Original article

Medications and natural products used in Jordan for prevention or treatment of COVID-19 infection during the second wave of the pandemic: A cross-sectional online survey

Samar H. Thiab a,⇑, Razan I. Nassar b, Sara Thiab c, Iman A. Basheti b

a Department of Pharmaceutical Chemistry and Pharmacognosy, Faculty of Pharmacy, Applied Science Private University, Amman, Jordan

b Department of Clinical Pharmacy and Therapeutics, Faculty of Pharmacy, Applied Science Private University, Amman, Jordan

c College of Pharmacy, Qatar University, Doha, Qatar

ARTICLE INFO

Article history:
Received 3 October 2021
Accepted 10 March 2022
Available online 14 March 2022

Keywords:
COVID-19
Coronavirus
Medication
Supplement
Natural products
Jordan

ABSTRACT

Worldwide, during the COVID-19 pandemic in 2019, there was an increase in the tendency of misusing prescription drugs as well as self-medicating with over-the-counters. Additionally, an increase in the use of herbs and natural products was reported. A descriptive cross-sectional survey was conducted in Jordan from May 19th to July 29th, 2021, to assess the medications and natural products used in Jordan during the second wave of the pandemic. The survey was developed and validated, then distributed using Google Forms via social media platforms. Data was analyzed using Statistical Package for Social Sciences-24. The study participants (n = 386) had a mean age of 29.35 (SD = 11.90) years. Most of participants were females (72.8%), not married (64.5%), non-smoker (69.2%), have a Jordanian nationality (80.6%), hold a bachelor’s degree (73.1%), and living in the middle of Jordan (74.1%). More than 70% of the participants used vitamin C, D and pain relievers. The most used natural products were citrus fruits (78.8%), honey (63.0%) and ginger (53.1%). The participants reported that family and friends (55.4%) played a major role in advising them to use medications and dietary supplements. Pharmacists ranked second (54.1%), followed by social media platforms (43.3%). Multiple logistic regression analysis highlighted that only the age significantly affected the participants’ use of medications and natural products (P < 0.001). The results of this study warrant the need of conducting awareness campaigns guided by trained healthcare providers to educate people and minimize the risk of side effects that may arise from unsupervised use of medications and natural products.

© 2022 The Author(s). Published by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Coronavirus is a family of viruses causing respiratory infections (Rajnik et al., 2021). One highly contagious coronavirus strain that is associated with high morbidity and mortality is the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), as officially named by the International Committee on Taxonomy of Viruses (ICTV) (Rajnik et al., 2021), which is responsible for the Coronavirus Disease 2019 (COVID-19) (ICTV Executive Committee 2020 - 2023). Common COVID-19 infection symptoms include fever, fatigue, cough, headache, muscle pain and diarrhea (Centers for Disease Control and Prevention 2021). Whereas, the severe form of the disease can progress to respiratory failure, life-threatening pneumonia, multi-organ failure and death (Centers for Disease Control and Prevention 2021). The World Health Organization (WHO) declared COVID-19 a pandemic disease on March 11th, 2020 (World Health Organisation 2020). As of August 3rd, 2021, COVID-19 has infected over 201 million people worldwide (Johns Hopkins University & Medicine 2021). The Jordanian Ministry of Health (MOH) announced the first confirmed COVID-19 case in Jordan on March 2nd, 2020 (Ministry of Health-The Hashemite Kingdom of Jordan 2020). Consequently, lockdown measures were imposed to limit the spread of the virus, particularly due to the absence of treatment regimens and vaccines in the early stages of the pandemic.
Worldwide there was an increase in the tendency of misusing prescription drugs as well as self-medicating with prescription or over-the-counter (OTC) drugs for the prevention or treatment of COVID-19 (Yáñez et al., 2021). For example, it was reported in India and Togo that hydroxychloroquine and chloroquine were used without a prescription for the prevention of COVID-19 infection (Chauhan et al., 2020, Malik et al., 2020, Sadio et al., 2021). Moreover, hydroxychloroquine, azithromycin, penicillin and antiretrovirals were found to be used for self-medication of COVID-19 symptoms in Peru (Quispe-Canari et al., 2021).

Vitamins and minerals such as vitamin C, D, and zinc are required for proper immune function in humans, and clinical deficiencies of these nutrients were shown to increase susceptibility to infections (Calder et al., 2020). They gained popularity during the pandemic along with other natural supplements, however, some of the dietary supplements including botanicals do not have essential physiologic roles and have no single straightforward measure of immune system function or resistance to disease (National Institutes of Health- Office of Dietary Supplements 2021). Regardless of the potential benefits, there are significant adverse effects and herb-drug interactions associated with herbal products, particularly when self-medicating. A common example is the interaction between Ginkgo biloba and a widely used antiplatelet medication, warfarin, which significantly increases risk of bleeding (Charan and Biswas 2013). Another famous example is the interaction of grapefruits with calcium antagonists, benzodiazepines, antihistamines and other medications causing significant clinical effects (Jha et al., 2009).

At present, data supporting recommendations for or against the use of dietary supplements, vitamins, or herbs to prevent or cure COVID-19 is insufficient. Nevertheless, according to a world-wide infodemiologic study conducted after the emergence of COVID-19, there was a global growth in the sales of dietary supplements by the general population to boost immunity, protect against or cure COVID-19 (Çimke and Gürkan 2021). Despite COVID-19 vaccines being available and pharmacological treatment regimens being developed, the interest in dietary supplements remains elevated. In Jordan, there is a high prevalence of herbal medicine use reaching 53.3% with more than 52% of the population believing that these products can treat diseases (Issa and Basheti 2017), as shown in a cross-sectional study (n = 1820) prior to COVID-19 (Abdel-Qader et al., 2020). In a more recent cross-sectional study (n = 789) it was reported that 70% of the study participants reported use of medicinal plants (Thiab et al., 2021). Common reasons for the use of natural products were chronic disease treatment, weight loss, or improving well-being (41.9%, 23.6%, and 16.2%, respectively) (Abdel-Qader et al., 2020, Thiab et al., 2021). Prevalence and patterns of use of natural products during COVID-19 has been an area of interest, for which multiple surveys have been conducted (Ahmed et al., 2020, AlNajrany et al., 2021, Nguyen et al., 2021, Srikanth et al., 2021).

Therefore, objectives of this cross-sectional survey were to estimate the prevalence and choice of medications and natural products used in Jordan during the COVID-19 pandemic, to identify the participant’s source of advice regarding the use of these products, and to evaluate the perception of symptom improvement after using these products among participants that were infected with the virus. Such outcomes can provide an insight into important health management issues during COVID-19 pandemic, and guide healthcare providers and policymakers in conducting a suitable awareness campaign to educate the Jordanian population about the effects of unsupervised use of medications and natural products.

2. Methods

2.1. Study design and participants

The objectives of the study were addressed in a descriptive cross-sectional electronic survey. It was conducted in Jordan from May 19th to July 29th, 2021. The survey was developed and validated to obtain anonymous responses that were kept confidential. Any adult living in Jordan was eligible to participate. Our study participants were recruited via social media platforms such as Facebook®, WhatsApp®, LinkedIn®, and Twitter®.

Participation in this study was voluntary and the participants who completed the survey were deemed to have given their informed consent to participate in this research.

2.2. Ethics approval

The study received ethical approval from the Faculty of Pharmacy, Applied Science Private University (Approval number: 2021-PHA-20). Before starting the survey, participants can view the ethics committee approval upon request. The participants’ confidentiality was maintained, and their names were not included.

2.3. Survey development, validation, and reliability

After analyzing validated surveys in the literature, the study survey was developed and designed with the use of the general concepts of good survey design (Ahmed et al., 2020, Charan et al., 2020, Abdullah Alotiby and Naif Al-Harbi 2021, AlNajrany et al., 2021, Quispe-Canari et al., 2021, Srikanth et al., 2021). Several sources were consulted to compile a list of questions that were thought to be related to the study objectives.

Google Forms was used to generate the online survey. It was written in English but delivered to participants in Arabic as it is Jordan’s official language. Multiple-choice questions were chosen to be included in the survey, and the survey was designed to be completed within 15 min.

The first draft of the survey was examined by twelve experienced independent academics and one statistician to guarantee face validity.

The comments and input they provided were considered and integrated into the final version of the survey when appropriate. Two senior academic staff members who are fluent in both Arabic and English translated the survey from English to Arabic and back. There were no medical jargon or technical vocabulary in the questions, and popular trade names of medications were mentioned to help participants in recognizing the medications of interest.

Finally, the survey was piloted with a group of 25 academics and 25 non-academics to improve clarity, readability, and understandability, as well as to ensure its applicability to the Jordanian population. Internal consistency reliability was tested by the Cronbach’s alpha coefficient.

The final version of the survey contained four parts; with the first part designed to collect data on the participants’ socio-demographic characteristics; the second part was designed to collect information about the medications/supplements used where a list of common medications and vitamins was provided; the third part was prepared to collect information about the herbs/natural products used, similarly a list of herbs and natural products that were reported to be used increasingly in Jordan during COVID-19 pandemic were included (Fudailat 2020); and the fourth part was filled only by participants who were infected with the virus to
evaluate the perception of symptom improvement after using these products. The symptoms included in this part were provided by the Centers for Disease Control and Prevention (CDC) (Centers for Disease Control and Prevention 2021).

2.4. Sample size

Currently, Jordan adult population is estimated at 4.784250 million (Department of Statistics 2021). Based on that, calculating the sample size, using a margin of error of 5%, a confidence level of 95%, and a response distribution of 50%, a minimum sample size of 385 is needed (Eng 2003, Charan and Biswas 2013, Taherdoost 2017). The number of participants in this study was 390.

2.5. Statistical analyses

Following data collection using Google Forms, the survey responses were extracted and coded then exported into a customized database using the Statistical Package for the Social Sciences (SPSS), Version 24.0 (IBM Corp., Armonk, New York, USA). The descriptive analysis was undertaken using means and standard deviations for continuous variables and percentages for qualitative variables.

Screening the factors that may affect using medications and herbs was carried out using simple logistic regression. For multiple logistic regression analysis, the variable entry criterion was set to 0.25, in that any variable that was found to be significant during the single predictor level (P < 0.25) were entered into the multiple logistic regression analysis to explore the variables that were significantly and independently associated with medications and herbs use. Variables were selected after checking their independence, where tolerance values > 0.2 and Variance Inflation Factor (VIF) values were < 5 were checked to indicate the absence of multicollinearity between the independent variables in regression analysis. Medications (n = 10) use was coded as follows [0: No, 1: Yes], where “Yes” indicated participants who used five medications or more (out of 10), the same scenario was applied for herbs (n = 11).

3. Results

The final number of participants reached 390, however, four participants did not consent to use their responses in this study, thus, 386 responses were included in the statistical analysis.

3.1. Demographic characteristics

The study participants (n = 386) had a mean age of 29.35 (SD = 11.90) years. Most of the participants were females (72.8%), not married (64.5%), non-smoker (69.2%), have a Jordanian nationality (80.6%), hold a bachelor’s degree (73.1%), and were living in the middle of Jordan (74.1%), where the Capital (Amman) is located, hosting about 42% of Jordan’s population (Department of Statistics 2019). Regarding participants’ professions, 15.0% were employees in the medical sector, 22.8% were employees in the non-medical sector, 14.8% were either unemployed or retired. Almost half of the participants were students (47.4%). Participants’ monthly income varied widely, 7.3% have less than 250 Jordanian dinars (JoD) while 13.5% have more than 1000 JoD. Some of the students who participated in the survey have part-time jobs, so they answered the profession as students, but they do have monthly income making the percentage of unemployed/student in this section to drop to 45.1%.

Sixty percent of the participants have medical insurance, and more than 90% did not have chronic diseases. The detailed demographic characteristics of the study participants are shown in Table 1.

3.2. Medications and supplements used during the second wave of COVID-19

More than 70% of the participants used vitamin C and D, as well as pain relievers such as paracetamol. Around one-third of the participants used cortisone, antibiotics, and decongestants. Details are shown in Table 2.

---

**Table 1**

Demographic characteristics of the study participants (n = 386).

| Parameter                  | Mean (SD) | n (%) |
|----------------------------|-----------|-------|
| Age (mean ± SD)            | 29.35 (11.90) |       |
| Gender, n (%)              |           |       |
| Female                     | 281 (72.8) |       |
| Male                       | 105 (27.2) |       |
| Marital status, n (%)      |           |       |
| Single                     | 152 (39.4) |       |
| Married                    | 234 (60.6) |       |
| Divorced                   | 10 (2.6)  |       |
| Widowed                    | 5 (1.3)   |       |
| Smoker, n (%)              |           |       |
| No                         | 267 (69.2) |       |
| Yes                        | 119 (30.8) |       |
| Nationality, n (%)         |           |       |
| Jordanian                  | 311 (80.6) |       |
| Arab nationality           | 67 (17.4)  |       |
| Non-Arab nationality       | 8 (2.1)   |       |
| Educational level, n (%)   |           |       |
| High School                | 58 (15.0)  |       |
| Diploma                    | 88 (22.8)  |       |
| Bachelor’s degree          | 282 (73.1) |       |
| Postgraduate degree (Master’s or Ph.D.) | 55 (14.2) |       |
| I did not complete my education | 4 (1.0) |       |
| Living place, n (%)        |           |       |
| Middle of Jordan           | 286 (74.1) |       |
| Northern Jordan            | 45 (11.7)  |       |
| Eastern Jordan             | 43 (11.1)  |       |
| Southern Jordan            | 12 (3.1)   |       |
| Profession, n (%)          |           |       |
| Working in the medical sector | 58 (15.0) |       |
| Working in non-medical sector | 88 (22.8) |       |
| Retired                    | 20 (5.2)   |       |
| Unemployed                 | 37 (9.6)   |       |
| Student                    | 183 (47.4) |       |
| Monthly income (in Jordanian dinar), n (%) |           |       |
| ≤250 JoD                   | 28 (7.3)   |       |
| 250–499 JoD                | 76 (19.7)  |       |
| 500–749 JoD                | 30 (7.8)   |       |
| 750–999 JoD                | 26 (6.7)   |       |
| ≥1000 JoD                  | 52 (13.5)  |       |
| Unemployed/student         | 174 (45.1) |       |
| Medical insurance, n (%)   |           |       |
| Yes                        | 234 (60.6) |       |
| No                         | 152 (39.4) |       |
| Have chronic disease(s), n (%) |       |       |
| Yes                        | 36 (9.3)   |       |
| No                         | 350 (90.7) |       |

---

**Table 2**

Medications and supplements used during the second wave of COVID-19.

| Medication/dietary supplement       | n (%) |
|-------------------------------------|-------|
| Vitamin C and Vitamin D             | 306 (79.3) |
| Pain relievers (e.g., Paracetamol)  | 276 (71.5) |
| Blood Thinners (e.g., Aspirin® or Clexane®) | 57 (14.8) |
| Cortisone                           | 38 (9.8)  |
| Antibiotics (e.g., Azithromycin)    | 120 (31.1) |
| Fluoroquinolone Antibiotics (e.g., Ciprofloxacin or Levofloxacin) | 34 (8.8)  |
| Hydroxychloroquine                   | 10 (2.6)  |
| Antivirals                           | 30 (7.8)  |
| Cough medicines                      | 127 (32.9) |
| Lozenges (e.g., Strepsils®)          | 161 (41.7) |
participants reported using Lozenges, cough medicines, and antibiotics. The percentages of the participants that used each medicine/dietary supplement are demonstrated in Table 2.

3.3. Herbs and natural products during the second wave of COVID-19

The prevalence of using natural products was high before the pandemic as between 50% and 70% of the population reported the use of such products (Abdel-Qader et al., 2020, Thiab et al., 2021). In this study, similar results were obtained with more than half of the participants reported the use of one or more natural products. The most used natural products during the second wave of the pandemic among the participants were citrus fruits (78.8%), honey (63.0%) ginger (53.1%), cinnamon (35.0%), star anise (32.1%) and clove (27.5%). The percentages of the participants that used each herb or natural product are demonstrated in Table 3.

3.4. Source of information regarding the medications, dietary supplements, herbs and natural products

The participants reported that family and friends (55.4%) played a major role in advising and encouraging them to use medications and dietary supplements for the purpose of preventing or curing a COVID-19 infection. Pharmacists ranked second (54.1%), followed by social media platforms (43.3%).

Likewise, regarding using herbs/natural products, family and friends ranked first in advising the participants to take them (63.0%), followed by social media platforms (52.3%), and then pharmacists (31.3%) as shown in Table 4.

3.5. Perception of symptoms improvement after using medications, supplements, herbs and natural products

About 40% of the participants (n = 150) documented that they got infected with coronavirus. Table 5 demonstrates the percentages of the participants who documented that their symptoms were relieved after using medications, dietary supplements, herbs and natural products.

Multiple logistic regression analysis of factors affecting medication use among study participants highlighted that age significantly affected medications and supplements use during the COVID-19 pandemic; the same results were found regarding the use of herbs and natural products as demonstrated in Table 6.

4. Discussion

This study is the first to assess the use of medications and natural products in Jordan, which can help policymakers in providing suitable educational campaigns to increase population knowledge and awareness about the use of medications, dietary supplements, herbs and natural products, particularly during the COVID-19 pandemic.

Regarding medications and dietary supplements, the study revealed that more than 70% of the participants used vitamin C, vitamin D and pain relievers. Analgesics are reported to be one of the most commonly self-prescribed medications, many of which are OTC drugs that are easily obtained, and the same applies to vitamins (Malik et al., 2020). Although there is limited proven therapeutic evidence of the efficiency of vitamins in the treatment of COVID-19, these products became popular among people due to the spread of clinical reports highlighting the role of vitamins in fighting infections including COVID-19 (Jovic et al., 2020, Junaid et al., 2021). Similar findings were reported in Peru (Quispe-Canari et al., 2021), Bangladesh (Ahmed et al., 2020) and Nigeria (Wegbom et al., 2021). In case of the use of herbs and natural products, 92.75% of the participants reported using at least one herb or a natural product, which shows the high prevalence of herbal use in Jordan as was reported in cross-sectional studies conducted in 2020 (Abdel-Qader et al., 2020, Thiab et al., 2021). In this study,
more than half of the participants used citrus fruits, honey, and ginger. Citrus fruits including oranges, mandarins and grapefruits are cultivated in Jordan and are known to contain vitamin C, which makes them an accessible natural source for vitamin C (Bayer 2021). Ginger was the most cited in a study conducted in Nepal about medicinal plants used to prevent COVID-19 (Khadka et al., 2021). Ginger and honey were also used by more than 50% of participants in a similar study conducted in Bangladesh (Ahmed et al., 2020). Honey, lemon, and ginger were amongst the most used natural products in Saudi Arabia as a protective measure during the COVID-19 pandemic (Abdullah Alotiby and Naif Al-Harbi 2021, AlNajrany et al., 2021). In Vietnam, ginger, honey and garlic were amongst the most used natural products during the COVID-19 pandemic (Abdullah Alotiby and Naif Al-Harbi 2021, AlNajrany et al., 2021). In Vietnam, ginger, honey and garlic were amongst the most used natural products during the COVID-19 pandemic (Abdullah Alotiby and Naif Al-Harbi 2021, AlNajrany et al., 2021). In Vietnam, ginger, honey and garlic were amongst the most used natural products during the COVID-19 pandemic (Abdullah Alotiby and Naif Al-Harbi 2021, AlNajrany et al., 2021). In Vietnam, ginger, honey and garlic were amongst the most used natural products during the COVID-19 pandemic (Abdullah Alotiby and Naif Al-Harbi 2021, AlNajrany et al., 2021). In Vietnam, ginger, honey and garlic were amongst the most used natural products during the COVID-19 pandemic (Abdullah Alotiby and Naif Al-Harbi 2021, AlNajrany et al., 2021). In Vietnam, ginger, honey and garlic were amongst the most used natural products during the COVID-19 pandemic (Abdullah Alotiby and Naif Al-Harbi 2021, AlNajrany et al., 2021).

Table 6
Assessment of factors affecting medications, supplements, herbs and natural products used during COVID-19 pandemic study participants (n = 386).

| Parameter                        | Medications use | P-value | OR     | P-value |
|----------------------------------|-----------------|---------|--------|---------|
|                                  | [0: No, 1: Yes] |         |        |         |
| Age                              | 1.030           | 0.003   | 1.027  | 0.008   |
| Gender                           |                |         |        |         |
| Male                             | Reference       |         |        |         |
| Female                           | 1.915           | 0.037   | 1.572  | 0.167   |
| Educational level                |                |         |        |         |
| Less than bachelor's degree      | Reference       |         |        |         |
| Bachelor's degree or above       | 0.644           | 0.200   | 0.708  | 0.345   |
| Profession                       |                |         |        |         |
| Working in a non-medical sector  | Reference       |         |        |         |
| Working in medical sector        | 0.344           | 0.870   |        |         |
| Smoker                           |                |         |        |         |
| No                               | Reference       |         |        |         |
| Yes                              | 0.554           | 0.044   | 0.602  | 0.099   |
| Chronic disease(s)               |                |         |        |         |
| No                               | Reference       |         |        |         |
| Yes                              | 1.459           | 0.338   |        |         |
| Herbs use                        | [0: No, 1: Yes] |         |        |         |
| Age                              | 1.028           | 0.002   | 1.025  | 0.015   |
| Gender                           |                |         |        |         |
| Male                             | Reference       |         |        |         |
| Female                           | 1.539           | 0.105   | 1.380  | 0.237   |
| Educational level                |                |         |        |         |
| Less than bachelor's degree      | Reference       |         |        |         |
| Bachelor's degree or above       | 0.493           | 0.024   | 0.623  | 0.160   |
| Profession                       |                |         |        |         |
| Working in a non-medical sector  | Reference       |         |        |         |
| Working in medical sector        | 1.231           | 0.496   |        |         |
| Smoker                           |                |         |        |         |
| No                               | Reference       |         |        |         |
| Yes                              | 0.909           |        |        |         |
| Chronic disease(s)               |                |         |        |         |
| No                               | Reference       |         |        |         |
| Yes                              | 1.863           | 0.083   | 0.878  | 1.069   |

* Using simple logistic regression,
$ Using multiple logistic regression,
* Significant at 0.05 significance level.

Social media in proposing a type of product to prevent or treat COVID-19 has increased although these platforms are not a reliable source of health information (Goel and Gupta 2020, Mallhi et al., 2020, Nasir et al., 2020, Srivastava et al., 2020, Sadio et al., 2021). Doctors and pharmacists played an active role in the participants’ choice of medications and supplements; however, when choosing a herb or a natural product, pharmacists have a role, unlike doctors. Many reasons can help explaining that, starting from the fear of contracting the coronavirus when visiting a medical facility (Mudenda et al., 2020, Nguyen et al., 2021), so visiting doctors can be limited to more serious conditions that require proper medications. Moreover, the ease of accessing community pharmacists can help in getting their advice for both medications and natural products more easily (Basheti et al., 2020, Bukhari et al., 2020, Nguyen et al., 2021).

Because doctors and pharmacists have a lower influence on the choice of natural products, this can lead to increasing the risk of getting herb-drug interactions. For example, ginger, which was found to be one of the most commonly used natural products during the pandemic in Jordan, can increase the risk of bleeding when taken with blood-thinning medications such as warfarin, phenprocoumon, clopidogrel and aspirin (Kruth et al., 2004, Marx et al., 2020, Sadio et al., 2021).
5. Conclusions

Around 93% of the study participants reported the use of at least one medication/supplement and herb/natural products. Vitamins C, D, analgesics, citrus fruits, honey and ginger were the most used substances for preventing or alleviating the symptoms of COVID-19 in Jordan during the second wave. Family and friends, followed by social media platforms, were the main sources of advice regarding the use of these substances. It was noted that pharmacists, compared to other healthcare providers, played a bigger role in advising participants in the choice of both medications and/or natural products. Age was the only factor influencing participants use of medications, supplements, herbs and natural products. Because usually older people can be on prescription medications, and they use herbal products more frequently, awareness campaigns guided by trained healthcare providers to educate people with special focus on the elderly can minimize the risk of side effects that may arise from unsupervised use of natural products concurrently with medications. Even for younger generations, who can be on prescribed drugs for different reasons, will benefit from such campaigns.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors would like to express their deepest gratitude to Ms. Sanaa Shakhshir for her help in distributing the survey.

Authors' contributions

Thiab, HS did the initial research, developed the survey and wrote the methods and discussion. Nassar, N helped in developing the survey, performed the statistical analysis and wrote the results. Thiab, S wrote the introduction and Basheti, I. supervised the study and helped in validating it.

References:

Abdel-Qader, D.H., Albassam, A., Ismael, N.S., et al., 2020. Herbal medicine use in the Jordanian population: a nationally representative cross-sectional survey. J. Pharm. Pharmacon. Res. http://doi.org/10.1016/j.jppr.2021.04.001.

Abdullah Alothoby, A, Naif Al-Harbi, L, 2021. Prevalence of using herbs and natural products as a protective measure during the COVID-19 pandemic among the Saudi population: an online cross-sectional survey. Saudi Pharm. J. https://doi.org/10.1016/j.jsps.2021.04.001.

Ahmed, I., Hasan, M., Akter, R., et al., 2020. Behavioral preventive measures and the use of medicines and herbal products among the public in response to Covid-19 in Bangladesh: A cross-sectional study. PLoS ONE. https://doi.org/10.1371/journal.pone.0243706.

AlNajrany, S.M., Asiri, Y., Sales, I, et al., 2021. The Commonly Utilized Natural Products during the COVID-19 Pandemic in Saudi Arabia: A Cross-Sectional Online Survey. Int. J. Environ. Res. Public Health. https://doi.org/10.3390/ijerph18094686.

Basheti, L.A., Nassar, R., Barakat, M., et al., 2020. Pharmacists' perceived barriers towards delivering their emergency roles during the COVID-19 pandemic and perceived policymakers' responsibilities. J. Pharm. Policy Pract. https://doi.org/10.1186/s40544-020-00234-y.
