



## “SELF-MEDICATION FOR PREVENTION OF COVID-19: A CROSS-SECTIONAL ONLINE SURVEY AMONG THE GENERAL PUBLIC IN SOUTH INDIA”

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**ABSTRACT** **Background:** Self-medication is a common practice in developing countries and its prevalence is attributed to less healthcare facilities, reduced economic burden, and easy availability of drugs and local medicines. With the onset of COVID-19, self-medication has increased due to fear and stigma surrounding the disease and hospitals being considered hotspots of infection.

**Methods:** This is a cross-sectional study and data was collected from 478 participants using a semi-structured, self-reporting online questionnaire. Responses were tabulated and analysed with the help of SPSS (V25).

**Results:** The prevalence of self-medication had risen to 84.5% in lieu of the COVID-19 pandemic. 80.8% of all males and 86.6% of all females who responded to the form used self-medication.

Elderly people were found to have self-medicated the most. 71% of the participants self-medicated as they were anxious about contracting the disease. 50.2% reported using home remedies. Most frequently used allopathic drugs among the respondents were Vitamins and other dietary supplements (51.7%). Treatment by self-medication was found effective by 91.6% of the participants.

**Conclusion:** Self-medication cannot be overlooked as it is most often suitable, cheap and effective. Awareness regarding the proper use of self-medication is necessary, especially during the COVID-19 pandemic as it can lead to drug interactions, microbial resistance or serious adverse effects.

**KEYWORDS :** COVID-19, self-medication, prevalence, home remedies, traditional medicine

### INTRODUCTION

Self-medication as defined by the World Health Organization is the "use of pharmaceutical or medicinal products by the consumer to treat self-recognized disorders or symptoms, the intermittent or continued use of a medication previously prescribed by a physician for chronic or recurring disease or symptom, or the use of medication recommended by lay sources or health workers not entitled to prescribe medicine." [1]

Self-medication is commonly practiced in countries with scarcity of human resources for medical aid, difficulties in securing a consultation with physicians, dearth in the inventory of essential medicines and potential delay in getting to health care facilities especially in emergencies.

The COVID-19 virus was officially declared a pandemic by the WHO on January 30<sup>th</sup> 2020 and has subsequently revealed the limitations of an already fragile medical fraternity across the globe. SARS-CoV2 is structurally similar to the virus that causes severe acute respiratory syndrome (SARS).[2] Even though India has made tremendous progress in improving healthcare standards, the population is deeply vested in traditional and alternative systems of medicine. As indicated by a study conducted by Dineshkumar et al [3], self-medication was already common in the country to treat minor ailments before the COVID-19 pandemic; the prevalence of self-medication was 37% in urban areas and 17% in rural areas of India. With the onset of COVID-19, the propensity has escalated - a recently published google trends study on the interest in self-medication during COVID-19 pandemic showed a drastic increase in the number of searches for self-medication worldwide ever since the pandemic was declared. [4]

In the present scenario, fear and stigma surrounding the disease have also resulted in people refusing to get tested or treated; the perception of hospitals being hotspots with increased risk of infection and the difficulties involved in consultation have now encouraged the practice of self-medication for prevention of the disease or management of its symptoms. Costs incurred due to consultation and treatments are

eliminated especially in areas where access to medical services is compromised. Since the manifestations of COVID-19 are common and can be resolved easily, people prefer to self-medicate without being clinically diagnosed. Therefore, it is imperative that the individual understands if their condition is suitable for self-medication and is competent enough to choose a suitable product while ensuring that it is used as directed. Furthermore, self-medication is often associated with risks such as misdiagnosis, use of excessive or prolonged drug dosage and other factors which could eventually lead to resistance. Thus, the onus of using self-medication is to be ultimately borne by the individual.

This study aims to estimate the prevalence, to find the various methods of self-medication used by the general public, to compare its use among elderly and young adults, and to check if there is any apparent increase in the practice of self-medication for prevention of COVID-19 among people in close contact with front line health care workers.

### METHODOLOGY

This is a cross sectional study conducted to evaluate the usage of self-medication among people residing in the states of South India (Andhra Pradesh, Kerala, Karnataka, Tamil Nadu and Telangana) during the COVID-19 pandemic between 1<sup>st</sup> September 2020 and 30<sup>th</sup> November 2020. In lieu of the pandemic, it was not feasible for the researchers to carry out a community-based study in the conventional method of door-to-door survey hence data was collected by preparing a questionnaire using Google Form. Convenience sampling technique was employed wherein the questionnaire was disseminated through social media platforms like WhatsApp and Facebook.

The questionnaire which was offered in the English language began with the introduction and background of our study followed by the consent form. Confidentiality was ensured and the questionnaire proceeded only if the participant gave consent in the beginning. Initially the questionnaire was distributed to 20 volunteers based on the inclusion criteria which were anyone above the age of 18 with access to the internet and residing in the above-mentioned states of India.

The responses obtained were used to create a data sheet and then reviewed by subject experts to further improve the questionnaire. Subsequently, the form was sent to the researchers' primary contacts according to the inclusion criteria. The respondents were further requested to share it with their contacts which expanded the reach of the survey.

The form was disabled after a week, responses were tabulated in an excel sheet and analysed with the help of SPSS (V25).

The continuous variables and the demographic variables were calculated by descriptive statistics and the associations between categorical variables were done by Pearson's chi square method.

**Sample Size Determination**

Sample size was determined to be a minimum number of 209 people from a study conducted by *Nasir M, Chowdhury ASMS, Zahan T on Self-medication during COVID-19 outbreak: a cross sectional online survey in Dhaka city.*[5] Based on this study, p value was obtained as 88% using the formula  $4pq/d^2$ , with 5% allotted error.

**Survey Tool**

A semi-structured questionnaire comprising 19 questions was designed using Google forms which was divided into 3 sections: (i) Consent form, (ii) Socio-demographic data (Age, sex, city, state, educational status), (iii) Approach to self-medication. A brief description of the study was provided before seeking the participant's consent. A total of 13 questions were framed under the approach to self-medication section. It included: (QN-1)Whether the participant has ever been diagnosed with COVID-19, (QN-2) Administration of self-medication, (QN-3)The duration of consumption of self-medication after the COVID-19 pandemic was declared, (QN-4)Source of information regarding self-medication for prevention, (QN-5)The reason for self-medication, (QN-6)Symptoms due to which self-medication was administered, (QN-7)The branch of medical science to which the treatment belongs, (QN-8) Specification of the allopathic drugs if consumed,(QN-9) Specification of the additional methods used to obtain relief from COVID-19 or its symptoms, (QN-10) Adverse effects of the additional methods used to treat COVID-19 or its symptoms observed by the participant, (QN-11) Effectiveness of the additional methods used to obtain relief from COVID-19 or its symptoms,(QN-12) Adverse effects of self-medication observed by the participant and (QN-13) Comorbidities of the participant.

**RESULTS**

**Prevalence**

The findings of this study showed that the prevalence of self-medication after the onset of the COVID-19 pandemic was 84.5%.

**Sociodemographic Data Of Study Participants**

A total of 487 people residing in the 5 South Indian states responded to the form of which 9 were excluded; 3 participants had not consented for the study and 6 were below the age of 18 years. The final sample had 478 valid participants of which 311 (65.1%) were women, and 255 (53.3%) respondents were from the age group 18-25. Among the total study participants, 205(42.9 %) were from Kerala. With respect to educational status, 7(1.5%) did not complete their schooling, 142 (29.7%) completed school, 184(38.5%) were graduates/diploma holders while 145(30.3%) were post-graduates. Only 33(6.9%) of the participants reported a history of being positive for COVID-19.The socio-demographic factors of all the respondents have been summarized in Table 1.

**Table 1- Percentage Frequency Distribution Of Demographic Factors And Reasons For Self-medication**

Variables	Frequency	Percentage
Gender		
Male	167	34.95%
Female	311	65.1%
Age in years		
18-25	255	53.3%
26-40	104	21.8%
41-60	108	21.1%
Above 60	18	3.8%
State		
Kerala	205	42.9%

Karnataka	99	20.7%
Tamil Nadu	87	18.2%
Andhra Pradesh	51	10.7%
Telangana	36	7.5%
Education level		
Did not complete schooling	7	1.5%
Completed schooling	142	29.7%
Graduate/ Diploma holder	184	38.5%
Post-graduate	145	30.3%
Reasons for self-medication		
Was a primary contact	17	4%
Was a secondary contact	24	6%
Worked in a high-risk profession (healthcare, retail etc.)	76	19%
Anxious about contracting disease	287	71%

**Approach To Self-medication**

Of the total number of respondents, 404 (84.5%) acknowledged the use of self-medication for prevention of COVID-19.

Percentage distribution of use of self-medication between different age categories has been summarized in Table 2.

**Table 2- Percentage Frequency Distribution Based On Usage Self-medication Among Different Age Groups**

Age group (in years)	Total respondents in each category	Frequency of Self-medication in each category	Percentage of Self-medication in each category	Percentage of self-medication from total respondents in each category
18-25	255	208	81.5%	51.4%
26-40	104	91	87.5%	22.5%
41-60	101	89	88.1%	22.2%
Above 60	18	16	88.9%	3.9%

With regard to gender, 80.8 % (135) of all males and 86.6% (269) of all females who responded to the form acknowledged the use of self-treatment.

Highest prevalence of self-medication was noted among males and females who completed post-graduation, at 92.3% and 90.3% respectively, as shown in Table 3.

**Table 3- Percentage Frequency Distribution Of Gender And Use Of Self-medication According To Educational Status**

Educational status	Gender	Frequency	Percentage
Did not complete schooling	Male (n=3)	2	66.7%
	Female (n=4)	3	75%
Completed school	Male (n=38)	29	76.3%
	Female (n=104)	82	78.8%
Graduate/Diploma holder	Male (n=74)	56	75.5%
	Female (n=110)	100	90.9%
Post-graduate	Male (n=52)	48	92.3%
	Female (n=93)	84	90.3%

The duration of self-treatment was less than thirty days for 41.3% (167), 1-2 months for 23.3% (94), 3-4 months for 14.6% (59) , 5-6 months for 11.1% (45) and 7-8 months for 9.7% (39) participants.

272 (67.3%) respondents took medications as a preventive measure without having any symptoms. Among the remaining 132 respondents, common symptoms for which the individual took medications are summarized in Table 4.

**Table 4- Percentage Frequency Distribution Table - Symptoms For Which Self-medication Was Taken And Co-morbidities Among Participants**

Symptoms	Frequency	Percentage
Fever	44	10.9%
Cough	45	11.1%
Common cold/runny nose	62	15.3%
Sore throat	48	11.9%
Tiredness, aches and pains	57	14.1%
Others	4	1%

No symptoms	272	67.3%
Comorbidities		
Diabetes	22	5.4%
Hypertension	19	4.7%
Dyslipidemia	14	3.5%
Obesity	5	1.2%
Immunosuppressive conditions (cancer, asthma etc.)	18	4.5%
Others	15	3.7%

With regard to systems of medicine which the medication taken to prevent COVID-19 belonged to, 50.2% reported using home remedies such as steam inhalation and salt water gargles. 46.3% participants favoured Allopathy, Homoeopathy (32.2%), Ayurveda (16.6%), Siddhi (3.5%), Unani (0.5%), Naturopathy (4.5%) and other systems (0.2%) respectively.

The most frequently used allopathic drug among the respondents were Vitamins and other dietary supplements (51.7%) followed by medication to reduce fever (14.1%), antibiotics (12.1%), Hydroxychloroquine (7.2%), painkillers (4.2%), Ivermectin (3%) and other medication (7%) respectively.

Simple home remedies being an integral part of Indian households, only 42 respondents (10.4) % reported not using any home remedy for symptomatic management. Of the remaining 362 (89.6%) participants, 266(65.8%) incorporated traditional home remedies like turmeric, honey etc., 262 (64.9%) increased intake of citrus fruits and vitamin C rich vegetables, 251(62.1%) took steam inhalation, 191(47.3%) practiced periodic salt water gargling, and 147 (36.4%) used medicinal plants like tulsi and mint.

Treatment by self-medication was found effective by 91.6% of the participants.

## DISCUSSION

To the best of our knowledge this is the first online survey conducted in South India to check the prevalence of self-medication during the COVID-19 pandemic. The findings of this study showed that the prevalence of self-medication was 84.5% and it was found to be similar to 88.33% of Dhaka city (Bangladesh) by Nasir et al [5]. This could be due to increased availability of medical resources locally without prescription, decreased efficiency of the health care sector as well as to reduce the economic burden on people especially in middle and low-income countries. [6, 7, 8]

Prevalence of self-medication was found to be more in the elderly age group and this observation was found to be in accordance with Selvaraj et al.[19] More than one-third (38.5%) of the participants who self-medicated were graduates. A meta-analysis of observational studies conducted in Ethiopia showed that students and health care professionals were the main practitioners of self-medication the practice is amplified with increasing literacy and it is even encouraged sometimes in order to achieve self-reliance for curative, preventive, promotive and rehabilitative care [9]. However, according to Sharma *et al.* [10] self-medication is practiced more among participants with less than higher secondary education compared with those who completed higher secondary.

The prevalence of self-medication has risen to 84% compared to similar studies carried out in India which showed the prevalence as 37% in urban areas and 17% in rural areas before COVID-19.[3] Of all respondents, 71% self-medicated due to nosophobia during the outbreak when compared to 85.33% in Dhaka, which shows that most of the participants self-medicated as a precaution and not due to any associated symptoms of COVID-19. [5] This is further substantiated by the finding that among all the respondents who acknowledged use of self-medication, 67.3% initiated treatment without showing any apparent symptoms.

The use of home remedies is more extensive when compared to modern medicine; it was found that the most common practices were home remedies (50.2%). A study by Anwar et al. [11], also ascertained that home-based treatments like self-care, use of complementary and alternative medicine (CAM) were often preferred for primary treatment. Many respondents also followed multiple systems of medication such as Allopathy, Homoeopathy and Ayurveda for maintenance of health- the elderly population has knowledge of simple remedies and herbal medicines for mild ailments. A study has also

opined that consumers preferred Allopathic medicines in comparison with Ayurveda for self-medication, which has been attested by the results from this study. [12]

With regard to allopathic medications taken, vitamins and other dietary supplements were the most consumed drugs in this study whereas Paracetamol was reported as the most commonly used drug in Peru, Ethiopia and Brazil. [13] A study from before the COVID-19 pandemic in Kerala found the percentage of respondents who practiced antibiotic self-medication to be 3.31%. This practice has increased to 12.1% after the onset of the disease, with development of antibiotic resistance being a major concern. [14]

Traditional home remedies like honey, increased intake of citrus rich food and steam inhalation were most commonly used in self-treatment. A study by Parisius et al. [15] based in Germany also obtained similar outcomes, with the same remedies mentioned above being in the top five most commonly used antidotes.

Every individual is susceptible to COVID-19, but the disease is more severe in the elderly due to increased comorbidities. [16] There is a high prevalence of diabetes in patients with COVID-19 and this is a determinant of its severity and mortality [17]. Diabetes was found to be the most common comorbidity in this study, with 5.4% of the participants suffering from the disease. Self-medication was found to be effective by 91.6% of the 478 participants. No significant adverse effects were reported whereas according to Berreni et al., [18] an incidence of 1.3% related to self-medication was observed. The most frequent adverse effects were gastrointestinal and neuropsychiatric in nature and main drug classes involved NSAIDs, analgesics with Phytotherapy-homeopathy accounting for 9.1% of drugs.

## CONCLUSION

The positive aspect of self-medication cannot be overlooked as it is often suitable, cheap and effective. The practice, however, can be a major global concern if not used properly, especially during the COVID-19 pandemic as it can lead to drug interactions, microbial resistance or serious adverse effects.

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