Public's Perception and Attitude of Herbal Medication for Respiratory Viral Infections

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ABSTRACT

Background: The use of herbal-origin medications is overgrowing, snowballing belief in its absolute safety. However, some herbal medicines have revealed severe adverse events that may reach death. Hence, it is vital to understand the perception and attitude of patients towards using herbal medications. **Objectives:** This survey analysis goals to gauge patients' perceptions and attitudes towards herbal medicine to manage respiratory infections. **Design and Settings:** A self-administered, structured questionnaire was sent to the public online, counting questions on the responders' demographics and questions about different herbal medications and their use to treat viral respiratory infections. The survey also encompassed questions to evaluate patients' perceptions and attitudes towards the use of herbal medicine. Data analysis was implemented through SPSS program version 26. **Results:** Four hundred and eighty-six responders contributed in this questionnaire. 89.92% of the responders were from the west area, and 94.62% had a Saudi nationality. 56.49% were in the age group between 18 to 30 years old. 46.27% were students, while only 23.44% were employees. 53.69% had an income <3000 SR. 18.32% were healthcare practitioners, and 53.85% were physicians. 45.42% of the patients did not use herbal medications over the last year. 44.01% found herbal medicines effective and valuable, and 41.98% of the responders described herbal medicines as operative. Patients' gender (p-value=0.025) significantly affected patients' perception of using herbal medications, where females showed a significantly better perception than females. The validity was tested by Mac (0.96), Cronbach (0.958), Guttmann 2 (0.961), and Guttmann 6 (0.973). **Conclusion:** The attitudes and perceptions of herbal medicine use among patients in Saudi Arabia are scarce. Awareness of the general public about herbal medications should be amended.

Key words: Public, Perception, Attitude, Herbal Medication, Viral Infections, Saudi Arabia

INTRODUCTION

In developing countries, most general population faith herbal products over the counter to manage common conditions, largely gastrointestinal and respiratory conditions.[1] In the Middle East, the use of herbal medicine is snowballing, particularly in Saudi Arabia. Furthermore, many patients in advanced countries also prefer to use herbal-origin medications, believing that they are safer. Though, cautious use of herbal medicines should always be measured.[2,3]

The use of herbal medications is desired by patients and is measured by general practitioners and family medicine specialists.[4] These medications are usually a first treatment option for mild and common conditions, like upper respiratory tract infections. This is established in the United States, where the use of herbal medications has augmented up to three-fold recently, while patients are using them without consulting their doctors.[5] Also, up to half of the general population in developing countries favour herbal medications compared to chemical medications.[6]

In the Saudi community pharmacies, the patients can access a wide range of herbal supplements the counter products in different forms.[7] Nevertheless, the attitude of the patients towards the use of these products is sometimes unsuitable. Most patients use herbal medicines based on their families and friends' endorsements without seeking medical advice.[8] This behaviour accordingly exposes them to a noteworthy hazard of adverse events.[9]

Consequently, it is vital to understand the factors persuading patients' different perceptions and attitudes towards herbal medications.[10] For example, some patients might be exaggerated by media advertisements about these agents, while others might be influenced by relative's or friends' experiences in a comparable condition.[11] Some patients also believe that doctors and pharmacists know only about chemical origins medications; hence they do not ask them about medicines of herbal origin. All these factors can lead to momentous complications and events that might harm the health of a large majority of the population.[12]

To present, data in Saudi Arabia on the general population's perception and attitudes towards the use of herbal medications for the treatment of viral respiratory infections is still indistinct.

Consequently, the contemporary study intentions to discover Saudi perceptions and attitudes.

MATERIALS AND METHODS

Study Design

A quantitative, cross-sectional questionnaire study was achieved in Saudi Arabia through a self-administered electronic questionnaire dispersed to the general public over two months. All Saudi citizens were encompassed. On the contrary, incomplete responses or responses from outside Saudi Arabia were omitted.

Data Collection

An online self-developed questionnaire was disseminated to members of the public in all regions in Saudi Arabia. The survey encompassed demographic data (locations, gender, material status, age, responder qualifications, occupational status, and monthly income). Simultaneously, the second part of the questionnaire comprised questions on herbal medicine and its usages. Besides, the resources of information about herbal medications for respiratory viral infections. A 5-point Likert response scale system was used. The survey had been scattered to a convenient sample of public responders. It was through social Media of WhatsApp and telegram, and personal contact. The prompt message is sent every 1-2 weeks. The completed survey and Saudi public will be involved in the final analysis.

Statistical Analyses

According to the previous literature with unlimited population size, the sample was planned, the population percentage of 50%, the confidence level 95% with z score of 1.96 and margin of error of 5% and drop-out rate of 10%. As a result, the calculated sample size will equal a minimum sample of 418 with the power of study of 80%.[13-15] The response rate compulsory of calculated sample size at least 60-70 % and above.[15,16] The survey was authenticated through the revision of expert reviewers and pilot testing. Besides, the reliability tests McDonald's ω, Cronbach's α, Guttmann's 2, and Guttmann's six were completed with the study. The data analysis was finalized through the survey monkey system. Besides, the statistical package of social sciences (SPSS), Jeffery's Amazing Statistics Program (JASP), and Microsoft excel sheet version 16 with description and frequency analysis, good fitness analysis, correlation analysis, inferential analysis between independent variables responders. The STROBE (Strengthening the reporting of observational studies in epidemiology statement: guidelines for reporting observational studies) navigated the contemporary study's reporting.[17,18]

RESULTS

Four hundred and eighty-six responders contributed in this online questionnaire. Only participants who accomplished all the sections in the questionnaire were included. The questionnaire's reliability was tested through Mac (0.96), Cronbach (0.958), Guttmann 2 (0.961), and Guttmann 6 (0.973). Socio-demographics of responders and analysis of the questionnaire are shown below.

General Characters of Responders

Out of 486 participants, 89.92% of the responders were from the west area with statistically momentous differences with other regions (p<0.001), and 94.62% had a Saudi nationality. Also, 80.45% were females with statistically significant differences from males (p<0.001), where 59.17% were single. As for the age of the responders, it was characterised into seven sub-categories. The most dominant age group was between 18 and 30 years old, with 56.49% of the responses with statistically significant differences between age groups (p<0.001). All socio-demographic data is shown Table 1.

Table 1: Socio-demographic data of responders to the questionnaire.

Nationality	Response Count	Response Percent	*p*-value
Central area	11	2.26%	<0.001
North area	6	1.23%	
South area	20	4.12%	
East area	12	2.47%	
West area	437	89.92%	
Answered question	**486**		
Skipped question	**0**		
Nationality	**Response Count**	**Response Percent**	
Saudi	457	94.62%	<0.001
Non-Saudi	26	5.38%	
Answered question	**483**		
Skipped question	**3**		
Gender	**Response Count**	**Response Percent**	
Female	391	80.45%	<0.001
Male	95	19.55%	
Answered question	**486**		
Skipped question	**0**		
Material Status	**Response Count**	**Response Percent**	
Single	284	59.17%	<0.001
Married	187	38.96%	
Divorced	9	1.88%	
Answered question	**480**		
Skipped question	**6**		
Age	**Response Count**	**Response Percent**	
<18	32	6.60%	<0.001
18 - 30	274	56.49%	
31 - 40	81	16.70%	
41 - 50	58	11.96%	
51 - 60	22	4.54%	
61 - 70	15	3.09%	
> 70	3	0.62%	
Answered question	**485**		
Skipped question	**1**		

Social and Professional Information of the Responders

Regarding the responders' education level, 66.1% had a bachelor's degree, while 46.27% were still students, and only 23.44% were employees, with statistically significant differences ($p<0.001$). Monthly income was also assessed; it has been shown that 53.69% had an income <3000 SR with statistically significant differences with other incomes ($p<0.001$). Participants were also inquired if they were working in the medical field. Only 18.32% were healthcare practitioners, while 53.85% of these practitioners were physicians with statistically significant differences with other specialties ($p<0.001$), as shown in Table 2.

Herbal Medicine Used in Practice

Responders were enquired about their thoughts on using some herbal medications for different indications. 80.39% of the responders thought that herbal medicines most commonly treat seasonal flu. Additionally, 45.42% of the patients did not apply herbal medications over the last year, while 12.08% used them only once. The responders were also requested about their reasons for using herbal medicines. 44.01% found herbal medications effective and useful. Based on their own involvements, 41.98% of the responders described herbal medicines as effective, as shown in Table 3.

Perception of Patients towards the Use of Herbal Medications for Respiratory Viral Infections

Responders were questioned about their perception and vision towards using herbal medications. They were probed to choose from five Likert scales, starting with "strongly agree" and ending with "strongly disagree." The average perception scores were (3.32) with a high score about educational lectures on herbal medications use for respiratory viral infection treatments (4.03), and the pharmacist should be educated and experienced about herbal medicines use for respiratory viral infection treatments (3.94). On the contrary, herbal medications' lowest scores do not interact with other medicines (2.75), and herbal medicines are safe and not dangerous for children (2.89).

Also, it was observed that more than a third of the responders were ambiguous about their opinion in all the questions related to their perception towards using herbal medications. There were statistically noteworthy differences between answers in all perception facets (p<0.001), as shown in Table 4.

Table 2: Social and professional information of responders.

Responder Qualifications	Response Count	Response Percent	*p*-value
Doctorate	10	2.08%	<0.001
Master's degree	28	5.82%	
Bachelor's degree	318	66.11%	
Diploma	21	4.37%	
High school	99	20.58%	
Intermediate School	3	0.62%	
Primary School	1	0.21%	
Not educated	1	0.21%	
Answered question	**481**		
Skipped question	**7**		
Occupational status	**Response Count**	**Response Percent**	
Employee	113	23.44%	<0.001
Non-employee	109	22.61%	
Retried	37	7.68%	
Student	223	46.27%	
Answered question	**482**		
Skipped question	**4**		
Monthly income	**Response Count**	**Response Percent**	
< 3000 SR	233	53.69%	<0.001
3001-6000 SR	37	8.53%	
6001-9000 SR	38	8.76%	
9001-12000 SR	44	10.14%	
> 12000 SR	82	18.89%	
Answered question	**434**		
Skipped question	**52**		
Are you a health care practitioner (Medical Doctor- Dentist- Pharmacist- Nurse- Others?	**Response Count**	**Response Percent**	
Yes	87	18.32%	<0.001
No	388	81.68%	
Answered question	**475**		
Skipped question	**11**		
If you are a health care practitioner, you are a	**Response Count**	**Response Percent**	
Physician	49	53.85%	<0.001
Dentist	6	6.59%	
Pharmacist	8	8.79%	
Nurse	28	30.77%	
Other (please specify)	66		
Answered question	**91**		
Skipped question	**395**		

Independent Variable Analysis

Age

There is no statistically momentous difference between males and females in different regions, ages, material status, nationality, healthcare provider or public, and healthcare professionals specialties ($p>0.05$). In contrast, the male 12 (63%) is higher than female 3 (0.74%) in age 61 years old and above with statistically significant difference ($p<0.05$). The male has higher academic qualifications than females master degree 12 (12.77%) vs. 17 (4.24%) or diploma 9 (9.57% vs. 14 (3.49%) while females

Table 3: Herbal medicine used in the practice.			
The Dental diseases or problems managed by herbal medications			
Answer Choices	**Responses**		
Coronavirus	74	17.92%	
Swine flu	3	0.73%	
Influenza A virus	4	0.97%	
Seasonal flu	332	80.39%	
Other (please specify)	57	13.80%	
Answered	**413**		
Skipped	**73**		
How frequently have you used herbal medications over the last 12 months for respiratory viral management?	**Response Count**	**Response Percent**	
never	218	45.42%	<0.001
Once	58	12.08%	
twice	57	11.88%	
three times	46	9.58%	
four times	25	5.21%	
5 to 9 five to nine times	31	6.46%	
ten times and more	45	9.38%	
Answered question	**480**		
what are the reasons for using herbal medications as a respiratory viral management	**Response Count**	**Response Percent**	
effective and useful	169	44.01%	<0.001
Safe	108	28.13%	
cheap	17	4.43%	
Easy to get it	48	12.50%	
based on the physician suggestion	13	3.39%	
lack of trust in manufactured medications	26	6.77%	
based on pharmacist suggestion	3	0.78%	
Answered question	**384**		
Skipped question	**102**		
How did you find the herbal medications for respiratory viral management	**Response Count**	**Response Percent**	
Very effective	73	17.22%	<0.001
Effective	178	41.98%	
Uncertain	153	36.08%	
Not effective	14	3.30%	
Not very effective	6	1.42%	
Answered question	**424**		
Skipped question	**62**		

more had of bachelor's degree 271 (67.58%) vs. 53 (56.38%) with statistically significant difference (p<0.05). The males more employed than female 32 (34.04%) vs. 84 (20.9%), and more retried 19 (2021%) vs. 18 (4.48%), while more females of non-employed 111 (27.61%) vs. 8 (8.51%) with statistically significant difference (p<0.05). The males had a higher monthly income (>12,000 SR) than females, 27 (30%) vs. 56 (15.77%). In contrast, the female had lower monthly income than males, 200 (56.34%) vs. 37 (41.11%), with a statistically weighty difference (p<0.05).

Healthcare Providers vs. Public

There is no statistically momentous difference between responders healthcare providers and public residents in living regions, gender, nationality and monthly income (p>0.05). However, the age of healthcare providers is higher than the public with (18-30 years) 72 (80.9%) vs. 196 (49.25%). In contrast, the people higher than professionals in ages (41-50 years) with percent 58 (14.57%) vs. 1 (1.12%), and age (51-60) with percent 22 (5.53%) vs. 0 (0%) with statistically significant difference (p<0.05). Most healthcare professionals were single 70 (80.46%) vs. public 208 (52.66%), while the majority of public responders were married 180 (45.57%) vs. healthcare professionals 16 (18.39%) with statistically significant difference (p<0.05). The healthcare providers had more bachelor's degree 70 (79.55%) than public 248 (62.78%), while the public had a more high school degree 90 (22.78%) than healthcare providers 10 (11.36%) with statistically important difference (p<0.05). The public responders had more non-employment 106 (26.77%) and retired 37 (9.34%) than healthcare providers 12 (13.64%) and 0(0%) respectively. In contrast, the healthcare providers had more student qualifications 56 (63.64%) than public responders 160 (40.4%), with a statistically substantial difference (p<0.05).

Nationality

There is no statistically major difference between Saudi and non-Saudi in the different regions came from, ages group, gender, material status, educational levels, occupational status, monthly income, healthcare provider or public, and healthcare professionals specialties (p>0.05).

Independent Variable Correlation

There is a confident association between age and material status and monthly income with spearman results (0.738) and (0.566) respectively, while the Kendal taw was (0.678), (0.499) with statistically weighty (p<0.001). In contrast, there was a negative association between age and occupational status with spearman results (-0.582) and Kendal taw (-0.83) with statistically significant (p<0.001). There was a positive connotation between material status and monthly income of spearman results was (0.518) and Kendal taw (0.476) with statistically significant (p<0.001). While there was a negative correlation between material status and occupational level, spearman's results were (-0.627) and Kendal taw (-0.580) with statistically momentous (p<0.001). There is a negative correlation between occupational levels and monthly income with spearman results (-0.578) and

Table 4: Perception of patients towards the use of herbal medications for respiratory viral infections.

	Strongly agree		Agree		Uncertain		Disagree		Strongly disagree		Total	Weighted Average	*p*-value
do you think herbal medication can replace regular synthetic medications for respiratory viral infection treatments	10.28%	48	16.92%	79	39.83%	186	27.41%	128	5.57%	26	467	3.01	<0.001
do you think herbal medications can cure respiratory viral diseases	5.60%	26	12.50%	58	42.24%	196	35.56%	165	4.09%	19	464	3.2	<0.001
do you think herbal medications don't cause side effects	3.66%	17	23.44%	109	45.38%	211	23.66%	110	3.87%	18	465	3.01	<0.001
do you think herbal medications do not have any interactions with other medications	9.66%	45	31.55%	147	36.91%	172	18.24%	85	3.65%	17	466	2.75	<0.001
do you think herbal medications are safe and not dangerous for children	8.37%	39	26.18%	122	37.12%	173	24.25%	113	4.08%	19	466	2.89	<0.001
do you think herbal medications for viral management are harmful to pregnant women	3.45%	16	12.72%	59	46.77%	217	31.03%	144	6.03%	28	464	3.23	<0.001
do you think herbal medications for viral treatments are harmful to breastfeeding women	3.22%	15	16.95%	79	52.36%	244	25.54%	119	1.93%	9	466	3.06	<0.001
do you think herbal medications for respiratory viral infection treatments are safe and effective for elderly	2.15%	10	9.66%	45	40.34%	188	39.06%	182	8.80%	41	466	3.43	<0.001
Herbal medications for respiratory viral infection treatments should prove their efficacy by studies and researches not based on personal experiences	4.08%	19	7.94%	37	28.97%	135	33.91%	158	25.11%	117	466	3.68	<0.001
FDA and international organizations should approve herbal medications for respiratory use	3.00%	14	9.21%	43	27.19%	127	35.97%	168	24.63%	115	467	3.7	<0.001
There should be lectures, and awareness bulletins about herbal medications use for respiratory viral infection treatments	1.92%	9	3.21%	15	17.74%	83	44.66%	209	32.48%	152	468	4.03	<0.001
The pharmacist should be educated and experienced about herbal medications use for respiratory viral infection treatments	1.27%	6	4.25%	20	23.35%	110	41.83%	197	29.30%	138	471	3.94	<0.001
Answered												473	
Skipped												13	

Kendal taw (-0.501) with statistically significant (<0.001).

DISCUSSION

Herbal medications are gradually used for different mild community conditions, chiefly respiratory tract and oral infections.[19,20] However, recently, some herbal medicines can lead to noteworthy side effects and complications.[21] Hence, patients should be aware of the hazards of using herbal treatments as well as their benefits. They should also be invigorated to seek medical advice before using any herbal products.[22] During the pandemic period of various COVID-19 studies, viral infection was showed, underlining COVID-19, either regular or herbal medications, with different results, positive or negative. All the inquiries search for the best and suitable medications for a viral illness, counting COVID-19. The patients sometimes do waiting until all clinical trials are completed. They used various regular and herbal medicines. The process of using any medications in practice starting knowing, then practice, and perception. The current study discovers the practice and perception of herbal medicines for viral infection. The present study intended to recognize the perception of patients living all over Saudi Arabia about the use of herbal medicines for acute respiratory tract infections. The study exemplified that's the majority of responders from west geographic area in Saudi Arabia. Besides, most of responders in a young age, student occupational status, single, and low monthly income because of the authors worked as data collectors, and they were students at college of medicine at Um Alora university located at west region and properly the most of composed from their society region. The characters of the sample study was entailed of two types. The majority part with public residents and one fifth of healthcare providers from total sample. The public was in elderly age, married, non-employments with low salary and without important an academic qualifications; while healthcare providers were young responders age, single, with employments, higher academic qualifications. Those descriptions was acknowledged and it was imitate the real life. Both groups, there were no statistically difference in gender or nationality, monthly income (p<0.001). The responders' demographic data replicated the actual characters of Saudi populations. It might reproduced the actual behaviour of usage of

herbal medications during viral infection with accent of coronavirus. There was medium positive correlation about age and marriage status, and linked with high financial income, while negative correlation of occupational status and younger age, and students positions correlation. In comparison; the old age connected with higher academic qualifications including mater science degree had negative association. Besides, the negative correlation of income and occupational status which echoed the reliable social practice.

The results should contain most responders who applied herbal medications for seasonal flu, followed by recently COVID-19. They used them at once for more than half of them. The patients specified reasons for using herbal medicines because of effective with valuable, and safe with easy to get it. This concept is widely dispersed for most public responders and agreed with numerous earlier studies. Besides, the responders tried the herbal medications, and more than half of them found the herbal medicines are effective, similar to other studies. However, the perception of herbal medicines is not unavoidably herbal effective in the clinical trials because several factors might mark the outcome in practice.

The perception of responders about herbal medications used for viral infection, counting COVID-19, was inadequate and compulsory further improvement. Similarly, Roy *et al.*[23] examined Indian patient's and doctors' perceptions about using herbal medicines for different community indications. It exhibited a poor perception in both patients and doctors.

Although one-fifth of the included cohort were healthcare professionals, half of them did not use herbal medications over the last year. On the contrary, in patients who used herbal medicines, almost one-half found herbal medicines actual and treasured, and two-fifth of the responders defined herbal medications as effective. Furthermore, nearly half of the responders had a positive perception. Perception of the use of herbal medicines has been assessed in different settings. Foley *et al.*[24] scrutinised the perception of patients towards using herbal medicines in clinical practice. A cross-sectional study that encompassed 252 patients, Foley *et al.*[24] verified that patients strongly agree that they would prefer using herbal medications to treat common conditions compared to chemical origin medications.

Additionally, patients strongly settled that they should be denoted to a doctor or pharmacist to discuss their herbal medicines. On the contrary, Gupta *et al.*[25] observed the perception of Indian patients towards using herbal medications. Gupta *et al.*[25] involved 533 patients in a survey study and validated that the use of herbal medications among the included cohort was 56.6%. However, most patients desired to try chemical medications and used herbal medications as a second-line or alternative.

In the existing study, half of the responders had the negative perception because there was no consciousness program about herbal medications, counting usage with a viral infection. The reports agreed with the perception of educational lectures about herbal use in respiratory viral infection demand, accentuating pharmacists to educate the patients about herbal medications for viral respiratory illness. It is imitated in the high demand for an education session about herbal medicines from most responders. In contrast, there was a poor insight of herbal medications during usage for children or any herbal drug interaction. It is related to the inadequate knowledge and awareness of herbal medicines for viral respiratory illness, including COVID-19. The usage of herbal medications was high by a respiratory viral infection in practice despite poor practice, perception and misapprehensions about them in Saudi Arabia.

Additionally, the present study had some restrictions; the participants' responses depend largely on the responders' subjective opinion towards their use of herbal medications, which could move the reliability of the findings. Nevertheless, it is measured the first study in Saudi Arabia to assess patients' perception of herbal medicines for respiratory viral infection.

CONCLUSION

The Saudi population towards herbal medications is insufficient and needs further improvement. This perception can suggestively impact patients' behaviour and attitude towards using these medications and might distress their health. Hence, it is vital to carry out awareness sessions for the public about herbal medications' hazards and benefits through evidence-based medical information. In addition, additional studies are desired to observe the perception of patients towards using herbal medicines in other indications.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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Consent for Publications

Informed consent was obtained from all the participants

Ethical Approval

This research is exempted from research and ethical committee or an institutional review board (IRB) approval.

https://www.hhs.gov/ohrp/regulations-and-policy/decision-charts-2018/index.html

ABBREVIATIONS

MOH: Ministry of Health; **KSA:** Kingdom of Saudi Arabia; **Covid-19:** Coronavirus; **SPSS:** Statistical Package of Social Sciences; **JASP:** Jeffery's Amazing Statistics Program; Strobe: Strengthening the reporting of observational studies in epidemiology statement: guidelines for reporting observational studies.

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