

Population healthy lifestyle changes in Abha city during COVID-19 lockdown, Saudi Arabia

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ABSTRACT

Background: The pandemic emergence was in Asia late last year, the virus has spread to every continent except Antarctica. Cases are rising daily in Africa the Americas, and Europe. (2, 3) coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Many preventive measures were recommended by WHO to minimize virus transmission including hand washing and social distancing, travel restrictions, and the closing of gathering areas including universities and schools up to partial or complete lockdown. These measures affected public lifestyle which obligated many persons and families to modify their living condition, sleep hygiene and their routine daily activities to cope with new procedures which is a challenge. **Aim:** To assess population healthy lifestyle changes during lockdown in Abha city, KSA during COVID-19 pandemic. **Methodology:** A descriptive cross-sectional approach was used targeting all accessible population in Abha city. Data were collected from participants using electronic pre-structured questionnaire. The tool will cover participants' socio-demographic data, participants' medical history, perception regarding lockdown and home quarantine, and different lifestyle aspects during lockdown. **Results:** A total sample of 1641 respondents were included in the current survey. Male participants were 733 (44.7%) and (61.1% of the participants aged 35 years or more. Exact of 85% of the participants agreed on lockdown efficacy. Daily sleep hours for less than 8 hours were recorded for 662 (40.3%) participants. As for dietary habits, exact of 885 participants (53.9%) changed their dietary habits during lockdown. sport practice during lockdown was reported by 981 (59.8%) of the participants. Lockdown related behaviour data showed that 98.5% of the participants were committed to lockdown either partially (18.8%) or completely (79.6%). **Conclusions and Recommendations:** In conclusion, the current study revealed that COVID-19 pandemic through lockdown as one of the recommended precautions to minimize virus transmission modified nearly all aspects of daily lifestyle including dietary habits, behaviour, social relations, and life sharing.

Keywords: COVID-19, dietary habits, general population, lifestyle, lockdown, practice

Background

The coronavirus COVID-19 pandemic is a worldwide health crisis of recent years and the greatest challenge the world faced since World War Two.^[1] The pandemic emergence was

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in Asia late last year, the virus has spread to every continent except Antarctica. Cases are rising daily in Africa the Americas, and Europe.^[2,3] coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).^[4] The outbreak began in Wuhan, Hubei province, China, in December 2019. The World Health Organization (WHO) stated the outbreak to be a Public Health Emergency of International Concern on 30 January

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2020 and recognized it as a pandemic on 11 March 2020.^[5,6] As of 8 April 2020, nearly 1.44 million cases of COVID-19 have been diagnosed in 209 countries and territories, causing nearly 83,400 deaths. About 308,000 people have recovered.^[7,8] The majority of cases were old aged but some children cases and few deaths among children were recorded.

Several preventive measures were recommended by WHO to minimize virus transmission including hand washing and social distancing (updated now to physical distancing) to avoid close contact between individuals. Physical distancing was managed by different rules of which home quarantines, travel restrictions, and the closing of gathering areas including universities and schools up to partial or complete lockdown.^[9,10] These sudden actions affected public lifestyle which obligated many persons and families to modify their living condition, sleep hygiene and their everyday activities to cope with new procedures which is a great challenge. Population became more aware regarding personal hygiene, health care, and healthy lifestyle including healthy food and behaviour.^[11]

Saudi community is hyperactive with high interest in travelling, social gathering, and familiar relations especially on holydays and social events. After lockdown due to COVID19, there was limited moving out of home and prohibited travelling. This in turn will affect public mental and psychological health and to cope with, many modifications in Saudi family's lifestyle are expected.

The lifestyle medicine concept recently evoluted, in fact it is not a remarkable change from what has been well-known since ancient periods. Recently, national organizations such as the American Heart Association and the American Diabetes Association, applying compromise panels to initiate practice guidelines, have reliably recommended that disease control should begin with "diet and exercise" changes, before medications are considered. This is the main role for primary care physicians.^[12,13]

Lifestyle behaviours during the COVID-19 was studied by Balanzá-Martínez,^[14] who reported that many psychological changes, feeling loneliness, feeling of isolation but increased home exercises. Di Renzo L, *et al.* conducted a study to assess the impact of the COVID-19 pandemic on eating habits and lifestyle changes among the Italian population.^[15] the study revealed that the of weight gain was observed in 48.6% of the population; stopping smoking was reported among 3.3% of smokers; with minor improvement in physical activity.

The current survey aimed to assess population healthy lifestyle changes during lockdown in Abha city, KSA during COVID-19 pandemic. This included general lifestyle features, eating behaviour, physical activity, and commitment to lockdown.

Methodology

A descriptive cross-sectional approach was used targeting all accessible population in Abha city, the capital of Aseer province,

Southern of Saudi Arabia. Saudis with ages of 18 years or more living in Abha since before lockdown were invited to participate in the survey. A total sample of 800 respondents was required based on the assumed healthy changes will be recorded among at least 50% of the individuals (due to lack of relevant information) with precision of 5% at 95% confidence level and using design effect equals 2. After obtaining permission from Institutional ethics committee, data collection started. Data were collected from participants using electronic pre-structured questionnaire. The questionnaire was uploaded online using social media platforms by the researchers and their relatives during the period from 15th March till 30th of April 2020. All accessible and eligible population in the study setting were invited to fill the attached tool. The researchers constructed the survey tool after intensive literature review and expert's consultation. Tool was reviewed using a panel of 5 experts for content validity. Tool reliability was assessed using pilot study of 30 participants with reliability coefficient (α -Cronbach's) of 0.76. The tool will cover the following data: Participants' socio-demographic data like age, gender, residence, education, participants' medical history, participants perception regarding lockdown and home quarantine, and participants general awareness and attitude towards COVID-19 pandemic. Also, eating behavior during lockdown, physical activity during lockdown, communication methods with others during lockdown, daily life activity during lockdown, smoking habit during home quarantine, and commitment to home quarantine were assessed in the questionnaire.

Data analysis

After data were extracted, it was revised, coded, and fed to statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analysis was done using two tailed tests. *P* value less than 0.05 was statistically significant. Descriptive analysis based on frequency and percent distribution was done for all variables including participants personal data, general lifestyle during lockdown, dietary habits during lockdown, and physical activities besides source of information. Crosstabulation was used to assess distribution of participants different lifestyles by their gender. significance of relations in cross tabulation was tested using Pearson Chi-square test.

Results

A total sample of 1641 respondents were included in the current survey. Male participants were 733 (44.7%) and (61.1% of the participants aged 35 years or more. Regarding qualification, 1032 (62.9%) participants had bachelor's degree and 274 (16.7%) had post graduate degree. Governmental job was recorded among 1322 participants (80.6%) while 1254 (76.4%) of the participants were married. Family size exceeded 5 persons among 804 (49%) participants and monthly income over 15000 SR was recorded for 29.3% of the respondents. Cigarette smoking was recorded among 193 (11.8%) of the participants and 64.2% smoked less than 15 cigarettes per day. Exact of 315 (19.2%) of the participants had chronic health problem, 24.1% of them

Table 1: Bio-demographic data of survey participants regarding lifestyle, Abha, Saudi Arabia

Bio-demographic data		No	%
Gender	Male	733	44.7%
	Female	908	55.3%
Age	15-25	186	11.3%
	26-35	453	27.6%
	36-45	538	32.8%
	45+	464	28.3%
Qualification	Primary	13	0.8%
	Intermediate	26	1.6%
	Secondary/diplome	296	18.0%
	Bachelor	1032	62.9%
	Postgraduate	274	16.7%
Job	Governmental	1322	80.6%
	Private	319	19.4%
Marital status	Single	318	19.4%
	Married	1254	76.4%
	Divorced/widow	69	4.2%
Family size	<2	107	6.5%
	2-5	730	44.5%
	>5	804	49.0%
Monthly income	<5000 SR	340	20.7%
	5000-15000 SR	820	50.0%
	>15000 SR	481	29.3%
Smoking	Yes	193	11.8%
	No	1448	88.2%
Number of daily cigarettes	<15 cigarettes/day	124	64.2%
	15-20/day	53	27.5%
	>20 cigarettes/day	16	8.3%
Chronic health problem	Yes	315	19.2%
	No	1326	80.8%
Mention	Bronchial asthma	40	12.7%
	DM	76	24.1%
	HTN	64	20.3%
	Hypothyroidism	36	11.4%
	Immunocompromised	11	3.5%
	Non relevant	65	20.6%
	DM&HTN	23	7.3%

complained of DM, 12.7% had bronchial asthma, and 11.4% had hypothyroidism [Table 1].

Table 2 illustrates Distribution of general lifestyle among survey participants during lockdown by their gender. Exact of 85% of the participants agreed on lockdown efficacy. Daily sleep hours for less than 8 hours were recorded for 662 (40.3%) participants and family troubles was reported by 44% of the respondents. Anxious or sad mood was reported by 36.1% of the respondents and 32.4% of the respondents were poured or even had no desire during daily life activities. Regarding communication methods during lockdown, social media was the most used method (66.9%; 1098) followed by using both social media and phone calls (493; 30%). Nearly 43% of the participants had spare time during lockdown exceeding 3 hours daily and 81.9% of the participants spent their time with their families during lockdown and 64.7% spent in worship.

As for dietary habits [Table 3], exact of 885 participants (53.9%) changed their dietary habits during lockdown. Sharing in food preparation was reported by 92.3% of the participants especially among females. Calling delivery 2-5 times weekly was reported by 2.9% of the participants and only 5 reported they call for delivery daily. Using delivery applications 2-5 times weekly was reported by 44 participants (2.7%). Having vegetables during lockdown was recorded among 97.5% of the respondents and 37.8% of them reported that they have sweets 2-5 times per week and having salt besides food for 2-5 times weekly was reported among 45.3% of the participants. Fatty food intake for 2-5 times weekly was reported by 36.6% of the respondents and 26.8% of the participants reported that they have 8-10 cups of water daily. Stimulants (tea and coffee) intake of more than 4 cups daily was reported by 14% of the participants and 5.7% reported that they have power drinks. Exact of 637 participants (38.8%) reported that they gained weight during lockdown and only 14.8% lost weight.

Table 4 demonstrates that sport practice during lockdown was reported by 981 (59.8%) of the participants. Practicing sports for 15-30 minutes daily was recorded among 48.9% of the participants and 51% practice sports for less than 3 times weekly while 33.1% practice sports for more than 3 times weekly.

Lockdown related behaviour data showed that 98.5% of the participants were committed to lockdown either partially (18.8%) or completely (79.6%). As for precautions during lockdown, frequent hand washing was reported by 1444 (88%) of the participants followed by physical distancing (73.8%), keep distance with others outdoors (61.9%), and wearing mask outdoors (51%) [Table 5].

Figure 1 shows the source of information regarding COVID-19 as reported by survey respondents. The most reported source was social media (83.3%) followed by mass media (52.5%), health care professionals (23.3%), and books (7.4%).

Discussion

The current study aimed to study the lifestyle of general population in Abha city during lockdown due to COVID-19 pandemic. The study included all eligible respondents for the survey questionnaire which covered different aspects of lifestyle including general lifestyle and daily activities besides dietary habits and sport practice. The survey respondents were variable regarding ages, gender, educational level, and even social level. At first, more than 80% of the respondents agreed on the significance of the lockdown but it was significantly higher among females than males. This can be logic as homestay is usually against male nature. This can explain other finding that only 80% of the survey participants were completely adherent to home stay during lockdown which was higher among females than males. As for sleeping, near half of the respondents reported sleeping for less than 8 hours daily besides that the same percent reported having 3 cups of coffee or more daily.

Table 2: Distribution of general lifestyle among survey partisans during lockdown by their gender in Abha, Saudi Arabia

General lifestyle		Total		Gender				P
				Male		Female		
		No	%	No	%	No	%	
Perception of home quarantine	SD	46	2.8%	26	3.5%	20	2.2%	0.021*
	Disagree	161	9.8%	85	11.6%	76	8.4%	
	Neutral	39	2.4%	18	2.5%	21	2.3%	
	Agree	729	44.4%	333	45.4%	396	43.6%	
Daily sleep hours	SA	666	40.6%	271	37.0%	395	43.5%	0.019*
	<8 hours	662	40.3%	323	44.1%	339	37.3%	
	8 hours	692	42.2%	286	39.0%	406	44.7%	
Family troubles during lockdown	>8 hours	287	17.5%	124	16.9%	163	18.0%	0.001*
	No	920	56.1%	468	63.8%	452	49.8%	
	Sometimes	695	42.4%	259	35.3%	436	48.0%	
Mood during lockdown	Most times	26	1.6%	6	0.8%	20	2.2%	0.417
	Normal	1049	63.9%	460	62.8%	589	64.9%	
	Anxious	430	26.2%	193	26.3%	237	26.1%	
Desire to perform daily life activity	Sad	162	9.9%	80	10.9%	82	9.0%	0.001*
	Enjoyed	911	55.5%	387	52.8%	524	57.7%	
	Poured	531	32.4%	284	38.7%	247	27.2%	
Communication methods during lockdown	Lack of desire	199	12.1%	62	8.5%	137	15.1%	0.097
	Phone calls	50	3.0%	20	2.7%	30	3.3%	
	Social media	1098	66.9%	470	64.1%	628	69.1%	
Spare time during lockdown	Phone and social media	493	30.0%	243	33.2%	250	27.5%	0.001*
	<1 h daily	248	15.1%	93	12.7%	155	17.1%	
	1-3 h daily	689	42.0%	270	36.8%	419	46.1%	
How to spend time during lockdown	>3 h daily	704	42.9%	370	50.5%	334	36.8%	0.001*
	Relaxation	921	56.1%	406	55.4%	515	56.7%	
	Communicate with others	1156	70.4%	510	69.6%	646	71.1%	
	Reading	796	48.5%	377	51.4%	419	46.1%	
	With my family	1344	81.9%	606	82.7%	738	81.3%	
	Worshipping	1062	64.7%	433	59.1%	629	69.3%	

P: Pearson χ^2 test. * $P < 0.05$ (significant)

This poor sleep hygiene was significantly higher among males than females. Many explanations may be provided including that due to lockdown, no morning work, no physical activity, and no duties which makes persons feel relaxed all the time with no effort and less need for sleeping. This also can be strengthened by that nearly 40% of the participants had more than 3 hours spare time daily and half of them said that they relax during this spare time. Other drawbacks for stay home during lockdown reported by the participants was nearly half of the sample reported having family troubles which was more noted among females. Regarding dietary habits, more than half of the participants reported that they changed their dietary habits. The surprising findings were that most of the participants recorded low frequency of calling delivery or using delivery applications during lockdown which means less intake of fast food and more chance to have homemade food. This also was confirmed by that more than 90% of the participants reported sharing in food preparation during lockdown especially male participants. Also, having more healthy food was reported by the survey respondents and more fluid intake daily. This can be response to health education and clinical advices that having healthy food and high fluid intake may play a role in minimizing infection with the virus. The drawback that was recorded in

dietary habits was that about one third of the participants gained weight during lockdown which may be a result of long duration of home stay and lack of physical activities. Nearly half of the participants reported that they practice sports during lockdown for 15-30 minutes but less than three times weekly. Although this rate per week is not ideal but it is good sign for public awareness regarding the importance of practicing sports during long stay duration. The most good signs and messages that were extracted from the respondents was that general population were updated regarding COVID-19 pandemic and its precaution as frequent handwashing was reported by more than 80% of the participants besides physical distancing and wearing masks especially if they were outdoors. Other good messages included strengthening familiar relation as 81% of the participants spent their time during homestay with their families besides commination with all available tools including phone calls, social media, or even virtual meeting software. Most of the reopened reported that they were enjoyed performing daily physical activities with their mood good. This pandemic as much it harmed many aspects especially the economy but repaired many other social and behavioural defects in the human being. Besides, it gave the enviroment a chance to breath and relax. Similar studies revealed that adopting unhealthy nutrition and

Table 3: Distribution of dietary habits among survey partisans during lockdown by their gender in Abha, Saudi Arabia

Dietary habits during lockdown		Total		Gender				P
				Male		Female		
		No	%	No	%	No	%	
Changed dietary habits during lockdown	Yes	885	53.9%	356	48.6%	529	58.3%	0.001*
	No	756	46.1%	377	51.4%	379	41.7%	
Share in food preparation during lockdown	No	127	7.7%	114	15.6%	13	1.4%	0.001*
	Sometimes	634	38.6%	488	66.6%	146	16.1%	
	Most times	880	53.6%	131	17.9%	749	82.5%	
Frequency of calling delivery during lockdown	Never	1115	67.9%	471	64.3%	644	70.9%	0.002*
	<2 times/week	473	28.8%	229	31.2%	244	26.9%	
	2-5 times/week	48	2.9%	28	3.8%	20	2.2%	
	>5 times/week	5	0.3%	5	0.7%	0	0.0%	
Frequency of using delivery applications during lockdown	Never	920	56.1%	435	59.3%	485	53.4%	0.062
	<2 times/week	677	41.3%	281	38.3%	396	43.6%	
	2-5 times/week	44	2.7%	17	2.3%	27	3.0%	
Frequency of having vegetables during lockdown	Never	41	2.5%	26	3.5%	15	1.7%	0.046*
	<2 times/week	758	46.2%	339	46.2%	419	46.1%	
	2-5 times/week	842	51.3%	368	50.2%	474	52.2%	
Frequency of having sweets during lockdown	Never	108	6.6%	67	9.1%	41	4.5%	0.001*
	<2 times/week	913	55.6%	391	53.3%	522	57.5%	
	2-5 times/week	620	37.8%	275	37.5%	345	38.0%	
Frequency of having salt during lockdown	Never	116	7.1%	61	8.3%	55	6.1%	0.010*
	<2 times/week	781	47.6%	368	50.2%	413	45.5%	
	2-5 times/week	744	45.3%	304	41.5%	440	48.5%	
Frequency of having fatty food during lockdown	Never	111	6.8%	45	6.1%	66	7.3%	0.168
	<2 times/week	929	56.6%	402	54.8%	527	58.0%	
	2-5 times/week	601	36.6%	286	39.0%	315	34.7%	
Frequency of having water during lockdown	<8 cups daily	1114	67.9%	462	63.0%	652	71.8%	0.001*
	8-10 cups	440	26.8%	217	29.6%	223	24.6%	
	>10 cups daily	87	5.3%	54	7.4%	33	3.6%	
Frequency of having stimulants during lockdown	No	295	18.0%	128	17.5%	167	18.4%	0.001*
	1-2 cups daily	651	39.7%	242	33.0%	409	45.0%	
	3-4 cups daily	466	28.4%	229	31.2%	237	26.1%	
	>4 cups daily	229	14.0%	134	18.3%	95	10.5%	
Have power drinks during lockdown	Yes	94	5.7%	53	7.2%	41	4.5%	0.019*
	No	1547	94.3%	680	92.8%	867	95.5%	
Weight change during lockdown	Gained weight	637	38.8%	270	36.8%	367	40.4%	0.334
	Lost weight	243	14.8%	112	15.3%	131	14.4%	
	No change	761	46.4%	351	47.9%	410	45.2%	

P: Pearson X² test. *P<0.05 (significant)

Table 4: Distribution of daily activities and sports among survey partisans during lockdown by their gender in Abha, Saudi Arabia

Daily activities and sports		Total		Gender				P
				Male		Female		
		No	%	No	%	No	%	
Practice sports during lockdown	Yes	981	59.8%	432	58.9%	549	60.5%	0.531
	No	660	40.2%	301	41.1%	359	39.5%	
Duration of practicing sports	<15 min/day	243	24.8%	117	27.1%	126	23.0%	0.023*
	15-30 min/day	480	48.9%	190	44.0%	290	52.8%	
	>30 min/day	258	26.3%	125	28.9%	133	24.2%	
Frequency of practicing sports	<3 times/week	623	51.0%	275	49.4%	348	52.3%	0.478
	3 times/week	194	15.9%	95	17.1%	99	14.9%	
	>3 times/week	405	33.1%	187	33.6%	218	32.8%	

P: Pearson X² test. *P<0.05 (significant)

sedentary lifestyle, with reduced outdoor time and increased screen time are reported during COVID-19 pandemic. These

behaviours may have adverse outcomes on mental and physical health.^[16] Diminished physical activity resulting from home

Table 5: Distribution of lockdown related behaviour among survey partisans during lockdown by their gender in Abha, Saudi Arabia

Lockdown related behaviour		Total		Gender				P
				Male		Female		
		No	%	No	%	No	%	
Commitment with lockdown	Not at all	25	1.5%	16	2.2%	9	1.0%	0.024*
	Partially	309	18.8%	152	20.7%	157	17.3%	
	Completely	1307	79.6%	565	77.1%	742	81.7%	
Precautions you applied during lockdown	Frequent hand washing	1444	88.0%	661	90.2%	783	86.2%	0.001*
	Wearing mask outdoor	837	51.0%	433	59.1%	404	44.5%	
	Keep distance with others outdoors	1015	61.9%	503	68.6%	512	56.4%	
	Physical distancing	1211	73.8%	546	74.5%	665	73.2%	
Used applications during lockdown	Seek for medical care if had symptoms	194	11.8%	104	14.2%	90	9.9%	0.001*
	Not used	1020	62.2%	409	55.8%	611	67.3%	
	No. 937	338	20.6%	177	24.1%	161	17.7%	
	Health application	219	13.3%	119	16.2%	100	11.0%	
	Appointment application	314	19.1%	185	25.2%	129	14.2%	
	Ensured application	65	4.0%	42	5.7%	23	2.5%	

P: Pearson χ^2 test. *P<0.05 (significant)

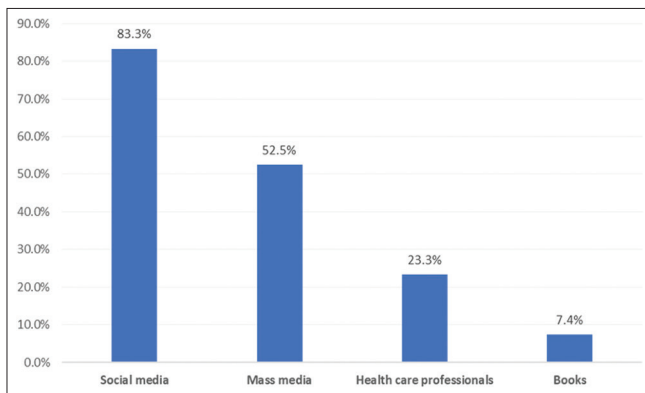


Figure 1: Source of information regarding COVID-19 among general population in Abha, Saudi Arabia

isolation may increase negative cardio-metabolic and mental effects.^[17] Other study assessed effect of physical distancing and lockdown policies during COVID-19 on lifestyle changes with its drawbacks on mental and psychological health.^[18] Also, during SARS epidemic, psychological and lifestyle changes were reported due to exercise, more time for relaxation and restorative sleep.^[19] The COVID-19 pandemic signifies a huge impact on public health, causing sudden dramatic lifestyle changes, due to social distancing and home isolation. Tus changes had bad economic and social consequences. Enhancing public health during this pandemic necessitates not only awareness from the medical and biological sciences, but also of all human sciences related to lifestyle, social and behavioural studies, including dietary habits and lifestyle.

Conclusions and Recommendations

In conclusion, the current study revealed that COVID-19 pandemic through lockdown as one of the recommended precautions to minimize virus transmission modified nearly all aspects of daily lifestyle including dietary habits, behaviour,

social relations, and life sharing. Many positive messages were extracted and discovered during lockdown besides some other drawbacks related to lack of activity and having spare time. Home stay during lockdown is a golden chance to repair all past breakthrough due to engaging in daily life affairs inside and outside family.

Ethical approval

The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics and Research Committee of the King Khalid University.

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Conflicts of interest

There are no conflicts of interest.

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