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Original Article

SELF-MEDICATION FOR PREVENTION AND TREATMENT OF DISEASES DURING COVID-19 PANDEMIC-A CROSS SECTIONAL SURVEY IN GENERAL POPULATION

SARITA PANIGRAHY[1], DEEPANJANA DASS[2], SUNIL KUMAR PANDEY[1], DAMERA MEHER SHEENA[1*]

[1]Gayatri Vidya Parishad Institute of Health Care and Medical Technology Visakhapatnam-530048, Andhra Pradesh, India. [2]MGM Medical College, Kamothe, Navi Mumbai, Maharashtra-410209, India

*Corresponding author: Damera Meher Sheena; *Email: mehersheena84@gmail.com

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ABSTRACT

Objective: The goal of this study was to assess the pattern and reasons for self-medication during the COVID-19 pandemic.

Methods: The present study was an exploratory cross-sectional survey. The questionnaire was meant to be filled up by those who were older than 18 y and could read and write English. The questionnaire (related to socio-demographic status, pattern, and reasons for self-medication) was designed and validated by a committee of faculties in the department of pharmacology through a peer review process and sent through mail, WhatsApp, and other means of social media. A non-parametric Chi-square test was used to test relationships between categorical variables.

Results: The responses of 557 participants were analyzed; among them, the majority were females as compared to males. There was a significant difference ($^{*}p = 0.02$) in the pattern of self-medication between the males (38%) and females (62%), and most of the participants used self-medication as a preventive measure for COVID-19 (39%). Fear of going out (13%) during COVID-19 was the main single reason for self-medication. Arsenic Album 30 was the most frequently used homeopathic formulation (26%).

Conclusion: This study showed that apprehension, coupled with the COVID-19 pandemic, was the main impulse for self-medication.

Keywords: COVID-19, Prevention, Self medication pattern

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INTRODUCTION

Self-medication remains an important issue to look at, especially in developing countries. The prevalence of self-medication differs significantly in urban, suburban, and rural India and varies with different types of medicines [1]. As per recorded data, it may account for as little as 11.7% and as much as 92% across the globe [2]. The term "Over-the-counter (OTC)" medicine is widely used for medicines that can be self-medicated. Self-medication has a low risk if done correctly. Factors like education, general knowledge, and socioeconomic status, media and the Internet, and increased advertising of pharmaceuticals [1] are a few influencers of self-medication. Costly consultation at private hospitals, poor quality of care and long queues, mild illness in government hospitals [3], and an old prescription are the few reasons for self-medication [3, 4]. These days, it has become an integral part of self-care [5].

Most of the medications are being constantly reclassified from a prescription only medication to medications available over-the-counter [5]. As per the definition of WHO, "self-medication is the use of medicinal products by consumers to treat self-recognized disorders or symptoms or the intermittent or continued use of medication prescribed by a physician for chronic or recurring diseases or symptoms" [5]. It involves the use of medications for family members as well, especially where the treatment of children or the elderly is involved [5, 6].

Where there are potential benefits of self-medication like direct and rapid access to treatment, convenience, and price, there are also many risks involved, like incorrect diagnosis, incorrect choice of treatment, adverse effects, worsening of the underlying disease, interactions, dependency, and resistance [5]. History of the disease, distrust of doctors, having no access to doctors, and low cost are a few of the top reasons for self-medication [7].

Self-medication is common not only in allopathy but also in other alternative systems of medicine like Ayurveda, homeopathy, and Unani [8].

A meta-analysis of self-medication shows its prevalence at 53.5% in India [7]. Adverse effects are very common in all forms of medicine, like hypothalamic-pituitary-adrenal axis suppression, hypertension, Cushing features [9], nausea, vomiting, abdominal pain, allergic reactions, inflammation, dependency [10], and vesico-bulbar eruptions [11].

In relation to Ayurvedic medicines, serious adverse effects like Steven-Johnson syndrome followed by fatal toxic epidermal necrosis [12], transient atrioventricular dissociation, and hypotension [13] have also been reported. Adverse effects like bradycardia, reversible pan conduction defect, and syncope with hemorrhage have also been reported after the self-medication of homeopathic medicines [14].

Only a few articles show any data on self-medication during any epidemic. Mortality and severe adverse effects like haemorrhagic duodenitis due to self-medication of Ibuprofen and Steven Johnson syndrome due to self-medication of Paracetamol and Codeine combination have been reported during epidemics [15]. During the ongoing COVID-19 pandemic, self-medications for prevention and treatment have been reported [16]. Deaths due to Coronavirus infection have been reported in the United States as well as in India [17].

The Ministry of Health and Family Welfare, India, has recommended the use of ayurvedic and homeopathic medicines like chyawanprash, turmeric, and arsenicum album-30 [18, 19]. The present study is designed with the thought that there may be an increase in the practice of self-medication during the lockdown due to the COVID-19 pandemic. Non-accessibility of hospitals and doctors, non-acceptability by the doctors and hospital, unavailability of transport, and lockdown terms and conditions may be the primary causes of self-medication during this pandemic. Since there are almost no publications related to self-medication during the pandemic, the present study was designed to assess the pattern and variety of self-medication, the adverse effects of self-medication, and the reasons thereof during the COVID-19 pandemic.

The objective of this study was to assess the pattern of self-medication among males and females and to identify the reasons for self-medication during the COVID-19 pandemic.

MATERIALS AND METHODS

Study design, population and method

The present study was an exploratory cross-sectional survey. The questionnaire was designed and validated by a committee of faculty in the department of pharmacology and through a peer review process. The pre-validated questionnaire, comprising questions related to socio-demographic status and questions related to the pattern and reasons for self-medication, was sent through mail, WhatsApp, and other means of social media.

Inclusion criteria

Participants living in India (whether temporarily or permanently) who were older than 18 and could read and write English were included in the study.

Exclusion criteria

Illiterate people and those less than 18 y of age were excluded from this study.

Sample size

The sample size was calculated using online software with a confidence level of 95% and an error of 5%, with a chance of an unlimited reachable population.

The total sample size calculated was 385. By the end of the study, a total of 573 responses had been received.

Statistical analysis

The collected data was manually fed directly into SPSS v.20, where frequency analysis was run. A non-parametric Chi-square test was also run to test the relationships between variables.

RESULTS

A sample size of 540 was set for the study. Although by the end of the study, 573 responses were received, only 557 were analyzed, as the remaining had missing data. The mean age of participants was found to be 35 y, with a minimum age of 18 y and a maximum age of 82 y. The mean age for females and males was 32 y and 39 y, respectively. The ratio of females to males was 1.3:1 (321/236), as shown in fig. 1.

There was a significant difference in the education level of males and females. Except for the above-postgraduate level of education, the percentage of school dropout was higher among females (73% vs. 27%), and the same held true for graduation (64% vs. 36%) and post-graduate level of education (55% vs. 45%), as shown in table 1.

Overall, 61% of participants reported a history of self-medication with allopathic//homeopathic/ayurvedic medicines or any combination of these during the study period or the past 3 mo (COVID period), as shown in fig. 2. There was a significant difference ($p = 0.02$) in the pattern of self-medication between the males (38%) and females (62%). Self-medication was found to be more common in the 18–30 and 31–43 age groups, as shown in fig. 1.

Among all the participants who had reported self-medication in the last three months, the majority of them said that self-medication was for the purpose of preventing COVID-19 (39%), followed by both prevention and treatment (19%), as shown in fig. 3. Once again, there was a significant difference between males and females, as shown in table 2.

Fear to go out (13%) during COVID-19 was the main single stimulus that surfaced for self-medication, as shown in fig. 2.

Table 1: Educational status of males and females (p-value =0.001; p≤ 0.05 is considered significant)

Education	Male (n=236)			Female (n=321)		
	Count	% Within gender	% Within education	Count	% Within gender	% Within education
School dropout	3	1.3	27.3	8	2.5	72.7
Graduation	101	42.8	36.1	179	55.8	63.9
Post graduation	95	40.3	45.5	114	35.5	54.5
Above PG	30	12.7	65.2	16	5.0	34.8
Anyother	7	3.0	63.6	4	1.2	36.4

Table 2: Reasons for self-medication among males and females (p-value =0.05; p≤ 0.05 is considered significant)

Male (n=236) Female (n=321)						
Reason for self-medication	Count	% Within gender	% Within reason for self-medication	Count	% Within gender	% Within reason for self-medication
For prevention	86	36.5	40	129	40.2	60
For treatment of symptoms of corona	6	2.5	27.3	16	5	72.7
For both treatment and prevention	39	16.5	36.8	67	20.9	63.2
Neither for prevention nor for cure	105	44.5	49.1	109	34	50.9

Table 3: Stimuli for self-medication among males and females (p=0.35 p ≤ 0.05 is considered significant

Male (n=236) Female (n=321)						
Stimuli for self-medication	Coun	% Within gender	% Within stimuli for self-medication	Count	% Within gender	% Within stimuli for self-medication
None	6	2.5	35.3	11	3.4	64.7
Non-accessibility to doctors	11	4.7	57.9	8	2.5	42.1
Non-accessibility to hospitals	2	0.8	16.7	10	3.1	83.3
Non-acceptability by hospitals	3	1.3	60	2	0.6	40
Non-availability of transporters	1	0.4	20	4	1.2	80
Fear to go out in Lockdown	31	13.1	42.5	42	13.1	57.5
Economic	2	0.8	66.7	1	0.3	33.3
Any other	104	44.1	46	122	38	54
All	8	3.4	47.1	9	2.8	52.9
Multiple options	68	28.9		110	35	

For females, non-accessibility to hospitals, transportation problems, and non-accessibility of doctors were the main stimuli for self-medication during the COVID-19 period, whereas for males, increased cost, non-acceptability by hospitals, and non-accessibility to doctors were the three main stimuli, as shown in table 3.

Most participants who took allopathic, homeopathic, or ayurvedic medications did not report any adverse effects.

Among homeopathic self-medicating participants, arsenic album 30 was the most frequently used formulation (26%). Whereas, among ayurvedic self-medicating participants, most of them took all three, i.e., chyawanprash, herbal decoction, and golden milk, as shown in fig. 4.

The major source of knowledge for self-medication was from authorized websites (28%) https://ayush.gov.in, https://nch.org.in [18, 20], news channels, and social media (10.4%), as shown in table 4.

Table 4: Frequency distribution of sources of knowledge for self-medication

Sources of knowledge	Frequency	Percentage
Did not self-medicate	12	2.2
Social media	51	9.2
News channel	7	1.3
Word of mouth	53	9.4
Internet (unofficial)	15	2.7
Official websites	156	28.0
Any other	10	1.8
All	114	20.5
News channel+Word of mouth	22	3.9
News channel+Social media	58	10.4
Internet+official	50	9.0
News channel+official website	9	1.6

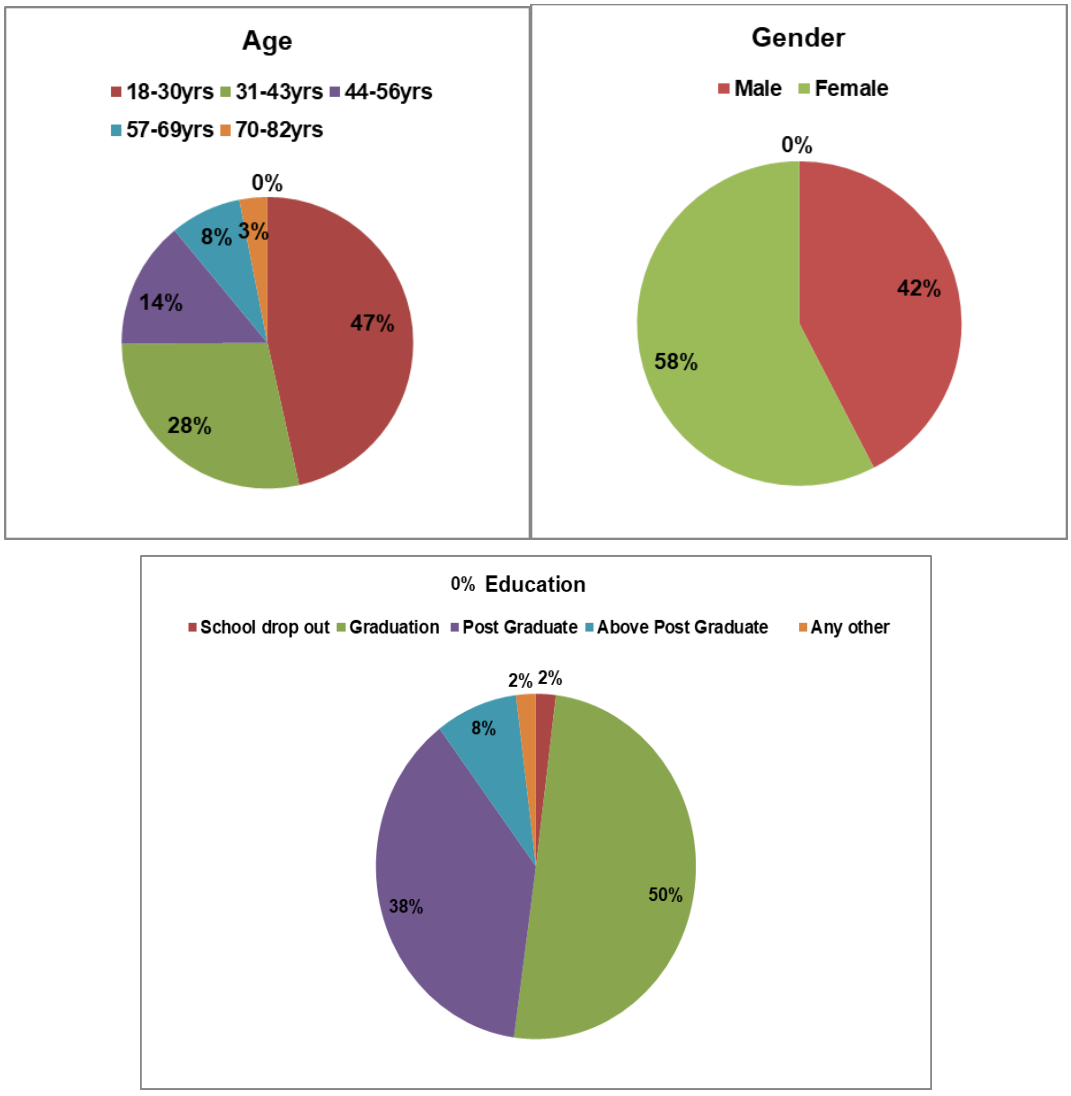

Fig. 1: Socio-demographic parameters of participants included in study

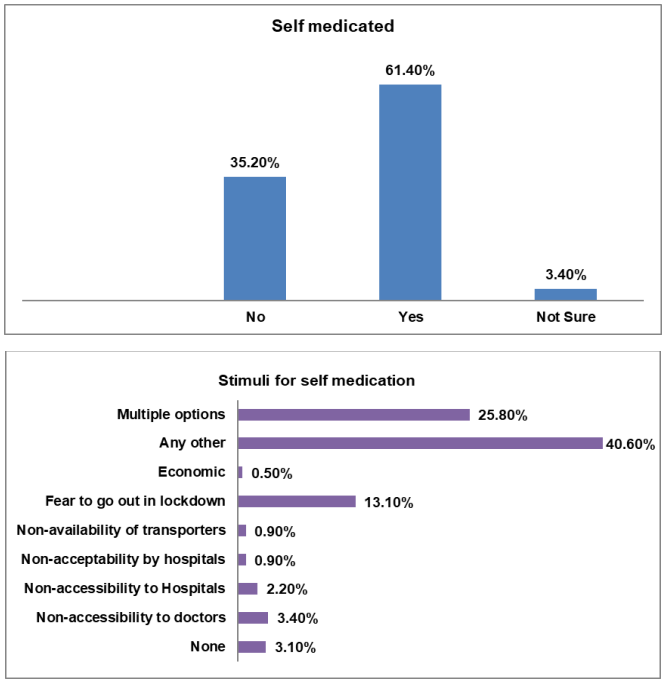

Fig. 2: Percentage of population taking self medications and their stimuli

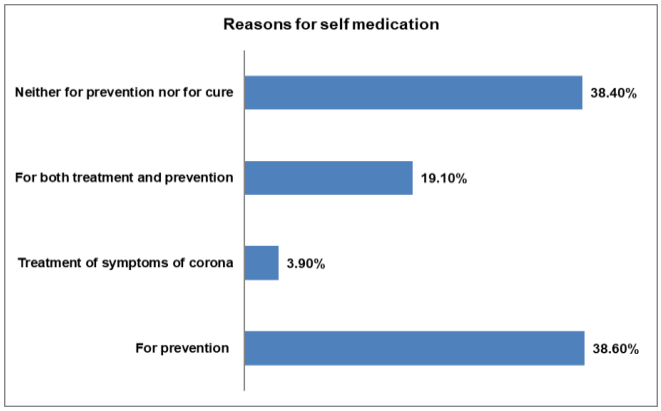

Fig. 3: Percentage showing reasons for self medication

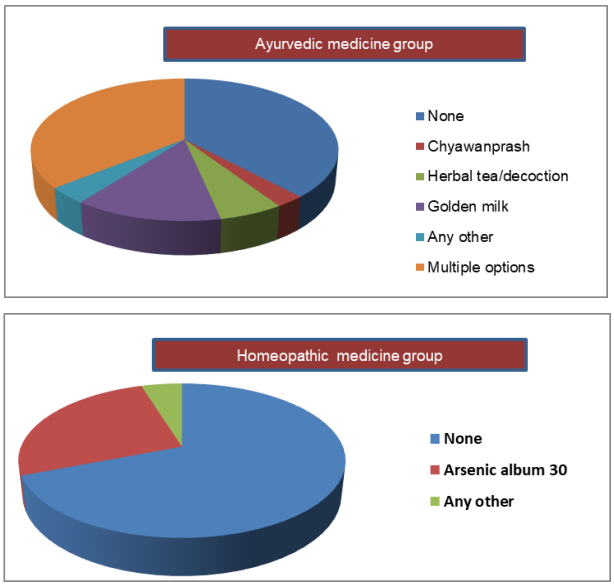

Fig. 4: Percentage of population taking ayurvedic and homeopathic medicine

DISCUSSION

Studies have reported varying prevalence among different states of India [3]. COVID-19 was one such situation where no definitive cure or vaccines were accessible, and it was further fueled by the false propaganda given by social media, leading to uncertainty and confusion in the public and a rise in the use of self-medication, including home remedies.

In a study conducted by Grace *et al.* at Cameroon 13% of adult participants use antibiotics as self-medication [6] as opposed to our study, where antibiotic usage was only 1%. Also, in this study, the reason for self-medication is due to the inaccessibility of health care services, which was more common in females but in our study fear to go out in lockdown was the main stimuli for self-medication with no significant difference between men and women. Grace also concluded that an increased risk of self-medication was more among middle-aged (40-59 y), which was not in agreement with our study as self-medication was more common in the age group of 18-30 y.

Low literacy was the main reason for self-medication among women in a study by Karimy *et al.* [21] which was not in line with our study, where women with higher education preferred self-medication more (96.3%). In a study by Gurmeet Kaur [10], the source of information for self medication was only television, whereas in our study, both men and women subgroups had multiple sources of knowledge (television, social media, and websites) of self-medication and multiple chronic co-morbidities were the prime reasons for self-medication.

In our study, about 61.9% used ayurvedic medicine as self-medication during COVID, as compared to 22.5% in a study done by Priyanka [22]. Easy availability of ayurvedic home-made medicines and a lack of adverse effects might be the reasons for their increased use. Also, we found a significant association between gender (p=0.00) and education (p =0.00) on the utilization of ayurvedic drugs. Information uploaded to the Ministry of Health and Family Welfare was the major source for self-medication in the present study, which is not on par with the above study [22], where mass media was the major source. The most common herbal product used for prevention was herbal tea (70.9%) [23] whereas in our study, only 5.9% used herbal tea.

Apart from Ayurveda and allopathy, it was found that 26.1% of participants used arsenic album in our study, whereas in the study done by Iftekhar Ahmed [23], 15% of participants took both homoeopathy and allopathy as preventive medicine, among which arsenic album (30.1%) was the most frequently used. In this same study, besides arsenic album, vitamin supplements (27.1%) were also commonly used by the public, which was similar to our study (11.8%).

Official websites were the major source of knowledge for self-medication (28%), especially for homeopathic and ayurvedic medicines (https://ayush.gov.in, https://nch.org.in) [18, 20], as opposed to the study by Onchonga D, where Google searches on self medication showed increased people's awareness of self-medication [24]. According to Gupta [25], students with less schooling are likely to self-medicate more, in contrast to study done by Rakesh [26] and present study, where graduates preferred to self-medicate.

The study by Kumari [27] stated the most common reason for self-medication was being more economical, working doctors were the common source of information, and the most common drugs used were analgesics, as compared to the present study, where our major stimuli for self-medication was fear of going out during lockdown (13%), the official website was the main source of knowledge (28%), and antibiotics were the most common drugs used.

The study conducted by Ainsy Goldlin [28] concluded that main factors related to self-medication were COVID 19 spread and fatality, fear of going to hospitals, lack of trouble-free access to hospitals (39.6%), which was in accordance to our study. Another similarity of our study was with the study done by Chopra [29] and also by Jalpa [30] where self-medication was more common in women with 62% and 66%, respectively than in men.

LIMITATIONS

No research is devoid of limitation. So, our study also has few limitations. As the data was collected based on convenient sampling, findings cannot be generalized. Another drawback of this study was that the people were not questioned directly as this was a self-answered questionnaire, which may result in recall bias and deviated responses as there was less scope for direct interaction.

CONCLUSION

Fear of exposure during COVID-19 was the key factor linked to the adoption of the behavior of self-medication. Self-medication is becoming more common in the younger population too. People turn to self-medication mainly because of limited access to facilities and an increase in the source of information during the pandemic. Better strategies towards the availability of medical treatment for acute and chronic infections should be the prime focus during any pandemic.

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AUTHORS CONTRIBUTIONS

Dr. Sunil Kumar Pandey: Conduction of the project, data analysis and interpretation, submission, revision, Dr. Sarita Panigrahy: preparation of protocol, manuscript, data input, revision, Dr. Deepanjana Dass: Data collection and compilation, Dr. Meher Sheena: Data collection and compilation.

CONFLICTS OF INTERESTS

Declared none

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