Perceived risk, behaviour changes and health-related outcomes during COVID-19 pandemic: Findings in a Medical College.

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ABSTRACT

Aims & Objectives: To examine perceived infection risk of **COVID-19** and the health and related behaviour changes among adults and to examine factors associated with self-reported health during the national quarantine period in India.[1] **Methods:** A cross sectional study was carried out via social media across India. A sample of 100 adults of India provided data on socio-demographic characteristics, awareness, and attitudes towards COVID-19, lifestyle factors, and health outcomes during the **quarantine**. (Regression models tested associations among study variables adjusting for covariates.) **Results:** Among the 100 total participants, overall, the data suggests that the COVID-19 pandemic has had both positive and negative impacts on people's health and well-being **(78%) perceived themselves to be at risk of COVID-19 infection**. Participants made a number of behaviour changes in response to the **pandemic**, including wearing masks in public (94%), washing hands frequently (93%), and avoiding social gatherings (87%). However, some participants engaged in risky behaviours, such as smoking (18%) and consuming alcohol (15%). Participants with **comorbidities** such as diabetes, hypertension, and cardiovascular disease were more likely to report poor health outcomes. The study also found that participants who were more educated and had higher incomes were more likely to have good knowledge about COVID-19 and engage in preventive behaviours.

Keywords : COVID-19, Quarantine, Perceived risk, Pandemic , Comorbidities

Introduction

Corona viruses are a large family of viruses that can cause **respiratory illnesses** in humans, ranging from the common cold to more severe diseases like SARS and MERS.[2] In 2019, a new corona virus emerged and caused an outbreak in China. This virus is called **SARS-CoV-2**, and the disease it causes is called **COVID-19.** In **March 2020,** the World Health Organization (WHO) declared the COVID-19 outbreak a **pandemic**.

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Public health groups like the CDC and WHO are monitoring the pandemic and providing updates on their websites. They have also issued recommendations for preventing and treating COVID-19 were also issued. Since the COVID-19 outbreak, India implemented a lockdown in mid March 2020 to contain the spread of COVID-19. Age, sex, ethnicity, comorbidities such as diabetes, hypertension and cardiovascular disease, obesity, and a pro-inflammatory and pro-coagulative state all probably contribute to the risk of worse outcomes. Among those with severe COVID-19 and those who died, there is a high prevalence of concomitant conditions including diabetes, cardiovascular disease, hypertension, obesity, and chronic obstructive pulmonary disease. (2) The fatality rate is particularly high in older patients, in whom comorbidities are common.

Materials & Methods

After obtaining institutional ethical clearance, a questionnaire based, cross sectional study was carried out throughout a medical college in India. The inclusion criteria for the study were all adults above 18 years of age (either positive, negative or previously infected). The sample size was 100 adults.

- Type of study: Cross-sectional Study

- Place of study: Medical College in an urban area of Maharashtra.

- Sampling Method: Purposive sampling followed by snowball effect (Snowball sampling is where research participants recruit other participants for a test or study.)

- Sample: done via Google Forms, all those who fill the form up during the time period were included in the study.

- Inclusion criteria: students and staff above 18 years of age

- Exclusion criteria: below 18 years

- Tool: A pre tested validated semi structured questionnaire was administered via Google form.

- IEC approval was obtained.

After obtaining an informed consent, voluntary participants of the study were asked to fill out a validated, detailed, semi structured questionnaire containing open ended and close ended questions. The results of the questionnaire were entered in Microsoft Excel and appropriate tests of significance (p value) statistical tests were applied.

1. Measurements

1.1 Demographic variables: Data on demographic characteristics, including gender, education, income, residence, and occupation were collected and then included as covariates in analysis models.

1.2 Awareness and attitude toward COVID-19: Awareness and attitudes towards the COVID-19 were assessed using items adapted from a recent COVID-19 awareness, attitude, and action questionnaire. Two questions asked participants to rate the likelihood they perceived that they or someone in the family might get infected with COVID-19 and levels of worry about getting corona virus: (1) ''How worried are you about being infected with COVID-19?'' Responses include a 4-point scale: not worried at all, a little worried, somewhat worried, and very worried; and (2) ''How likely do you think it is that you or someone in your family may get infected with the corona virus this year?'' Responses include a 4-point scale: very likely, somewhat likely, not that likely, and not at all likely.

1.3 Health-related experiences and behaviour changes during COVID-19: Two items, drug shortage and food shortage due to COVID-19, were used to measure corona virus experiences. Measures of health-related behaviours, including changes in lifestyle behaviours (diet, physical activity, and sleep), were assessed.

Results

Table -1 : Demographic data of participants of a medical college

			Adults		
			No.	%	
Demographic Date		20 – 24	58	58.0	
		25 – 29	11	11.0	
		30 – 34	10	10.0	
		35 – 39	10	10.0	
		40 – 44	6	6.0	
		45 – 49	5	5.0	
		Total	**100**	**100.0**	
Gender		Female	58	58.0	
		Male	42	42.0	
			Male	**Female**	**Total**
			No.	No.	No.
Religion		Hindu	30	20	50
		Muslim	6	7	13
		Christian	14	16	30
		Others	4	3	7
Occupation		Students	31	27	58
		Staff (nurses/ technicians)	9	9	18
		Medical teaching staff (Professors/ Residents)	11	13	24
Education		HSC	6	12	18
		Graduate	38	31	69
		PG and above	6	7	13
Marital Status		Married	6	11	17
		Unmarried	45	38	83
Location		Urban	37	52	89
		Rural	5	6	11
Addiction		Smoking	10	6	16
		Alcohol	10	12	22
		Internet	1	1	2

Table-2: Questionnaire Based: Self-perceived risk of Covid and level of worry **.**

Sl. No.	Questionnaire		Male	Female	Total
1.	**Do you think you are at risk of Covid?**	No	24	26	50
		Yes	25	25	50
2.	**History of any diseases/ comorbidities?**	Asthma	0	1	1
		Hypertension	5	6	11
		Interstitial lung disease	1	0	1
		Ischemic Heart Disease	1	0	1
		Thyroid	0	1	1
		No	35	50	85
	85% had no comorbidities. 11% reported to be hypertensive				
3.	**Are you on any medications currently?**	No	40	45	85
		Yes	10	5	15
	15% were on medications				
4.	How worried are you about being infected with COVID-19?	1 (not worried at all)	15	10	25
		2 (slightly worried)	20	20	40
		3 (worried)	10	20	30
		4 (worried to a great extent)	2	3	5
	25% were not worried at all about being infected. 75% were slightly to moderately worried about being infected. Whereas only 5% were worried to a greater extent.				
5.	**How likely do you think it is that you or someone in your family may get infected with the corona virus this year?**	1 (very likely)	9	4	13
		2	14	20	34
		3	25	14	39
		4 (not likely at all)	7	7	14
	47% of respondents believe they or someone in their family is very likely to get infected with the corona virus this year. 39% believe it is somewhat likely, and 14% believe it is not very likely or not likely at all.				
6.	**Self reported overall health (poor to excellent)**	1 (Poor)	2	6	8
		2 (Average)	20	23	43
		3 (Moderate-good)	12	24	36
		4 (Excellent)	6	7	13
	Only 13% subjects felt that they had excellent health, 8% reported poor health.				
7.	**Were you worried about food shortages during the lockdown?**	Yes	17	18	35
		No	25	40	65
	Majority of them were not worried about food shortages.				
8.	**Were you worried about drug shortages?**	Yes	15	34	49
		No	27	24	51

Table-3: Lifestyle behaviour changes

Sl. No.	Questionnaire		Male	Female	Total
1.	**During COVID-19 epidemic, how many hours on average per day were you physically active? (in hours)**	<1hr	4	6	10
		1-2	12	12	24
		2-4	21	24	45
		4-6	6	5	11
		≥6	4	6	10
2.	**Majority of the participants (45%) were active for 2-4 hrs in their homes and 34% were active for less than 2hrs.**	<1hr	4	6	10
		1-2	12	12	24
		2-4	21	24	45
		4-6	6	5	11
		≥6	4	6	10

Majority of the participants (45%) were active for 2-4 hrs in their homes and 34% were active for less than 2hrs.

Table-4: Health related outcomes

Sl. No.	Health related outcome		Male		Female		Total	
1.	**Have you taken the Covid vaccine?**	Yes	42		58		100	
		No	0		0		0	
	It was mandatory to take the vaccine							
2.	If yes, how many doses?	Dose 1	2		0		2	
		Dose 2	37		50		87	
		Booster Dose	3		8		11	
3.	How effective do you think the Covid vaccine is?	1 (No effect)	2		0		2	
		2 (Somewhat effective)	23		24		47	
		4 (Effective)	20		21		41	
		5 (Very effective)	5		5		10	
	Since people still acquired Covid despite of taking the vaccine, it might have led them to believe that the vaccine had no or little effect,							
4.	**Has your mental health deteriorated during Covid and in the post Covid era?**	Yes	20		37		57	
		No	22		21		43	
	More females (37%) reported deterioration in their mental health. This suggests that a significant number of people experienced mental health problems during the pandemic.							
5.	**If yes, have you reached out for help and through what means?**		No.	%	No.	%	No.	%
		Spoken to an elder	7	12.0	8	14.0	15	26.3
		Spoken to an elder, spoken to your friends	3	5.0	3	5.0	6	10.5
		Spoken to your friends	18	32.0	9	16.0	27	47.4
		Spoken to your friends, taken professional hour	0	0.0	3	5.0	3	5.2
		Taken professional help	1	2.0	5	9.0	6	10.5

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Sl. No.	Health related outcome		Male	Female	Total
	More females (37%) reported deterioration in their mental health. This suggests that a significant number of people experienced mental health problems during the pandemic.				
6.	**Has Covid helped in your overall physical and mental developmental improvement?**	Yes	30	39	69
		No	12	19	31
	The table shows that 69 people said yes, and 31 people said no. This suggests that a majority of people believe that COVID helped them improve their physical and mental health.				
7.	**Changes in my life include post Covid includes**	**Positive Outcome**			
		I am exercising more regularly	17	19	36
		I am more particular about my health now	22	33	55
		I am careful about what I eat	19	22	41
		I am taking my medicines regularly as compared to pre Covid	3	10	13
		Negative Outcome			
		I have restricted my outdoor activities	13	20	33
		My sleep pattern is more disturbed	13	14	27
		I am more irritable	6	7	13
		I spend more time on electronic devices	22	37	59
		I face mood swings	8	16	24
		Human interaction has been limited	26	37	63

Table-5: Sex wise association of outcomes from Covid 2019

Changes in my life include post Covid includes		Male		Female		Total
		No.	P Value	No.	P value	No.
Positive Outcome	I am exercising more regularly	17	0.0000	19	0.0000	36
	I am more particular about my health now	22	0.0000	33	0.0000	55
	I am careful about what I eat	19	0.0000	22	0.0000	41
	I am taking my medicines regularly as compared to pre Covid	3	0.0051	10	0.0000	13
Negative outcome	I have restricted my outdoor activities	13	0.0000	20	0.0000	33
	my sleep pattern is more disturbed	13	0.0000	14	0.0000	27
	I am more irritable	6	0.0000	7	0.0000	13
	I spend more time on electronic devices	22	0.0000	37	0.0000	59
	I face mood swings	8	0.0000	16	0.0000	24
	Human interaction has been limited	26	0.0000	37	0.0000	63

Positive Outcomes:

Exercise: A significant increase in people exercising more regularly ($p < 0.0001$ for both men and women).

Health awareness: A significant increase in people being more particular about their health ($p < 0.0001$ for both men and women).

Diet: A significant increase in people being careful about what they eat ($p < 0.0001$ for both men and women).

Medication adherence: A marginally significant increase in people taking their medications regularly ($p = 0.0051$ for men, $p < 0.0001$ for women).

Negative Outcomes:

Outdoor activities: A significant decrease in outdoor activities ($p < 0.0001$ for both men and women).

Sleep disturbance: A significant increase in people experiencing sleep disturbances ($p < 0.0001$ for both men and women).

Irritability: A significant increase in people reporting increased irritability ($p < 0.0001$ for both men and women).

Electronic device use: A significant increase in the amount of time people spends on electronic devices ($p < 0.0001$ for both men and women).

Mood swings: A significant increase in people experiencing mood swings ($p < 0.0001$ for both men and women).

Limited human interaction: A significant decrease in human interaction ($p < 0.0001$ for both men and women).
Limitation:

First, it is a cross-sectional study, so it **cannot establish causality**.

Second, the sample size is **relatively small.**

Finally, the study was conducted online, so it may **not be representative of the general population of India**.

Despite these limitations, the study provides **valuable insights into the perceived risk, behaviour changes, and health-related outcomes associated with the COVID-19 pandemic among adults in India**. More research is needed to fully understand the long-term effects of the pandemic, and to identify ways to mitigate the negative impacts and support people's health and well-being. The findings of the study can be used to inform public health policies and interventions aimed at reducing the spread of the virus and protecting the health of the population.

Discussion

Mental health and its effects:

- A significant number of people (57%) reported that their mental health deteriorated during and after the Covid-19 era.

- However, a majority of those who reported mental health deterioration (69%) said that Covid-19 helped in their overall physical and mental development. This suggests that, for some people, the challenges of the pandemic may have led to personal growth.

- The most common coping mechanisms for those who reported mental health deterioration were speaking to friends and seeking help from elders. This suggests that social support is important for mental well-being.

- A smaller number of people who reported mental health deterioration sought professional help. This suggests that there may be a stigma associated with seeking mental health care.

A significant portion of respondents reported exercising more regularly (36%) and being more particular about their health (55%) since the pandemic began. This suggests that the pandemic may have prompted some people to adopt healthier lifestyle habits. There was also a small but statistically significant increase in the proportion of people who reported taking their medications regularly (13%). This could be due to increased awareness of the importance of medication adherence during the pandemic, or it could be due to changes in healthcare access or routines. The most common negative outcome was an increase in time spent on electronic devices (59%). This could be due to a number of factors, such as increased boredom or social isolation during lockdowns, or a shift to remote work or learning. Many people also reported reduced human interaction (63%) and more restricted outdoor activities (33%). This is likely due to social distancing measures and lockdowns put in place to control the spread of the virus.

Conclusion

Overall, the data suggests that the COVID-19 pandemic has had a mixed impact on people's health and habits. While some people have adopted healthier behaviours, others have experienced negative impacts on their mental and physical health, as well as their social interactions.

Addressing Negative Outcomes and Improving Health during COVID-19:

Based on the study findings, here are some methods to prevent or decrease negative outcomes, improve health awareness, and curb the spread of COVID-19:

1. *Targeted public health campaigns*:

Address misinformation: Counteract misinformation and disinformation about COVID-19 through clear, factual messaging in multiple languages and formats.

Focus on marginalized groups: Design campaigns specifically for communities with lower access to information and resources, considering cultural and linguistic sensitivities.

Promote preventive behaviours: Emphasize the importance of mask-wearing, hand hygiene, social distancing, and vaccination through engaging outreach programs.

2. *Mental health support*:

Reduce stigma: Normalize seeking mental health care by raising awareness about the psychological impacts of pandemics and promoting mental well-being resources.

Increase accessibility: Make mental health services more accessible through telehealth options, community support networks, and affordable therapy services.

Promote coping mechanisms: Encourage social support networks, mindfulness practices, and stress-management techniques for individuals experiencing mental health challenges.

3. *Healthy lifestyle habits*:

Encourage physical activity: Promote accessible fitness programs, outdoor recreation opportunities, and home-based exercise routines to combat increased screen time and sedentary lifestyles.

Nutrition awareness: Educate individuals on healthy eating habits and provide resources for nutritious and affordable meals to combat unhealthy food choices due to stress or restrictions.

Medication adherence: Encourage regular medication intake through reminders, medication management tools, and improved access to healthcare services.

4. *Combating risky behaviours***:**

Smoking cessation programs: Offer smoking cessation programs and resources to help individuals reduce or quit smoking, a known risk factor for severe COVID-19 complications.

Alcohol awareness campaigns: Promote responsible alcohol consumption through educational campaigns and support groups to address alcohol misuse as a potential risk factor.

5. *Community engagement***:**

Strengthen social support networks: Foster community cohesion and connection through social events, volunteer opportunities, and online support groups to combat social isolation and loneliness.

Empower local leaders: Engage community leaders, faith-based organizations, and grassroots groups to disseminate health information and promote preventive behaviors in their communities.

Address economic hardships: Provide support for individuals facing financial difficulties due to the pandemic to reduce stress and promote healthy choices.

Remember:

- Continuous monitoring: Regularly assess the effectiveness of interventions and adapt strategies based on evolving needs and data.

- Collaboration and partnerships: Foster collaboration between public health agencies, healthcare providers, community organizations, and private sectors for comprehensive response.

- Equity and inclusion: Ensure equitable access to health information, resources, and support services for all populations, regardless of background or socioeconomic status.

By implementing these methods and prioritizing a multi-pronged approach, we can work towards preventing and mitigating negative outcomes, improving health awareness, and curbing the spread of COVID-19, leading to a healthier and more resilient society. It is crucial to involve relevant stakeholders, including healthcare professionals, community leaders, and individuals affected by the pandemic, in developing and implementing interventions.

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