Original Article

Stress Management During Covid-19 Pandemic by Consuming Herbal and Alternative Medicine – A Cross Sectional Study

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ABSTRACT

Objective: Main objective of current study was to investigate the frequency of the use of herbs and alternative-medicine during Covid-19 and their effectiveness in reducing stress.

Study Design: Cross-sectional survey

Place and Duration of Study: This study was conducted at the Faculty of Pharmacy and Pharmaceutical Sciences and Faculty of Arts and Social Sciences, University of Karachi from August 2022 to June 2023.

Methods: The collection of the data was done by survey questionnaire. Ethical approval of study has been taken from Ethical Review Committee, Hamdard University. Chi-square and correlation tests were applied for determination of significance between variables.

Results: The data for current study was collected from 332 participants. Majority of respondents were 18-30 years old, followed by 31-40 years. Respondents mentioned that black seeds, citrus fruits, ginger, herbal teas and honey consumption reduced the stress during lockdown of Covid-19 outbreak (χ^2=1192.35; p=0.0051). Effects of rumors were high on individuals during pandemic for causing anxiety (χ^2=975.92; p=0.0049). Similarly majority of individuals mentioned that herbal remedies were significantly (χ^2=960.42; p=0.031) effective in reducing stress during Covis-19 lockdown. Low income individuals preferred to use herbal medicine during pandemic (χ^2=1188.0; p=0.0001).

Conclusion: Herbal and alternative medicines can significantly contribute in boosting the immune strength of individuals with cost-effectiveness. Effectiveness of herbal products for relieving stress during Covid-19 was high.

Key Words: SARS-COV-2; Covid-19; herbal medicine; alternative medicine; stress; immune strength

Citation of article: Majid A, Khaliq SA, Zubairi NA, Azhar I. Stress Management During Covid-19 Pandemic by Consuming Herbal and Alternative Medicine – A Cross Sectional Study. Med Forum 2024;35(5):40-44. doi:10.60110/medforum.350509.

INTRODUCTION

World attention has been intensively taken up by the outbreak of mysterious pneumonia; which has expanded from human to human. The cause of the illness was attributed to the Severe Acute Respiratory Syndrome Corona Virus (SARS-COV-2).[1] The World Health Organisation (WHO) declared the pandemic and a global health emergency on 11th March 2020. Covid-19 infection or coronavirus was highly contagious; in Wuhan, China Covid-19 reported its first case of viral illness in 2019 December.[2]

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Received: December, 2023
Accepted: January, 2024
Printed: May, 2024

Pakistan reported its first coronavirus case on 26th February 2020 in the city of Karachi. As of 20th March 2020; World Health Organization (WHO) started to recommend for implementing potential measures including social distancing, isolation, quarantine and lockdown.[3] Fear of COVID-19 connected by these measures and the potential information about the virus in the media acted as a social stress factors and imposed a huge impact on the mental health of the individuals.[4]

Evaluation of virus revealed that corona virus is a single stranded positive-sense ribonucleic acid; under electron microscope the coronavirus has a crown-like structure because of the presence of the glycoprotein enveloped spike; there are four main proteins that make up viruses: the spike protein (S), the envelope protein (E), the membrane protein (M), and the nucleus protein (N).[5] further analysis by electron micrograph of the virus has shown genome of SARS-CoV-2 contains 29,891 nucleotides.[6] The clinical manifestations of coronavirus may vary with age and included fever, coughing, sore-throat, headache, weakness, loss of taste and smell; some individuals developed chest congestion, runny nose, inflammation of pharynx, muscular pain and diarrhea; symptoms were not described by the children and neonates, however, they

showed Gastro-intestinal disturbances such as vomiting and diarrhea.[7]

At the initial stage of outbreak; healthcare providers used antibiotics, intravenous immunoglobulins and herbal medicines to treat Covid-19.[8] Oxygen therapy (essential treatment), antipyretic, antiviral (Lopinavir, Ritonavir, Ribavirin, Favipiravir , remdesivir, oseltamivir, Nelfinavir), Interferon and TCM (traditional Chinese medicine) found to exert some activity against SARS-CoV-2.[9] TCM have achieved a massive experience in reducing of infection; TCM provided the herbal formula (Qing-Fei-Pai-Du decoction) has shown 90% effectiveness in coronavirus treatment; this formula may contains Gypsum fibrosum, Rhizoma pinelliae, Ephedrae herba, Aurantii fructus immaturus, Zingiberis rhizome.[10] TCM seeds contain flavonoids like quercetin, which can help block the 3CLpro enzyme that's responsible for the virus' replication.[11] The study conducted in Jordan found that variety of herbs and natural products e.g. Anise (Pimpinella anisum), Chamomile (Matricaria chamomilla), Ginger (Zingiber officinalis), Clove (Syzygium aromaticum), Peppermint (Mentha piperita), Turmeric (Curcuma longa), Thyme (Thymus vulgaris), Black seed (Nigella sativa), leaves of Guajava (Psidium guajava), Cumin (Cuminum cyminum), Sesame (Sesamum indicum), Mustard seeds (Brassica alba), Lemon (Citrus limon), Onion (Allium cepa) were the most commonly used herbs during covid-19.[12] In Saudi Arabia, the mostly consumed natural products were honey (84%), black cumin seeds (63%) lemon citrus fruit (54%) and ginger (41%).[13] In addition, several signs of stress e.g. low concentration, lack of confidence, panic, sleep disturbances, eating disorder, difficulty in decisions making, generalized anxiety and depression were also noted due to outbreak of Covid-19.[14] Depression and anxiety are the important leading causes of inability to work and aggravated by the effects of the pandemic of Covid-19. Such circumstances also established the urge to conduct studies on plants and herbs to reduce stress.[4]

The use of herbal medicines and CAM (Complementary and alternative medicine) has become more widespread and is used as an alternative treatment in many countries. Rising cost and side effects due to use of prescription medications incline the patients to utilize herbal, CAM or natural treatments.[15] Herbs, vitamins, nutrients, meditation, aromatherapy, herbal teas have positive impact in reducing depression and anxiety regardless of age, marital status, education level and socioeconomic status.[16] Therefore, the main objective of current study was to assess and investigate the frequency of use of herbs and CAM during Covid-19 and their effectiveness in reducing stress.

METHODS

The prospective cross-sectional survey was conducted in different cities of Pakistan to determine the use of herbal remedies during Covid-19 for relieving stress. The study focused on routine stress management during lockdown.

Survey targeted the general population of Pakistan particularly mega city Karachi from August-2022 and June-2023.

Sample size of study: Sample size was calculated by precision-analysis-technique.[17] Data of 332 participants were collected and analyzed to comply the requirement of minimum sample size.

Data collection method: The collection of the data was done by survey questionnaire; it was consist of four parts. In first part socio-demographic information i.e. (age, sex, education) were collected; in second part factors or causes of stress, in third part psychological and behavioral pattern of people to identify level of stress and in fourth part information regarding use of alternative and complementary medicine were collected. Informed consent was taken before gathering the data from each respondent. Survey was conducted by personal interviews and social media.

Inclusion criteria: Respondents must be at least 18 years of age and possess knowledge of social media.

Exclusion criteria: Un-educated and less than 18 years individuals.

Statistical analysis: The statistical evaluation of data was integrated by SPSS (Statistical Package for Social Sciences) 22 version. Stratification sampling technique was used as first step based on socio-economic status. Chi-square test and correlation tests were applied for determination of significance between variables. The level of significance was 5%.

RESULTS

The data for current study was collected from 332 participants. Study showed majority of respondents 18-30 years old, followed by 31-40 years. More than half 60.84% (n=202) were married and 37.3% (n=124) were single. Around 35.54% (n=118) were postgraduate and 55.12% (n=183) were graduate. Majority of respondents mentioned that black-seeds, citrus fruits, ginger, herbal teas and honey consumption reduced the stress during lockdown of Covid-19 outbreak. (Figure-1) Significance and relationship between variables were determined by chi-square (χ^2) tests and correlation (r) test. Item pertaining to relief from stress by use of sub-variables e.g. black-seeds, cardamom, citrus fruits, coffee, coriander leaves, ginger, ginseng extract, herbal teas (turmeric, ginger), honey, honey+black cumin, honey+cardamom, honey+olive oil+black-seeds, kalonji (*Nigella sativa*), poppy-seeds, smoking, moringa, turmetric, multi-vitamins; compared with level of education, employment status, income status, level of stress, type of stress, fear of covid-19, effect of rumors, eating habits, impact on concentration, frequency for the use of herbal product and effectiveness of herbal product. (Table-1)

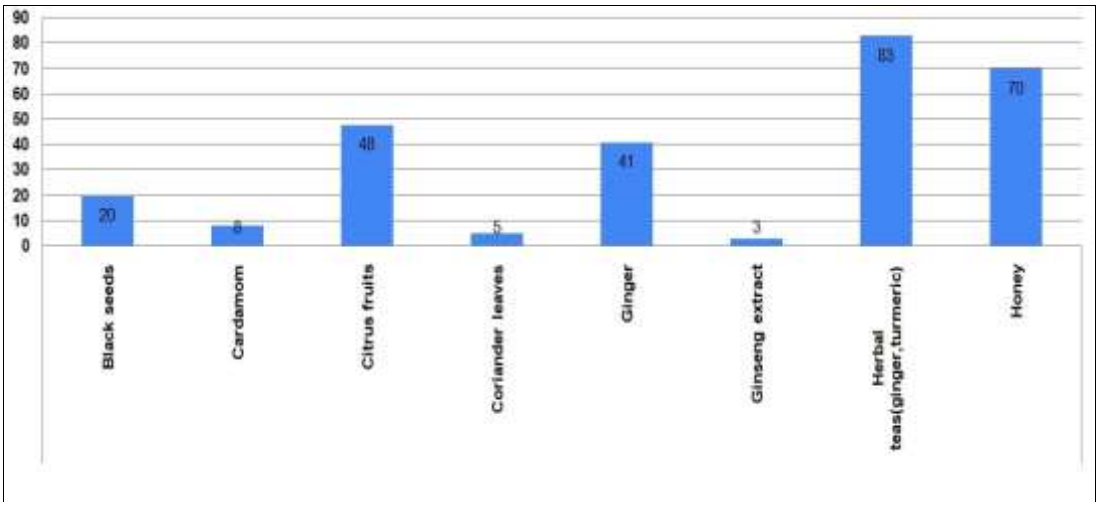

Figure No.1: Response of individuals regarding experience of using CAM during Covid-19 lockdown for relieving stress

Table No.1: Response of individuals regarding experience of using CAM during Covid-19 lockdown as per demographic characteristics

Variables									Chi-Square (χ^2) test and significance	Pearson correlation coefficient (r) and significance
Item	**Level of education**									
What CAM in your experience is providing, convincing response during Covid-19 to relieve stress? (black-seeds, cardamom, citrus fruits, coffee, coriander leaves, ginger, ginseng extract, herbal teas (turmeric, ginger), honey, honey+black cumin, honey+cardamom, honey+olive oil+black-seeds, kalonji, poppy-seeds, smoking, moringa, turmetric, multi-vitamins)	Lower than matriculation/ O-levels		Matric/ O-levels	Intermediate /A-levels	Graduate		Post Graduate		χ^2=623.62; p=0.0001	r=0.78; p=0.0101
	01		02	28	183		118			
	Employment status									
	Employed		Unemployed		Own business		others		χ^2=550.65; p=0.0049	r=0.859; p=0.0062
	176		81		36		39			
	Income/Salary status in PKR (Pak Rupees)									
	< 20,000	21,000 to 30,000	31,000 to 50,000	51,000 to 75,000	76,000 to 125,000	126,000 to 200,000	201,000 to 300,000	> 300,000	χ^2=1188.0; p=0.0001	r=0.930; p=0.029
	94	42	62	34	45	30	12	13		
	Level of stress									
	Mild		Moderate		Normal	Severe		Very severe	χ^2=1192.35; p=0.0051	r=0.950; p=0.0099
	77		93		111	48		03		
	Type of stress									
	Anxiety		Depression	Difficulty in concentration / Attention deficit disorder		GI (Gastro-intestinal) up-set		Mood swings	χ^2=830.58; p=0.005	r=0.833; p=0.001
	74		51	36		23		148		
	Fear of Covid-19									
	Yes				No				χ^2=248.71; p=0.01	r=0.738; p=0.0129
	259				73					
	Effect of rumors on anxiety during Covid-19 lockdown									
	No		Yes	May be		No response			χ^2=975.92; p=0.0049	r=0.874; p=0.001
	76		129	123		04				
	Stress and eating disorder during Covid-19 lockdown									
	No		Yes	No response					χ^2=664.00; p=0.0001	r=0.746; p=0.011
	209		121	02						
	Decreased concentration during Covid-19 lockdown									
	No		Yes	No response					χ^2=647.89; p=0.0231	r=0.787; p=0.005
	130		198	04						

	Frequency for the use of herbal products during Covid-19 lockdown							
	Always	Never	Sometimes	Usually	Very often	No response	χ^2=1343.33; p=0.032	r=0.934; p=0.0019
	23	80	128	41	58	02		
	Experience for effectiveness of herbal products during Covid-19 lockdown							
	Excellent	Moderate		Mild	Never	No effect	χ^2=960.42; p=0.031	r=0.920; p=0.0001
	38	92		97	71	34		

DISCUSSION

Trends for the use of herbal and alternative medicines are changing; particularly after the outbreak of Covid-19. Therefore; current study was focused on the role of herbal remedies during Covid-19. The study has found interesting results for relieve of stress during Covid-19 by using herbal and CAM. After analysis of collected data; there was strong correlation noted in between the use of complementary medicines and age (r=0.883; p=0.0001), education (r=0.78; p=0.0001), marital status (r=0.805; p=0.0001), income level (r=0.930; p=0.0001) and various types of stresses (r=0.833; p=0.0001). The another literature reported that use of complementary medicinal products are significantly related to age (72.7%; p<0.0001), educational attainments (50.0%; p<0.001), health condition (75.8%; p=0.007) and income (74.3%; p<0.001).[18] The results have shown that more educated people consumed herbal teas, honey, citrus fruits and ginger during Covid-19. Findings of current study can be correlated with another study mentioned that herbs and spice can play an important role in fighting viral infections.[19] According to another published data pertaining to Covid-19; cinnamon, black-pepper and turmeric plays an important role against SARS-CoV-2.[19] In India 68.8% people were using ginger, clove, cinnamon, black-pepper and tulsi (holy basil) as main ingredients in tea (Kahwa).[19]

Current study found that low income/salary status (n=94; 28.31%) individuals consumed citrus fruits, black-seeds, ginger; while honey and herbal teas were preferred by middle income/salary status (n=62; 18.67%) individuals. Same situation were observed in Uganda, where they herbal medicines and CAM are readily available and affordable, therefore; low-income earners prefer herbal remedies.[20] According to current study, people with varying levels of stress; such as mild (n=77; 23.19%) to moderate (n=93; 28%) preferred herbal teas, honey, and ginger, and ate citrus fruits, black-seeds, and cardamom. It was observed that women, kids, teenagers, the impoverished, the elderly, and people with pre-existing medical conditions have been recognized as vulnerable groups that frequently suffered from psychological morbidity as a result of the COVID-19 outbreak.[21] Interestingly; married people experienced mood swings (n=142; 42.77%) and attention deficit disorder (n=36; 10.84%) greater than single people. However, majority of educated people used herbal products more frequently in current study.

In Lebanon, adults frequently used honey, black-seeds, and garlic as natural products for different ailments.[22] According to data of current study, those who are extremely depressed and anxious frequently used herbal teas with honey and ginger. The majority of those who used herbal products during the outbreak were in between the age range of 18-50 years and there was a strong correlation (r=0.795; p=0.0001) between age and their use. The other published data has shown that participants over the age of 40 took significantly (p<0.05; 27.9%) more supplements than the participants under the age of 31-35 years.[23] Most people (n=60; 18.07%) who suffered from Covid-19 and who had fear of infection (n=20; 6.02%) consumed honey; while with low level of fear individuals (n=259; 78.01%) and who did not (n=219; 65.96%) experience Covid-19 symptoms used black-seeds, honey, citrus fruits, ginger, and herbal teas.

Majority of respondents mentioned that use of herbal medicine significantly enhanced by certain factors, such as rumors causing anxiety during lockdown of Covid-19 (χ^2=975.92; p=0.0049), stress and eating disorder (χ^2=664.00; p=0.0001), decreased focus and concentration (χ^2=647.89; p=0.0231); while frequency (r=0.934; p=0.0019) and effectiveness (r=0.920; p=0.0001) of herbal remedies during outbreak of pandemic was also significantly correlated with the type of herbal remedy, 37% individuals used herbal remedies very often, always and usually, while 24% never tried it. Similarly 11% mentioned that herbal remedies are really very effective while 57% reported mild to moderate effect and only 10% observed no effect of herbal remedies.

CONCLUSION

The study concluded that herbal medicines and CAM can significantly contribute in keeping immune strength to highly competent level with cost-effectiveness. The high level of immune competency can provide resistance against infections as noted in current study. Effectiveness of herbal products for relieving stress during Covid-19 was high. Stress due to infections can be managed by drinking herbal teas, honey, and ginger.

Author's Contribution:

Concept & Design of Study:	Aimun Majid
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Conflict of Interest: The study has no conflict of interest to declare by any author.

Source of Funding: None

Ethical Approval: No.ERC/HU/depess-123/5/2022 dated 10.05.2022

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