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RESEARCH ARTICLE

A cross-sectional study regarding respiratory etiquette and stress during novel coronavirus pandemic

Dharmesh Patel[1], Rajesh Desai[2], Jasmin Parmar[2], Manish Ramavat[1]

[1]Department of Physiology, GMERS Medical College, Patan, Gujarat, India, [2]Department of Physiology, Banas Medical College and Research Institute, Palanpur, Gujarat, India

Correspondence to: Manish Ramavat, E-mail: manish_ctc@yahoo.com

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ABSTRACT

Background: Lockdown helps in achieving the goal of reducing coronavirus disease (COVID)-19 virus infections but also causes loneliness increasing mental issues such as anxiety and depression. Even if all restrictions are lifted from June 8, we have to take proper precautions such as social distance, wearing masks, and frequent hand washing. **Aims and Objectives:** This study aims to access respiratory etiquette, anxiety, and depression regarding COVID pandemic among participants after lifting the restriction of lockdown. **Materials and Methods:** This cross-sectional study was carried out among 260 participants during June–July 2020. Structured pro forma was used for data collection. General anxiety disorder-7 and patient health questionnaire-9 scales were used to assess anxiety and depression respectively. Google link was shared using purposive snowball sampling method. Consent obtained electronically through Google Forms. **Results:** Out of 260 participants, only 17.3% of participants always used mask. The prevalence of anxiety and depression was 50.4% and 44.6%, respectively. Significant association of anxiety and depression was observed with 31–45 age group, female, health-care professionals (HCPs), and those participants whose family members were COVID-19 positive. **Conclusions:** Lower respiratory hygiene etiquette after lifting of lockdown may be due to reduced fear of getting COVID-19 infection among the participants. Anxiety and depression level was associated with economic productive age group, female, HCPs, and those participants whose family members were COVID-19 positive.

KEY WORDS: Anxiety; COVID-19; Depression; Lockdown; Respiratory Etiquette

INTRODUCTION

Since the end of December 2019, the Chinese city of Wuhan reported a novel pneumonia caused by coronavirus disease 2019 (COVID-19), which is spreading internationally.[1] The World Health Organization estimates global mortality at 3.4%.[2] There is no definitive treatment and vaccine available for COVID-19 virus. Community transmission of the infection is also very much high without taking proper preventive measures.[3] All these factors lead to psychological distress.[3] This will decrease immunity level[4] and working efficiency both.

Various phases of lockdown were announced by Government of India during March 24–May 31, 2020, for breaking the COVID-19 infection cycle.[5] Although lockdown helps in achieving the goal of reducing infections, reduced access to family, friends, and other social support systems causes loneliness increasing mental issues such as anxiety and depression.[6] Various studies were conducted to assess stress regarding COVID pandemic during the lockdown period. This stress may be due to due to restricted movement during lockdown rather than fear of getting COVID infection.

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From June 8, lockdown restrictions were to be lifted and services have been resumed in a phased manner.[5] This does not mean life goes back to normal. However, the insane traffic jams at various places tell us that people probably think that the danger of COVID-19 is already past. Even if all restrictions are lifted, we have to take proper precautions such as social distance, wearing masks, and frequent hand washing.[1] Therefore, this study will be conducted to access respiratory etiquette and stress regarding COVID pandemic among participants after lifting the restriction of lockdown.

MATERIALS AND METHODS

This cross-sectional study was carried out among 260 participants during June–July 2020 after getting permission from the Institutional Ethic Committee. Structured pro forma was used for data collection. It comprised three parts, the first consisting of demographic data including age, gender, city of residence, education, type of family, profession, addiction, and comorbid condition. The second part included questions regarding attitude and practice related to respiratory etiquette. The level of practice for each question was assessed using a five-item Likert-type scale (always, often, sometimes, rarely, and never). The third part included general anxiety disorder-7 and patient health questionnaire-9 scales to assess anxiety and depression, respectively. In the patient health questionnaire-9, there are total nine questions. Answers included not at all (0), several days (1), more than ½ days (2), and nearly every days (3). Minimum score of each question is 0 and maximum score is 3. Total score was calculated by summing up the score of all questions (ranging from 0 to 27). We categorized depression levels into five categories, that is, minimal depression (1–4), mild depression (5–9), moderate depression (10–14), moderately severe depression (15–19), and severe depression (20–27).[7] Similarly, in the general anxiety disorder-7, there are total seven questions. Anxiety levels were categorized into five categories, that is, no anxiety, minimal, mild, moderate, and severe anxiety.

This pro forma was translated into Gujarati language and validated by two experts. Those participants were not able to understand English, Gujarati version was used for them. Google link was shared and asked to fill up the questionnaire. Purposive snowball sampling method was used for sharing Google link. The questionnaire was completed online through mobile or personal computer. Information regarding study and study procedure was provided through text appeared at the start of Google Forms and also consent obtained on same page denoting that they were voluntarily participate in study and complete the questionnaire.

Statistical Analysis

The collected data from Google Forms were exported into Microsoft Excel spreadsheet 2010 and analyzed by EPI INFO software Ver.7. Quantitative data were presented in mean ± standard deviation and qualitative data in percentage. Z-test was applied to find out the outcome; $P<0.05$ was considered statistically significant.

RESULTS

Characteristics of participants are shown in Table 1. In the present study, a total of 260 participants have given consent for participation. Out of them, 152 participants were in 18–30 years age group (58.5%), 157 (60.4%) male, and 189 (72.7%) from urban area. Majority of the participants (137, 52.7%) have competed graduation. A total of 156 participants (60.0%) belonged to nuclear family. Thirty-six participants (13.8%) had comorbid condition. About 94 participants

Table 1: Characteristics of participants

Characteristics	Frequency	Percentage
Age		
18–30	152	58.5
31–45	76	29.2
46–60	22	8.5
>60	10	3.8
Gender		
Female	103	39.6
Male	157	60.4
Education		
Primary	12	4.6
Secondary	29	11.2
Higher secondary	11	4.2
Diploma	4	1.5
Graduation	137	52.7
Postgraduation	67	25.8
Locality		
Urban	189	72.7
Rural	71	27.3
Occupation		
Unskilled	12	4.6
Skilled	30	11.5
Student and unemployed	50	19.2
Self-employed	32	12.3
Professional	136	52.3
Occupation		
Medical and paramedics	94	36.2
Other	166	63.8
Type of family		
Nuclear	156	60.0
Joint	104	40.0
Comorbid condition		
Yes	36	13.8
No	224	86.2
Total	260	100.0

Table 2: COVID-19-related activities among the study participants

Activities	Frequency	Percentage
COVID duty		
Yes	94	36.2
No	166	63.8
Time spend on social media and television for COVID-19-related news		
<30 min	121	46.5
30–60	67	25.8
1–2 h	45	17.3
2–4 h	15	5.8
>4 h	12	4.6
Infected with COVID-19		
Self	12	4.6
Family member	26	10.0
No	222	85.4
Habit		
Eating habit changed in lockdown?		
Yes	65	25.0
No	195	75.0
Sleeping habit changed?		
Yes	87	33.5
No	173	66.5

COVID: Coronavirus disease

Table 3: Respiratory etiquette among the study participants

Etiquette	Frequency	Percentage
Wearing mask during going outside		
Always	45	17.3
Often	78	30.0
Sometimes	34	13.1
Rarely	56	21.5
Never	47	18.1
Following respiratory hygiene during coughing (use handkerchief, bent elbow, etc.)		
Always	95	36.5
Often	34	13.1
Sometimes	35	13.5
Rarely	28	10.8
Never	68	26.2
Maintain social distance		
Always	68	26.2
Often	28	10.8
Sometimes	46	17.7
Rarely	46	17.7
Never	72	27.7
Are you feeling better than lockdown period		
Yes	187	71.9
No	73	28.1

(36.2%) were health-care professional (HCPs). Participation of unskilled worker was very less (12, 4.6%).

Out of 260 participants, 94 participants (36.2%) were engaged in COVID-19-related activities. Twenty-seven participants (10.4%) were spending more than 2 h on social media or television for COVID-19-related news. Twelve participants (4.6%) were COVID-19 positive and 26 participants' family members (10.0%) were infected with COVID-19 [Table 2].

Table 3 shows practice of respiratory etiquette among participants. Only 45 participants (17.3%) always used mask. Ninety-five participants (36.5%) always used handkerchief or bent elbow during coughing or sneezing while 68 participants (26.2%) never followed that practice. Only 68 participants (26.2%) maintained social distance. Majority participants (187, 71.9%) responded that they were feeling better after lifting lockdown, stress level was reduced.

Thirteen participants (4.3%) had moderate [9 (3.5%)] to severe [2 (0.8%)] anxiety. Similarly, depression level was also observed less among participants. Depression level was moderate in 9 (3.5%), moderately severe in 3 (1.2%), and severe in 1 (0.4%) participants [Figure 1].

Table 4 demonstrates association of anxiety and depression with sociodemographic characteristics. Female participants of 31–45 age group were more anxious and depressed as compared to male of other age group participants. Anxiety and depression level was also high among HCPs and those participants whose family members were COVID-19 positive.

DISCUSSION

India is facing biggest health emergency after independence. COVID-19 virus has brought chaos to economics and lives. Social chaos and arbitrary relationship are destroyed due to panic and fear. Mental health is becoming critical in managing COVID-19 pandemic.[8,9] In this study, most of the participants were in 18–30 years age group (58.5%), male (60.4%), completed graduation (52.7%), and belonged to nuclear family (60.0%) and from urban area (72.7%). More than one-third of participants (36.2%) were HCP. About 13.8% had comorbid condition. Similar characteristics were observed in the study of Sharma and Subramanyam. Three-fourth of participants were in 18–29 years age group, 62.5% were male, 90.9% completed graduation, and 81.1% from urban area.[10]

In the present study, safe practice of respiratory etiquette among participants was very less. Only 17.3% and 30.0% of participants used mask always and often. respectively. The use of handkerchief or bent elbow during coughing was

Table 4: Association of various factors with anxiety and depression level

Variable	PHQ-9	GAD 7
	Mean	Mean
Age		
18–30	3.98±1.23	2.98±1.02
31–45	5.2±0.89	3.41±0.86
46–60	3.33±0.51	1.89±1.21
>60	3.53±0.95	2.78±0.5
P-value	<0.01	<0.01
Gender		
Female	5.16±5.27	3.97±4.51
Male	3.74±3.21	2.88±3.77
P-value	<0.05	<0.05
Education		
Higher secondary and below	6.15±6.73	4.09±4.04
Graduation and above	4.69±5.12	3.44±4.10
P-value	>0.05	>0.05
Occupation		
HCP	5.5±5.75	4.12±4.32
Other	3.96±4.46	3.02±3.82
P-value	<0.05	<0.05
Comorbidity		
Yes	4.91±4.23	4.02±3.9
No	3.96±4.11	3.16±3.65
P-value	>0.05	>0.05
Time spend on social media and television for COVID-19-related news		
<2 h	4.62±2.56	3.33±3.25
>2 h	5.61±3.45	4.12±3.90
P-value	>0.05	>0.05
Infected with COVID-19		
Self or family member	5.66±3.78	4.25±3.98
No	4.13±3.01	2.9±2.75
P-value	<0.05	<0.05

COVID: Coronavirus disease, HCP: Health-care professional

observed only in half of participants (total – 49.6%: always – 36.5%, and often – 13.1%). Only 26.2% and 10.8% of participants maintained social distance always and often, respectively. However, the study from Jaipur conducted during lockdown reported higher practice (94.1%) of proper preventive measures while leaving home as compared to the present study.[11] Less safe practice in the present study after lifting of lockdown may be due reduced fear of getting COVID-19 infection among the participants.

In the present study, the prevalence of moderate-to-severe anxiety and depression was very less. The prevalence of anxiety was 50.4% (minimal – 36.9%, mild – 9.2%, moderate – 3.5%, and severe – 0.8%). The prevalence of depression was 44.6% (minimal – 25.0%, mild – 14.6%, moderate – 3.5%, moderately severe – 1.2%, and severe – 0.4%). In

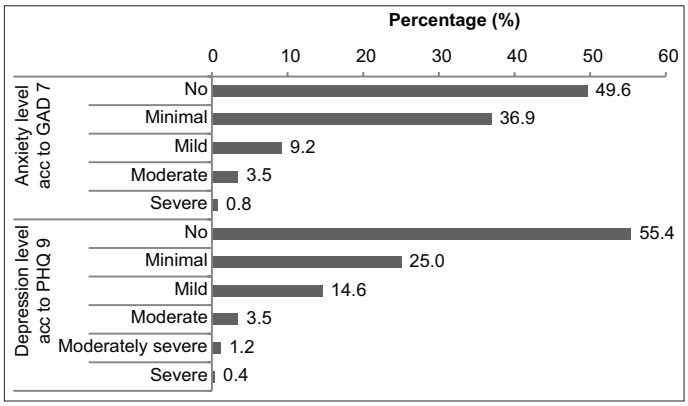

Figure 1: Anxiety and depression level among the study participants

India, about 166% increase (21.0%–56.0%) in complaint of anxiety from lockdown 1.0 to unlock 1.0.[12] One study conducted during lockdown, 26.0% of respondents were suffering from mild depression, 11% were feeling moderately depressed, and 6% were facing severe symptoms of depression.[13] Sharma and Subramanyam observed an increased depressive symptoms during the lockdown (β = 4.34, CI: 376 2.38, 6.30), independent of other covariates.[10] A very recent general public survey in China showed about one-third of participants reported moderate-to-severe anxiety.[14]

In the present study, majority of the participants (76.8%) shared their negative states of mind during lockdown. They described how their daily routines had changed and how the lockdown disrupted their lives causing frustration and agitation. More than two-third of participants (71.9%) responded that stress level was due to economic impact of lockdown rather than fear of getting COVID-19 infection. They accepted COVID-19 as a part of life for the year of 2020. This is in consonance with a John Hopkins University survey which reported increased psychological distress from 3.9% in 2018 to 13.6% in April 2020 in adult. This could be due to economic impact of COVID-19. Feelings of loneliness increased only marginally from 11% in 2018 to 13.8% in 2020. Therefore, it might not be a major cause of distress.[15]

In the present study, significant association of anxiety and depression was observed with 31–45 age group, female, HCPs, and those participants whose family members were COVID-19 positive. Saleem *et al*. observed that more than 95% of the HCPs of Pakistan were suffering from moderate-to-severe level of anxiety.[16] Anxiety level among female[17] and HCPs[18,19] was also reported significantly high in neighboring countries.

There is limited access of internet to illiterate and aged person residing in rural area. They could not be included in the study. Therefore, the result of the present study could not be generalized to the population. There is no question of knowledge and attitude so it could not be evaluated.

CONCLUSIONS

Lower respiratory hygiene etiquette after lifting of lockdown may be due to reduced fear of getting COVID-19 infection among the participants. Anxiety and depression level was comparable to various studies conducted in India. Significant association was observed with economic productive age group (31–45 years), female, HCPs, and those participants whose family members were COVID-19 positive. Stable mental health is essential and plays a significant role in strengthening immunity, certain measures need to be taken to reduce the fear and anxiety level among health-care providers.

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REFERENCES

1. Murali J. COVID-19: Life after Lockdown. Deccan Herald, DH News Service; 2020. Available from: http://www.deccanherald.com/opinion/in-perspective/covid-19-life-after-lockdown-832473.html. [Last accessed on 2020 Jul 09].
2. World Health Organization. WHO Director-General's Opening Remarks at the Media Briefing on COVID-19; 2020. Available from: https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19. [Last accessed on 2020 Mar 03].
3. Gupta B, Bajwa SJ, Malhotra N, Mehdiratta L, Kakkar K. Tough times and Miles to go before we sleep-corona warriors. Indian J Anaesth 2020;64:S120-4.
4. Segerstrom SC, Miller GE. Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. Psychol Bull 2004;130:601-30.
5. COVID-19 Pandemic Lockdown in India. Wikipedia, Wikimedia Foundation; 2020. Available from: http://www.en.wikipedia.org/wiki/COVID-19_pandemic_lockdown_in_India. [Last accessed on 2020 Jul 09].
6. Zhou X, Snoswell CL, Harding LE, Bambling M, Edirippulige S, Bai X, *et al*. The role of telehealth in reducing the mental health burden from COVID-19. Telemed J E Health 2020;26:377-9.
7. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med 2001;16:606-13.
8. Ren SY, Gao RD, Chen YL. Fear can be more harmful than the severe acute respiratory syndrome coronavirus 2 in controlling the corona virus disease 2019 epidemic. World J Clin Cases 2020;8:652-7.
9. Shigemura J, Ursano RJ, Morganstein JC, Kurosawa M, Benedek DM. Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: Mental health consequences and target populations. Psychiatry Clin Neurosci 2020;74:281-2.
10. Sharma AJ, Subramanyam MA. Psychological Impact of Covid-19 Lockdown in India: Different Strokes for Different Folks. New York: medRxiv; 2020.
11. Tomar BS, Singh P, Nathiya D, Suman S, Raj P, Tripathi S, *et al*. Indian Communitys Knowledge, Attitude & Practice towards COVID-19. New York: medRxiv; 2020.
12. Dutta PK. India Today. How Covid-19 Affected Anxiety Level among Indians Between Lockdown 1.0 and Unlock 1.0. Available from: https://www.indiatoday.in/coronavirus-outbreak/story/covid-19-anxiety-mental-stress-india-lockdown-unlock-1687085-2020-0. [Last accessed on 2020 Jul 06].
13. Coronavirus Pandemic: 43% Indians Suffering from Depression: Study Hindustan Times. Available from: https://www.hindustantimes.com/more-lifestyle/coronavirus-pandemic-43-indians-suffering-from-depression-study/story-1njolQxGrmcYKV58J6H11O.html. [Last accessed on 2020 Jul 07].
14. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, *et al*. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. Int J Environ Res Public Health 2020;17:1729.
15. Johns Hopkins University Bloomberg School of Public Health. Survey Finds Large Increase in Psychological Distress Reported among US Adults during the COVID-19 Pandemic. Science Daily. Available from: http://www.sciencedaily.com/releases/2020/06/200. [Last accessed on 2020 Jul 08].
16. Saleem Z, Majeed MM, Rafique S, Siqqiqui Z, Ghandhi D, Tariq H. COVID-19 pandemic fear and anxiety among healthcare professionals in Pakistan. Health Econ Outcomes Res 2020. Available from: https://www.researchsquare.com/article/rs-37608/v1. [Last accessed on 2020 Jul 07].
17. Rajkumar RP. COVID-19 and mental health: A review of the existing literature. Asian J Psychiatry 2020;52:102066.
18. Taghizadeh F, Hassannia L, Moosazadeh M, Zarghami M, Taghizadeh H, Dooki AF, *et al*. Anxiety and Depression in Health Workers and General Population During COVID-19 Epidemic in IRAN: A Web-Based Cross-Sectional Study. New Yok: medRxiv; 2020.
19. Xiao H, Zhang Y, Kong D, Li S, Yang N. The effects of social support on sleep quality of medical staff treating patients with coronavirus disease 2019 (COVID-19) in January and February 2020 in China. Med Sci Monit 2020;26:e923549.

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