Assessment of Psychology, Behaviour and Self-Medication Potential Among Indian People During COVID-19 Pandemic

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This research work was done during the Indian festive season of 2020 to assess the attitude, mentality and psychological pattern of Indians. Also, the effect of yoga and meditation in combating the Covid-19 pandemic related stress was analyzed in the present research work. As Paracetamol and Diclofenac are OTC medications which are widely available without doctor's prescription, the potential of self-medication for these drugs amidst the pandemic need to be studied, this study further attempted to analyze the rate and extent of self-medication of these drugs among Indians. An e-questionnaire survey bearing questions on pandemic-related mental stress, sleep duration, yoga, meditation practice, and extent of self-medication in combating the pandemic was floated to the residents of Bengaluru to collect their response. The collected data were analyzed using Statistical Package for the Social Sciences software version 17. A mixed response regarding their stress, anxiety, and fear expressed on a higher scale was the same before or during Covid could be perceived. The sleep pattern before and during CoVid had no significant variation (p>0.05) and appeared the same. All the respondents agreed that they spend considerable time with electronic gadgets during the Covid lockdown period. Most of the respondents (60%) practice yoga and meditation occasionally or daily. The high rate of self-medication with Paracetamol and Diclofenac drugs among Indian people in the current pandemic situation shows they are OTC and readily available. The self-medication practice is of real concern as it may cause a long-term impact on the consumers.

Keywords: COVID-19; Diclofenac; Meditation; Psychology; Paracetamol; Self-Medication; Yoga.

In December 2019, few cases of an unidentified pneumonia came up in Huanan Seafood Wholesale Market which is a wet market in Wuhan, China. The disease characteristics were similar to that reported by virus flu. This causative agent was later identified as SARS-Cov-2 virus which caused symptoms like fever, cough, diarrhoea, fatigue and vomiting. Some severe cases caused acute respiratory distress, heart injury and secondary infections. [1,2]

The World Health Organization declared it as a pandemic on March 11, 2020. The virus inflicts fear of getting sick, dying due to infection, stigma and helplessness among common people. [3]

Quarantine is a traditional method of containing the spread of epidemic diseases. [4]

Mass fear of Covid 19 is called as "coronaphobia". Nationwide lockdowns are being reported to cause mass hysteria, anxiety, depression, rise in substance dependence, irritability, confusion, anger, insomnia, denial, despair, fear of getting the disease, post-traumatic stress disorder and even suicidal thoughts. [5]

Medicating someone in order to alleviate or prevent an illness without medical supervision

is called as self-medication. Fever, headache and common cold are some of the common ailments for which self-medication is generally used. The term "OTC" is not legally recognised in India. Drugs not listed under "prescription-only" drugs are considered as "non-prescription" OPTC drugs which should be sold by pharmacists without the prescription of a Registered Medical Practitioner. Saving time and money are the major reasons for self-medication. [6]

Self-medication has disadvantages of causing risk of misdiagnosis, overdosage, prolonged usage, waste of resources and high resistance to pathogens. In India, no list of OTC drugs exists. [7]

In developing nations, self-medication is widely practiced by people who cannot bear clinical costs. Drugs are dispensed without medical supervision. Paracetamol and other NSAID's are mostly used for self-medication. [8]

Diclofenac is also reported to be used for self-medication among most population. Common adverse reactions associated with this include dyspepsia, diarrhoea and abdominal pain. [9]

Diclofenac is also used as monotherapy or in combination with Aspirin or Ibuprofen for the treatment of tension-type headache. Overuse of medications may cause headaches. [10]

At the outset of the Covid 19 pandemic, the Indian Government implemented a nation-wide lockdown to prevent the further spread of disease. However, continuous lockdown impacted the economy and lives of people by causing social isolation, financial and job losses. Hence, unlock was implemented with certain relaxations since June 2020. However, some people prefer to follow restrictions like social distancing, regularly using sanitizer, wearing masks and restricting going out till very much required.

The country India is home to diverse culture having several festivals and celebrations all over the year. The novel covid-19 infection being very contagious is fast spreading throughout the World including India. The common symptoms of the disease are fever, body aches, sore throat, runny nose, loss of taste and smell.

A nationwide lockdown was announced in the second quarter of the year 2020 to combat the deadly pandemic COVID-19. The viral infection was severe between April and July 2020

in Bengaluru, Karnataka. Many urban pockets of the city declared as containment zones experienced severe restrictions. The imposed restrictions made the routine societal life to a grinding halt and perturbed many containment zone residents.

Lockdown and restrictions grossly impacted the livelihood of Indian people. Schools and colleges closed down since March 2020 for an indefinite period of time. Working women have to manage home and work without much support from domestic helps. Day cares are shut down and women have to help children with online classes apart from their existing work from home official work and household chores. Constant home confinement results in psychological distress like fear of contracting the disease, fear from dying of the disease, insomnia, poor sleep quality, rise in screen time in order to avoid boredom, uncertainty, depression and even suicidal thoughts due to lower incomes and financial losses. The current pandemic situation has caused massive cuts in salary and job losses.

In late August 2020, the first phase of unlocking down relaxed the containment zone dwellers. Nevertheless, vigilant watch on any increase in the spread of infection continued in this area. Hence, this containment zone was selected.

In India, the festive season begins from Ganesh Chaturthi, usually in August-September and lasts till New Year eve. In order to contain the spread of the novel covid-19 infection, norms like social distancing, practicing hand and respiratory hygiene and avoiding going out of home till very much required are the guidelines which should be followed. During the festive season, generally migrant workers working in various corporate sectors visit their native places in order to see their family, friends and relatives. Purchase and shopping for gifts and handicrafts is also rampant during this period of time. The current survey was done during the Indian festive season of 2020 between August and November to check the mental and emotional status of general public, covid awareness and guideline procedure which is being followed.

Yoga originated in ancient time in India and is known to have therapeutic benefits. Meditation relaxes the body and mind. The effect of yoga and meditation in alleviating the stress and tension was also studied in the study.

India is home to several spiritual gurus who teach yoga and meditation. Patanjali of Ramdev and Sudarshan Kriya by Sri Sri Ravishankar is practiced by many people in India as well as over the World.

In a country like India, caste discrimination is still rampant in few parts of the nation. Turning Covid-19 positive results in stigmatization and social isolation. Indians may prefer to self-medicate themselves rather than consulting doctors or undergoing Covid 19 tests. As fever and body aches are very common symptoms of the novel corona virus infection, a research was conducted to analyse the rate of self-medication of Diclofenac and Paracetamol in the current situation of pandemic.

With the advancement of technology and Digital India scheme, easy accessibility of internet is available to almost everyone in India. People may view and collect drug information online rather than consulting practising physicians during illness.

The number of cases of Covid 19 infection is rapidly increasing in an exponential order in Bangalore. The BBMP are not getting enough participants for Covid free testing. Most of the people are panicked about turning Covid positive which may result in social isolation and stigmatization. Hence, they are tending to take Paracetamol and Diclofenac as a precautionary measure even before getting infected by the virus. Paracetamol and Diclofenac are being stocked by people as an essential commodity presently.

As per unpublished sources, India has reached the peak of Covid-19 infection on September 17th, 2020. There are more than 8000 pharmacy shops in Bangalore. Continuous awareness messages are telecasted in all the print and media (online and regular). The people are also very much aware of the commonly used OTC drugs.

Prior studies on the psychological behavior of people during festive season, effect of yoga in combating stress related to the pandemic and usage of the drugs Diclofenac and Paracetamol during Covid is missing. People are not aware of the side effects and they are having fear of exposing themselves because they were very much bothered about infection rate, isolation and the sequential health deterioration effects caused by the virus.

MATERIALS AND METHODS

An online questionnaire prepared on popular e-format (Google forms) was circulated to the residents of Bangalore. The participants were encouraged to circulate the questionnaire with their acquaintances to increase the visibility. The e-questionnaire survey was targeted only at the common people. A total of 1050 people were distributed with the e-survey questionnaire and ensured a rational distribution between the gender.

The first part of the questionnaire contained questions relating to the gender, age group, diet, personal and medical history of the respondents. The second part of the questionnaire contained questions related to covid preparedness and awareness. The third part of the questionnaire studied the psychological effect of the current covid pandemic. The latter part of the questionnaire further assessed the potential for self-medication of Paracetamol and Diclofenac.

A total of 200 responses were gathered. The responses were analyzed using Statistical Package for Social Sciences (SPSS) software version.17. Descriptive statistics were performed to calculate the frequency and percentage. A Chi-square analysis was conducted to identify the variation in the awareness toward COVID-10 and its preventive measurs, psychological and behavioral response, tantrums, sleep pattern, self-medication and preparedness between the genders.

RESULTS

Age of respondents

The age of the respondents was grouped into four categories namely 26-30, 31-35, 36-40 and 41-45.

Participants of age group 31-35 responded well.

People belonging to the age group 31-35 actively participated in the survey.

About 42.2% of the respondents belong to the age group 31-35 while the least percent (of respondents (7%) were from the age group of 41-45.

Marital status and children

Majority of the respondents were married (75.9%). Only 24.1% were unmarried. Most of the

respondents (45.7%) had children. While 54.3% did not have children.

All respondents comply with the statutory practice of wearing face masks or protective shields during their outside visits from home. They tend to wash their hands with sanitizer; their duration of washing hands with soap was less than a minute. They showed an inclination to stay at home and preferred online shopping. However, they showed a need-based outside movement from their home. The respondents provisioned a separate room at their residence to isolate themselves in the event of any contact suspicion.

People believed that drinking hot water may improve themselves to combat the infection. From the responses, it is clear that the male and female respondents did not drink hot water frequently as the weather conditions so demand them to drink sterile and cool water to quench their thirst. However, most of the respondents believed that drinking warm water might have a therapeutic effect. Further, they also restricted their children from playing at common facilities. Thus, no high and significant variation (p<0.05) prevailed between genders in permitting their children to play outdoors (Table.2).

Table 1. Demographic characteristics of the respondents and their dietary habits

Characteristics	Variable	% of recorded response	Chi square (df and p-value
Gender	Male	47.7	
	Female	52.3	
Age Group	26-30	19.1	
	31-35	42.2	
	36-40	31.7	
	41-45	7.0	
Marital status	Married	75.9	
	Unmarried	24.1	
Having children	Yes	45.7	
	No	54.3	
Qualification	Intermediate	1.0	4.617 (3, 0.202)
	Graduate	18.1	
	Post graduate and others	76.4	
	Pursuing	4.5	
Socio-economic status	Average	33.7	1.813 (2, 0.404)
	Good	65.8	
	Poor	0.5	
Number of members in the family	Less than 4	60.8	
	Less than 6	37.2	
	More than 8	2.0	
Working status	Not working	12.6%	6.925 (3, 0.074)
	With job and working from home	87.4%	
Personal Lifestyle and dietary habits			
Dietary status	Vegetarian	35.2%	
	Non vegetarian	64.8%	
Fruits and vegetables consumption	Daily	42.9%	12.616 (1, 0.000)
	Occasionally	57.1%	
Tea and coffee consumption	Yes	79.9%	6.314 (1, 0.012)
	No	20.1%	
Smoking habit/Tobacco consumption	Smoker	28.6%	
	Non smoker	71.4%	51.178 (1, 0.000)
Alcohol consumption	Occasional Drinker	41.7%	24.001 (2, 0.000)
	Non-Drinker	57.8%	
	Regular Drinker	0.5%	

Table 2. Awareness over the Covid preventive practices among the respondents

Covid Preventive Practices	Response statement	% of responses	Chi square (df, p-value)
Frequency of using face masks	Always before going out/meeting people	98.5%	0.437(1, .508)
	Rarely	1.5%	
Frequency of using hand wash or hand sanitizer	Every time after returning from outside/touching common surfaces	94.0%	0.189(1, 0.664)
	Rarely	6.0%	
Duration of washing hands with soap and water	Less than a minute	99.0%	1.845 (1, 0.174)
	More than a minute	1.0%	
Frequency of visits outside home per day during current situation	Minimum 1 time	32.7%	20.984(2, 0.000)
	More than 2 times	13.6%	
	Don't go out till very much required	53.8%	
Availability of separate room for isolation	Yes	86.4%	0.613(1, 0.434)
	No	13.6%	
Frequently drinking hot water to prevent being infected from covid	Yes	70.9%	3.866(1, 0.049)
	No	29.1%	
Allowing children to go out for playing	Yes	9.0%	3.866(1, 0.049)
	No	77.9%	
	Not Applicable	13.1%	

Table 3. Psychological and behavioral response of the respondents, the practice of yoga and meditation, and their self-medication of antipyretic and anti-inflammatory drugs

Psychological behaviour	Response	% of the responses recorded	Chi square (df, p-value)
Any allergies	Known	53.3	19.698 (1, 0.000)
	Not known	46.7	
Pre existing diseases	Diabetes	3.5	29.128 (5, 0.000)
	Thyroid problem	12.1	
	Blood Pressure	3.5	
	Migraine issue	3.5	
	None of these	75.9	
Stressed currently	Yes	58.3%	0.157 (1, 0.692)
	No	41.7%	
Current anxiety level	High	52.5%	0.835 (2, 0.659)
	Low	10.6%	
	No change	36.9%	
Frequency of throwing temper tantrums	High	47.7%	1.042 (2, 0.594)
	Low	13.1%	
	No change	39.2%	
Current fear factor	High	57.4%	0.223 (2, 0.895)
	Low	8.1%	
	No change	34.5%	
Panicked about turning covid positive	Maybe	14.6%	5.701 (2, 0.058)
	No	38.9%	
	Yes	46.5%	
Duration of sleep before covid	6-8 hrs	89.9%	5.165 (2, 0.076)
	8-10 hrs	9.0%	
	More than 10 hrs	1.0%	
Current duration of sleep	6-8 hrs	88.4%	1.750 (1, 0.186)
	8-10 hrs	11.6%	
Present nature of sleep	Better	8.0%	1.071 (2, 0.586)
	Same	53.3%	
	Worse	38.7%	
Duration of mobile/television screen before covid	1-2 hrs	36.4%	2.117 (4, 0.714)
	3-4 hrs	43.9%	
	5-7 hrs	15.2%	
	8-10 hrs	2.5%	
	10-12 hrs/more than 12 hours	2.0%	
Current duration of mobile /television screen	1-2 hrs	27.4%	3.947 (4, 0.413)
	3-4 hrs	43.7%	
	5-7 hrs	18.8%	
	8-10 hrs	7.1%	
	10-12 hrs/more than 12 hours	3.0%	
Practice of yoga and meditation	No	40.2%	0.662 (2, 0.718)
	Occasionally	44.2%	
	Yes, daily	15.6%	
Self-Medication			
Will you use Paracetamol for fever now?	No	11.1%	0.077 (2, 0.962)
	Yes	64.3%	
	Yes, with doctor's consultation	24.6%	
Will you use Diclofenac for fever now?	No	29.6%	6.696 (2, 0.035)
	Yes	40.2%	
	Yes, with doctor's consultation	30.2%	

The respondents disclosed their health status, and three-fourth of the population did not suffer any disease. A significant variation ($p<0.05$) recorded among the respondents about their awareness of allergy to their body (Table.3) indicates they are aware of the common food allergens. Most participants showed a mixed response regarding their stress, anxiety, and fear, on a larger scale and continue to be the same before or during Covid. All the participants expressed their high frequency of throwing temper tantrums. The respondents may be sensitive and aware of the COVID-19, and they did not display any significant variation ($p>0.05$) in expressing their psychological attributes.

Further, they practice suitable preventive measures and are not panicked about turning COVID-19 positive. The sleep pattern before and during pandemic lockdown did not vary much and appear the same. No significant variation ($p<0.05$) is found between males and females in their sleep pattern during the lockdown period. About 92% of the male respondents expressed that they tend to sleep for 6-8 hours, and it did not affect their sleep pattern. All the respondents agreed that they spend considerable time with electronic gadgets. The survey respondents spent only a minimum period of 3 – 4 hours watching television or using their mobile phones for entertainment despite the more free time. Thus, there was no significant variation($p>0.05$) in e-gadget usage time among the respondents. As e-gadgets are gaining momentum through technological improvements and their wide usage among the respondents is not surprising. Equal response to occasional and no yoga and meditation practice indicates a select group of populations alone (15.6% of the respondents) practiced yoga, and such activities need attention. Most of the respondents (60%) practice yoga and meditation occasionally or daily, and it enables the respondents to balance over the fear and anxiety factors noted during COVID-19. By and large, the respondents have an idea of the use of antipyretic and anti-inflammatory drugs. These drugs are readily available at any druggist's outlet. Hence, most of the respondents used Paracetamol and Diclofenac. Nevertheless, the respondents preferred to take anti-inflammatory pills only with a physician prescription. A significant variation ($p<0.05$) observed between male and female respondents on the anti-inflammatory drug usage shows that males preferred self-medication. Thus, the majority of the respondents (65%) undergo self-medication. It indicates they were preparing to manage any high body temperature with a commonly available antipyretic prescription free from a drug store.

Further, we also opine that the respondents are unwilling to step further to COVID-19 examination unless their body condition worsens. About 1/4th of the population is sensitive, and they took antipyretics only with a physician's prescription. It shows this group of people are very much aware of the situation's gravity and avoid self-medication.

DISCUSSION AND CONCLUSION

Study of the psychological behaviour among Indians during the current Covid situation has been reported before; however research during the Indian festive season is not conducted. Moreover, studies of yoga and meditation to control the psychological behaviour of people in the present pandemic situation have not been reported previously. Further, reports regarding self-medication during the current pandemic situation is not adequately reported.

As per a study conducted by David L. Dawson et al, Covid 19 lockdown in the United Kingdom caused distress, anxiety and stress, reduced wellbeing and loneliness. [11]

Fizra Balkhi et al reported fear of safety and anxiety due to news on social media among residents of Pakistan during the lockdown of Coivd 19. Few participants in the study avoided watching news as it created fear and panic among themselves. [12]

G. Serafini et al reported the prevalence of psychological problems like stress, depression, anxiety, uncertainty and frustration during the current pandemic situation. [13]

Grazia Maugeri et al reported self-isolation and loneliness during the quarantine period among people in Italy. [14]

Lengthy lockdowns in Italy for the containment of the novel corona virus infection caused boredom, confinement, isolation and loss of income. [15]

Leticia González-Blanco et al reported

that anxiety or fear may be caused to following of restrictions like physical distancing and self-isolation during lockdown period in Spain. [16]

Lindsey M. Rodriguez et al reported that high rates of unemployment, home stay orders and quarantine measures prompted men and women in the United States to resort to more drinking frequencies. [17]

Matthew T. Tull et al reported in a study conducted in the United States that lockdown contributed to adverse psychological effects like feeling of loneliness, financial concern, anxiety, depression and less social support. [18]

Mack Sheraton et al reported the occurrence of job stress, anxiety, depression and insomnia during the Covid 19 pandemic. [19]

Mahua Jana Dubey et al reported the increased use of alcohol, substance abuse, increased screen time, video gaming and watching porn sites by the people in India in order to combat stress related to long term home stay, panic arising due to fear of contracting the infection, reduced income and losing jobs and increased work from home. [20]

Miao Chao et al reported that most of the people are exposed to media related to the novel corona virus. Use of media related to negative news impacts the psychological behaviour by causing stress, anxiety and depression. [21]

As per Qian Guo et al, anxiety and depression were found to be common in Covid 19 infected patients compared to normal ones. [22]

Seshadri Sekhar Chatterjee et al reported the prevalence of stress, anxiety and depression among doctors as well. [23]

As per the World Health Organization, self-medication should be controlled and taught correctly to avoid drug issues like antimicrobial resistance which is currently a worldwide problem, especially in developing countries where antibiotics are frequently available without a prescription. [24]

Self-medication may provide temporary relief, however it may delay the appropriate diagnosis and treatment of underlying diseases. People mostly self-medicate due to lack of time for going to physician. [25]

Rise in literacy rate among people is creating awareness about OTC medications which is increasing the rate of self-medication. Pharmacists are generally consulted by patients. [26]

Easy access to OTC drugs in both pharmacy and non-pharmacy outlets is a cause for the increased self-medication. [27]

It has been reported that lack of time, easy availability, reusing old prescriptions, fast relief, parental advice and lack of knowledge regarding the disease are the most common reasons for self-medication. Paracetamol was one of the most commonly used drug for self-medication. The volunteers in the study were using the drug without proper knowledge about the disease, dosing and frequency of administration side effects and adverse drug reactions. [28]

Both Paracetamol and Diclofenac belong to the class of NSAID's which are used as analgesic and anti-inflammatory agents. This category of drugs is frequently used for the relief of acute and chronic pain. They are used for self-medication without consulting physicians, little realizing the possible adverse effects associated with it. Pharmacists can provide guidance for a safe and effective use of drugs; however, it becomes difficult to check all patients requests for them. Adverse effect of these drugs may include mortality. [29]

Analgesics represent the largest market share among all OTC medications. [30]

Paracetamol has excellent analgesic and anti-pyretic properties and is considered to be safe and effective for the treatment of various clinical conditions. However, it may cause dose dependent hepatotoxicity and hepatocellular injury leading to centrilobular necrosis. [31]

Mild illness and prior knowledge about the drug are major reasons for self-medication. Around eighty percent of all drugs are purchased without a prescription in developing nations. [32]

Consumption of more coffee, alcohol, more tobacco smoking, and a preferred non-vegetarian diet of many respondents in the survey makes us fear that these personal lifestyle habits may predispose them to chronic disease conditions, making them vulnerable to the complications associated with the current pandemic. People follow basic guidelines like wearing a face mask, having room for isolation on symptoms, frequently using hand wash or sanitizer, and minimizing outside visit. It shows the degree of awareness inculcated through media by the government. People are becoming aware and respect the guidelines.

The psychological, behavioral response shows that people are at higher stress due to more socio-economic factors that require further analysis. Their anxiety, fear, panic levels, psychological tantrums are on a larger scale. Sleeplessness has become common owing to their habituation of using e-gadgets. The high usage of e-gadgets well correlates with their sleeplessness.

The practice of yoga and meditation occasionally or daily should have enabled the respondents to balance over the fear and anxiety factors, giving scope for more research on their daily work style, attention, and perception of handling any situation. The current study results show that yoga and meditation are effective tools to manage the stress, tension, panic, and fear arising out of the COVID-19. People may be sensitized over the benefits of yoga and meditation to nurture proper mental and psychological health. Further, we also opine yoga and meditation have beneficial effects.

Increased self-medication of anti-pyrectics and anti-inflammatory drugs among the people is a concern of the study. The results showed a high self-medication rate for Paracetamol and Diclofenac among Indian people in the current pandemic situation. Irrespective of the qualification and socio-economic status, most people use these drugs without a medical consultation to manage fever and body ache symptoms.

Thus, the public should be counseled appropriately and educated regarding the current COVID-19 virus, its modes of transmission, and treatment. They should be urged not to self-medicate themselves, rather see physicians if developing any symptoms like fever, cold, sore throat, or body pains. As we gain a gradual and steady control over the pandemics, we fear the second wave as the virus takes a virulent variant form. Although vaccination is carried extensively, its efficacy requires more studies and research.

ACKNOWLEDGEMENTS

Conflicts of Interest
None.

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