Impact Of Covid-19 Pandemic Lockdown on Social and Mental Health of ondo State Residents, Nigeria

Adeleke, O. R.,[1] Adegboro J. S .,[2] Olaseyo Toyosi,[3] Oluwaseyi O. Olofintuyi,[4] Salaam, A.A.,[5] Jegede O. I[6]

[1,2,3,4,6]Department of Human Kinetics and Health Education, Adekunle Ajasin University, Akungba-Akoko, Nigeria

[5]Department of Physical and Health Education, Emmanuel Alayande College of Education, Oyo, Oyo State, Nigeria

Co-author contact information

Dr. Adegboro J. S .

Email address: adejossy95@yahoo.com

Olaseyo Toyosi

Email address: olaseyot@gmail.com

Oluwaseyi O. Olofintuyi

Email address:oluwaseyi.olofintuyi@aaua.edu.ng

Salaam, A.A.

Email address: salaamabass50@gmail.com

Jegede O. I

Email address: jegedetoyin501@yahoo.com

Abstract

COVID-19 is a pandemic disease which has caused fears and concerns among many people, with a significant influence on social and mental well-being. Considering this, this study investigated the impact of COVID-19 pandemic lockdown on social and mental health of Ondo State residents, Nigeria. Descriptive survey design was used in this study. Using multistage sampling technique, data were obtained through administration of questionnaire on 648 married couples with children in Ondo State. Data collected were analysed using inferential statistics. Findings revealed that respondents disclosed that their income and earnings have drastically reduced ($\bar{X}$ = 2.89), feel withdrawn from community participation ($\bar{X}$ = 2.96), reduced their interaction with people ($\bar{X}$ = 2.98), reduced their interaction with their loved ones ($\bar{X}$ = 2.67). The impact of COVID-19 lockdown on the mental health of the residents indicated that majority of the respondents feel lonely due to COVID-19 lockdown ($\bar{X}$ = 3.00), feel distressed ($\bar{X}$ = 2.87) and agitated ($\bar{X}$ = of 2.47). The study revealed a significant difference in the social and mental health of Ondo state residents based on their age and gender; $F_{(5, 642)} = 10.554$, $p<.05$, $\eta^2 = .076$; $F_{(5, 642)} = 6.694$, $p<.05$, $\eta^2 = .000$ respectively. Hence, the impacts of the COVID-19 lockdown on the social and mental health of majority of the respondents was obvious. Therefore, health

[1] ***Corresponding author:**

Adeleke, Olasunkanmi Rowland

Department of Human Kinetics and Health Education, Adekunle Ajasin University, Akungba-Akoko, Ondo State, Nigeria

Email address: olasunkanmi.adeleke@aaua.edu.ng

Phone number: +2347030538639

education awareness raising activities on mass media should be urgently conducted with focus on how people can cope effectively with their social and mental health during this lockdown period.

Key words: COVID-19, Pandemic, Communicable disease, lockdown, Social health and Mental health

1.0 Introduction

COVID 19 is a pandemic, which has emanated fears and concerns among many people, with a significant influence on their social and mental well-being. In January 2020, the World Health Organization (WHO) declared the outbreak of COVID-19 a Public Health Emergency of International Concern due to the high risk of the infection spreading to other countries around the world [1]. The well-being of individuals, family and friends, and the society at large are at stake due to the perpetuated potential effects of the novel coronavirus (COVID-19). The outbreak which initially started in China, presently, has turned into a pandemic with more than 18,546,573 people infected in over 215 countries as at August 4, 2020, with over 699,835 mortality recorded globally [1]. Due to the current COVID-19 catastrophe, many countries all over the world have enforced prompt quarantine procedures to contain the pandemic [2].

In Nigeria, the first case of COVID-19 was confirmed on the 27th of February 2020 by the Nigeria Center for Disease Control (NCDC) [3]. In a short period of time, the number of COVID-19 patients rose alarmingly which prompted the Nigerian government to implement a sweeping quarantine in three major states (Lagos, Abuja and Ogun) in a bid to slow down and abate the spread of the pandemic disease. In Nigeria, the number of COVID-19 morbidity keeps increasing with over 43,841 confirmed cases in the country [3]. The aforementioned situation has prompted 97% of states in the country to implement total or partial lockdown of their states in other to slow down the spread COVID-19. A very vital portion of this moment of COVID-19 pandemic has resulted into avoidance by neighbourhood, insecurity regarding properties, workplace prejudice, and withdrawal from social events [4].

Nigeria is the most populous West African country, and with the history of high unemployment rate in Nigeria where most of her citizens engage in unskilled job on daily basis to meet their various family needs, the impact of COVID-19 lockdown on the social and mental health of the people cannot be overemphasized. The reaction of most states and their local governments towards the current pandemic catastrophe is ordering the closure of non-essential industries and schools, barring large crowds, and necessitating quarantines for travelers, they also insisted that people embrace social distancing. A larger part of the states in Nigeria have declared mandatory stay-at-home orders for all but essential workers of which Ondo state is not an exemption. Ondo state recorded her first case of COVID-19 on April 3, 2020 and by the 6th of April, the number of COVID-19 was 436. This prompted the State Governor to order the closure of all its borders [5]. As at August 7th, 2020 Ondo State has 1243 number of COVID-19 cases which is steadily edging towards becoming the COVID-19 hotbed in Nigeria [6].

The uncertainty and low predictability of COVID-19 do not only threaten people's physical health, but also people's mental health, especially in terms of social, emotional and cognition as revealed by different studies [7]. According to Behavioral Immune System (BIS) theory [8] people are likely to develop negative emotions (e.g., aversion, anxiety, etc.) and negative cognitive assessment for

self-protection. Faced with potential disease threat, people tend to develop avoidance behaviors (e.g., avoiding contact with people who have pneumonia-like symptoms) [9]. Previous outbreaks have reported that psychological impact of quarantine can vary from immediate effects, like irritability, fear of contracting and spreading infection to family members, anger, confusion, frustration, loneliness, denial, anxiety, depression, insomnia, despair to extremes of consequences, including suicide [10]. There is a neuropsychiatric linkage between the outbreak of acute respiratory infections and mental disorders which date back to the prevalence of influenza and severe acute respiratory syndrome (SARS) that took place years ago. The people who are in quarantine areas may experience boredom, anger, and loneliness; the symptoms of the viral infection such as cough and fever may also cause worsening cognitive distress and anxiety among people due to the fear of contracting COVID-19 [11].

During the early phase of the manifestation of severe acute respiratory syndrome (SARS), several psychiatric co-morbidities such as depression, panic attack, anxiety, psychomotor excitement, suicidal tendency, delirium, and psychotic symptoms were reported [11]. Many studies have demonstrated the impact of infectious disease outbreaks on public mental health, such as SARS in 2003, and the 2009 novel influenza (HIN1) epidemic [12]. These types of epidemics led the public to experience psychological problems such as post-traumatic stress disorder, psychological distress, depression and anxiety [13]. A report by the WHO in 2020 stated that "as the coronavirus pandemic rapidly sweeps across the world, it is inducing a considerable degree of fear, worry and concern in the population at large and among certain groups in particular, such as older adults, care providers and people with underlying health conditions". In public mental health terms, the main psychological impact of COVID-19 to date is elevated rates of stress or anxiety, but as new measures and impacts are introduced – especially quarantine and its effects on many people's usual activities, routines or livelihoods – levels of loneliness, depression, harmful alcohol and drug use, and self-harm or suicidal behaviour are also expected to rise. COVID-19 pandemic and resultant economic downturn has negatively affected human's mental health due to worry about the way to meet their primary needs such as food and strain over the virus, and some other mental effect of the lockdown experienced by the elderly may include anxiety, irritability and excessive feeling of stress or anger and as time goes by, cognitive ability begins to decline and therefore people might become much more anxious, agitated, and socially withdrawn [14], [15], [16], [17].

As the pandemic rages on, it is likely that the mental fitness burden will grow as measures taken to slow the surge of the virus, which includes social and physical distancing, commercial enterprise and college closures, and shelter-in-vicinity orders cause extra isolation and potential monetary distress. Although, it is important to prevent the loss of life because of COVID-19, these public health measures predispose many people to experience situations which can be linked to poor mental health outcomes, which includes isolation, economic instability and activity loss. In addition, emotions of tension are increasingly more common as humans are terrified of themselves or cherished ones falling ill and are unsure of the repercussions of the pandemic. The social and mental health issues are other major health concerns, which are expected to increase day by day during this pandemic. Considering the relevance of all the above factors, it was aimed to investigate the impact of COVID-19 pandemic lockdown on social and mental health of Ondo State residents, Nigeria.

1.1 Research questions

i. What are the impacts of COVID-19 pandemic lock down on the social health of Ondo State residents?

ii. What are the impacts of COVID-19 pandemic lock down on the mental health of Ondo State residents?

1.2 Research Hypotheses

i. There is no significant relationship between gender of the respondents and impacts of COVID- 19 pandemic lock down on social and mental health in the study area.

ii. There is no significant relationship between age of the respondents and impacts of COVID-19 pandemic lock down on social and mental health in the study area

2.0 Method

The descriptive survey type research design was used in this study. Administration of questionnaires was conducted after weeks of implementing the lockdown order; between April 3 – 17 April 2020, so as to enable the researchers to get valid response from the respondents. The population for the study comprised all residents of Ondo State who are currently married with children. The multistage sampling procedure was used for this study as four (4) local government areas which were easily accessible were purposively selected for the study due to the lockdown orders and restriction of movement. Three (3) towns each were selected using simple randomly sampling technique of fish bowl without replacement making a total of twelve (12) towns. The town selected were then stratified into wards, three (3) wards were randomly selected from each town, making a total of thirty-six (36) wards. From each of the thirty-six (36) selected wards, eighteen (18) respondents were selected using systematic sampling technique every 5^{th} house in the selected wards were sampled, totaling 648 respondents, which constituted the sample for this study. The instrument used for data collection was a questionnaire constructed by the researchers to obtain necessary information from the respondents for the purpose of the study. The instrument was given to experts in the field of Educational Psychology and Health education to ensure the validity. Cronbach alpha was used for reliability of the instrument and a coefficient figure of 0.67 was obtained. Data were checked, coded and entered into Statistical Package of the Social Sciences (SPSS) version 25. Frequency counts, percentages, t-test and ANOVA were used to answer the research questions and hypotheses at 0.05 alpha level.

3.0 Results

Table 1: showing background characteristics of respondents

	Items	Frequency(percent)
Age (in years)	Below 20	160(24.7%)
	21-30	242(37.3%)
	31-40	157(24.2%)
	41-50	53(8.2%)
	51-60	12(1.9%)
	61 years and above	24(3.7%)
Gender	Male	371(57.3%)
	Female	277(42.7%)

Religion	Christianity	510(78.7%)
	Islam	63(9.7%)
	Traditional	37(5.7%)
	Others	38(5.9%)
Marital status	Single	239(36.9%)
	Married	347(53.5%)
	Separated	50(7.7%)
	Widower	12(1.9%)
Education	Primary school certificate	40(6.2%)
	SSCE	184(28.4%)
	First degree and its equivalent	307(47.4%)
	Masters degree	65(10%)
	PhD	12(1.9%)
	Did not go to school	40(6.2%)
Family size	Two	25(3.9%)
	Three	51(7.9%)
	Four	63(9.7%)
	More than four	509(78.5%)
	Total	648(100%)

Table 1 reveals that 160(24.7%) of the respondents are below 20yrs, 242 (37.3%) are between the age group of 21-30 years, 157(24.2%) are age group of 31-40 years, 53(8.2%) are between the age group of 41-50 years, 12 (1.9%) were between age group of 51-60 years , while 24(3.7%) are age group of 61 and above ; 371 (57.3%) of the respondents were males while 277 (42.7%) were females; 510 (78.7%) were Christians, 63(9.7%) were Muslim, 38(5.9%) practice other religion while 37 (5.7%) were traditional worshippers; 347 (53.5%) were singles while 12 (1.9%) were widowers; 307 (47.4%) were first degree holders, while 12 (19%) were PhD holders and 25 (3.9%) of the respondents had two family members, 51(7.9%) had three family members, while 509 (78.5%) had more than four family members.

Table 2: showing descriptive statistics of the impact of COVID-19 lockdown on social and mental health of Ondo state residents

S/N	Impact on Social Health	Mean	SA	A	D	SD
1	COVID-19 lockdown has reduced my interaction with people	2.98	117(18.4%)	427(65.9%)	78(12%)	26(4%)
2	COVID-19 lockdown has reduced my decision ability	2.55	67(10.3%)	278(42.9%)	249(38.4%)	54(8.3%)
3	COVID-19 lockdown has prevented me from making new friends	2.52	50(7.7%)	320(49.4%)	198(30.6%)	80(12.3%)

4	COVID-19 lockdown has prevented me from attending social gatherings	3.25	213(32.9%)	383(59.1%)	52(8%)	-
5	COVID-19 lockdown has prevented me from seeing my loved ones	2.67	91(14%)	306(47.2%)	197(30.4%)	54(8.3%)
6	COVID-19 lockdown has reduced my earnings	2.89	184(28.4%)	265(40.9%)	145(22.4%)	54(8.3%)
7	I am satisfied with life during the COVID-19 lockdown	2.28	52(8%)	213(32.9%)	249(38.4%)	134(20.7%)
8	I cannot go to my workplace due to the COVID-19 lockdown	2.61	330(50.9%)	171(26.4%)	26(4%)	121(18.7%)
9	I have difficulty in maintaining relationships due to COVID-19 lockdown	2.71	106(16.4%)	303(46.8%)	185(28.5%)	54(8.3%)
10	COVID-19 lockdown has made me withdrawn fromcommunity participation	2.96	187(28.9%)	277(42.7%)	158(24.4%)	26(4%)
	Impact on Mental Health					
11	I feel distressed during COVID-19 lockdown	2.87	156(24.1%)	303(46.8%)	135(20.8%)	54(8.3%)
12	I have issues in handling adversity during COVID-19 lockdown	2.44	78(12%)	200(30.9%)	301(46.5%)	69(10.6%)
13	I feel lonely due to COVID-19 lockdown	3.00	133(20.5%)	409(63.1%)	78(12%)	28(4.3%)
14	I treat people with kindness during COVID-19 lockdown	3.00	54 (8.3%)	542(83.6%)	52(8%)	-
15	I feel stressed up during COVID-19 lockdown	2.24	79(12.2%)	130(20.1%)	305(47.1%)	134(20.7%)
16	I get easily annoyed during COVID-19 lockdown	2.44	106(16.4%)	130(20.1%)	358(55.2%)	54(8.3%)
17	I resolve differences with people quickly during COVID-19 lockdown	2.46	39(6%)	249(38.4%)	332(51.2%)	28(4.3%)

18	I feel denied of my freedom rights during this COVID-19 lockdown	2.87	143(22.1%)	321(49.5%)	143(22.1%)	41(6.3%)
19	I feel too quiet during COVID-19 lockdown	2.67	26(4%)	408 (63%)	188(29%)	26(4%)
20	I get easily agitated during COVID-19 lockdown	2.47	67(10.3%)	213(32.9%)	327(50.5%)	41(6.3%)
Grand mean (Social health) = 2.70				Grand mean (mental health) = 2.35		

Table 2 presents the impacts of COVID-19 lockdown on social and mental health of Ondo State residents in frequencies, percentages and based on mean. The impacts of the COVID-19 lockdown on the social health showed that majority of the respondents disclosed that their income and earnings have drastically reduced ($\bar{X}$ = 2.89). Also, the larger part of the respondents revealed that COVID-19 lockdown has prevented them from attending social gatherings ($\bar{X}$ = 3.25), feel withdrawn from community participation ($\bar{X}$ = 2.96), reduced their interaction with people ($\bar{X}$ = 2.98), reduced their interaction with their loved ones (with the mean of 2.67), they are not satisfied with their lives ($\bar{X}$ = 2.28). In continuation of the findings table 2, the impact of COVID-19 lockdown on the mental health of the residents indicated that majority of the respondents disclosed that they feel lonely due to COVID-19 lockdown ($\bar{X}$ = 3.00), feel distressed ($\bar{X}$ = 2.87), denied of their freedom (($\bar{X}$ = 2.87), annoyed ($\bar{X}$ = 2.44) and agitated ($\bar{X}$ = 2.47). Despite all these, some of the respondents disclosed that they do not feel stressed COVID-19 lockdown ($\bar{X}$ = 2.24).

Table 3: t-test summary showing significant difference in the impact of covid-19 lockdown on social and mental health base on gender residents

Variables	Gender	N	Mean	Std. Deviation	t	d.f	Sig.	P
Social health	Male	371	26.9245	3.73511	.180	647	.672	<0.05
	Female	277	27.0650	4.69383				
Mental health	Male	371	28.6496	5.96486	.154		.695	
	Female	277	28.4549	6.62743				

Table 3 revealed that there is no significant difference in the impact of COVID-19 lockdown on the social and mental health of male and female residents; t = 0.180, p<0.05; t = 0.154, p<0.05 respectively. The table also revealed that the COVID-19 lockdown has a greater impact on the social health of Ondo state female residents ($\bar{X}$ = 27.07) than the males ($\bar{X}$ = 26.92). Also, findings revealed COVID-19 lockdown has a greater effect on the mental health of Ondo state male residents ($\bar{X}$ = 28.63) than the females ($\bar{X}$ = 28.45).

Table 4: ANOVA summary showing difference in social and mental health of Ondo state residents based on their age

Variables	Age (in	N	Mean	Std.	Sum of	Df	Mean	F	sig

	years)			Deviation	Squares		Square		
Social health	Below 20	160	26.1188	3.22602			170.827		
	21-30	242	27.2025	4.39779	854.134		16.186		
	31-40	157	28.4395	4.31951	10391.711			10.554	.000
	41-50	53	25.6792	3.73020	11245.846				
	51-60	12	27.8333	2.88675					
	61 years and above	24	23.5000	3.90095		5			
	Total	648	26.9846	4.16912		642			
Mental health	Below 20	160	27.2813	5.16540		647			
	21-30	242	28.9174	6.81052					
	31-40	157	30.4331	6.41640	1253.263		250.653	6.694	.000
	41-50	53	26.7547	5.61901	24039.883		37.445		
	51-60	12	28.5000	1.97714	25293.147				
	61 years and above	24	25.4167	4.71737					
	Total	648	28.5664	6.25244					

Table 4 revealed that there is a significant difference in the social and mental health of Ondo state residents based on their age; $F_{(5, 642)} = 10.554$, $p<.05$, $\eta^2 =.076$; $F_{(5, 642)} = 6.694$, $p<.05$, $\eta^2 =.000$ respectively. The table further revealed that Ondo state residents who are between the age of 31- 40 years displayed the highest level of social health ($\bar{X} = 28.44$) followed by people within the age group 51-60 years ($\bar{X} = 27.83$) and residents aged 61 years and above displayed the lowest level of social health ($\bar{X} = 23.50$). In addition, the table revealed that Ondo state residents who are between the age of 31-40 years displayed the highest level of mental health ($\bar{X} = 30.43$) followed by people within the age group 21-30 years ($\bar{X} = 28.92$) and residents aged 61 years and above displayed the lowest level of emotional health ($\bar{X} = 25.42$).

4.0 Discussion

This survey provides an insight on the impact of COVID-19 lockdown on both social and mental health of Ondo state residents. The study revealed the impact of COVID-19 lockdown on the social health of Ondo state residents from which majority of them agreed that they earn less than their usual income, they are prohibited from attending social gatherings, feel withdrawn from participating in community activities which has reduced their interaction with people especially with their loved ones and as such they are not satisfied with their lives. This agrees with an earlier report that a very vital portion of this moment of COVID-19 pandemic results into avoidance by neighbourhood, insecurity regarding properties, workplace prejudice, and withdrawal from social events [4]. Due to the current

COVID-19 catastrophe, many countries all over the world have enforced prompt quarantine procedures to contain the pandemic [2], however, the consequences of these measures affects the well-being at personal and population-levels. The enforced mass quarantine applied by nationwide lockdown programs can result in family separation, insufficient supply of basic essentials, financial losses, increased perception of risk of the disease, which usually get magnified by vague information and improper communications through media in the early phase of a pandemic [4],[7].

Also, the impact of COVID-19 lockdown on the mental health of the respondents revealed that a greater number of the respondent experienced denial of their freedom due to the movement restrictions which has in turn resulted into loneliness, agitation, being easily provoked and a feeling of being distressed. Amidst all these emotional divergence, they do not feel stressed. Previous outbreaks have reported that psychological impact of quarantine can vary from immediate effects, like irritability, fear of contracting and spreading infection to family members, anger, confusion, frustration, loneliness, denial, anxiety, depression, insomnia, despair, to extremes of consequences, including suicide [4], [10]. Also, from this study, it was shown that there is no significant difference in the impact of COVID-19 lockdown on the social and mental health of male and female residents. However, the resultant effect of the lockdown was greater on the social health of Ondo state female residents than the males while the COVID-19 lockdown has a greater effect on the mental health of Ondo state male residents than the females. With long-term closures of childcare centers and schools, many parents are experiencing ongoing disruption to their daily routines. This is in line with the findings [18] from the early April KFF Tracking Poll which showed that among parents with children under the age of 18, nearly three out of five (57%) women said that worry or stress related to COVID-19 has negatively impacted their mental health, up from 36% of women in the KFF tracking poll conducted two weeks prior. The early April KFF Tracking Poll also finds that women with children under the age of 18 are more likely to report negative impacts to their mental health than their male counterparts (57% vs 32%, respectively).

The researchers also found out that there is a significant difference in social and mental health of Ondo state residents based on their age. Residents who are between the age of 31-40 years displayed the highest level of social health, while residents aged 61 years and above displayed the lowest level of social health. In addition, the inhabitants who are between the age of 31-40 years displayed the highest level of mental health, while people aged 61 years and above displayed the lowest level of emotional health. This implies that the elderly people have reduced social and mental health during the COVID-19 lockdown. This is because older adults are more likely than people of other ages to develop serious illness if they contract COVID-19 due to a decline in the body's immune system activity. The view that older people with serious underlying illnesses are mostly exposed to worse effects from COVID-19 can generate huge panic amid the elderly [15], [19]. Some other mental effect of the lockdown experienced by the elderly may include anxiety, irritability and excessive feeling of stress or anger [14], [15] and as time goes by, their cognitive ability begins to decline and therefore become much more anxious, agitated, and socially withdrawn [16], [17].

Conclusion

This study investigated the impact of COVID-19 pandemic lockdown on social and mental health of residence of Ondo State, Nigeria. The findings revealed that there were impacts of the COVID-19 lockdown on the social health showed as majority of the respondents disclosed that their income and earnings have drastically reduced, on mental health majority of the respondents disclosed

that they feel lonely and distressed due to COVID-19 lockdown. The finding pointed out that there is no significant difference in the impact of COVID-19 lockdown on the social and mental health of male and female residents but there is a significant difference in the social and mental health of Ondo state residents based on their age.

Recommendations

1. Health education awareness activities should be raised on mass media and should urgently be conducted to focus on how people can cope with their social and mental health effectively during this lockdown period.
2. Further research should be embarked upon using nationally represented sample.

Acknowledgements: We appreciate the anonymous referees for their valuable submissions.

Conflict of interest: None declared.

Ethics approval and Consent to participate: The research used human samples and their consent, right to withdraw from the study at any time were considered. More so, their secret information was not exposed as they are strictly considered confidential.

Funding: None.

References

1. World Health Organisation, 2020.Coronavirus disease (COVID-19) outbreak.Mental health and COVID-19. Accessed from https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/technical-guidance/mental-health-and-covid-19. August 4, 2020
2. Rubin GJ, Wessely S, 2020. The psychological effects of quarantining a city. *BMJ* 2020;368:m313.
3. Nigeria Centers for Disease Control and Prevention 2020. Emergency Preparedness and Response. 2020. https://emergency.cdc.gov/han/han00426.asp Accessed August 4,2020.
4. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, 2020. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020;395:912e20.
5. Radio Nigeria, 2020. Ondo records first case of COVID-19. April 3, 2020. Available at https://www.radionigeria.gov.ng/2020/04/03/ondo-records-first-case-of-covid-19/
6. Premium Times Newspaper, 2020. Ex-Ondo chairman dies of COVID-19. July 09, 2020. Agency report. Accessed from https://www.premiumtimesng.com/regional/ssouth-west/402104-ex-ondo-nma-chairman-dies-of-covid-19.html
7. Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, et al, 2013. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *CMAJ* 2003;168:1245e51.
8. John ATJ. Natalie JS, Michael AM. 2013. The behavioral immune system and social conservatism: Ameta-analysis. *Evol. Hum. Behav*.**2013**, 34, 99–108. [CrossRef]
9. Houston V, Bull R, 1994. Do people avoid sitting next to someone who is facially disfigured. *Eur. J. Soc. Psycho*l. 1994, 24, 279–284. [CrossRef]

10. Liu X, Kakade M, Fuller CJ, Fan B, Fang Y, Kong J, 2012. Depression after exposure to stressful events: lessons learned from the severe acute respiratory syndrome epidemic. *ComprPsychiatr* 2012;53:15e23.
11. XiangYT,YangY,LiW,Zhang,L.,Zhang,Q.,Cheung,T.,Ng,C.H.(2019).Timelymentalhealthcarefor the2019novelCoronavirusoutbreakisurgentlyneeded.*LancetPsychiatry7*,228–229.https://doi.org/10.1016/S2215-0366(20)30046-8.
12. Ko CH, Yen CF, Yen JY, Yang MJ, 2006. Psychosocial impact among the public of the severe acute respiratorysyndrome epidemic in Taiwan.*PsychiatClinNeuros*. 2006;60:397–403.
13. Peng EYC, Lee MB, Tsai ST, Yang CC, Morisky DE, Tsai LT, 2010. Population-based post-crisis psychological distress: an example from the SARS outbreak in Taiwan. *J Formosa Med Assoc*. 2010;109:524–32.
14. Lee S, Chan LY, Chau AM, Kwok KP, Kleinman A, 2005. The experience of SARSrelated stigma at Amoy Gardens.*SocSci Med* 2005;61:2038e46.
15. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, 2020. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *N Engl J Med* 2020;382:1199e207.
16. Doraiswamy S, Cheema S, Mamtani, 2020. Older people and epidemics: a call for empathy. Age Ageing 2020. afaa060.Published by Oxford University on behalf of the British Geriatrics Society.
17. Lloyd-Sherlock PG, Kalache A, McKee M, Derbyshire J, Geffen L, Casas FG, 2020. WHO must prioritise the needs of older people in its response to the covid-19 pandemic. *BMJ* 2020;368:m1164.
18. NirmitaPanchal, Rabah Kamal, Kendal Orgera, Cynthia Cox, Rachel G, Liz H, Cailey M, Priya, C, 2020. Mental Health and Substance Use. Accessed from www.kff.org/coronavirus-covid-19/issue-brief/the-implication-of-covid-19-for-mental-health-and-substance-use/#
19. Muris P, Field AP, 2010. The role of verbal threat information in the development of childhood fear. "Beware the Jabberwock! *Clin Child FamPsychol Rev* 2010;13:129e50.