugs and dietary supplements

The pattern of using OTC drugs and dietary supplements among males and females was analyzed (Figure 2). Results from the current study revealed that 38.4% of females used vitamins on a daily basis, 8.7% used them on weekly

Criteria	Always	Often	Occasionally	Never
Medicine composition	41.5%	18.5%	19.5%	20.5%
Below 20 years	0.5%	1%	2%	5.5%
20-30 years	13%	6%	9.5%	5%
31-40 years	16.5%	7%	3%	6%
41-50 years	8%	2.5%	3%	3%
Above 50 years	2.5%	2%	2%	1%
Indication	59%	19.5%	13%	8.5%
Below 20 years	4%	2.5%	1%	1.5%
20-30 years	19.5%	8%	4.5%	1.5%
31-40 years	17.5%	6%	5.5%	3.5%
41-50 years	12%	2%	1%	1.5%
Above 50 years	6%	1%	1%	0.5%
Dosage	65.5%	14.5%	10%	10%
Below 20 years	5.5%	1%	1%	1.5%
20-30 years	21%	5%	4%	3.5%
31-40 years	20.5%	5.5%	3%	3.5%
41-50 years	12.5%	2.5%	1%	0.5%
Above 50 years	6%	0.5%	1%	1%
Adverse events	52.5%	16.5%	17.5%	13.5%
Below 20 years	3%	1.5%	1.5%	3%
20-30 years	17.5%	6%	6.5%	3.5%
31-40 years	16%	7.5%	4.5%	4.5%
41-50 years	11.5%	Nil	3%	2%
Above 50 years	4.5%	1.5%	2%	0.5%
Interaction	35.5%	20%	19.5%	25%
Below 20 years	1.5%	3%	0.5%	4%
20-30 years	9.5%	5.5%	9.5%	9%
31-40 years	13%	6.5%	6.5%	6.5%
41-50 years	7.5%	3.5%	2%	3.5%
Above 50 years	4%	1.5%	1%	2%
Contraindication	46.5%	22.5%	13%	18%
Below 20 years	3%	2%	1%	3%
20-30 years	15.5%	9%	3.5%	6%
31-40 years	15.5%	6.5%	5%	5.5%
41-50 years	9%	3%	2.5%	2%
Above 50 years	4%	2%	1%	1.5%
Mode of storage	40.5%	13%	19%	27.5%
Below 20 years	3%	Nil	2%	4%
20-30 years	10%	6%	8%	9.5%
31-40 years	16%	5%	3%	8.5%
41-50 years	8%	1%	4.5%	3%
Above 50 years	3.5%	1%	1.5%	2.5%



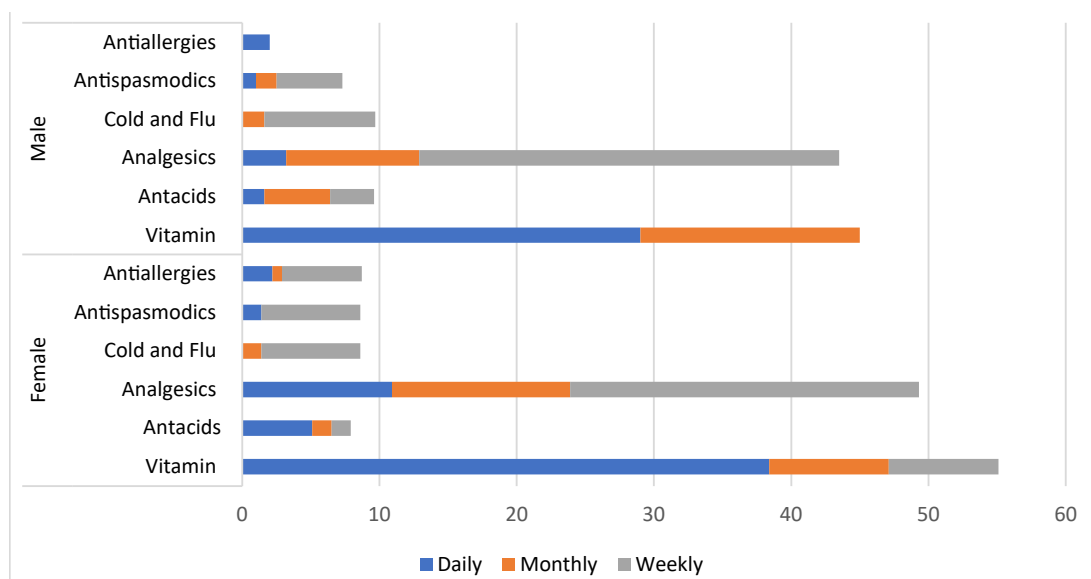


Figure 2. Pattern of using OTC drugs and dietary supplements among males and females

Criteria	Academic field groups	Percentage
Physician advice	Literature- high	65.3%
	Arts-low	14.3%
Pharmacist advice	Housewife-high	41.2%
	Business-low	9.6%
Traditional advertisement	Housewife-high	11.8%
	Business-low	40.4%
Social media advertisement	Housewife-high	11.8%
	Arts-low	42.9%
Dosage form	Housewife-high	35.3%
	Student-low	30%
Family, friend's opinion	Housewife-high	35.3%
	Student-low	20%
Own experience	Medical -high	63.3%
	Business-low	7.7%
price	Housewife-high	35.3%
	Student-low	20%

basis, and 1.4% used them on a weekly and monthly basis. Regarding the interpretation of males, results showed that analgesics were the most commonly used medication and dietary supplements by the males with 30.6% being used on a monthly basis. While only 9.7% used them weekly and 3.2% used them on daily basis. The second common group of medication and dietary supplements involves the vitamins mostly used on daily basis with 29% and 16% males used them on weekly

basis, and 85% used them on monthly basis. Analgesics were another major group of OTC drugs that were used by females mostly on monthly basis (25.4%). While 13% of females used analgesics on weekly basis and 10.9% on daily basis. Cold and flu and antispasmodic medication were used by 7.2% of females on monthly basis. While 1.4% used cold and flu medications on weekly basis and the same percentage used antispasmodic medications on daily basis. Anti-allergies were the least used medication by the females with mostly 5.8% used them on monthly basis, 2.2% on daily basis, and only 0.7% on weekly basis. Furthermore, 5.1% of females used antiacids on daily

Parameter	Chi-square value	P-value
Vitamins	9.025	0.029
Antacids	3.935	0.269
Analgesics	4.054	0.256
Cold and Flu	0.05	0.975
Anti-spasmodic	1.058	0.589
Anti-allergies	4.37	0.224

Parameter	Chi square value	P value
Vitamins	1.505	0.22
Antacids	0.117	0.732
Analgesics	4.582	0.032
Cold and Flu	0.107	0.743
Anti-spasmodic	0.072	0.788
Anti-allergies	1.893	0.169

Note: p<0.05 Significant



basis. Cold and flu were used mostly on monthly basis with 8.1%, and 1.6% on weekly basis. Lastly, Anti-acids were used mostly on weekly basis with 4.8%, 3.2% on a monthly basis, and 1.6% on daily basis. None of the males used anti-allergies as OTC drugs.

### Participant’s referral to the medication leaflet

Results showed that before buying OTC drugs and supplements the majority of the participants always read leaflet to know about dosage form (65.5%), followed by indication (59%), adverse events (52.2%), contraindications (46.5%), medicine composition (41.5%), mode of storage (40.5%) and interaction (30.5%). On the other hand, 27.5% of participants said that they never read any information from leaflet regarding mode of storage followed by interaction (25%), medicine composition (20.5%), contraindication (18%), adverse events (13.5%), dosage (10%) and indication (8.5%). Results regarding referral to the medication leaflet content before taking the OTC drugs and dietary supplements with respect to age groups are mentioned in table 3.

### Criteria affecting the participants choice of OTC drugs and dietary supplements

Various criteria affecting the patient’s choice of medication and dietary supplements based were also analyzed and results indicate that most of the participants belonged to the literature field (65.3%) preferred physician advice while choosing OTC drugs and dietary supplements. While all results regarding criteria affecting the patient’s choice of OTC drugs and dietary supplements are mentioned in table 4.

### Common sources of obtaining OTC drugs and dietary supplements

Among the participants, the majority of participants who had OTC drugs and dietary supplements obtained their antibiotics from community pharmacies 79.5%, while 12% of participants obtained their OTC drugs from supermarkets. At the same time, 5.5% of participants obtained their OTC drugs and dietary supplements from an online herbal medical shop and only 3.5% buy them from an online pharmacy (Figure 3).

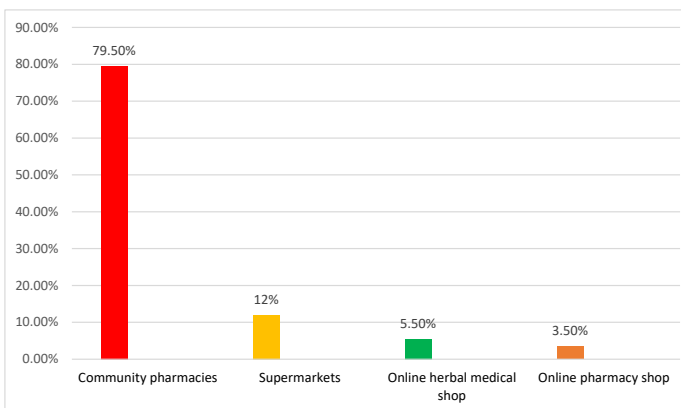


Figure 3. Common sources of obtaining OTC drugs and dietary supplements

Parameter	Chi-square value	P-value
Medicine composition	31.554	0.002
Indication	10.461	0.576
Dosage	5.47	0.94
Adverse events	17.990	0.116
Interaction	16.406	0.173
Contraindication	6.059	0.913
Mode of storage	17.372	0.136

Note: p<0.05 Significant

Parameter	Chi-square value	P-value
Physician advice	30.147	0.180
Pharmacist advice	20.765	0.653
Traditional advertisement	17.837	0.811
Social media advertisement	23.27	0.504
Dosage form	20.374	0.675
Family, friend’s opinion	20.427	0.672
Own experience	25.236	0.393
price	21.277	0.622

Note: p<0.05 Significant

### Side effects and action was taken after using OTC drugs and dietary supplements

The participant’s experienced side effects and their actions have been also analyzed. It has been found that almost 70.5% of the individuals have not experienced any side effects while 29.5% of them have experienced some of the side effects. Regarding the participant’s action towards the developed side effect of OTC drugs and dietary supplements, it has been found that around 83 % of them have stopped the medication. Approximately, 17% of them reduced the dosage of medication while none of the participants continued with the medication.

### Chi-square test of significance for frequent and most commonly used OTC drugs and dietary supplements

The frequency of use of common OTC drugs and dietary supplements was analyzed for significance. The chi-square value for vitamins was 9.025 and the p-value was 0.029 which is less than or equal to the significance level of 0.05. Hence, it was observed that vitamins were statistically significant between the males and females when compared with the use of antacids, analgesics, cold and flu, antispasmodics, and anti-allergies. The frequency of use of Antacids, analgesics, cold and flu, anti-spasmodic, and anti-allergies between males and females was not statistically significant. The significant level with the variables was analyzed for the present



study and results are mentioned in table 5. The results revealed that the use of common OTC drugs and dietary supplements had a significant difference for analgesics, but no significant difference was noted for Vitamins, antacids, Cold and flu, anti-spasmodic, and anti-allergies. In this analysis for analgesics, the chi-square value was 4.582 and the p-value was 0.032 which is less than or equal to the significance level of 0.05.

#### **Participants knowledge regarding OTC drugs and dietary supplements between different age groups**

The percentage of patient's knowledge between different age groups was also analyzed and results are mentioned in table 6. The percentage of patient's knowledge regarding medicine composition was statistically significant between different age groups as it showed the chi-value of 31.554 and p-value of 0.002 which is less than the significant level of 0.05. But there was no statistically significant difference for indication, dosage, adverse events, interaction, contraindication, and mode of storage as the p-value is larger than the significant level.

#### **Criteria affecting the participants choice of OTC drugs and dietary supplements**

The criteria affecting the patients' choice of medications and dietary supplements were analyzed and results are mentioned in table 7. It was observed that the criteria affecting the patient's choice of medications and dietary supplements were not statistically significant with physician's advice, pharmacist advice, traditional advertisement, social media advertisement, dosage form, family, friend's opinion, own experience, and price as the p-value was larger than the significant level. Moreover, results also showed that the choice of OTC drugs and dietary supplements was largely based on participants with prior knowledge (54.4%). While 40.5% chose OTC drugs and dietary supplements that are well-known and approved.

## **DISCUSSION**

The present study has analyzed the results of collected data for describing the outcomes or observations that have been evolved from the social point of view. The results from the current study showed a high prevalence of OTC drugs and dietary supplements (98%). A study performed in Cyprus also showed similar results, where 97% consumed OTC drugs.<sup>15</sup> Previous studies performed in Spain (78.9%), the Czech Republic (92%) and Sweden (87%) showed that a lower number of people used OTC drugs than current study.<sup>2,15,16</sup> The high prevalence of OTC drugs in the current study might be due to cultural diversity. There are many different ethnicities in the UAE, whereas the population is composed of around 20% as UAE nationals and the reminders are expatriates.<sup>17</sup> All UAE nationals have the healthcare and medications free of charge, while the expatriates have plans of

health insurance as it can vary from full coverage to co-payment based on the type of the insurance plan.<sup>6</sup> This payment can be considered as a factor to avoid visiting the physicians and preferring to use OTC drugs. Most of the participants from current study purchased their OTC drugs and dietary supplements from pharmacies and some other studies also showed similar results.<sup>18,19</sup> Moreover, results from the current study also revealed that females (students and housewives) are most prone towards the use of OTC drugs, and these findings are confirmed by other studies as well.<sup>20-22</sup>

In addition to this, the results from the present study also revealed that females used OTC drugs and supplements on daily basis to maintain good health. A study performed among students showed a high prevalence of self-medication of supplements among the students was noted in Dubai believing that it helps to maintain good health and replenish adequate nutrition on a daily basis.<sup>4</sup> Analgesics are the most commonly used drugs and it is a prominent factor influencing the use of these drugs internationally.<sup>23</sup> Therefore, the analgesic segment had the highest share of the UAE market in the OTC drugs especially among the expatriate.<sup>6</sup> Results from the present study also revealed that the majority of participants used analgesics (96.80%). The consumption of analgesics in the present study, was higher than that reported in the United States of America (63%).<sup>24</sup> A study performed in the UAE also showed that vitamins are frequently used as dietary supplements by individuals.<sup>5</sup> Another important aspect is the effect of choice of OTC drugs and the information provided through media<sup>25</sup> and physician advice. A total of 79.6% of the participants from the current study preferred physician advice while purchasing OTC drugs and dietary supplements. Moreover, results from the present study also indicate that participant's knowledge regarding the choice of OTC drugs and dietary supplements also played an important role. The existing literature has justified this fact by stating the safe use of OTC drugs with self-medication as per the individuals' knowledge, attitude, and practice (KAP) influences the appropriate choice of medication and such practice prevent risks associated with OTC and dietary supplements.<sup>7</sup> Hence, there is a need for improved knowledge of individuals towards self-medication behavior to preserve their health. This study has several limitations, as the present study has acknowledged the response towards individual's knowledge and practices on consumption and utility of OTC drugs and dietary supplements and hence, cannot be completely represented for the whole population from the Dubai region. As the statistical reasoning applies to the studied group, the derived conclusions revealed that individuals must take caution while using the OTC drugs and dietary supplements as most of the variations are evolved according to the gender, their age group, and academic field. Therefore, the present study should be considered as the empirical study of individuals'



knowledge regarding their health impact towards the use of OTC drugs and dietary supplements and its findings and conclusions have to be treated as empirical only. Lastly, this study used a convenience sampling method so the results of the current study cannot be generalized to the whole population of Dubai.

## CONCLUSION

The present study has revealed the fact that OTC drugs and dietary supplements consumption in Dubai among different participants was high and reached 98%. In addition, the most commonly used OTC drugs was analgesics. Furthermore, our study concluded that the majority of participants that trusted the medical staff consultation were between the ages of 20-40 years and they were not influenced by social media and traditional media (TV, Radio) advertisement. Regarding the safety-related issue, the majority of people were aware of how serious the side effects of these medications could affect their overall health, so their action was rational as they would immediately recognize the effect, stop the medication and seek medical advice. Although OTC drugs have a high safety margin, that does not justify their irrational consumption. The awareness program regarding the safe use of OTC drugs should be implemented through healthcare professionals especially through pharmacists, as patient safety is one of the main concerns.

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## CONFLICTS OF INTEREST

Authors declare that they have no conflicts of interest to disclose.

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## References

1. Abdulla NM, Aziz F, Blair I, et al. Prevalence of, and factors associated with health supplement use in Dubai, United Arab Emirates: a population-based cross-sectional study. *BMC Complement Alt Med Rev.* 2019;19(1):1-11. <https://doi.org/10.1186/s12906-019-2593-6>
2. Sánchez-Sánchez E, Fernández-Cerezo FL, Díaz-Jimenez J, et al. Consumption of over-the-Counter Drugs: Prevalence and Type of Drugs. *Int J Environ Res Public Health.* 2021;18(11):5530. <https://doi.org/10.3390/ijerph18115530>
3. Barakat-Haddad C, Siddiqua A. Prevalence and predictors of over-the-counter medication use among adolescents in the United Arab Emirates. *East Mediterr Health J.* 2018;23(11):744-753. <https://doi.org/10.26719/2017.23.11.744>
4. Jairoun AA, Al-Hemyari SS, Shahwan M, et al. What are the beliefs and behaviours related to sport nutrition supplements, particularly regarding UAE regulatory issues, among male fitness centre members in Dubai? *Clin Epidemiol Glob Health.* 2020;8(3):934-938. <https://doi.org/10.1016/j.cegh.2020.02.027>
5. Alhomoud FK, Basil M, Bondarev A. Knowledge, Attitudes and Practices (KAP) Relating to Dietary Supplements Among Health Sciences and Non-Health Sciences Students in One of The Universities of United Arab Emirates (UAE). *J Clin Diagn Res.* 2016;10(9):JC05-JC9. <https://doi.org/10.7860/jcdr/2016/19300.84391>
6. Zaghoul AA, Elsergany M, El-Enein NA, et al. Over-the-counter medication patterns in households in Sharjah, United Arab Emirates. *Risk Manag Healthc Policy.* 2013;7:19-24. <https://doi.org/10.2147/rmhp.s55752>
7. Bekele KM, Abay AM, Mengistu KA, et al. Knowledge, Attitude, and Practice on Over-the-Counter Drugs Among Pharmacy and Medical Students: A Facility-Based Cross-Sectional Study. *Integr Pharm Res Pract.* 2020;9:135-146. <https://doi.org/10.2147/ijrp.s266786>
8. Conca AJ, Worthen DR. Nonprescription drug abuse. *J Pharm Pract.* 2012;25(1):13-21. <https://doi.org/10.1177/0897190011431148>
9. Benotsch EG, Koester S, Martin AM, et al. Intentional misuse of over-the-counter medications, mental health, and polysubstance use in young adults. *J Community Health Nurs.* 2014;39(4):688-695. <https://doi.org/10.1007/s10900-013-9811-9>
10. Khalifeh MM, Moore ND, Salameh PR. Self-medication misuse in the Middle East: a systematic literature review. *Pharma Res Perspect.* 2017;5(4). <https://doi.org/10.1002/prp2.323>
11. Bochenek T, Godman B, Lipowska K, et al. Over-the-counter medicine and dietary supplement consumption among academic youth in Poland. *Expert Rev Pharmacoecon Outcomes Res.* 2016;16(2):199-205. <https://doi.org/10.1586/14737167.2016.1154790>





12. Sim J, Saunders B, Waterfield J, et al. Can sample size in qualitative research be determined a priori? *International Journal of Social Research Methodology*. 2018;21(5):619-634. <https://doi.org/10.1080/13645579.2018.1454643>
13. Fink A. *How to conduct surveys: A step-by-step guide*: Sage Publications; 2015.
14. Connelly LM. Pilot studies. *Medsurg Nurs*. 2008;17(6):411.
15. Kamekisi A, Bertsiaris A, Moschandreas J, et al. Patients' intention to consume prescribed and non-prescribed medicines: A study based on the theory of planned behaviour in selected European countries. *J Clin Pharm Ther*. 2018;43(1):26-35. <https://doi.org/10.1111/jcpt.12601>
16. Hedenrud T, Andersson Sundell K, Martinsson J, et al. Attitudes towards sales and use of over-the-counter drugs in Sweden in a reregulated pharmacy market: a population-based study. *Int J Pharm Pract*. 2019;27(1):17-24. <https://doi.org/10.1111/ijpp.12457>
17. Hamoudi, R., Saheb Sharif-Askari, N., Saheb Sharif-Askari, F. et al. Prediabetes and diabetes prevalence and risk factors comparison between ethnic groups in the United Arab Emirates. *Sci Rep* 9, 17437 (2019). <https://doi.org/10.1038/s41598-019-53505-7>
18. Abdulkarem AR, Mustafa H. Use of over-the-counter medication among pregnant women in Sharjah, United Arab Emirates. *J Pregnancy*. 2017:2017. <https://doi.org/10.1155/2017/4503793>
19. Luketina-Sunjka M, Rancic N, Mihailovic N, et al. The impact of the socio-demographic characteristics of complementary and alternative medicine users in Serbia on OTC drug consumption. *Front Public Health*. 2019;7:303. <https://doi.org/10.3389/fpubh.2019.00303>
20. Brandão GR, Teixeira L, Araújo L, et al. Self-medication in older European adults: Prevalence and predictive factors. *Arch Gerontol Geriatr*. 2020;91:104189. <https://doi.org/10.1016/j.archger.2020.104189>
21. Hansen EH, Holstein BE, Due P, et al. International survey of self-reported medicine use among adolescents. *Ann Pharmacother*. 2003;37(3):361-366. <https://doi.org/10.1345/aph.1c111>
22. Wilcox CM, Cryer B, Triadafilopoulos G. Patterns of use and public perception of over-the-counter pain relievers: focus on nonsteroidal antiinflammatory drugs. *J Rheumatol*. 2005;32(11):2218-2224.
23. Carrasco-Garrido P, de Andrés AL, Barrera VH, et al. Predictive factors of self-medicated analgesic use in Spanish adults: a cross-sectional national study. *BMC pharmacology & toxicology*. 2014;15:36. <https://doi.org/10.1186/2050-6511-15-36>
24. Cryer B, Barnett MA, Wagner J, et al. Overuse and misperceptions of nonsteroidal anti-inflammatory drugs in the United States. *Am J Med Sci*. 2016;352(5):472-480. <https://doi.org/10.1016/j.amjms.2016.08.028>
25. Yousaf A, Hagen R, Delaney E, et al. The influence of social media on acne treatment: A cross-sectional survey. *Pediatr Dermatol*. 2020;37(2):301-304. <https://doi.org/10.1111/pde.14091>