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Use Patterns of Over the Counter Analgesics in Adult Population in United Arab Emirates: A Population Based Study

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***Abstract*– Background:** Analgesics are among the most commonly used over-the-counter (OTC) medications and are widely available. Yet, their use patterns are not well documented. This study aimed to assess the self-use of OTC analgesics and use patterns in the adult population of the United Arab Emirates. **Methods:** A descriptive cross-sectional survey was conducted in Dubai and Sharjah Emirates among adults aged 18 years and over who were not from healthcare professions. We further conducted a multivariable logistic regression to investigate the factors associated with the use of paracetamol as OTC analgesic. **Results:** In total, 604 individuals fulfilled the inclusion criteria and answered the survey. Overall, 350 of respondents (58%) were women. The most commonly used analgesic was paracetamol either alone or in combination (n=459, 76%); headache was the main cause for use. Most respondents self-used OTC analgesics less than once a month (n=332, 55%). The majority of respondents (n=314, 52%) never read the patient information leaflets and one-tenth reported taking more than two tablets at once. Use of paracetamol was less common in men compared to women (adjusted odd ratio (aOR) 0.57, 95% confidence Interval (CI) 0.40-0.83) while it was more common in persons with a chronic condition (aOR 1.69, 95%CI 1.15-2.49). **Conclusion:** Considering that paracetamol and other non-steroidal anti-inflammatory drugs are widely used and easily available in retail sales and online, and since most users do not read the patient information leaflets, pharmacists can have an important role in educating patients for the rational use of OTC analgesics and to avoid their overuse.

Keywords: United Arab Emirates, Pharmacoepidemiology, Survey study, Analgesics, Over the counter medications.

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1. Introduction

Pain is a common and subjective symptom that significantly impacts the quality of life. Analgesics are medications used to alleviate pain [1]. Some analgesics are categorized under over-the-counter (OTC) medications such as paracetamol and non-steroidal anti-inflammatory (NSAIs) e.g. naproxen and ibuprofen [2]. OTC drugs mean they could be issued without a prescription. Other analgesics might need a prescription to be issued from a pharmacy such as narcotics. Many patients may self-medicate themselves using OTC analgesics.

It was reported in a study conducted in United States that 60% of patients used OTC paracetamol, while 67% used NSAIDs [3]. Another study from Saudi Arabia reported a high prevalence of OTC analgesic use [4, 5], emphasizing the need for further investigations to enhance our understanding about general population's knowledge related to analgesics. OTC analgesics are generally safe when used appropriately. However, misuse may lead to adverse events, such as bleeding and stomach ulcers with NSAIDs [6], or hepatotoxicity and liver failure with paracetamol [7]. A systematic review conducted in Middle East highlighted the potential health risks associated with self-medication misuse [8]. Based on published studies, there is a lack of knowledge about the self-medication patterns of OTC analgesics among adult population in the United Arab Emirates (UAE). Such knowledge is crucial in tailoring interventions to enhance the proper use of self-administered medications when needed. Therefore, the aim of our research is to investigate the self-medication use patterns mainly OTC analgesics among adult population in the UAE.

2. Materials and Methods

Study design and setting: A cross-sectional survey was developed and conducted between 1st November 2018 to 15th

January 2019. The researchers (HA, HA, IA, NN) screened customers in four community pharmacies and two hospital pharmacies in Dubai and Sharjah, UAE to assess their eligibility to be enrolled in the study based on the predefined eligibility criteria which is listed below.

Study population: Based on previous studies showing a high self- use of analgesics in the adult population, (around 60%) [3], a minimum sample size of 320 persons was judged to be enough for a maximum width of +/-5% for the 95% confidence interval. We decided to target the double of this size to have enough power to conduct regression analyses. The study population was sampled based on a convenience sampling which is a non-probability sampling method. The researchers (HA, HA, IA, NN) approached clients consecutively at each pharmacy and asked whether he or she wished to participate in the study. Eligibility criteria were: individuals aged ≥ 18 years, ability to understand English or Arabic. While, exclusion criteria were: healthcare professionals or students, and other population who reported using analgesics only under medical prescription, and those who did not accept to sign the consent form. All approached clients received information both verbally and in writing on the purpose of the study, anonymity and the right to decline to participate. Clients who fulfilled all the inclusion criteria and agreed to participate were given the questionnaires to be completed then returned directly to the researcher at the same pharmacy.

Description of the questionnaire: The research group developed a questionnaire with open and multiple-choice questions based on items developed in previous research [4, 5]. None of the questions used in the previous research were directly used in our survey. The questionnaire included information on the sociodemographic characteristics of participants and their self-use of OTC analgesics (name of medications, indications, frequency of use). Questions were initially developed in English and then translated to Arabic as they are the two main languages in the UAE. The four first authors and the last author are bilingual and the back-translation was approved by all and then validated by a professional translator. The questionnaire was pilot-tested on a sample of adults with different educations to evaluate its clarity. As it is known that participants do not read long instructions and definitions, simplification of the questionnaire was considered necessary for minimising the risk of refusal to participate and reporting biases among persons with health literary or cognitive barriers. For the same reason, the length of the survey was minimised. Once validated, research group members recruited the participants and assisted those who had difficulties to read the questionnaire in order to reach those with low educational level.

Statistical analysis: The data obtained from the different variables were represented descriptively by frequency and percentages. We further conducted a multivariable regression analysis to investigate the factors associated with the use of paracetamol in the adult population. The covariates considered in the regression model were: age, gender, nationality, the highest attained education and the existence of a chronic condition. Results were reported as adjusted odds ratios (aOR) and 95% confidence intervals (95% CI). P-values <0.05 were considered as statistically significant. Analyses were conducted using SPSS software version 27.

Ethical approval: The study had an ethical approval from the research ethics committee of Dubai Pharmacy College (Approval number. REC/UG/2018/18). Individuals were consented to participate in the study by signing the consent form then answering the questionnaire. All data were analysed anonymously.

3. RESULTS

The individuals approached were 718 adults. Out of this group, 75 individuals (10%) were deemed ineligible as they exclusively used analgesics under medical prescription, 25 (3%) did not provide consent to participate, 11 (2%) could not speak either English or Arabic, and three (0.4%) were identified as health professionals. In total, 604 individuals met the inclusion criteria and actively participated in the survey.

The main characteristics of the study population are presented in Table *1*. In total, 350 (58%) participants were women; 179 (30%) were ≤25 years, while 40 (7%) were aged ≥56 years. Overall, 110 (18%) were nationals, and 286 (47%) were residents from the Middle East/North Africa, while 145 (24%) were from other Asian countries. Furthermore, 160 (27%) reported having a chronic condition, and 316 (52%) had a university degree. As illustrated in Figure *1*, paracetamol was the most commonly used OTC analgesic. It was used alone by 411 (68%) respondents, while in combination with other analgesics (OA) such as non-steroidal anti-inflammatory drugs (ibuprofen, naproxen) it was used by 48 (8%) of respondents. Use of naproxen alone was the least commonly reported used OTC analgesics.

The most commonly reported symptom indicating the use of OTC analgesics was headache, found in 465 (77%) of participants (Figure *2*). The reported symptoms for the use of OTC analgesics were associated with both acute conditions (pharyngitis, cold, odontalgia, and fever) and potentially chronic conditions (headache, myalgia, back pain, and migraine).

As shown in Figure *3* A, most participants self-used OTC medications only once a month or rarely (n=332, 55%), while 54 (9%) of respondents used OTC analgesics daily. Further, 54 (9%) answered that they took more than three tablets at once, indicating a potential overuse pattern (Figure *3* B). Furthermore, 314 (52%) never read the patient information leaflet of the medication, while 78 (13%) reported always reading the leaflet (Figure *3* C). The multivariate regression analysis indicated that use of paracetamol was less common in men compared to women (aOR 0.57, 95% CI 0.40-0.83) (Table *2*). Use of paracetamol was more common in persons with a chronic condition (aOR 1.69, 95%CI 1.15-2.49).

Figure 1: **Reported over the counter analgesics**

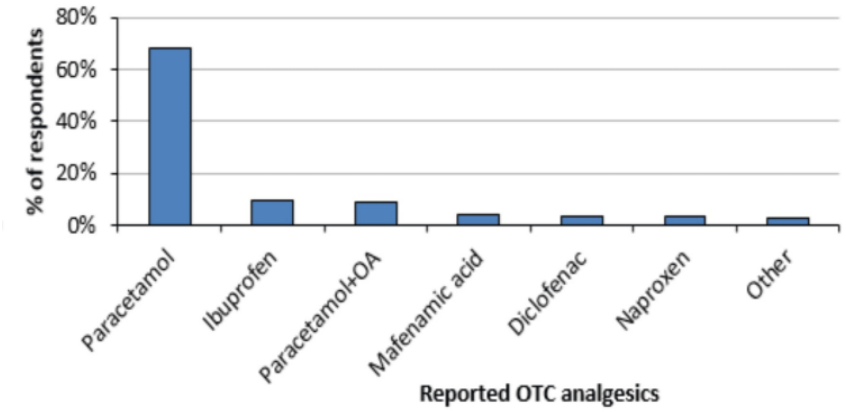


Figure 2: **Reported symptoms indicating the use of over the counter analgesics**

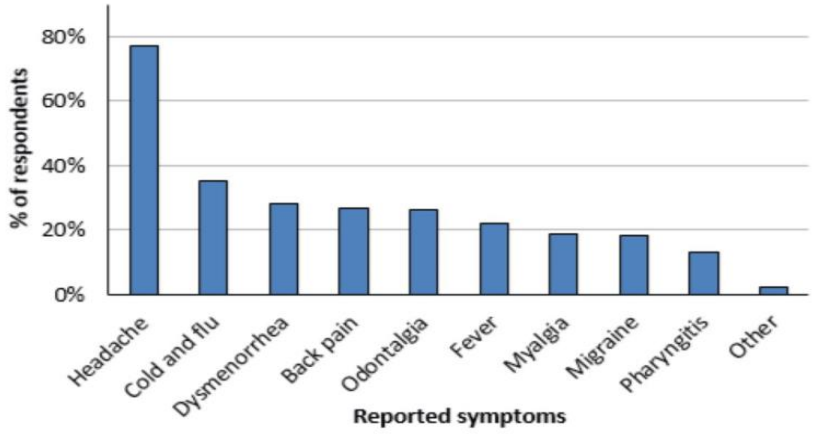
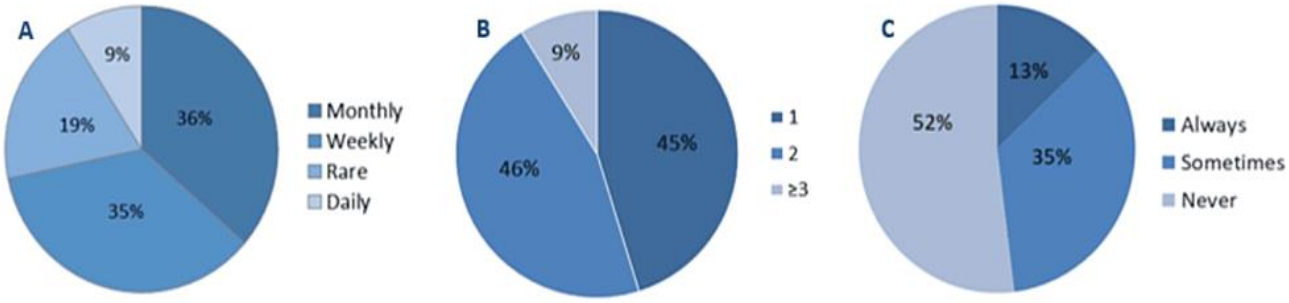


Figure 3: **Reported utilization patterns of over the counter analgesics**



OTC: Over the counter
A. Frequency of use OTC analgesics
B. Number of tablets of OTC analgesics taken at once
C. Frequency of reading the leaflets of OTC analgesics

Characteristics	Number (%)
Gender	
Women	350 (58)
Men	254 (42)
Age category	
18-25	179 (30)
26-35	195 (32)
36-45	125 (21)
46-55	65 (11)
≥ 56	40 (7)
Chronic condition	160 (27)
Nationality	
Middle East/North Africa	286 (47)
Asian*	145 (24)
Emiratis	110 (18)
Western countries †	56 (9)
Others	7 (1)
Highest attained level of education	
None	16 (3)
Primary	54 (9)
Secondary	218 (36)
University	316 (52)

Table 1: Characteristics of the study population (N=604)

*Other than those in the Middle East region.
†Refers to Australasia, Europe, and the Americas.

4. Discussion

The findings of this survey suggest that the self-use of OTC analgesics is highly prevalent among adult population of two large Emirates Dubai and Sharjah in the UAE. Only 10% reported that they never used these medications without a prescription. The most commonly used OTC analgesic was paracetamol, primarily for treating headaches. Most respondents used OTC analgesics less than once a month, while more than half reported that they never read the patient information leaflet. Use of paracetamol was more common in women and in persons with a chronic condition.

The high use of paracetamol among our population parallels findings from previous research [9, 10]. This is most probably due to its wide availability, low cost, and safety profile [7]. We noted a low frequency of repeated use of OTC analgesics, as about 55% used them either monthly or rarely, while daily use was only reported by less than one-tenth of the respondents. This finding echoes a recent survey conducted in Saudi Arabia as 49.3% of the participants rarely self-used OTC analgesics and 19.4% used them only every few months [5]. In our survey, use of paracetamol was higher in women. Women were also over-represented in our sample. This is understandable as dysmenorrhea was the third most common symptom for self-use of analgesics. Another explanation may be the gender difference in the perception of pain, as women were found to have a higher sensitivity to pain than men in some studies [11].

The low proportion of individuals who read the patient information leaflet is in line with previous research [12]. Difficult to understand content and small print size were the two main reported limitations that prevented consumers from reading leaflets [13, 14]. To enhance the ability of reading the leaflet, it should be made more appealing and more patient-friendly than it is currently [15]. Since most adults use the internet to seek information about their health, including self-used medications, the digital leaflet should be considered in order for patients to be able to utilize the information provided to them [16]. As most individuals still purchase their OTC medications from pharmacies [17], pharmacists play an important role in communicating and counselling about the safe use of self-used medications. About one-tenth of respondents reported taking three tablets or more of OTC analgesics at once. While we lacked data about the actual dose taken at once, this finding may potentially indicate an overuse of analgesics in some individuals. OTC analgesics were found to be the most overused medications in some research [18], especially for headache [19]. In the United Arab Emirates, OTC medications dispensed in higher doses are considered pharmacist-only medications [20]. Future research should explore the actual dose taken and whether it is associated with adverse outcomes.

Strengths and weaknesses of the study: The survey was conducted among adults of the general population and translated into the two main languages in the UAE. The survey questions were clear and understandable by participants, as they were previously pilot-tested among individuals from different educational backgrounds. Furthermore, research group members clarified questions to respondents with low literacy. The weaknesses of the research include the risk of recall bias, as some respondents may not have reported the exact information on the medication taken, frequency of use, or associated symptoms. Although our survey was conducted in two large cities, the generalizability of our findings to small cities is uncertain. Convenience sampling, while cost-effective and efficient, may limit generalizability due to non-random participant selection. This should be reflected on when interpreting our findings. Yet, the external validity is higher compared to studies conducted in selected populations, as in hospital settings or among students. Considering the limited time of pharmacy customers to answer the questionnaire, we purposefully limited the number of questions and did not include information related to the safe use of OTC analgesics. The question on the number of pills taken at once aimed to indicate a potential overuse of OTC analgesics, but we acknowledge that reporting the exact dose would have been more accurate, though not all participants would have been able to respond.

5. Conclusion

Paracetamol is the most widely used OTC analgesic, mainly for headache. Use of paracetamol was more commonly used in women and in individuals who reported having chronic conditions. Pharmacists have therefore an important role to ensure the education of patients on the rational self-use of OTC analgesics.

Covariates	Univariate odds ratio (95%confidence interval)	p-value	Adjusted odds ratio* (95% confidence interval)	p-value
Age (years) (Ref: 18-25)				
26-35	0.92 (0.61-1.41)	0.71	0.83 (0.54-1.30)	0.42
36-45	1.25 (0.76- 2.05)	0.38	1.13 (0.68-1.89)	0.64
46-55	1.13 (0.62- 2.10)	0.69	0.99 (0.52-1.89)	0.98
≥ 56	1.18 (0.56- 2.48)	0.67	1.12 (0.51-2.48)	0.77
Gender men (Ref: women)	0.60 (0.42-0.86)	0.005	0.57 (0.40-0.83)	0.003
Chronic condition (Ref: No chronic condition)	1.55 (1.074-2.23)	0.02	1.69 (1.15-2.49)	0.007
Nationality (Ref: Emirati)				
Middle East/North Africa	0.75 (0.47-1.21)	0.24	0.77 (0.47-1.26)	0.30
Asian †	0.97 (0.56-1.68)	0.92	0.99 (0.57-1.73)	0.97
Western countries ‡	0.80 (0.40-1.59)	0.52	0.80 (0.39-1.63)	0.54
Highest attained level of education (Ref: Primary)				
High school	1.13 (0.62-2.06)	0.68	1.08 (0.58-2.03)	0.80
University	1.29 (0.39-4.26)	0.67	1.20 (0.34-4.19)	0.78

Table 2: **Factors associated with use of paracetamol**

Ref: Reference group. *Adjusted for all variables considered in the univariate analysis. †Other than those in the Middle East region. ‡Refers to Australasia, Europe, and the Americas.

Conflict of Interest: The authors declare no conflict of interest.

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