

Original research article

Impact of COVID-19 Lockdown on Physical, Mental and Behavioral Health.

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Abstract

Background: An unprecedented and unexpected COVID-19 pandemic resulted in lockdowns limiting movement of the entire population of the country and also across the globe. Downtime due to COVID-19 pandemic, led to adjournment of schools, colleges, different institutions, industries and business. This shutdown of work affected physical, mental and behavioral health of mankind from different age groups of different sectors.

Methods- In this cross-sectional study, prevalidated questionnaire using the quick mode of communications like Whatsapp and emails through Google form was used. It was among the quick and inexpensive method to collect data from a wide cross-section of the general public. After ethical committee approval, link was distributed among health care trainee, employees and health care workers (HCWs) of various educational institutes and hospitals. Participants read informed consent for voluntary participation in the survey, which was administered in two parts: The first part asked participants basic demographic characteristics including age, gender, place of residence and in second part questions were asked to determine participation in specific behaviors related to their physical, mental and behavioral health.

Results: Physical-Significant change in exercise habits was found in 45.3% participants who exercised daily and 32.7% participants did 2 to 3 times exercise in a week but 22% participants did not follow any exercise routine. Mental-This study reveals profound impact of lockdown on mental fitness variables as well. Lockdown induced lack of regular work schedules changed sleep habits of 45.8% participants. Behavioral-As precautionary measure 76% of the

participants washed their hands mostly 5-7times throughout the day and 84.2% among them followed 6-steps of hand hygiene. 95.5% of participants used mask compulsorily.

Conclusion: This survey is an attempt to study knowledge and behaviors of people in face of current pandemic where more than 1.3 billion people are inside their homes since lockdown. Although lockdown is effective measure to reduce the spread of COVID-19 there are reasons to be concerned. Prolonged home confinement and shutdown of work affects physical, mental and behavioral health of people. People feel socially isolated due to lockdown however social media platforms offer an opportunity to ameliorate social isolation. The effect on lockdown on physical, mental and behavioral routine habits can give inside of how people are living under impact of lockdown and the findings can reveals the impact of these never seen restrictions on life of people.

Key Words: COVID-19, Lockdown, Physical-Mental-Behavioral Health

Introduction

A novel corona virus named severe acute respiratory coronavirus2 (SARS-CoV-2) was first identified in a seafood market in Wuhan City, Hubei Province in China, at the end of 2019[1]. In December 2019, in Wuhan City, Hubei Province in China number of people suffered from severe respiratory illness. On 31st December 2019, China informed the World Health Organization (WHO) about the increasing number of patients with symptoms of respiratory illness of unknown cause [2, 3]. This contagious respiratory illness later was identified to be caused by novel coronavirus called coronavirus disease 2019 or COVID-19[4]. This novel corona virus outbreak in individuals in Wuhan led to community transmission gradually to the initial endemic turning into a pandemic [5]. Gradually COVID-19 cases soared across most of Europe, the United States, Australasia, Asia and Africa. Africa and South Asian countries being most affected. Until now, the novel coronavirus continues to wreak havoc on daily life around the globe, infecting 126,057,757 people and killing 2,767,283 people (until 25thMarch 2021) [6].The early days of the coronavirus disease (COVID-19) pandemic in India brought uncertainty in the knowledge about COVID-19 and what to do about it. As a preventive measure against the COVID-19 pandemic on 22 March 2020 ,14-hour voluntary public curfew followed by nationwide lockdown for 21 days was ordered by, the Government of India limiting movement of the entire 1.38 billion population of India. This lockdown had slowed the growth rate of the pandemic by 6 April. As the end of the first lockdown period approached, state governments extended the lockdown in different phases, as in Phase 1: 23 days; Phase 2: 19 days; Phase 3: 14 days; Phase 4: 14 days with conditional relaxations. Lockdown encouraged people to implement social distancing so as to reduce interactions between people which could eventually reduce the possibilities of new infection; however, it has affected the overall physical, mental, social and spiritual health of the people [7]. An unprecedented and unexpected pandemic due to COVID-19 appalled to unexpected lockdowns limiting movement of the entire 1.38 billion population of India which suspended schools, colleges, different institutions, industries and business. This shutdown of work has led to different sort of physical, mental and behavioral changes in human beings ranging in people from different age groups of different sectors. Hence this survey aimed to study the impact of COVID-19 lockdown on physical, mental and behavioral health in Indian population.

Material and Methods:

In this cross-sectional study, prevalidated questionnaire using the quick mode of communications like Whatsapp and emails through Google form was used. It was among the quick and inexpensive method to collect data from a wide cross-section of the general public. Link was distributed among health care trainees, employees and health care workers (HCWs) of various educational institutes and hospitals. In this survey, participants read an informed

consent statement for voluntary participations. The survey was anonymous, and confidentiality was ensured. Google forms software was used. The survey was administered in two parts: First part asked participants basic demographic characteristics including age, gender, place of residence and in second part questions were asked to determine participation in specific behaviors related to their physical, mental and behavioral routine. The survey so conducted was completed in a time-frame of 1month after the last lockdown. Anonymous responses were obtained after ethical approval for this survey. Sample size was 772 from individuals aged between 18 years to above 60yrs.

Statistical analysis was done using descriptive statistics such as frequency and percentage was used to present the data. The relationship between two variables was assessed by using Chi-square test. A p-value less than 0.05 were considered as significant. Data analysis was performed by using software SPSS v20.0.

Results:

Table 1: Basic characteristics		
Characteristics	Number	Percentage
Age group		
18-25yrs	547	70.9
26-40yrs	168	21.8
41-60yrs	49	6.4
>60yrs	7	0.9
Gender		
Female	357	46.3
Male	414	53.7

Table-1 depicts the demographic details of the study participants. These participants ranged from 18 to above 60 years of age. One third participants (70.9%) belonged to the age group of 18-25 whereas 21.8% participants were between 26-40 years and others respondents were above 41yrs. Female participants were 46.3% whereas 53.7% were males.

Impact on physical health:

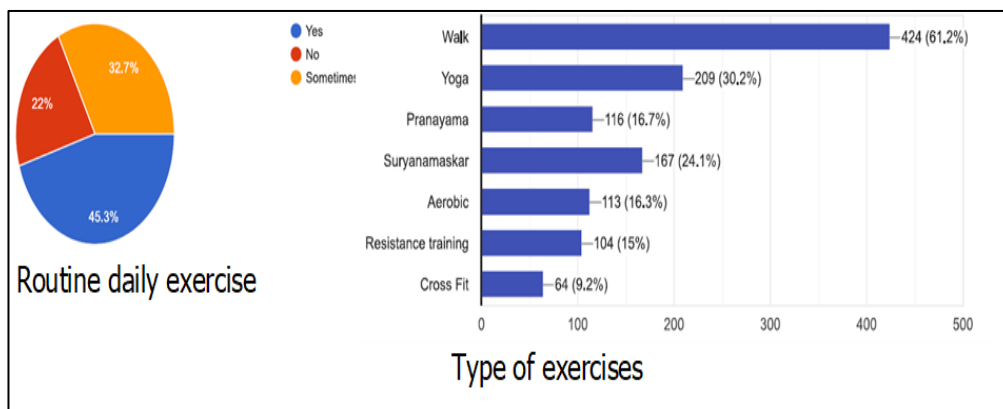


Figure 1 : Routine daily exercise and type of exercise

Almost two third of the study participants exercised daily or on alternate day basis whereas one third did not follow any exercise routine. Among these exercising respondents, more than 60% did walk while other 30% practiced yoga. While remaining either practiced Pranayama, Suryanamaskar, aerobic exercise, weight training or cross-fit kind of exercises.

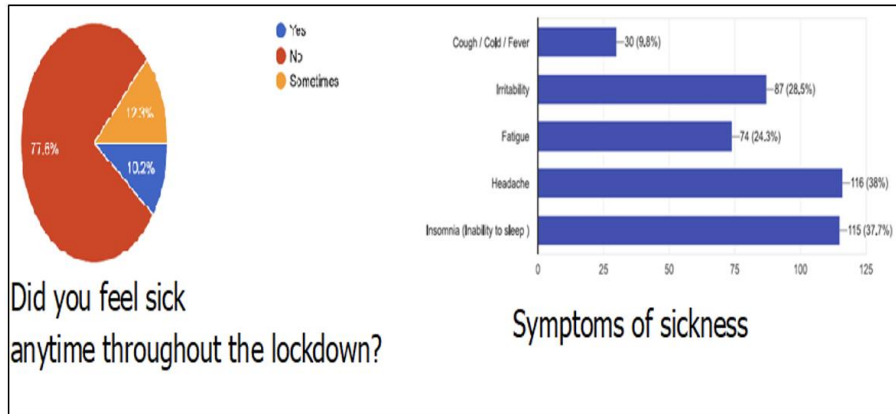


Figure 2 : Did you feel sick anytime throughout the lockdown and what were the symptoms?

The above graph reflects that two third participants never felt sick throughout the lockdown while remaining one third participants felt sick occasionally. Among this one third respondents, only 9.8% participants actually had COVID-19 symptoms while other complained of irritability, fatigue, insomnia, headache (which could be due to increased screen-time).

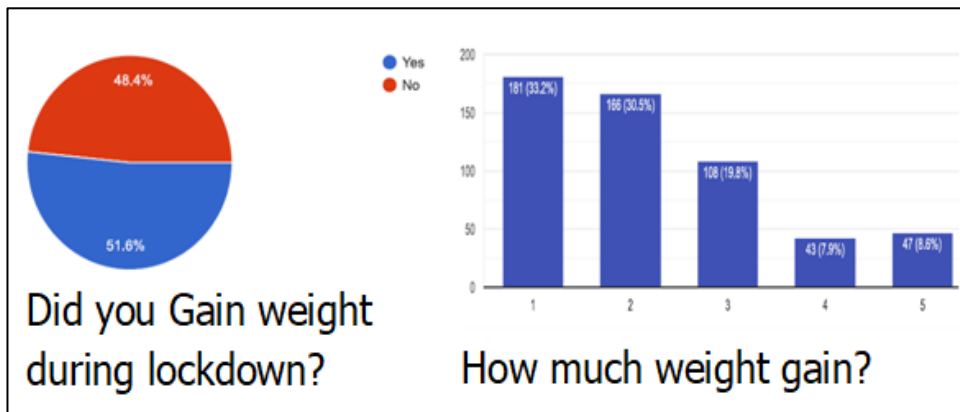


Figure 3: Did you Gain weight during lockdown and how much?

There was substantial weight gain in more than 50% respondents, while the others did not gain weight.

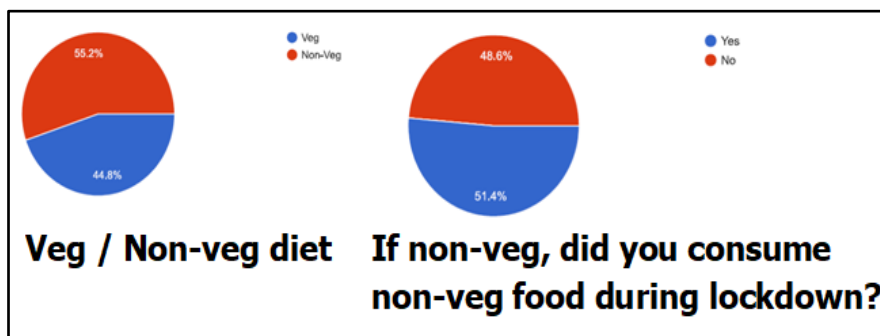


Figure 4: Whether type of diet consumed was veg or non-veg and if non-veg did you consume it during lockdown?

Fig.4 depicts 44.8% participants were vegetarians and remaining were non-vegetarians. Among these non-vegetarians, almost half of them stopped consuming non-veg. food during lockdown.

Table 2: Impact on mental health:		
	Number	Percentage
When did you wake up during lockdown period?		
Same as before lockdown	314	41.0
Early than before lockdown	101	13.2
Late than usual	351	45.8
Did you manage to take afternoon nap daily?		
Yes	324	42.4
No	202	26.4
Sometimes	239	31.2
Did you feel lockdown has increased your family time?		
Yes	670	87.4
No	50	6.5
Maybe	47	6.1
Did you feel lockdown has added to your family responsibilities?		
Yes	460	60.7
No	191	25.2
Maybe	107	14.1
Did you feel lockdown has increased your household chores / burdens?		
Yes	381	49.9
No	277	36.3
Maybe	106	13.9
The influence of lockdown on sleep is depicted in Table 2. Majority of participants (45.8%) woke up later than before. Lockdown also affected sleep pattern in 42.4% participants (managed to take afternoon nap daily). Above table also depicts that 87.4% participants felt lockdown has increased their family time. However 60.7% participants felt lockdown has raised their family responsibilities which in turn have increased household chores for almost half of the respondents.		
Table 3: Impact on behavioral changes:		
	Number	Percentage
How often did you wash hands (soap / sanitizers) in a day?		
1	3	0.4
2	19	2.5
3	43	5.6
4	110	14.3
5	198	25.7
6	133	17.3
7	265	34.4
Did you follow 6-steps of hand hygiene?		
Yes	647	84.2 ##
No	121	15.8
Did you use face- mask while going out?		
Yes	735	95.5
No	5	0.6
Sometimes	30	3.9

How did you disinfect materials brought from outside?		
Cleaned by sanitizer	258	33.4
Cleaned by soap water	228	29.6
Did not clean	7	0.9
Kept in sunlight	173	22.5
Warm water	30	3.9
Bleach	50	6.5
Kmn04	8	1.0
Spraying by dilute hypochloride	15	1.9
Are attending online classes or doing work from home?		
Yes	624	82.0
No	137	18.0
How did you get connected?		
Zoom	334	22.8
Google meet	250	17.0
Facebook	206	14.0
Instagram	36	2.5
Whatsapp	626	42.7
Other	15	1.0

Table no. 3 reveals that 0.4% participants showed negligence to hand washing while others washed hands frequently throughout the day. 84.2% of the respondents did follow 6-steps of hand hygiene. Above table also depicts the awareness of using mask compulsorily in 95.5% of participants. 33.4% of the participants used sanitizers' to clean the items and materials brought from outside, while 29.6% cleaned the essentials by use of soap water. While 22.5% kept the items in sunlight for disinfection. Above table explains that 82% of people were either attending classes online or were working from home while only 18% said they were not attending anything online, which on analysis a had highly significant difference. While connecting people online most of the respondents (42.7%) preferred Whatsapp while others used Google meet, Zoom, Facebook, Instagram, etc for attending classes or working from home.

Table 4: Relationship between genders and the Impact on:

	Sex (%)		p-value
	Female	Male	
Physical health			
Routine daily exercise			
No	66 (38.8)	104 (61.2)	0.006
Sometimes	136 (54)	116 (46)	
Yes	155 (44.4)	194 (55.6)	
Mental Health			
Feel lockdown has added to your family responsibilities			
Maybe	46 (43)	61 (57)	0.02
No	74 (38.5)	118 (61.5)	
Yes	232 (50.3)	229 (49.7)	
Feel lockdown has increased your household chores / burdens			
Maybe	55 (51.4)	52 (48.6)	<0.0001
No	99 (35.7)	178 (64.3)	

Yes	202 (52.9)	180 (47.1)	
Behavioral changes			
Feel lockdown has increased your household chores / burdens			
Maybe	55 (51.4)	52 (48.6)	0.02
No	99 (35.7)	178 (64.3)	
Yes	202 (52.9)	180 (47.1)	
Attending online classes or doing work from home			
No	82 (59.9)	55 (40.1)	0.01
Yes	328 (52.4)	298 (47.6)	
Table shows there is a significant association between gender and the impacts on various physical, mental and behavioral changes of the individuals ($p < 0.05$). Furthermore, females are tending to shows more impact on mental health and behavioral changes whereas males have significant impact on physical health			

Table 5: Co-relation between different age groups and Impact on:

	Age group in years (%)				p-value
	18-25	26-40	41-60	>60	
Physical Health					
Weight gain during lockdown					
No	221 (60.7)	97 (26.6)	40 (11)	6 (1.6)	<0.0001
Yes	312 (80.4)	66 (17.0)	9 (2.3)	1 (0.3)	
Mental Health					
Wake up during lockdown					
Early than before the lockdown	76 (75.2)	20 (19.8)	5 (5.0)	0	<0.0001
Late than usual	284 (80.7)	54 (15.3)	12 (3.4)	2 (0.6)	
Same as before lockdown	185 (58.7)	93 (29.5)	32 (10.2)	5 (1.6)	
Behavioral changes					
Wash hands – no. of times in a day					
1	2 (66.7)	1 (33.3)	0	0	<0.0001
2	17 (89.5)	1 (5.3)	0	1 (5.3)	
3	39 (90.7)	3 (7.0)	1 (2.3)	0	
4	89 (80.9)	19 (17.3)	2 (1.8)	0	
5	162 (81.8)	24 (12.1)	10 (5.1)	2 (1.0)	
6	99 (74.4)	23 (17.3)	10 (7.5)	1 (0.8)	
7	139 (52.5)	97 (36.6)	26 (9.8)	3 (1.1)	
Attending online classes or doing work from home					
No	52 (38)	65 (47.4)	16 (11.7)	4 (2.9)	<0.0001
Yes	489 (78.1)	102 (16.3)	32 (5.1)	3 (0.5)	
Table no.5 depicts a highly significant association between different age groups and impact on various parameters of physical, mental and behavioral changes of individuals, mainly like on weight gain ($p < 0.0001$), waking up late than the usual time ($p < 0.0001$), regular washing of hands throughout the day ($p < 0.0001$) and attending online classes or doing work from home ($p < 0.0001$).					

Discussion:

To curb COVID-19 pandemic and reduce the spread of infections, government of India announced a series of phased lockdown with conditional relaxation that imposed limitations on

the movement of the entire 1.3 billion population of India from 24th March, 2020[8]. Although lockdown is an effective measure to reduce the spread of COVID-19 there are reasons to be concerned [9-12]. Prolonged home confinement and shutdown of work affects physical, mental and behavioral health of the people [13]. Data was analyzed and interpreted. Demographic details of the study found 70.9% participants were young and belonged to 18-25 age groups whereas 21.8% of participants were from age group 26-40 years. 6.4% participants ranged from 41 to 60 years and only 0.9% responders were senior citizens. 53.7% were males while 46.3% were female participants.

Physical Health:

Significant change in exercise habits was found in 45.3% participants. Similar study was done by Mahendra et al in which 42% of total participants were exercising before lockdown that no. drastically tumbled down to 22% [14]. A study conducted by Peijie Chen et al suggested that prolonged home stays can change the behaviors that lead to inactivity [15]. Maximum participants 61.2% enjoyed morning or evening walk even in lockdown whereas 30.2% participants executed Yogic postures and others participants practiced Pranayama, Suryanamaskar or did aerobic exercises, resistance training or cross-fit. Our study revealed that more than two third participants i.e. 77.6% never felt sick throughout the lockdown while remaining 22.5% study participants felt sick in down time out of which only 9.8% study participants suffered from COVID-19 symptoms like cough, cold and fever while all others participants had one or more than one symptom like irritability (28.5%), fatigue (24.3%) headache (38%) and insomnia(37.7%). COVID-19 causes a wide range of diseases and symptoms. Most infections are asymptomatic or oligosymptomatic, as has been recognised[16].

In present study 55.2% of study participants were non-vegetarian while 44.8% were vegetarians. Among non-vegetarians, almost half of them (51.4%) continued to consume non-vegetarian food while other half (48.6%) stopped consuming non vegetarians food items in lockdown period. Two third study participants gained weight (70.7%) in lockdown period. Weight gain could be due to changed eating habits during lockdown.

Mental health:

This study reveals profound impact of lockdown on mental fitness variables as well. Lockdown induced lack of regular work schedules changed sleep habits of 45.8% participants, who woke up late than before (sleeping till late hours in morning) and 42.4% participants managed to take afternoon nap daily while 37.7% complained of insomnia. Similar study was done by Mahendra et al in which 42% participants got up at or after 8 am post lockdown as compare to 12% of before lockdown [14]. A Pan India survey revealed that 67 % peoples working from home has altered their sleep routine [17]. In our study, 87.4% of people said lockdown increased family time, 60.7 percent said it increased family duties, and 49.9% said it increased household work and load.

Behavioral health:

Lockdown is considered to be an effective measure in slowing the spread of coronavirus around the globe in 2020[18, 19], however to effectively address the pandemic, it is also necessary to understand public knowledge and behaviors towards current critical pandemic situation. As precautionary measure 76% of the participants washed their hands mostly 5-7times throughout the day and 84.2% among them followed 6-steps of hand hygiene. 95.5% of participants used mask compulsorily. Study done by John Clements revealed how knowledge about COVID-19 influences participation in different behaviors like panic buying, purchasing more goods than

usual people, buying masks, and people hoarding everything from toilet paper to eggs and milk [20]. Zhong et al conducted a similar study in China to determine the level of knowledge and public sentiment about the emerging pandemic in China. The general hypothesis guiding this research is that lower levels of knowledge about the coronavirus pandemic are associated with behaviors that are contrary to current guidelines [21]. In the face of the current pandemic, this requires the public to understand to limit exposure and the spread of the illness. 33.4% of the participants used sanitizers to clean the items brought from outside, while 29.6% cleaned the essentials by use of soap water. Our study finds 82% of participants attending classes online or were working from home while many organizations adopting a work-from-home policy to contain the spread of coronavirus pandemic. Study conducted by AZ Research reveals 43% participants agreed increased screen time since lockdown as compare to 21% before lockdown [22]. Another study conducted in China revealed that 38 % peoples worked from home and 25% peoples work affected due to COVID-19 outbreak [23]. While connecting people online 42.7% of the respondents said they used Whatsapp as their tool for interactions while 22.8% used Google meet and 17% used Zoom for attending classes or working from home.

This pandemic led to think of alternative methods of teaching, which promoted the progress of online education. It not only increased the importance and urgency of online education but also provided an opportunity for teaching learning methods[24]. As per other studies, 40 % participants agreed to use maximum use of internet data for official work since lockdown as people are working from home and 52% participants had installed any of new application on their phone to facilitate communication. 42% Study participants reported more frequent use of mobile phone since lockdown to talk to their family/ friends frequently as compare to 33 % of before lockdown. Recent studies support the impact of lockdown such condition on human behavior and suggest that people in lockdown are experiencing negative psychosocial changes which have an impact over thinking and anxiety [25]. These observations have potential implications that could aid the development of physical activity and nutritional recommendations to maintain health during the COVID-19 pandemic [26, 27].

Relationship of basic characteristics with impact on physical, mental and behavioral health:

Daily work and household responsibilities have evolved as people around the world have been confined to their houses. Individual weight change is attributed to the amount to which people had larger change in one area (e.g., food consumption) vs another domain (e.g., physical activity) [28]. These sudden shifts have resulted in a loss in mental health, as well as some positive and many unfavorable changes in health behaviors' [29]. In present study, it was observed that gender and different age-groups are associated with impact on various parameters of physical, mental and behavioral changes significantly affecting the younger age group. Our study thus reveals that the impact of lockdown was significantly more in females of younger age group (18-25 yrs) affecting physical, mental and behavioral aspects of health. The rampant increase in number of cases globally, is a cause of concern. This still need to be studied under longer term review of these newer variants.

All the needs to ponder upon as there might be many more mutations lurking around. Hence, keeping in mind the apprehension of the future wave, globally we need to get together and put up a battle against the COVID-19[30]

Conclusion:

This survey is an attempt to investigate people's knowledge and behavior in the face of the current epidemic, which has confined more than 1.3 billion people to their homes since the

outbreak began. People feel socially alienated as a result of the lockdown, yet social media platforms did provide a way to alleviate this alienation. In addition to the importance of social separation, we cannot overlook the role of social solidarity in addressing such a dire scenario of contagious diseases. In addition to importance of social distancing we cannot ignore social solidarity is an essential tool for combating such extraordinary situation of infectious diseases. Our study revealed that people endured more symptoms related to social isolation than the disease itself as a result of the lockdown. COVID-19 symptoms may be more severe in people who gained weight, resulting in worse results if they get the disease. COVID-19 may have a long-term impact on therapeutic treatment due to increasing cases of weight gain and substantial reductions in mental health due to disruption in sleep patterns. A national, coordinated effort toward a pandemic response may ensure better compliance with behavioral recommendations to address this public health emergency.

What is already known on this topic?

- COVID-19 pandemic has hit developing countries hard.
- The public health sector has been under tremendous burden which has also led to burden on health and economy of these developing countries.

What this study adds:

- India being one of the pillars of the developing countries in the world, issues related to various physical, mental and behavioral changes was noticed during the lockdown which focuses on issues pertaining to public health.
- This would help bringing the precarious health system to highlight the issues related to physical, mental and behavioral changes seen in the population during the COVID-19 pandemic. As these are common to all the developing countries, this study would bring about an insight towards the changes that need to incorporate in to our time of confinement which would keep us focused onto our well-being.

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