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Original Research

The patterns of herbal medicine use in the United Arab Emirates; A national study

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Abstract

Objectives: To examine the pattern, nature, and attitude towards herbal medicines usage in the UAE. **Methods:** A cross-sectional national questionnaire was distributed over five weeks in 7 emirates of UAE: The questioner was constructed using an online platform and delivered randomly to 448 adults in the UAE. The data collection technique adopted for this study was a convenient sampling. SPSS version 24 was used for statistical analysis. **Results:** Among participants, 98.7% used herbal medicines (HMs), and respondents who aged between 18 and 24 years were more likely to use HMs. Participant were mainly female (70.3%), with fair health status (55%), and participant with chronic disease were significantly less likely to use HM (10.9%). The majority of herbal medicine users believed herbal medicine were harmless, because they were derivatives of natural products. The findings of this study reported that many participants use HMs to enhance immunity (26.8%), and for relaxation (23.5%). **Conclusion:** Despites the risk of adverse-effects, many participants in this study are regular users for HMs and have perception that 89 may cure or prevent COVID-19. Therefore, awareness-raising campaigns that target HM users are essential to mitigate any unwanted consequences.

Keywords: herbal medicine usage; UAE; natural ingredients

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INTRODUCTION

Herbal medicine (HMs), also called botanical medicine is the practice of phytotherapy, based on the theories, beliefs, and experience using naturally occurring plants. plants leaf, stem, flower, root, seed, bark are dissolved with water, alcohol or other solvents to extract the herbal drug (active ingredients) and formulate it to different dosage forms and it is used for treatment and prevention of disease as a complementary and/or alternative medicine.[1] The Herbal medicine includes plant elements in a form of processed herbs, pure herbs or, the finished herbal product found in a market in different dosage forms, such as tablets, capsules, powders, teas, syrup, ointment and cream which are ready for patient's administration.[2] The fact that herbal medicines are being sold without prescription in the pharmacies, without further regulatory control in the condimental shops, drug stores, and supermarket raise concern over the herbal medicine safety, quality, and efficacy in the UAE.[3] Another concern of herbal based medicine is the lack of complete information about the composition of the herbal product. The usage of herbal medicine varies around the world depending on the region, according to recent researches the usage of herbal medicines in the Middle Eastern countries has increased, for the sake of prevention and treatment of illness, beauty purposes, as well as its unique flavor and scent in the daily consumed foods.[3] This increase is due to the cultural and historical beliefs of the population.[4] Throughout the world, the herbal medicine market is divided into four regions (European, American, Asia-pacific and Middle-East & Africa). The European region (Germany, France, UK, Italy, Spain, etc.) market for herbal drug medicines is the largest and estimated to be the fastest-growing region.[5-7] ASIA Pacific region (Japan, China, India, South Korea Indonesia, Australia) is counted as the second largest

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herbal medicine market, the reason responsible for this growth in ASIA Pacific region is due to adoption of traditional medicines (Homeopathy, acupunctures) by pharmaceutical companies, researchers and policymakers.[7] The herbal medicine market, of Europe and the Asia-Pacific, occupies 72.36% of the total global consumption. The third-largest herbal medicine market is the US market where the population mainly uses herbal medicines for stroke and arthritis conditions.[8] The herbal medicine market in Africa and the Middle East is the slowest in growth.[9] To our knowledge, this is the first study in the UAE that assesses herbal medicine utilization on a national level.

METHODOLOGY

Study design and participant

In this cross-sectional study, a structured online questionnaire was distributed over 40 Days in 7 major cities in UAE: Abu Dhabi, Dubai, Sharjah, Ajman, RAK, Fujairah, and Umm Al Quwain. The questionnaire was administered randomly using to individuals aged ≥ 18 years. The study population was classified using proportionate random sampling into 7 emirates: Abu Dhabi, Sharjah, Dubai, Ajman, Ras al-Khaimah, Fujairah, umm al-Quwain. A scannable QR code was developed and distributed in the emirates with a larger population which was provided to random patients for larger distribution and heterogeneous samples. The sample size required to collect a significant proportion of responses was estimated to be 384 (Rao soft, 2004). Nonetheless, to provide more comprehensive data, we decided to 448 participants divided as in Table 1. Data collectors have created a QR scanning code for this survey and distributed throughout pharmacies in the region of Dubai, Sharjah and Abu Dhabi which has a larger population and greater samples were required. The survey was available in the community pharmacies in form of QR code purposefully to keep the patient-pharmacist trust by preventing the spread of the Corona virus disease (covid-19) by reduce the handlings and exchange of materials and maintain the safe distance between people.

Study tool

In this study, we used researcher-administered survey adopted to fulfil the study aims. The study tool was adjusted to the UAE's population after analyzing the previous localized study,[10] which particularly focused only on one region, to evaluate the herbal medicine used in the selected region. The original form of the questionnaire has been written in the English language. Our survey contained 28 questions targeting the popularity of herbal medicines among the UAE population, a brief introduction was provided to explain the primary objectives of the study, and furthermore a short and operational definitions of HMs were provided. The questionnaire consisted of four main themes:

Personal information:

The following information was collected

Gender

Age

Ethnicity

Region

Profession

Chronic condition.

Herbal medicine utilization

Participants using herbal medicine were addressed to answer specific questions about:

The duration of herbal drug usage

The purpose of herbal medicine consumption

The type of herbs used

The amount of herbal medicine uses during the pandemic

The supplier of the herbal medicines

The symptoms and adverse effect of herbal medicines

The herbal medicine dosage form

Attitude toward herbal medicines:

All participants were required to answer targeted questions about safety, efficacy, accessibility and regulation of herbal medicine, the responses were measures using 5- point Likert scale strongly agree, agree, neutral, disagree and strongly disagree)

Socio-economic status

Participants were asked to answer voluntarily about their income and their total monthly expenditure on herbal medicine usage.

Table 1. Sample size distribution in the UAE (n=448)

Region	Population	% of total	Sample size
Abu Dhabi	3,431,969	34.7%	142
Dubai	3,530,874	35.7%	29
Sharjah	1,602,245	16.2%	139
Ajman	573,643	5.8%	12
RAK	405,506	4.1%	18
Fujairah	267,040	2.7%	100
Umm AL Quwain	89,013	0.9%	8
Total	9,890,402	100%	448

Eligibility criteria

Inclusion criteria: Adults (above 18 years), Arabic or English speakers (the questionnaire was presented in Arabic and English), UAE citizens or residence were included.

Exclusion criteria: The exclusions of this study were those who lived temporarily in UAE (tourist, newly incomers), people with psychological disorders, and those who rejected participation were excluded.

Date collection

The final version of the questionnaire was spread online using google forms software. This form has been sent to a variety of people who met the inclusion criteria and participants

who would want to participate, through their emails and messengers. The data collection process has been done by 3 fifth-year pharmacy students at the University of Sharjah. The enrolled students received proper training on data collection techniques and complete supervision. The pilot study was conducted and the survey was sent to 30 participants in individual pharmacies with the minimum of 3 years' experience throughout seven emirates. The results of the pilot study showed that there is an overall consistency between the survey's items (Cronbach's alpha was 0.81). Based on the participants' responses from the primary survey the needed information was obtained and the final survey was completed and approved by the community of the University of Sharjah, after finalizations and approved the final form of the survey was spread to the targeted population. The final form of the survey consisted of a brief explanation about herbal drugs, the aim of the study and all of the questions were positioned on one page on the software to allow the participants to be aware of the total number of questions and approximate time that the survey may take. The final survey consisted of mandatory and optional questions to protect the participant's privacy and confidentiality. Optional questions were developed to evaluate some other influencing factors in herbal drug usage, participants could use this opportunity and skip the optional questions. Participants had the chance to withdraw and not complete the survey if they were not comfortable or did not meet the inclusion criteria without hesitation and they were kindly asked to forward the survey to others who would want to participate and meets the inclusion criteria.

Data analysis

Data were firstly entered into an Excel sheet, in which duplicates were removed and then imported into an SPSS sheet for data analysis. Descriptive statistical analysis was performed and data were presented as numbers with percentages.

RESULTS

Demographic information

Of the 448 participants who completed the survey, 315 (70.3%) were females and 98.7% are regular users of HMs, and roughly two-thirds of the participants (64.7%) had good health (Table 2). The vast majority of the participants were Arabs (82.6%). Among participants, (11.17%) had diabetes, (13.8%) suffer from hypertension, (4.5%) asthma, (2%) heart disease, (11.5%) obesity, and (0.94%) cancer.

Table 2. Socio-demographic characteristics of participants (n=448)

Demographics	Total (n, %)
Age (years)	
18-24	242 (54.0%)
25-34	132 (29.5%)
35-44	47 (10.5%)
45-54	22 (4.9%)
55-64	2 (0.4%)
65+	3 (0.7%)
Gender	
Female	315 (70.3%)
Male	133 (29.7%)
Ethnicity	
Arab	370 (82.6%)
Non-Arab	78 (17.4%)
Profession	
Student	203 (45.3%)
Graduate	153 (34.2%)
Pharmacist	41 (9.1%)
Housewife	28 (6.3%)
Others	23 (5.1%)
Region	
Abu Dhabi	142 (31.7%)
Ajman	29 (6.5%)
Dubai	139 (31.0%)
Fujairah	12 (2.7%)
RAK	18 (4.0%)
Sharjah	100 (22.3%)
Umm Al Quwain	8 (1.8%)

Attitude toward herbal medicines

As shown in Table 3, 22.5% and 6% of the participants agreed and strongly agreed that herbal medicine are more effective than conventional medicine, respectively. More than one-third of the respondents agreed (29.2%) and strongly agree (7.6%) that HMs are harmless, because they were derivatives natural products and are free from any side effects. Many participants agreed (52.5%) and strongly agreed (12.5%) with this statement "I feel comfortable using herbal medicine". The majority of participants agreed (62.3%) and strongly agreed (9.2%) with the statement "Herbal medicines are easily accessible because they are being sold everywhere". More than half of

Table 3. Attitudes towards herbal medicines (n=448)

Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel comfortable using herbal medicine.	56 (12.5%)	235 (52.5%)	129 (28.8%)	13 (2.9%)	14 (3.1%)
I believe in herbal medicines.	47 (10.5%)	251 (56%)	130 (29%)	6 (1.3%)	14 (3.1%)
Herbal medicines are more effective than actual medicines.	27 (6%)	101 (22.5%)	214 (47.8%)	68 (15.2%)	38 (8.5%)
Herbal medicines do not have any side effects.	34 (7.6%)	131 (29.2%)	97 (21.7%)	122 (27.2%)	64 (14.3%)
Herbal medicines are easily accessible because they are being sold everywhere.	41 (9.2%)	279 (62.3%)	87 (19.4%)	31 (6.9%)	10 (2.2%)
Herbal medicines are cheaper than other medicines.	37 (8.3%)	260 (58%)	102 (22.8%)	39 (8.7%)	10 (2.2%)
Do you think herbal medicine can eliminate SARS Cov-2 virus?	13 (2.9%)	109 (24.3%)	209 (46.7%)	70 (15.6%)	47 (10.5%)

the participants (58.0%) agreed with the statement "Herbal medicine are cheaper than conventional medicine".

Herbal medicine usage during Covid19 pandemic

As presented in Table 4, around two-thirds (62.7%) of the participants used herbal medicine for prevention of COVID-19. Almost three-quarters of the participants (75.2%) used herbal medicine during covid-19 to boost their immunity. A quarter of the participants thought herbal medicine can eliminate COVID-19. During the COVID-19 pandemic, 5.8% of the participant have used zinc, (5.8%) used garlic, (14.3%) used ginger, (28.6%) vitamin C, (16.4%) multivitamin, (9.95%) herbal teas, (11.9%) have used citrus fruit, and other vegetables rich in vitamin C (Table 5).

Table 4. Herbal medicines s utilization during the COVID-19 pandemic

Items	Total (n,%)
Did you take any herbal medicine for covid-19 prevention or treatment?	
Yes	281 (62.7%)
No	167 (37.3%)
If you have taken herbal medicine during the pandemic, please specify what herbals did you use?	
Zinc	64 (5.8%)
Garlic	64 (5.8%)
Ginger	158 (14.3%)
Vitamin C	316 (28.6%)
Multivitamin	181 (16.4%)
Herbal teas	110 (9.95%)
Citrus fruits (orange, lemon) and other vegetables rich in vitamin C	130 (11.9%)
Others	82 (7.43%)
I use herbal medicine during pandemic to:	
Boost my immunity	337 (75.2%)
I did not use	109 (24.3%)
others	2 (0.4%)

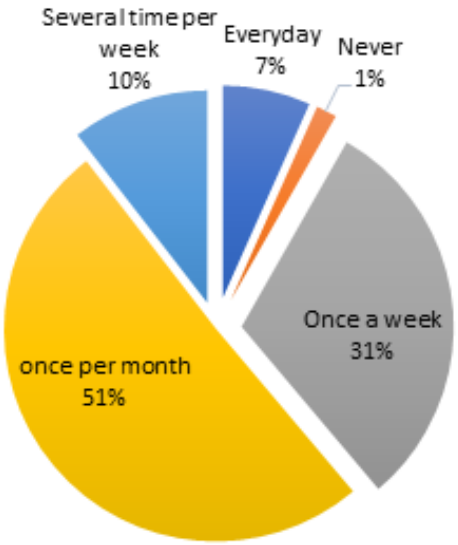

Figure 1. Frequency of herbal medicine usage by users

Table 5. Herbal medicine utilization (n=448)

Item	Total (n,%)
Which herbal medicine have you used?	
Cough syrup	160 (11.4%)
Mebo ointment	116 (8.2%)
Himalaya cystone	36 (2.6%)
Ginseng	39 (2.7%)
Senna	36 (2.6%)
Gingko Biloba	37 (2.6%)
Thyme	123 (8.7%)
Chamomile	119 (8.4%)
Anis	31 (2.2%)
Capsicum	29 (2.1%)
Ginger	219 (15.6%)
Aloe Vera	206 (14.6%)
Black seed	202 (14.4%)
Others	8 (0.6%)
None	41 (2.93%)
Which herbal medicines dosage form do you use?	
Capsules	69 (6.7%)
Tablets	65 (6.3%)
Tea	259 (25.2%)
Oil	198 (19.3%)
Cream, Ointment	134 (13.1%)
Powder	56 (5.4%)
Syrup/Solution	211 (20.5%)
None	33 (3.2%)
Others	3 (0.3%)
Did you experience any side effect after using herbal medicines?	
Yes, in the long-term use	59 (13.2%)
Yes, in the short-term use	65 (14.5%)
Never	324 (72.3%)

Herbal medicine utilization

Around half of the participants (51%) use HMs once per month, (10%) use herbal medicine several times per week, and (31%) once a week (Figure 1). Among participants, (14.9%) of the participant use herbal medicine for weight reduction, (23.5%) for relaxation, (26.8%) to enhance immunity, and (22.5%) for beauty purposes. The findings of this study indicated that 25.2% of the participants use HMs as a tea form, 20.5% as a syrup, 19.3% as oil, and 13.1% as ointment. The findings also reported that 15.6% of the respondents use ginger, 14.6% aloe Vera, 14.4% black seed, 8.7% thyme, and 8.4% chamomile. The vast majority of participants spend less than 25$ per month on HMs. As illustrated in Figure 2, 53.5% of the participants take their information about HMs from their family, 17.8% from friends, and 11.1% from pharmacists. Participant purchase herbal medicine from herbal stores (27.2%), grocery stores (26.7%), pharmacy (19.2%), and (15.8%) prepared at home. Among respondents, 14.5% reported short-term side effect, and (13.4%) experienced long term side effect. unpleasant symptoms, including headache (16.4%), diarrhea (15.6%), sleeplessness (13.9%), nausea and vomiting (11.7%), constipation (11.2%), allergic reaction (10.5%), pain and fatigue (4.6%) (Figure 3).

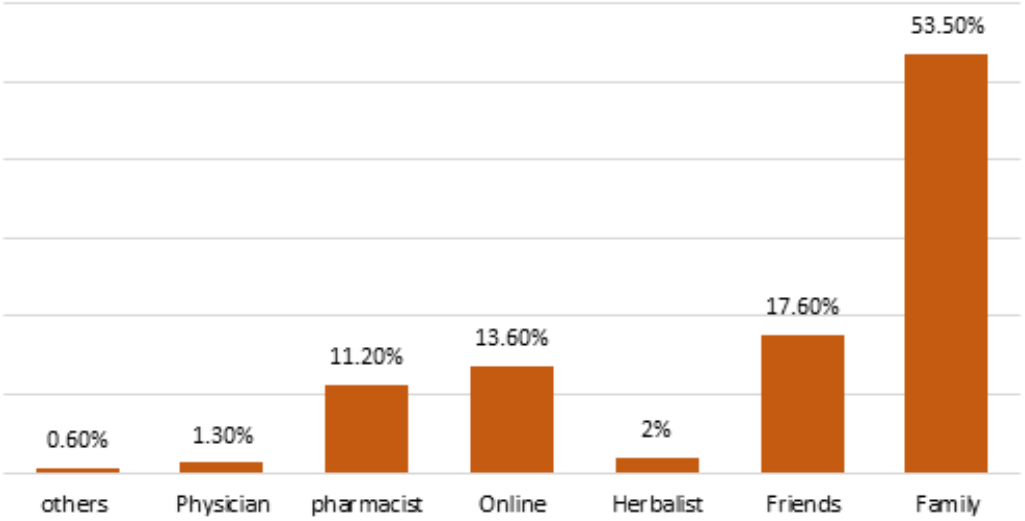

Figure 2. Sources of information about HMs

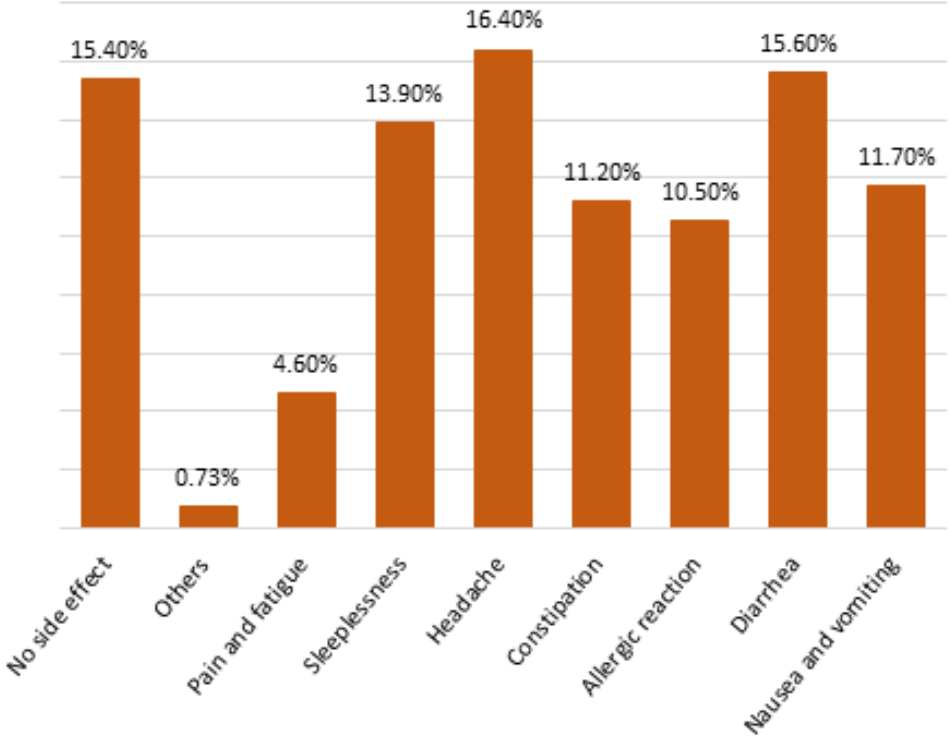

Figure 3. Side Effects that participants have experienced

DISCUSSION

To our knowledge, this study is the first of its kind in the UAE. Specifically, this study assessed the frequency of herbal medicine use, attitude, and awareness toward herbal medicines (HMs). The findings of this study may provide a robust quantitative measurement of herbal medicine's prevalence, utilization, and correlated socio-economic factors. This was an online survey-based study, which automatically reduces the potential for bias because lack of contact and communication between the participants and data collectors makes it easier for the participants to respond truthfully, especially loaded questions accommodated with personal information such as socio-economic factors and chronic medical conditions.

This study has shown that the majority of UAE population use HMs, and greater number of users were female. This was consistent with the previous studies such as those in the UAE,[3] Jordan,[11] Saudi Arabia,[12] and Kuwait.[10] These findings may indicate that our findings could be generalizable to other populations in the region. The high prevalence of HMs in the Middle East may reflect the need to monitor and regulate this

practice.

According to the findings of this study, the main habitual reasons for using herbal medicines are to enhance individual's immune system and health promotion, improve mental health and relaxation, beauty purposes, weight reduction, and diseases prevention. A previous study conducted in Thailand found that 53.7% of participants used HMs for treating a long-term health condition and 40% of herbal medicine usage is to improve overall well-being.[13] Differences in HMs uses among countries may be attributable to variation in sample age and socio-demographic characteristics.

The result of the study indicates that most of the participants are more comfortable using herbal medicines preparations in form of different teas for weight reduction and protection against oxidative stress (relaxation). The second most preferred herbal medicine dosage form is liquid dosage forms (solution and syrup); however, oral dosage forms are more convenient and preferred by people still our results present that liquid dosage form is more preferred over solid dosage form because people face some degree of difficulty in swallowing the solid dosage forms. Additionally, participants prefer dosage forms such as oils and creams due to their easy application and local action were the minority of participants reported using ointments and solid dosage forms such as tablets, capsules and powder, which is consistent with other studies conducted in the region.[12]

Study limitations and directions

This study has several limitations worth mentioning, because of covid-19 the current situation around the world and its rapid spread globally, this resulted in significant limitations and difficulties that affected our cross-survey study. Before all else, this study was conducted in the form of an online self-reported survey instead of face-to-face survey with the participants, to limit the further spread of the virus, and this originated few concerns. To begin with, this survey was conducted online using google forms and was delivered to our friends, family and colleagues through online platforms. The realizable section of the results appeared to be relatively biased to gender (female), unintended target population students specifically between the age of (18 to 24), realizable absence of a disproportionately high number of (older age groups) might influence the prevalence rates for herbal medicine usage. Additionally due to the lack of contact between the data collectors and the participants this might cause some limitations, for example if the participants couldn't comprehend a certain question, they could not clarify any possible misunderstanding by contacting data collectors, so they might have picked any answer without comprehending the question, and the participants might have over or under-reported their use of herbal medicine.

CONCLUSION

A high prevalence of HM use was reported among a representative sample of the UAE population who were mostly females. Most of participants relied on unofficial source of information. Therefore, healthcare professions especially pharmacist should be encouraged to raise the awareness of community about safety, efficacy, quality, potency, and potential drug-herb interactions

DECLARATIONS

Author statement

NAM, RA, GA, NA: Concept design, data collection, manuscript drafting. MA, AS, OMI, AZM, data analysis, concept design, manuscript drafting, review of intellectual content.

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Declaration of competing interest

The authors have no relevant financial or non-financial interests.

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Ethics approval

The study was approved by the University of Sharjah Ethics community (September 2020).

ABBREVIATIONS

UAE: United Arab Emirates

COVID-19: Coronavirus disease 2019

HM: Herbal medicine

UK: United Kingdom

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