

SHORT SURVEY

**Eating Disorders and Eating Pattern During Covid-19 Pandemic:  
A Short Bulletin**

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**ABSTRACT**

**OBJECTIVE:** To rule out possible effects of lockdown/self-isolation on eating behaviors and to determine development of eating disorders in the pandemic due to stress and anxiety, produced as a result of fear of chances to get infection or stress produced due to social isolation.

**METHODOLOGY:** An online survey-based study was performed by the way of social media and other online networking modes from April-May 2020, the number of participants was n=313, online SCOFF questionnaire was given to participants aged between 18 to 38 years.

**RESULTS:** The SCOFF positive male were 66(47.5%) and female were 114(65.5%) while Binge eating disorders positive males were 102 (73.4%) and female were 113(64.9%). Furthermore, The increased size of meal in isolation period was significantly ( $p=0.0009$ ) associated with Binge eating disorders positive females. The change in food intake time during isolation was also significantly ( $P=0.03$ ,  $P=0.01$  and  $P=0.001$  respectively) more in SCOFF +ve female, Binge eating disorders positive male/female. Addition of snacks /fried /frozen food was significantly ( $P=0.007$ ,  $P=0.0003$ ) more in Binge eating disorders positive male and female. Surprisingly, no any significant difference was observed when participants were asked about exercise or physical activity before or during novel corona virus pandemic, however, a big proportion of general population 63.5% people were involved in exercise and/physical activities which reduced to 34.5% during pandemic.

**CONCLUSION:** Eating disorders and changed eating pattern along with less physical activity was observed during COVID-19 pandemic lockdown.

**KEY WORDS:** COVID-19, Self- isolation, Eating habits, SCOFF.

**INTRODUCTION**

Coronavirus disease 2019 (COVID-19) initially emerged in December 2019, in Wuhan China<sup>1</sup>, is now declared as global pandemic<sup>2</sup> and almost whole world facing an alarming health condition with multiple challenges. It is caused by a virus of corona family<sup>3</sup> named as novel corona virus, primarily attacks respiratory system followed by secondary bacterial infections, apart from respiratory system it also causes severe damages to cardiovascular, renal, nervous system of human body<sup>4,5</sup>. Pakistan is one among most affected countries reported 176,614 confirmed cases, 3501 deaths and 67892 recovered patients up till date<sup>6</sup>. COVID-19 has badly effect life of people all around the world, both physiologically and psychologically, after the pandemic is emerged, countries all around the globe taken possible steps to stop or minimize the viral spread and implemented certain restrictions on general population to slow down the spread rate including physical/social distancing and home isolation<sup>7</sup>, this limited social interaction and distancing put people under the burden of social loneliness, isolation and further loss is contributed by unemployment, which ultimately leads to distress, depression and increased levels of anxiety<sup>8</sup>. Self-isolation/ social distancing greatly affect the normal life style of people including their eating and exercising pattern during pandemic, moreover the eating behaviors of people can be strongly affected by loneliness, distress and boredom<sup>9</sup>. Changes in eating patterns and physical inactivity during confinement could contribute as an important cofactor in the progression of eating disorders in vulnerable people, evidences suggest that mostly observed consequences in the development of anorexia nervosa are loneliness and isolation and it could be further worsened by self-imposed isolation/quarantine. Eating disorders symptoms (binge eating & purging) are observed to be triggered in the people who feels difficulty in managing emotional behaviors<sup>10</sup>, continuous hearing and updates from media about COVID-19 plays a significant role in the development of stress level leads people to overeating particularly comfort foods with high sugar content and called as “food craving”<sup>11,12</sup>.

To date, as per our knowledge not any published study had reported the impact of the pandemic on eating patterns, eating behavior, lifestyle modification and physical activity especially among underdeveloped countries. We investigated the eating disorders prevalence, changes in eating patterns, improper food choices and irregular meal timings during lockdown and pointed out possible health consequences that may be triggered or aggravated by COVID-19 pandemic.

## **METHODOLOGY**

An online survey based cross sectional/observational study, conducted from April to May 2020. Due to lockdown it was not practicable to conduct community-based data collection hence the data was collected online, depending on the contact list of authors, contacts belong to Hyderabad district were asked to participate. Total number of participants (n) was 313. Participants comprised of both genders that is male and females aged between 18 to 38 years. Participants could have easy access of internet and having good understanding with English language was motivated to take part, consent was taken before study conducted. SCOFF questionnaire<sup>13</sup> and binge eating disorder (BEDS-7)<sup>14</sup> for eating disorder along with semi structured questionnaire was developed which contains several questions about eating habits, type of food intake, duration, quantity and exercising habits during lockdown implemented due to COVID-19. Questions were given with simple yes/no choices for which the participants answered. The link of questionnaire was provided by the means of various sources e-mails, social media and WhatsApp to the participants. The questionnaire contains demographic characters, gender, education and information about recent medical history of individual. Chi square test (with Yates correction, at 0.05 significant levels) was employed. Relative risk and Odds ratio was also calculated.

**RESULTS**

Out of 313 (General pool without any grouping),  $n=199$  (63.57%) were indulged in routine/physical activity but after pandemic only  $n=108$  (34.50%) were performing exercise. Additionally, 161 (51.4%) participants (male & female) had added more junk/frozen food to their diet.

As shown in Table I, out of 139 males, 66 (47.5%) were SCOFF positive, the relative risk, odds ratio and the  $p$ -values for each question asked is shown in table.

As indicated in Table II, out of 174 females, 114 (65.5%) were SCOFF positive while 60 (34.5%) were SCOFF negative. Out of 174, 94 (54%) were scoff positive as well as responded “yes” to the question regarding change in the time of food intake. (Chi= 4.6,  $p=0.03$ ). The Chi score,  $p$  values, relative risk and Odds ratio of respective groups are indicated.

For Table III and IV, another questionnaire (BED-7) was used in order to detect the binge eating. As the Table III is indicated, out of 139 males, 102 (73.4%) were BED-7+ve, while 37 (26.6%) were negative, 81 (58.3%) were BED-7+ve as well as said “yes” to the question asked regarding time of food intake. (Chi= 6,  $p=0.01$ ). Similarly, an extremely significant (Chi= 7.1,  $p=0.007$ ) response was shown with SCOFF positive as well as said “yes” to snacks /fried/frozen food consumption. The corresponding relative risk, odds ratio, chi score and  $p$  values are shown in Table III.

As indicated in Table IV, out of 174 females, 113 (64.9%) were BED +ve, while 61 (35.1%) were negative. Binge eaters as well as those who say “yes” to the questions regarding, size and time of food and snacks / fried / frozen food show a marked difference as compared to other groups (Chi= 10.9, 9.5, 12.7,  $p=0.0009$ , 0.001, 0.0003 respectively) again the corresponding relative risk, odds ratio and  $p$  values are shown.

**TABLE I: SCOFF +VE AND SCOFF -VE MALE (N= 139)**

Questions asked during Pandemic	SCOFF +ve 66(47.5%)	SCOFF -ve 73(52.5%)	Relative risk	Odds ratio	X <sup>2</sup>	P-value
Do you think that social isolation period has changed your eating habits (increase in portion size of meal)?						
Yes	41(29.5%)	50(36.1%)	0.87	0.75	0.3	0.5
No	25(17.9%)	23(16.5%)				
Do you think schedule/time of intake of main meals has changed?						
Yes	48(34.6%)	55(39.6%)	0.93	0.87	0.02	0.8
No	18(12.9%)	18(12.9%)				
Have you added more snacks /fried /frozen food into your diet during isolation period?						
Yes	41(29.5%)	29(20.9%)	1.62	2.49	6.08	<b>0.01</b>
No	25(17.9%)	44(31.7%)				
Did you exercise /any physical activity before COVID-19?						
Yes	49(35.3%)	49(35.3%)	1.21	1.41	0.5	0.4
No	17(12.2%)	24(17.2%)				
Do you exercise /any physical activity now?						
Yes	23(16.5%)	22(15.9%)	1.12	1.24	0.1	0.6
No	43(30.9%)	51(36.7%)				

**ONLINE FIRST**

**TABLE II: SCOFF +VE & SCOFF -VE FEMALE (N= 174)**

Questions asked during Pandemic	SCOFF +ve 114(65.5%)	SCOFF -ve 60(34.5%)	Relative risk	Odds ratio	X <sup>2</sup>	P- value
Do you think that social isolation period has changed your eating habits (increase in portion size of meal)?						
Yes	54(31%)	37(21.3%)	0.82	0.56	2.6	0.1
No	60(34.5%)	23(13.2%)				
Do you think schedule/time of intake of main meals has changed?						
Yes	94(54%)	40(23%)	1.4	2.35	4.6	<b>0.03</b>
No	20(11.5%)	20(11.5%)				
Have you added more snacks /fried/frozen food into your diet during isolation period?						
Yes	64(36.8%)	27(15.5%)	1.17	1.56	1.5	0.2
No	50(28.7%)	33(19%)				
Did you exercise /any physical activity before COVID-19?						
Yes	71(40.8%)	30(17.2%)	1.19	1.65	1.9	0.1
No	43(24.7%)	30(17.2%)				
Do you exercise /any physical activity now?						
Yes	45(25.9%)	18(10.3%)	1.15	1.52	1.1	0.2
No	69(39.7%)	42(24.1%)				

**ONLINE FIRST**

**TABLE III: BEDS-7 +VE & BEDS-7 -VE MALE (N=139)**

Questions asked during Pandemic	BEDS-7 +ve 102(73.4%)	BEDS-7 -ve 37(26.6%)	Relative risk	Odds ratio	X <sup>2</sup>	<i>P</i> - <i>value</i>
Do you think that social isolation period has changed your eating habits (increase in portion size of meal)						
Yes	72(51.8%)	22(15.8%)	1.15	1.64	1.1	0.3
No	30(21.6%)	15(10.8%)				
Do you think schedule/time of intake of main meals has changed?						
Yes	81(58.3%)	21(15.1%)	1.4	1.99	6.0	<b>0.01</b>
No	21(15.1%)	16(11.5%)				
Have you added more snacks /fried/frozen food into your diet during isolation period?						
Yes	61(43.9%)	12(8.6%)	1.35	3.1	7.1	<b>0.007</b>
No	41(29.5%)	25(18%)				
Did you exercise /any physical activity before COVID-19?						
Yes	74(53.3%)	23(16.6%)	1.14	1.61	0.9	0.3
No	28(20.1%)	14(10%)				
Do you exercise /any physical activity now?						
Yes	33(23.7%)	13(9.4%)	0.97	0.88	0.0	0.9
No	69(49.6%)	24(17.3%)				



**ONLINE FIRST**

**TABLE IV: BEDS-7+VE & BEDS-7-VE FEMALE (N=174)**

Questions asked during Pandemic	BEDS-7 +ve 113(64.9%)	BEDS-7 -ve 61(35.1%)	Relative risk	Odds ratio	X <sup>2</sup>	P- value
Do you think that social isolation period has changed your eating habits (increase in portion size of meal)?						
Yes	77(44.2%)	25(14.4%)	1.51	3.08	10.9	<b>0.0009</b>
No	36(20.7%)	36(20.7%)				
Do you think schedule/time of intake of main meals has changed?						
Yes	98(56.3%)	40(23%)	1.7	3.43	9.5	<b>0.001</b>
No	15(8.6%)	21(12.1%)				
Have you added more snacks /fried /frozen food into your diet during isolation period?						
Yes	74(42.5%)	22(12.7%)	1.54	3.36	12.7	<b>0.0003</b>
No	39(22.4%)	39(22.4%)				
Did you exercise /any physical activity before COVID-19?						
Yes	67(38.5%)	37(21.3%)	0.98	0.94	0.00	0.9
No	46(26.4%)	24(13.8%)				
Do you exercise /any physical activity now?						
Yes	39(22.4%)	24(13.8%)	0.93	0.81	0.2	0.6
No	74(42.5%)	37(21.3%)				

**DISCUSSION**

An online survey was conducted during the epic of COVID-19 pandemic, in order to evaluate whether the isolation/ lockdown has perturbed the eating pattern or eating behavior. This study tries to portrait the picture of eating patterns, lifestyle modifications and eating behavior of adults from April to May, after spending almost 8 weeks of isolation/lockdown, the data covers both normal healthy adults and adults which shows mild threshold of eating disorders like anorexia nervosa and binge eating. This study is an attempt to investigate the prompt impact of COVID-19 on eating patterns and exercising/physical activity on local healthy population and those who have the likelihood of eating disorders.

The SCOFF positive male was 66(47.5%) and female were 114(65.5%) while Binge eating disorders positive (BEDS-7+ve) males were 102(73.4%) and females were 113(64.9%). Furthermore, the increased size of meal in isolation period was significantly ( $p=0.0009$ ) associated with BEDS-7+ve females. The change in food intake time during isolation was also significantly ( $p=0.03$ ,  $p=0.01$  and  $p=0.001$  respectively) more in SCOFF +ve females, BEDS-7+ve male/female. Addition of snacks /fried /frozen food was significantly ( $p=0.007$ ,  $p=0.0003$ ) more in BEDS-7+ve male and females that is also in consistent with the study done in Italy which shows high consumption of comfort food<sup>15</sup>. Surprisingly, no any significant difference was observed when participants were asked about exercise or physical activity before or during Covid-19 with the especial reference to SCOFF and BEDS-7 questionnaire. Nonetheless 63.5% (from general pool without any grouping), of the people were taking exercise before pandemic but now they are restricted to home, among them less people (34.50%) were maintaining the physical activity, which is similarly observed by the online survey conducted on large population almost from whole world<sup>16</sup>, others were not able to continue physical activity at their homes due to unavailability of space/equipment and could not move to fitness centers/parks due to lockdown and “stay at home” slogan, lack of exercise or physical activity might could cause excess weight gain<sup>17</sup>.

According to data 51.4% participants(male& female) has added more junk/frozen food to their diet that is alarming, because choice of healthy food and micronutrients is key factor in case of exposure to virus during pandemic<sup>18,19</sup>, 75.71% of respondents has changed the eating patterns and altered the normal schedule of eating main meals, which may lead to impaired hormonal production metabolic disorders<sup>20</sup>, and indigestion problems<sup>21</sup> which ultimately could affect immunity<sup>22,23</sup> and may worsens the health of EDs specifically as they already have weak immune system<sup>24,25</sup>. Current study conducted during pandemic showed that immune compromised people and young EDs specially suffering from anorexia nervosa are at increased risk of getting infection<sup>26</sup>.

As it was web study and was not possible for us to get physical parameters such as weight, height or BMI or any other anthropometric indicators so clearer picture could be portrayed by using these parameters. Furthermore, the shortness of sample size itself is one of the limiting factors and the pandemic is still going on. The data can be further investigated on larger group by taking anthropometric indices.

## **CONCLUSION**

Eating disorders and changed eating pattern along with less physical activity was observed during COVID-19 pandemic lockdown. The study concludes that during lockdown implemented due to COVID-19 the pattern of eating, hunger and satiety is altered at greater extent and people became inactive and sedentary.

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## **AUTHOR CONTRIBUTIONS**

Benazir Mahar: Manuscript writing

Jamshed Warsi: Concept, design, statistical analysis

Tazeen Shah: Manuscript writing, critical analysis

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