

Most common over-the-counter medications and effects on patients

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Abstract. – OBJECTIVE: The self-medicating practice of using over the counter (OTC) medications are more common than prescription drug use worldwide. OTC drugs are primarily used to treat conditions that do not require direct medical attention or supervision, and OTC drugs must be demonstrated to be reasonably safe and well-tolerated. The pharmacy profession describes their role in dispensing over the counter (OTC) products as “selecting the best medication according to reported symptoms”. This study aimed to evaluate the use of most common over the counter (OTC) medications and its effect on patients.

PATIENTS AND METHODS: A cross-sectional survey-based study was conducted on 442 participants who used OTC drugs from June to November 2021.

RESULTS: The most common OTC drugs used by patients involved in the study were paracetamol (13.35%), followed by ibuprofen (2.04%). Gender of patients was significantly related to (duration, frequency, suggestion, and misuse) of OTC use and patient counseling by the pharmacist ($p<0.05$).

CONCLUSIONS: OTC medications can easily be obtained at pharmacies for the purpose of self-treatment. The most common OTC drugs used by the studied patients were paracetamol, followed by ibuprofen. It is suggested that an awareness program among community people be conducted at the community level regarding over the counter (OTC) drugs.

Key Words:

Over-the-counter (OTC), Prescription drugs, Pharmacists.

use of non-prescription medication, due to the need to cut healthcare spending and the tendency to improve self-care¹. Medications accessible over the counter can now be used to treat many ailments². According to the World Health Organization, community pharmacists' role in promoting self-care includes self-medication³. Community pharmacy teams (CPTs) play an important role in treating minor illnesses, assisting with self-medication, and encouraging the safe and effective use of over-the-counter medications. For minor health concerns, pharmacies have been linked to higher client satisfaction than emergency departments and general practice; they provide convenient access while avoiding excessive wait periods and service prices⁴. Non-prescription pharmaceuticals, often known as over-the-counter (OTC) medications, are any drugs that can be legally acquired without a prescription from a licensed physician⁵. OTC medications are typically used to treat diseases that do not necessitate immediate medical treatment or supervision, and they must be shown to be reasonably safe and well-tolerated⁵.

Self-medication also refers to taking pharmaceuticals or herbs on one's initiative or based on the recommendations of others, such as friends, relatives, pharmacists, and mainstream periodicals and newspapers⁶. Self-medication is a global healthcare crisis, especially in industrialized countries, and is often motivated by economic and societal factors⁷. Nowadays, many symptomatic individuals prefer to self-treat using non-prescription drugs [i.e., over-the-counter (OTC) treatments)], which are readily available in pharmacies⁸. Older people are the most frequent

Introduction

Patients are increasingly assuming responsibility for managing minor ailments, including the

users of OTC drugs, accounting for around 30% of all OTC medications⁹. However, OTC drugs are not always safe and useful, and they can expose patients to unforeseen health concerns such as adverse drug reactions (ADRs) and drug-drug interactions (DDIs)¹⁰. Pharmacists' qualifications for counseling patients with minor conditions vary by country and are influenced by local law and pharmacy education¹¹. It is codified as "pharmacist counseling" in some countries and focuses on therapeutic advice. The pharmacist's role in dispensing over-the-counter (OTC) medications is defined as "selecting the optimal drug based on reported symptoms, while also considering the product's safety and efficacy"¹². Pharmacists should also tell patients about the product's features, dosing, potential side effects, and drug interactions. They should also remind patients to see a doctor if required¹². Compared to prescription drugs, using OTC drugs has many benefits, including fewer doctor visits and reduced prices¹³. Misuse of OTC medications, on the other hand, can lead to unpleasant reactions, drug interactions, overdose, and other medication-related problems¹⁴. Therefore, the public should be trained to safely use OTC drugs to increase their knowledge and understanding of potential dangers and promote responsible self-care¹⁵. When prescription drugs are used following a physician's recommendations for specific diagnoses, they are effective for treating illnesses; however, some prescription medications can be purchased without a prescription¹⁶. This study aimed to evaluate the use of the most common over-the-counter (OTC) medications and their effect on patients.

Patients and Methods

This cross-sectional survey-based study was conducted on 442 participants who use OTC drugs at several community public pharmacies (June to November 2021) located in Fayoum's different areas.

Ethical Considerations

After the Scientific research ethics committee (Faculty of Medicine, Fayoum University) at session (98) approved the study, participants signed informed consent forms before the study began. They were briefed about the study's purpose at the start of the survey. All procedures followed the ethical standards established by the institutional research committees.

Samples

The sample size was determined using the most recent core health indicators (WHO 2018 estimate)³. Using the online sample size calculator, the minimum effective sample size for this study was 442, with a confidence interval of 95%, a 5% margin of error, and a 50% anticipated response distribution.

Participants in our study had to give their signed informed consent, be male or female, and have used over-the-counter medications in the previous six months. At the same time, those who had been administered over-the-counter medications by a doctor for long-term use and participants who refused to give consent were also excluded.

Age, sex, weight, height, educational status, marital status, socioeconomic statistics, and occupation were all collected from all study participants. The weight and height were measured, and BMI was calculated as kg/m².

Medical history: emphasized over-the-counter and prescription medications, history of chronic disease (hypertension, diabetes, asthma, and coronavirus infection), and herbal medicines.

Statistical Analysis

The results were tabulated and statistically evaluated using the SPSS V.25 application (IBM, Corp., Armonk, NY, USA). This study employs two types of statistics: Data descriptions in the form of the mean (SD) for quantitative data, frequency and percentages for qualitative data, and analytical statistics are included in descriptive statistics. For the Standard student's *t*-test (*t*), One-Way ANOVA, Chi-Squared (2) tests, and Spearman's correlation (*r*) were used, *p*-value ≤ 0.05 was considered a statistically significant level.

Results

The average age of the 442 participants in this study was 27.44±16.62 years. Females made up 53.8% of the patients. (151.12±33.93 cm, 62.07±25.27 kg, and 26.45±7.29 kg/m²) were their average height, weight, and BMI. Most patients (69.2%) had no dietary supplements or herbal medicines (71.3%). In addition, 90.0% did not use tobacco, and 81.4% did not smoke (Table I).

Half of the study's participants were between the ages of 20 and 40, 28.3% were younger than

Table I. Characteristic data of the studied patients (n = 442).

| Variables | N = 442 | |
|--------------------------|------------------|------------|
| | Mean ± SD No. | Range % |
| Age/year | 27.44 ± 16.62 | 1-72 |
| Sex | | |
| Male | 204 | 46.2 |
| Female | 238 | 53.8 |
| Height/cm | 151.12 ± 33.93 | 40-190 |
| Weight/kg | 62.07 ± 25.27 | 2-190 |
| BMI (kg/m ²) | 26.45 ± 7.29 | 9.92-64.2 |
| Dietary supplement | | |
| No | 306 | 69.2 |
| Yes | 136 | 30.8 |
| Herbal remedies | | |
| No | 315 | 71.3 |
| Yes | 127 | 28.7 |
| Tobacco use | | |
| No | 398 | 90.0 |
| Yes | 44 | 10.0 |
| Smoking | | |
| Non-smoker | 360 | 81.4 |
| Light smoker | 53 | 12.0 |
| Intermittent smoker | 21 | 4.8 |
| Heavy smoker | 8 | 1.8 |

20, 17.9% were between the ages of 41 and 60, and only 3.4% were older than 60. Most participants (32.6%) were unemployed, while 29.8% were students and 19.7% were employers (Figures 1 and 2).

About a third of the patients (33.5%) had previously been infected with the coronavirus (COVID-19). In addition, 61.8% had received the COVID vaccine, whereas 91.2% had received no other immunizations. Only 10% of those surveyed had allergies, 6.8% had hypertension, 3.4% had diabetes, 3.6% had asthma, and 81.4% had chronic illnesses (Table II).

Common cold (33.03%), cough (4.75%), headache (4.3%), colic (2.49%), and burns were the most common symptoms among the patients investigated (2.49%) (Table III).

About 31.4% used OTC as a previous prescription, 16.1% used it based on the internet experience, and 15.4% used it based on a friend's recommendation. The most commonly used OTC had no negative effects, and 96.4% of patients were satisfied with their decision to take it. Furthermore, patients had encounters with OTC medicine distribution and services (69.2%), but only (11.1%) reported OTC drug

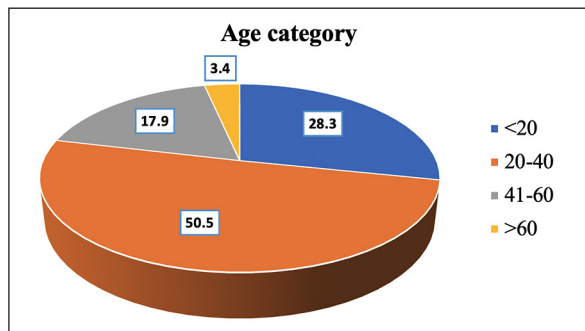


Figure 1. Age category of the studied patients.

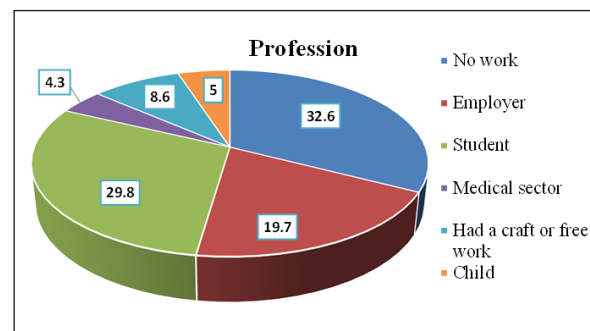


Figure 2. Professions of the studied patients.

Table II. Medical history of the studied patients (n = 442).

| Variables | N = 442 | |
|-------------------------------------|---------|------|
| | No. | % |
| Previous infection with coronavirus | | |
| No | 294 | 66.5 |
| Yes | 148 | 33.5 |
| COVID vaccine | | |
| No | 169 | 38.2 |
| Yes | 273 | 61.8 |
| Other vaccines | | |
| No | 403 | 91.2 |
| Sedovage | 1 | 0.2 |
| Polio vaccine | 11 | 2.5 |
| Rabies vaccine | 6 | 1.4 |
| (hepB, dtap, hib, pcv13, mmr, tdap) | 4 | 0.9 |
| Tetanus | 4 | 0.9 |
| Influvac TETRA | 2 | 0.5 |
| MMR. Vaccine | 4 | 0.9 |
| Influenza | 7 | 1.6 |
| Allergies | | |
| No | 398 | 90.0 |
| Yes | 44 | 10.0 |
| Chronic disease | | |
| Hypertension | 30 | 6.8 |
| Diabetes | 15 | 3.4 |
| Asthma | 16 | 3.6 |
| Diabetes, Hypertension, Arthritis | 1 | 0.2 |
| Diabetes, Hypertension | 5 | 1.1 |
| Hypertension, Other | 1 | 0.2 |
| Arthritis | 11 | 2.5 |
| Asthma, COPD | 2 | 0.5 |
| Dementia | 1 | 0.2 |
| Others | 360 | 81.4 |

COPD: Chronic obstructive pulmonary disease.

interactions with prescription drugs. The majority of patients (76%) had no medication misuse, (95%) had pharmacist counseling, and (93.9%) were willing to pay for pharmacist self-care services on proper OTC usage (Table IV).

Paracetamol (13.35%), and ibuprofen (2.04%) were the most commonly utilized OTC medications by the participants in the study (2.26%) (Table V).

About 56.6% of the patients in the study used OTC for 1-7 days and 16.1% for 8-14 days. In addition, 41.2 % utilized OTC daily, 8.1% when needed, and 5.9% for one week (Figures 3 and 4).

No significant relationships existed between patient gender and age, height, weight, BMI, OTC side effects, satisfaction after OTC use, patient experiences with OTC distribution and services, and OTC drug interactions with prescription ($p>0.05$). At the same time, patient gender was associated with (length, frequency,

recommendation, and misuse) of OTC usage and pharmacist-patient counseling ($p <0.05$) (Table VI).

The category with the highest mean age of patients was >60 , with a substantial female prevalence in all age groups. There were significant correlations between patient age and height, weight, BMI, OTC side effects, satisfaction after OTC use, patient experiences with distribution, services related to OTC medicine, and OTC drug interactions with prescription (duration, frequency, suggestion, misuse) and patient counseling by the pharmacist ($p<0.05$), (Table VII).

Patients' age was significantly correlated with duration, side effects, satisfaction, OTC drug misuse/abuse, and prescription drug interactions. In addition, the duration and side effects of OTC were found to be strongly connected to the gender of the patients ($p<0.05$) (Table VIII, **Supplementary Figures 1-5**).

Table III. The most common symptoms among the studied patients (n = 442).

| Symptoms | N = 442 | |
|------------------------------------|---------|-------|
| | No. | % |
| Common cold | 146 | 33.03 |
| Cough | 21 | 4.75 |
| Headache | 19 | 4.30 |
| Colic | 11 | 2.49 |
| Burns | 11 | 2.49 |
| Need contraception method | 8 | 1.81 |
| Vaginal irritation | 12 | 2.71 |
| Constipation | 9 | 2.04 |
| Acne on face and body | 7 | 1.58 |
| Gastritis | 10 | 2.26 |
| Diarrhea | 8 | 1.81 |
| Heart burn and shortness of breath | 9 | 2.04 |
| Sore throat | 9 | 2.04 |
| Eye infections | 9 | 2.04 |
| Fever | 9 | 2.04 |
| Back pain | 9 | 2.04 |
| Colic and diarrhea | 6 | 1.36 |
| Hair loss | 6 | 1.36 |
| UTI | 5 | 1.13 |
| Pain and swelling in the foot | 4 | 0.90 |
| Vomiting | 7 | 1.58 |
| Overweight | 4 | 0.90 |
| Arthritis | 5 | 1.13 |
| Others | 98 | 22.17 |

UTI: urinary tract infection.

Females (53.8%) used OTC medications at a somewhat higher rate than males (46.2 %). The most frequent users of these drugs were those between the ages of 20 and 40 (50.5 %). Paracetamol (13.35), and ibuprofen (2.04) were the most commonly used OTC medications (2.26). Vomiting (3.17), nausea (2.94), and stomach discomfort were the most prevalent adverse effects mentioned by individuals (2.94), (Table IX).

Discussion

OTC medicines are defined as safe and effective drugs for use by the general public without a prescription¹⁷. These drugs are often located on shelves in pharmacies with easy access by patients¹⁸. OTC medications are effective in treating common ailments, and it helps patients to select a safe, effective product¹⁹. Half of the patients in the current study were between the ages of 20 and 40, with a mean age of 27.44±16.62. Females made up 53.8% of the patients, which was higher than males. 32.6% were unemployed, while 29.8% were students. Another study by Mourya et al²⁰

reported that participants ranged in age from 14 to 90 years old. The age group 14-24 years had the highest percentages of participants (51.33%), while the age group >64 years had the lowest percentages. Graduates 263 were found to have the greatest percentage of self-medication out of 580 individuals (36.55%). 235 (31.33%) of the 14-24-year-olds were female. Sharma et al²¹ also discovered that nearly a third of the respondents (33.6%) were between the ages of 20 and 29 and that 60.9% of the respondents were female. 42.7% have a bachelor's degree or higher education. The conclusion that women took more OTC drugs than men was consistent with Wazaify et al²² and Gazibara et al²³ findings from earlier research conducted in other countries. Women made up 52.2% of the 224 respondents in Kim et al²⁴ survey, and 63.4% of the 202 OTC medication consumers in Serbia. Differences in pain perception can partly explain women's higher usage of OTC drugs (e.g., menstrual pain), more health awareness, higher utilization of health services, and better medication understanding²⁵.

The most common symptoms in the current study were a common cold (33.33%), cough

Table IV. OTC uses data and its side effects among the studied patients (n = 442).

| Variables | N = 442 | |
|--|---------|------|
| | No. | % |
| The suggestion of the OTC drug | | |
| Treatment himself as it's his specialty | 40 | 9.0 |
| Advice from a friend | 68 | 15.4 |
| Internet experience | 71 | 16.1 |
| Previous prescription | 139 | 31.4 |
| Other | 124 | 28.1 |
| OTC side effects | | |
| No | 260 | 58.8 |
| Yes | 168 | 38.0 |
| Rarely | 14 | 3.2 |
| Satisfaction after OTC products use | | |
| No | 16 | 3.6 |
| Yes | 426 | 96.4 |
| Patient experiences with distribution and services related to OTC medicine | | |
| No | 136 | 30.8 |
| Yes | 306 | 69.2 |
| OTC interactions with prescription | | |
| No | 385 | 87.1 |
| Yes | 49 | 11.1 |
| Don't know | 8 | 1.8 |
| Misuse/abuse | | |
| No drug misuse | 336 | 76.0 |
| Laxatives | 22 | 5.0 |
| Opioids | 19 | 4.3 |
| Anti-histamines | 13 | 2.9 |
| Others | 52 | 11.8 |
| Patient counseling by the pharmacist | | |
| No | 22 | 5.0 |
| Yes | 420 | 95.0 |
| Patient willing to pay for pharmacist self-care services on proper use OTC | | |
| No | 27 | 6.1 |
| Yes | 415 | 93.9 |

OTC: Over the counter.

(4.75%), headache (4.3%), colic (2.49%), and burns (2.49%). Kim et al²⁴ observed that the most prevalent cause for taking an OTC drug was to treat a cold, followed by dyspepsia and pain.

According to Mourya et al²⁰, 33.97% of people utilize OTC medications for a single condition. They experienced a variety of illnesses in the previous six months, with the following being

Table V. The most common OTC drugs used by the studied patients (n = 442).

| OTC drugs | N = 442 | |
|-------------|---------|-------|
| | No. | % |
| Paracetamol | 49 | 13.35 |
| Ibuprofen | 9 | 2.04 |
| VITAMIN C | 4 | 0.9 |
| Diclofenac | 3 | 0.68 |
| Otrivin | 3 | 0.68 |
| Others | 364 | 82.35 |

UTI: urinary tract infection.

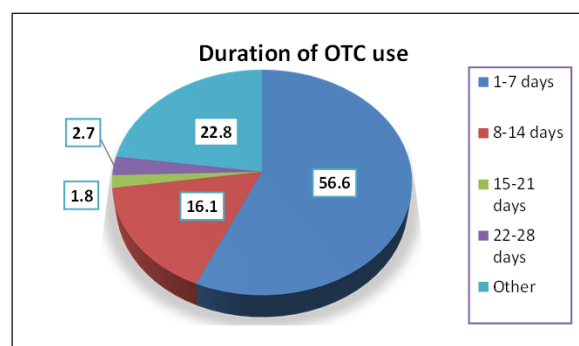


Figure 3. Duration of OTC use among the studied patients.

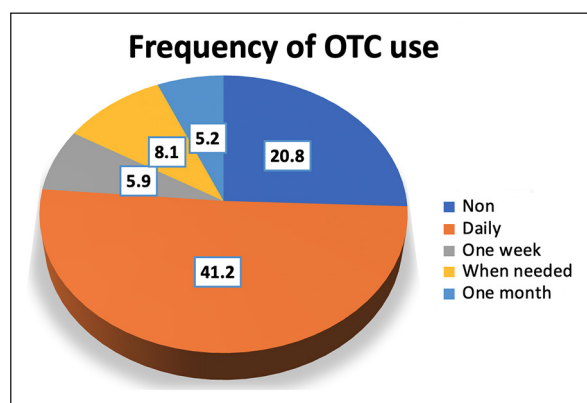


Figure 4. Frequency of OTC use among the studied patients.

the most common: 31.55 % fever, 30 % headache, 17.93 % cough/common cold/sore throat, 10.86 % backache, 8.79 % diarrhea, 7.068 % menstrual cramp, 6.37% joint pain, 6.206% acidity, 5.86% muscle ache/cramp, 5.68% mouth ulcer, 5.17% nausea/vomiting, and 4.827% Fever was treated with over-the-counter medications by 31.55 % of people.

In the present study, the patients' most prevalent OTC drugs used by this survey were paracetamol (13.35%), followed by ibuprofen (2.04 %). Similarly, Mourya et al²⁰ found that paracetamol (63.103%) was the most commonly used medicine. The majority of participants self-medicated with antipyretics, which were the most popular class of medications. Cetirizine (6.55%) was the second most widely used drug, followed by Mef-tal spas (4.65%), Eldoper (2.931%), and Pantoprazole (2.413%). While Kim et al²⁴ showed that the most frequently used OTC medications among survey respondents were antipyretics, analgesics, and anti-inflammatory drugs. These drugs are used to relieve muscle and joint pain, headache, and cold symptoms.

In the current study, 31.4% of patients utilized OTC as a previous prescription, 16.1% from internet experience, 15.4% from a friend's recommendation, and 9% treated themselves without previous experience. Friends/relatives (27.41%), pharmacists (16.55%), and doctors (16.55%) were the most relevant sources of information. According to Mourya et al²⁰, in 13.79% of self-medication, most individuals depended on friends or relatives. In addition, Kim et al²⁴ reported a greater incidence rate than we observed, with 64% of individuals using OTC

drugs for self-treatment. Patients preferred information regarding OTC medication tailored to their unique health problems and illnesses provided by pharmacists over information generated by manufacturers following tight regulations, according to Raynor et al²⁶.

In the present study, vomiting, nausea, and stomach pain were the most common side effects. Most of the patients were satisfied with using OTC medications. Only 11.1% reported OTC had interactions with prescription drugs. 76% had no drug misuse. In agreement with Kim et al²⁴ revealed that patients might be exposed to unexpected DRPs such as ADRs and DDIs when taking OTC drugs, which is not necessarily safe or useful. When asked if an OTC drug could produce bad effects or interact with prescription drugs, the respondents' level of understanding was lower than predicted. The material about adverse effects got the least amount of attention²⁵. Also, according to Mourya et al²⁰, 90.69% of individuals had alleviation from their symptoms after taking OTC medication. According to 48.62% of participants, OTC medications are relatively effective compared to those recommended by a doctor. Most people thought self-medication was moderately/more successful than those given by a doctor, indicating that they were self-assured and considered it harmless. In addition, Sharma et al²¹ reported younger age than ours with almost 6% had experienced adverse reactions such as gastrointestinal disturbance, constipation, and diarrhea. An outstanding result was obtained by Dawane et al²¹ and Bhambhani et al²⁷ that not even half of the respondents had adequate knowledge regarding over-the-counter drugs, their dose, duration, side effects, and interactions.

There were no significant relationships between gender and OTC side effects, satisfaction after OTC use, or OTC drug interactions with prescription drugs in the current investigation. Gender was substantially connected to OTC use (duration, frequency, recommendation, and misuse). Females tend to score higher on various characteristics that predict increased consumption, according to Lorentzen et al²⁸. Also, Wazai-fy et al²² discovered that males are more likely than females to misuse OTC products, as they are more inclined to use them more frequently than suggested. According to Kim et al²⁴, men (19.1%) were more likely than women to take antitussives and expectorants (9.3%). This outcome can partly be explained by differences in smoking status

Table VI. Relation between OTC used data and its side effects with the gender of patients (n = 442).

| Variables | Studied patients N = 442 | | | | Test of sig. | p-value |
|--|--------------------------|-------|----------------|-------|----------------|----------|
| | Male N = 204 | | Female N = 238 | | | |
| Age/ year | 28.27 ± 18.29 | | 26.72 ± 15.06 | | t = 0.978 | 0.329 |
| Height/ cm | 152.77 ± 37.14 | | 149.71 ± 30.94 | | t = 0.944 | 0.346 |
| Weight/ kg | 64.58 ± 27.96 | | 59.92 ± 22.55 | | t = 1.94 | 0.053 |
| BMI (kg/m ²) | 27.12 ± 8.59 | | 25.87 ± 5.91 | | t = 1.81 | 0.071 |
| | No. | % | No. | % | χ ² | p-value |
| Duration of OTC use | | | | | 32.569 | < 0.001* |
| 1-7 days | 107 | 52.45 | 143 | 60.08 | | |
| 8-14 days | 51 | 25.00 | 20 | 8.40 | | |
| 15-21 days | 0 | 0.00 | 8 | 3.36 | | |
| 22-28 days | 6 | 2.94 | 6 | 2.52 | | |
| Other | 24 | 11.76 | 50 | 21.01 | | |
| Frequency of OTC use | | | | | 30.8 | < 0.001* |
| Non | 58 | 28.43 | 34 | 14.29 | | |
| Daily | 87 | 42.65 | 95 | 39.92 | | |
| One week | 10 | 4.90 | 16 | 6.72 | | |
| When needed | 19 | 9.31 | 17 | 7.14 | | |
| One month | 0 | 0.00 | 23 | 9.66 | | |
| Suggestion of the OTC drug | | | | | 14.830 | 0.005* |
| Treatment himself as it's his specialty | 15 | 7.35 | 25 | 10.50 | | |
| Advice from a friend | 36 | 17.65 | 32 | 13.45 | | |
| Internet experience | 25 | 12.25 | 46 | 19.33 | | |
| Previous prescription | 56 | 27.45 | 83 | 34.87 | | |
| Other | 72 | 35.29 | 52 | 21.85 | | |
| OTC side effects | | | | | 3.074 | 0.215 |
| No | 127 | 62.25 | 130 | 54.62 | | |
| Yes | 70 | 34.31 | 98 | 41.18 | | |
| Rarely | 5 | 2.45 | 9 | 3.78 | | |
| Satisfaction after OTC products use | | | | | 1.484 | 0.223 |
| No | 5 | 2.45 | 11 | 4.62 | | |
| Yes | 199 | 97.55 | 227 | 95.38 | | |
| Patient experiences with distribution and services related to OTC medicine | | | | | 2.835 | 0.089 |
| No | 71 | 34.80 | 65 | 27.31 | | |
| Yes | 133 | 65.20 | 173 | 72.69 | | |
| OTC drugs and their interactions with prescription | | | | | 1.808 | 0.173 |
| No | | | | | | |
| Yes | 173 | 84.80 | 212 | 89.08 | | |
| Don't know | 27 | 13.24 | 22 | 9.24 | | |
| Misuse/abuse | | | | | 12.777 | 0.012* |
| No drug misuses | 150 | 73.53 | 186 | 78.15 | | |
| Laxatives | 9 | 4.41 | 13 | 5.46 | | |
| Opioids | 13 | 6.37 | 6 | 2.52 | | |
| Antihistamines | 11 | 5.39 | 2 | 0.84 | | |
| Others | 21 | 10.29 | 31 | 13.03 | | |
| Patient counseling by the pharmacist | | | | | 0.893 | 0.345 |
| No | 8 | 3.92 | 14 | 5.88 | | |
| Yes | 196 | 96.08 | 224 | 94.12 | | |
| Patient willing to pay for pharmacist self-care services on proper use OTC | | | | | 6.786 | 0.009* |
| No | 19 | 9.31 | 8 | 3.36 | | |
| Yes | 185 | 90.69 | 230 | 96.64 | | |

 OTC: Over the counter, t: Independent t-test, χ²: Chi-square test, *Significant.

Table VII. Relation between OTC used data and its side effects with the age category of the studied patients (n = 442).

| Variables | Age category of the studied patients (N = 442) | | | | | | | | Test of sig. | p-value |
|--|--|------|------------------|-------|-----------------|-------|----------------|--------|----------------|----------|
| | < 20 N = 125 | | 20-40 N = 223 | | 41-60 N = 79 | | > 60 N = 15 | | | |
| Age/ year | 9.05 ± 6.28 | | 27.28 ± 6.63 | | 49.57 ± 6.18 | | 66.47 ± 5.36 | | H = 840.48 | < 0.001* |
| Sex | No. | % | No. | % | No. | % | No. | % | χ ² | |
| Male | 53 | 42.4 | 108 | 48.43 | 37 | 46.84 | 6 | 40 | 1.845 | 0.605 |
| Female | 72 | 57.6 | 115 | 51.57 | 42 | 53.16 | 9 | 60 | | |
| Height/ cm | 113.24 ± 43.98 | | 165.93 ± 7.48 | | 165.76 ± 7.35 | | 169.67 ± 8.64 | | H = 141.95 | < 0.001* |
| Weight/ kg | 33.11 ± 21.31 | | 70.32 ± 14.40 | | 82.10 ± 17.34 | | 75.33 ± 10.15 | | H = 77.057 | < 0.001* |
| BMI (kg/m ²) | 26.04 ± 11.05 | | 25.46 ± 4.20 | | 29.93 ± 6.25 | | 26.16 ± 3.24 | | H = 7.872 | < 0.001* |
| Duration of OTC use | No. | % | No. | % | No. | % | No. | % | χ ² | |
| 1-7 days | 97 | 77.6 | 121 | 54.26 | 39 | 49.37 | 9 | 60.00 | 66.885 | < 0.001* |
| 8-14 days | 18 | 14.4 | 47 | 21.08 | 4 | 5.06 | 1 | 6.67 | | |
| 15-21 days | 0 | 0 | 8 | 3.59 | 0 | 0.00 | 0 | 0.00 | | |
| 22-28 days | 0 | 0 | 12 | 5.38 | 0 | 0.00 | 0 | 0.00 | | |
| Other | 10 | 8 | 35 | 15.70 | 25 | 31.65 | 5 | 33.33 | | |
| Frequency of OTC use | No. | % | No. | % | No. | % | No. | % | | |
| Non | 41 | 32.8 | 58 | 26.01 | 12 | 15.19 | 1 | 6.67 | 134.012 | < 0.001* |
| Daily | 54 | 43.2 | 100 | 44.84 | 50 | 63.29 | 11 | 73.33 | | |
| One week | 13 | 10.4 | 21 | 9.42 | 7 | 8.86 | 2 | 13.33 | | |
| When needed | 8 | 6.4 | 34 | 15.25 | 6 | 7.59 | 1 | 6.67 | | |
| One month | 9 | 7.2 | 10 | 4.48 | 4 | 5.06 | 0 | 0.00 | | |
| The suggestion of the OTC drug | No. | % | No. | % | No. | % | No. | % | χ ² | |
| Treatment himself as it's his specialty | 15 | 12 | 19 | 8.52 | 6 | 7.59 | 0 | 0.00 | 47.949 | < 0.001* |
| Advice from a friend | 16 | 12.8 | 47 | 21.08 | 5 | 6.33 | 0 | 0.00 | | |
| Internet experience | 26 | 20.8 | 36 | 16.14 | 8 | 10.13 | 1 | 6.67 | | |
| Previous prescription | 31 | 24.8 | 54 | 24.22 | 43 | 54.43 | 11 | 73.33 | | |
| Other | 37 | 29.6 | 67 | 30.04 | 17 | 21.52 | 3 | 20.00 | | |
| OTC side effects | No. | % | No. | % | No. | % | No. | % | | |
| No | 91 | 72.8 | 122 | 54.71 | 37 | 46.84 | 8 | 53.33 | 24.782 | < 0.001* |
| Yes | 27 | 21.6 | 95 | 42.60 | 40 | 50.63 | 7 | 46.67 | | |
| Rarely | 7 | 5.6 | 6 | 2.69 | 2 | 2.53 | 0 | 0.00 | | |
| Satisfaction after OTC products use | No. | % | No. | % | No. | % | No. | % | χ ² | |
| No | 0 | 0 | 13 | 5.83 | 3 | 3.80 | 0 | 0.00 | 8.386 | 0.039* |
| Yes | 125 | 100 | 210 | 94.17 | 76 | 96.20 | 15 | 100.00 | | |
| Patient experiences with distribution and services related to OTC medicine | No. | % | No. | % | No. | % | No. | % | χ ² | |
| No | 56 | 44.8 | 57 | 25.56 | 20 | 25.32 | 3 | 20.00 | 16.312 | 0.001* |
| Yes | 69 | 55.2 | 166 | 74.44 | 59 | 74.68 | 12 | 80.00 | | |

Continued

between men and women. The difference in drug use between genders was significant for all three types of drugs.

In the present study, the highest age group of patients who took OTC medications in this study was >60, with a strong female predominance.

There were significant associations between age and OTC side effects, satisfaction after OTC usage, patient experiences with distribution, services connected to OTC medicine, and OTC drug interactions with prescription of OTC use, as well as patient counseling by the pharma-

Table VII (Continued). Relation between OTC used data and its side effects with the age category of the studied patients (n = 442).

| Variables | Age category of the studied patients (N = 442) | | | | | | | | Test of sig. | p-value |
|--|--|------|------------------|-------|-----------------|-------|----------------|--------|--------------|----------|
| | < 20 N = 125 | | 20-40 N = 223 | | 41-60 N = 79 | | > 60 N = 15 | | | |
| | No. | % | No. | % | No. | % | No. | % | χ^2 | |
| OTC drugs and their interactions with prescription | | | | | | | | | 90.128 | < 0.001* |
| No | 122 | 97.6 | 188 | 84.30 | 68 | 86.08 | 7 | 46.67 | | |
| Yes | 2 | 1.6 | 33 | 14.80 | 8 | 10.13 | 6 | 40.00 | | |
| Don't know | 1 | 0.8 | 2 | 0.90 | 3 | 3.80 | 2 | 13.33 | | |
| Misuse/abuse | | | | | | | | | 81.172 | < 0.001* |
| No drug misuse | 104 | 83.2 | 178 | 79.82 | 51 | 64.56 | 3 | 20.00 | | |
| Laxatives | 5 | 4 | 1 | 0.45 | 10 | 12.66 | 6 | 40.00 | | |
| Opioids | 0 | 0 | 12 | 5.38 | 5 | 6.33 | 2 | 13.33 | | |
| Anti-histamines | 6 | 4.8 | 5 | 2.24 | 2 | 2.53 | 0 | 0.00 | | |
| Others | 10 | 8 | 27 | 12.11 | 11 | 13.92 | 4 | 26.67 | | |
| Patient counseling by the pharmacist | | | | | | | | | 27.014 | < 0.001* |
| No | 3 | 2.4 | 6 | 2.69 | 13 | 16.46 | 0 | 0.00 | | |
| Yes | 122 | 97.6 | 217 | 97.31 | 66 | 83.54 | 15 | 100.00 | | |
| Patient willing to pay for pharmacist self-care services on proper use OTC | | | | | | | | | 27.236 | < 0.001* |
| No | 7 | 5.6 | 4 | 1.79 | 14 | 17.72 | 2 | 13.33 | | |
| Yes | 118 | 94.4 | 219 | 98.21 | 65 | 82.28 | 13 | 86.67 | | |

OTC: Over the counter, H: Kruskal Wallis test, χ^2 : Chi-square test, *Significant.

cist. Also, according to Mourya et al²⁰, in the age group 14-24 years, 35.17 % of girls utilized OTC products more than males (22.07%). Females used OTC goods 9.31 % more than males

(8.28%) in the 25-44 age group, and males used OTC products 9.48% more than females in the 45-64 age group (7.93%). In addition, Kim et al²⁴ found that people over 65 used prescription

Table VIII. Correlation between OTC used data and its side effects with age and sex of the studied patients (n = 442).

| Variable | Age/year | | Sex | |
|--|----------|----------|--------|---------|
| | r | p-value | r | p-value |
| Duration of OTC use | 0.134 | 0.007* | 0.105 | 0.035* |
| Frequency of OTC use | -0.013 | 0.802 | 0.053 | 0.32 |
| The suggestion of the OTC drug | -0.053 | 0.267 | -0.051 | 0.287 |
| OTC side effects | 0.144 | 0.003* | 0.104 | 0.031* |
| Satisfaction after OTC use | -0.127 | 0.007* | -0.019 | 0.692 |
| Patient experiences with distribution and services related to OTC | 0.105 | 0.027* | 0.018 | 0.701 |
| OTC drugs interactions with prescription | 0.166 | 0.001* | -0.066 | 0.175 |
| Misuse/abuse | 0.162 | 0.001* | 0.044 | 0.352 |
| Patient counseling by the pharmacist | 0.006 | 0.898 | 0.044 | 0.359 |
| Patient willing to pay for pharmacist self-care services on proper use OTC | 0.198 | < 0.001* | 0.063 | 0.185 |

OTC: Over the counter, r: Correlation coefficient, *Significant.

Table IX. Characteristic data of the studied patients (n=442).

| Variables | N = 442 | |
|--|---------|-------|
| | No. | % |
| Sex | | |
| Male | 204 | 46.2 |
| Female | 238 | 53.8 |
| Age category | | |
| < 20 | 125 | 28.3 |
| 20-40 | 223 | 50.5 |
| 41-60 | 79 | 17.9 |
| > 60 | 15 | 3.4 |
| Common OTC drugs used | | |
| Paracetamol | 59 | 13.35 |
| Ibuprofen | 9 | 2.04 |
| The most common side effects caused by OTC drugs | | |
| Drowsiness | 8 | 1.81 |
| Nausea | 13 | 2.94 |
| Vomiting | 14 | 3.17 |
| Skin rash | 7 | 1.58 |
| Dizziness | 6 | 1.36 |
| Pain in stomach | 13 | 2.94 |
| Irritation | 3 | 0.68 |
| Headache | 10 | 2.26 |
| Hypnotic | 6 | 1.36 |
| Diarrhea | 9 | 2.04 |
| Allergy | 3 | 0.68 |

medications instead of OTC drugs to relieve pain and cold symptoms, because they could save money by using national health insurance co-payments, The prevalence rates of HTN, gastroduodenitis, gonarthrosis, heart failure, gastroesophageal reflux illness, and muscle tension were considerably greater in responders aged 65 than those aged 65, according to the Korean Health Insurance Review and Assessment Service²⁹. It was also discovered that respondents over 65 had a greater understanding of the potential ADRs and DDIs of OTC medications than those under 65.

Limitations

This study has some limitations that must be addressed when evaluating the results. The survey respondents' representativeness is the study's first shortcoming. As a result, it's difficult to extrapolate the findings from this study. Second, we did not consider patients' non-demographic and lifestyle characteristics, shown in prior studies, to impact OTC medicine use. Third, herbal medical preparations and functional foods are extensively utilized in our community; however, we did not examine the usage of these items by patients,

which could result in a variety of interactions with prescription and over-the-counter medications and conditions.

Conclusions

For self-treatment, over-the-counter drugs are readily available at pharmacies. Most of our patients used OTC as a previous prescription, 16.1% used it based on the internet experience, and 15.4% used it based on a friend's recommendation. The most commonly used OTC had no negative effects, and most patients were satisfied with their decision to use it. Paracetamol and ibuprofen were the most widely used OTC medications among the patients in the study. The length, frequency, recommendation, and misuse of OTC were all substantially associated with the patient's age and gender. Before the aggregate results can be reviewed and used as basic data in establishing whole patient care programs, similar surveys will need to be conducted in other regions. Also, it is suggested that an awareness program among community people should be conducted at the community level regarding over-the-counter drugs.

Conflict of Interest

The Authors declare that they have no conflict of interests.

Informed Consent

Written informed consent was obtained from the participants to publish this paper.

Data Availability Statement

The data presented in this study are available on request from the corresponding author. The data are not publicly available due to confidentiality policies.

Ethics Approval

The Scientific Research Ethics Committee of the Faculty of Pharmacy of Fayoum University approved the research procedures numbered (R248).

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