

Effects of Fear of COVID-19 on Mental Well-Being and Quality of Life: A path analysis

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Abstract

The COVID-19 pandemic has been very disruptive and thus likely to result in substantial challenges to mental health. This study aimed to investigate the effects of fear of COVID-19 on mental well-being and quality of life among Saudi adult population, and to evaluate the impact of perceived social support. A total of 1029 Saudi adults with a mean age of 33.7 years (SD 11.5) took part in an anonymous online survey. Path analysis indicated that fear of COVID-19 was directly associated with mental well-being, which in turn was associated with lower quality of life. Perceived social support had more influence on quality of life than mental well-being. No direct link between fear of COVID-19 and quality of life was found. These findings emphasize the importance of having effective systems, in addition to social support, in place in order to minimize the impact of the COVID-19 pandemic on mental well-being and quality of life.

Introduction

In January 2020, the World Health Organization (WHO) declared the coronavirus disease 2019 outbreak (COVID-19) an international public health emergency (World Health Organization, 2020). The global community continues to face high transmission rates of this unpredictable, fast spreading infectious disease that presents serious challenges to global health (Mamun & Griffiths, 2020). Not only does the virus incur a high mortality rate, but uncertainty is heightened as the global community lacks effective antiviral therapy or vaccines and knowledge of the accurate number of people infected (due to lack of widespread testing and tracking) (Shereen et al., 2020; Tull et al., 2020).

Aiming to slow the spread of the virus, overload of healthcare systems and infection-related mortality, governments around the globe have implemented public health measures (such as isolation, quarantine, physical and social distancing) as fundamental infection control measures (Dsouza et al., 2020; Lai et al., 2020; Rubin & Wessely, 2020; Tull et al., 2020). These unpleasant changes bring the perception of constrained freedom (sense of loss of control and being trapped, especially in those separated from family), increasing psychological distress and community anxiety (Brooks et al., 2020; Rubin & Wessely, 2020). The unpredictability of the situation makes people uncertain of how safe they are and how worried they should be, elevating fears and misconceptions (Rubin & Wessely, 2020).

Even without quarantine, the response to COVID-19 outbreak raises community anxiety due to deaths, increased media reporting and escalating number of new cases (Rubin & Wessely, 2020). Levels of anxiety rise due to both fear of contracting the virus and extreme rules that profoundly change lifestyles and social relationships (Casagrande et al., 2020). Thus, COVID-19 raises a broad range of public mental health concerns, including distress reactions (sleep disorders, anger and extreme fear); health risk behaviors (increased substance abuse, social isolation); and lowered perceived health (Bao et al., 2020; Brooks et al., 2020; Casagrande et al., 2020; Mamun & Griffiths, 2020; Shigemura et al., 2020). These

responses affect mental health, well-being and quality of life at personal and population-levels, possibly triggering social dysfunction, mass hysteria, stigma, discrimination, xenophobia and marginalization (Banerjee, 2020; Dubey et al., 2020; Gunawan et al., 2020).

The impact of widespread lockdown varies according to each individual – those who live in comfortable households may enjoy the free time at home; some people manage to be productive; but for others the lack of human interaction and usual daily activities may feel like a nightmare that negatively affects their mood and cognition (Gunawan et al., 2020; Horesh & Brown, 2020). Overall, COVID-19 challenges the quality of life of people around the world, exacerbating interpersonal issues (such as domestic violence, substance abuse, trauma, negative emotions, unhealthy relations and family environment, financial instability, poverty, poor health) and raising questions of self-acceptance, meaning in life, and relationships with others (Banerjee, 2020). In consequence, the virus disproportionately harms poor and marginalized groups with the least resources (e.g., elderly, poor, immigrants and refugees) (Steele, 2020).

Currently, Saudi Arabia has the highest count of confirmed cases of COVID-19 among the Gulf states, with more than 200,000 infections and 2,100 deaths at the time of writing this paper (Johns Hopkins University & Medicine, 2020). This study aimed to investigate the effects of fear of COVID-19 on mental well-being and quality of life among the Saudi adult general population, and to evaluate the impact of perceived social support. We hypothesized that fear of COVID-19 causes anxiety and/or depressive symptoms, reducing quality of life – but perceived social support can ameliorate this impact.

Materials And Methods

1.1. Participants and procedure

Participants were Saudi adults aged 18 years or older. Participants were recruited via an anonymous online survey administered using Google Forms and using a snowball sampling technique. Invitations to take part in the study were shared via email to personal and professional contacts, and posted on social media platforms (Twitter, Facebook, and LinkedIn). Eligible participants were asked to share the study with their personal and professional networks. Furthermore, participants had to answer all questions to submit their responses. Data collection occurred between 11 April and 11 May 2020. Participation was voluntary, and all participants provided electronic informed consent. The study was approved by the appropriate ethics committee (IRB 41–00155).

1.2. Measures

Participants provided information regarding their age, sex, marital status, education status, employment status, monthly income, and region of residence. Additionally, participants indicated if they, or a family member, had a COVID-19 diagnosis (yes/no).

1.2.1. Fear of COVID-19

The Arabic version of the Fear of COVID-19 Scale (FCV-19S) was used to measure fear levels of COVID-19 (Alyami et al., 2020). The FCV-19S consists of seven items and is scored on a 5-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree) (Ahorsu et al., 2020). A total score is calculated by adding all item scores with a possible total score ranging from 7 to 35. Higher scores indicate higher levels of fear of COVID-19. The original scale as well as the Arabic version have shown robust psychometric properties (Ahorsu et al., 2020; Alyami et al., 2020).

1.2.2. Mental Well-Being

The Hospital Anxiety and Depression Scale (HADS) was used to measure levels of psychological distress (Zigmond & Snaith, 1983). The HADS consists of a total of 14 items, seven items for the anxiety subscale (HADS-A) and seven items for the depression subscale (HADS-D). Each item is scored on a 4-point scale and item scores are summed to yield HADS-A and HADS-D total scores (range 0–21 for each subscale). Additionally, an overall total score (HADS-T) is computed by adding all item scores (range 0–42). Higher scores indicating greater psychological distress (Zigmond & Snaith, 1983). The HADS has demonstrated satisfactory psychometric properties in different patient groups as well as in general populations (Bjelland et al., 2002; Djukanovic et al., 2017; Herrmann, 1997; Mykletun et al., 2001). The Arabic version of the HADS has also shown satisfactory psychometric properties (Terkawi et al., 2017).

1.2.3. Quality of life

The European Health Interview Survey-Quality of Life (EUROHIS-QOL 8-item index) was used to measure quality of life (QoL) (Schmidt et al., 2006). The EUROHIS-QOL is a brief version derived from the WHOQOL-BREF (The WHOQOL Group, 1998). It consists of eight items and is scored on a 5-point scale ranging from 1 (not at all/very poor/very dissatisfied) to 5 (completely/very good/very satisfied). Each domain in the WHOQOL-BREF (social, psychological, physical, and environmental) is represented by two items in the EUROHIS-QOL. An overall QoL score is computed by adding all item scores (range 8–40), with higher scores indicating better QoL. In the initial large study as well as subsequent research, the EUROHIS-QOL showed satisfactory psychometric qualities (Rocha et al., 2012; Schmidt et al., 2006). The Arabic version of the WHOQOL-BREF has also demonstrated adequate psychometric properties (Dalky et al., 2017; Ohaeri & Awadalla, 2009).

1.2.4. Perceived Social Support

A six-item version of the Medical Outcomes Study Social Support Survey (MOS-SSS-6) was used to assess perceived social support (Sherbourne & Stewart, 1991), which was abbreviated and validated in two large women population-based samples (Holden et al., 2014). Items relate to emotional/information support (2 items), tangible support (2 items), affectionate support (1 item), and positive social interaction

(1 item). Items are scored on a 5-point scale where 1 (a little of the time) and 5 (all of the time) and summed to produce a total score (range 6–30). Higher scores indicating greater perceived social support. The MOS-SSS-6 has shown satisfactory psychometric properties (Holden et al., 2014), similar to the original 19-item measure (Sherbourne & Stewart, 1991) as did the Arabic version (Dafaalla et al., 2016).

1.3. Data Analysis

First, we assessed demographic data to provide an overview of the sample characteristics. Second, we calculated measures of central tendency, kurtosis, skewness, and reliability coefficients regarding each of the measures used. Third, we conducted a path analysis to investigate the proposed theoretical domain structure linking fear of COVID-19 with social support, mental well-being and quality of life. We assessed the path model fit indices according to the following criteria (Lei & Wu, 2007; Marsh et al., 1988):

1. Chi-square values can be inflated with increases in sample size therefore we used this value as a guide rather definitive criterion.
2. Root mean square error of approximation (RMSEA) values $\leq .06$
3. Comparative fit index (CFI) values $>.90$ (or more desirably $\geq .95$)
4. Standardized root mean square residual (SRMR) values $\leq .08$

Results

A total of 1070 responses were recorded, of which 41 participants did not provide informed consent. The final sample comprised 1029 participants who consented and completed all questionnaires. Participants' mean age was 33.7 years (SD 11.5). Further sample characteristics are shown in Table 1.

Table 2 provides an overview of the values obtained for each of the variables. The results indicate that the values for each variable approximate a normal distribution (Byrne & Campbell, 1999) and these values are compared with the wider literature below.

Path analysis

Based on the literature presented in the introduction, we mooted an 'a priori' conceptual model and tested this proposed model using a path analysis approach. The primary criterion variable was the FCV-19S. The values obtained for RMSEA, SRMR, and CFI indicated that the model fit (see Figure 1) was exemplary, that is, the standardized RMR= .017, CFI= .988, and RMSEA= .076.

Figure 1 shows the path diagram for all the data collected (n= 1029). As a measure of mental well-being, we used HADS-T due to the high correlations obtained between the HADS-A and HADS-D scores. The path coefficients are shown for significant relationships only ($p < .05$). The results indicated that FCV-19S significantly influenced mental well-being (HADS-T), which in turn influenced QoL. Perceived social

support was included in the model to assess its ability to ameliorate the relationships between FCV-19S, mental well-being and QoL. We noted that perceived social support has more influence on QoL than mental well-being suggesting that perceived social support may be more influential when predicting QoL. It is also acknowledged that we trialed a model including age and sex, but these two variables did not significantly add value to the model. We additionally trialed a direct link between FCV-19S and QoL, but this was found to be close to zero.

Hence, the narrative that best describes the path analysis, is that FCV-19S directly influences mental well-being, suggesting that participants with high levels of fear towards COVID-19 are more likely to experience anxiety and/or depressive symptoms. COVID-19 indirectly via mental wellbeing affects QoL, hence those participants with relatively higher levels of fear of COVID-19 are more likely to be either more anxious or depressed and as a consequence they appear to experience relatively lower levels of QoL. The impact on QoL can, to some extent, be ameliorated by having good social support systems in place.

Discussion

The findings indicate significant relationships between the fear of COVID-19, mental well-being and QoL, with some potential benefit from social support. It is widely accepted that outbreaks of infectious disease bring uncertainty and feeling of insecurity, along with decreased rational thinking and leading to psychological distress and symptoms of mental illness (Arafat et al., 2020; Bao et al., 2020; Mukhtar, 2020). Fear, insecurity, exacerbation of anxiety and a hyper-vigilant state are core factors that may characterize COVID-19 as a traumatic event (Arafat et al., 2020; Horesh & Brown, 2020).

Besides significantly straining the global healthcare and economic systems, COVID-19 imposes an unprecedented level of physical isolation (determined by public health measures) that challenges our most basic human motivations (especially our need for human connection), affecting every aspect of society (Hagerty & Williams, 2020). The experience of a severe viral pandemic (and its social and economic fallout) creates a sense of uncertainty triggering psychological distress, such as sadness, boredom, worry, fear, anger, annoyance, confusion, frustration, grief, guilt, helplessness, loneliness, and nervousness (Bao et al., 2020; Dsouza et al., 2020; Gunawan et al., 2020; Mamun & Griffiths, 2020; Mukhtar, 2020; Tull et al., 2020; Xiang et al., 2020).

The actual values obtained for each of the measures (Table 2) showed that this sample were fearful of COVID-19, more anxious and depressed, but reported higher QoL scores and had reasonable social support systems. Nonetheless, The FCV-19S is a developing scale without normative values. In accordance with the theory that fear of COVID-19 influences mental well-being, the HADS values of our findings appear to be higher than those found in other studies for similar age groups (e.g., Hinz & Brähler, 2011). Secondly, the findings in our study showed that our sample reported marginally higher QoL scores than found elsewhere in the literature (e.g., Schmidt et al., 2006), which may be indicative of the social and economic standing of the sample. The perceived social support scores of our study population were consistent with those cited in the literature (e.g., Holden et al., 2014).

In this study, we aimed to explore the inter-relationships between the aforementioned variables. The rationale behind this approach is linked to the concept that COVID-19 will likely lead to substantial and long lasting emotional and psychological responses in the general population (Brooks et al., 2020; Casagrande et al., 2020; Gunawan et al., 2020; Rubin & Wessely, 2020). It has been also established that social stressors (such as health anxiety, fear of death, fear of losing loved ones, fear of the unknown, loss of social connectedness, loss of employment and homelessness) may contribute to causing new mental disorders (e.g. depression and anxiety). Similarly, such social stressors could possibly exacerbate pre-existing mental health conditions (Banerjee, 2020; Shigemura et al., 2020). In this study, our findings indicated that fear of COVID-19 has an impact on anxiety and depression, and with those people affected by anxiety and depression this will have an adverse impact on their QoL. Interestingly, the findings also showed that there was no direct link between fear of COVID-19 and QoL, suggesting that only those who incurred anxiety and depression were affected.

Our findings indicated that fear of COVID-19 was not correlated in a meaningful way with perceived social support. Pandemics activate annihilation anxiety – the fear of being obliterated, of annihilation of the self and dying alone – and separation anxiety – fear of loss or separation from loved ones, or fears following from actual loss (Steele, 2020). This may lead to intrusive thoughts related to health, and even death (Horesh & Brown, 2020). COVID-19 presents high mortality salience (the capacity to activate our fear of death) leading to impulsive, skewed, irrational and aggressive action (Steele, 2020), but in this case this is likely to be ameliorated by other variables rather than those linked with perceived social support, such as the influence of media reporting (Roy et al., 2020).

Historically, epidemics have been shaping public health standards (e.g. sanitation, vaccination and health care management) and demanding global solutions (Bonneux & Van Damme, 2006; Van Damme & Van Lerberghe, 2000). As COVID-19 and related social distancing measures persist (even if to a lesser degree), determining the level of associated fear, worry, helplessness and other mental health issues may support the development of interventions focused on promoting mental health and well-being (Mamun & Griffiths, 2020; Tull et al., 2020). Increase in social support seeking or connectedness as individuals give hope to potential positive outcomes of this pandemic could help us adjust to changes in daily life (Tull et al., 2020), although in the case of our findings other systems could also significantly ameliorate the impact.

Our findings should be viewed in light of some limitations. First, the study cross-sectional design limits the ability to definitively infer causal relationships. A second limitation is likely linked to not measuring other influential variables, such as the influence of media reporting. Finally, the sample consisted of predominantly well-educated and technological literate Saudi adults, which may not represent the general Saudi population.

Declarations

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Conflict of interest

The authors declare that they have no conflict of interest.

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References

- Ahorsu, D. K., Lin, C.-Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The Fear of COVID-19 Scale: Development and initial validation. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-020-00270-8>
- Alyami, M., Henning, M. A., Krägeloh, C. U., & Alyami, H. (2020). Psychometric evaluation of the Arabic version of the Fear of COVID-19 Scale. *International Journal of Mental Health and Addiction*, 1–14. <https://doi.org/10.1007/s11469-020-00316-x>
- Arafat, S. M. Y., Kar, S. K., Marthoenis, M., Sharma, P., Hoque Apu, E., & Kabir, R. (2020). Psychological underpinning of panic buying during pandemic (COVID-19). *Psychiatry Research*, 289, 113061. <https://doi.org/10.1016/j.psychres.2020.113061>
- Banerjee, D. (2020). The COVID-19 outbreak: Crucial role the psychiatrists can play. *Asian Journal of Psychiatry*, 50, 102014. <https://doi.org/10.1016/j.ajp.2020.102014>
- Bao, Y., Sun, Y., Meng, S., Shi, J., & Lu, L. (2020). 2019-nCoV epidemic: Address mental health care to empower society. *Lancet*, 395(10224), e37–e38. [https://doi.org/10.1016/S0140-6736\(20\)30309-3](https://doi.org/10.1016/S0140-6736(20)30309-3)
- Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale: An updated literature review. *Journal of Psychosomatic Research*, 52(2), 69–77. [https://doi.org/10.1016/S0022-3999\(01\)00296-3](https://doi.org/10.1016/S0022-3999(01)00296-3)
- Bonneux, L., & Van Damme, W. (2006). An iatrogenic pandemic of panic. *BMJ*, 332(7544), 786–788. <https://doi.org/10.1136/bmj.332.7544.786>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet*, 395(10227), 912–920. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- Byrne, B. M., & Campbell, T. L. (1999). Cross-cultural comparisons and the presumption of equivalent measurement and theoretical structure: A look beneath the surface. *Journal of Cross-Cultural Psychology*, 30(5), 555–574. <https://doi.org/10.1177/0022022199030005001>

- Casagrande, M., Favieri, F., Tambelli, R., & Forte, G. (2020). The enemy who sealed the world: Effects quarantine due to the COVID-19 on sleep quality, anxiety, and psychological distress in the Italian population. *Sleep Medicine*. <https://doi.org/10.1016/j.sleep.2020.05.011>
- Dafaalla, M., Farah, A., Bashir, S., Khalil, A., Abdulhamid, R., Mokhtar, M., Mahadi, M., Omer, Z., Suliman, A., Elkhalifa, M., Abdelgadir, H., Kheir, A. E. M., & Abdalrahman, I. (2016). Validity and reliability of Arabic MOS social support survey. *SpringerPlus*, *5*(1). <https://doi.org/10.1186/s40064-016-2960-4>
- Dalky, H., Meininger, J., & Al-Ali, N. (2017). The reliability and validity of the Arabic World Health Organization Quality of Life-BREF instrument among family caregivers of relatives with psychiatric illnesses in Jordan. *Journal of Nursing Research*, *25*(3), 224–230. <https://doi.org/10.1097/JNR.0000000000000146>
- Djukanovic, I., Carlsson, J., & Årestedt, K. (2017). Is the Hospital Anxiety and Depression Scale (HADS) a valid measure in a general population 65–80 years old? A psychometric evaluation study. *Health and Quality of Life Outcomes*, *15*(1), 1–10. <https://doi.org/10.1186/s12955-017-0759-9>
- Dsouza, D. D., Quadros, S., Hyderabadwala, Z. J., & Mamun, M. A. (2020). Aggregated COVID-19 suicide incidences in India: Fear of COVID-19 infection is the prominent causative factor. *Psychiatry Research*, 113145. <https://doi.org/10.1016/j.psychres.2020.113145>
- Dubey, S., Biswas, P., Ghosh, R., Chatterjee, S., Dubey, M. J., Chatterjee, S., Lahiri, D., & Lavie, C. J. (2020). Psychosocial impact of COVID-19. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, *14*(5), 779–788. <https://doi.org/10.1016/j.dsx.2020.05.035>
- Gunawan, J., Juthamane, S., & Aunguroch, Y. (2020). Current mental health issues in the era of Covid-19. *Asian Journal of Psychiatry*, *51*, 102103. <https://doi.org/10.1016/j.ajp.2020.102103>
- Hagerty, S. L., & Williams, L. M. (2020). The impact of COVID-19 on mental health: The interactive roles of brain biotypes and human connection. *Brain, Behavior, & Immunity - Health*, *5*, 100078. <https://doi.org/10.1016/j.bbih.2020.100078>
- Herrmann, C. (1997). International experiences with the Hospital Anxiety and Depression Scale-A review of validation data and clinical results. *Journal of Psychosomatic Research*, *42*(1), 17–41. [https://doi.org/10.1016/S0022-3999\(96\)00216-4](https://doi.org/10.1016/S0022-3999(96)00216-4)
- Hinz, A., & Brähler, E. (2011). Normative values for the Hospital Anxiety and Depression Scale (HADS) in the general German population. *Journal of Psychosomatic Research*, *71*(2), 74–78. <https://doi.org/10.1016/j.jpsychores.2011.01.005>
- Holden, L., Lee, C., Hockey, R., Ware, R. S., & Dobson, A. J. (2014). Validation of the MOS Social Support Survey 6-item (MOS-SSS-6) measure with two large population-based samples of Australian women. *Quality of Life Research*, *23*(10), 2849–2853. <https://doi.org/10.1007/s11136-014-0741-5>

Horesh, D., & Brown, A. D. (2020). Traumatic stress in the age of COVID-19: A call to close critical gaps and adapt to new realities. *Psychological Trauma: Theory, Research, Practice and Policy*, 12(4), 331–335. <https://doi.org/10.1037/tra0000592>

Johns Hopkins University & Medicine. (2020). *Johns Hopkins Coronavirus Resource Center*. <https://coronavirus.jhu.edu/map.html>

Lai, C.-C., Shih, T.-P., Ko, W.-C., Tang, H.-J., & Hsueh, P.-R. (2020). Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *International Journal of Antimicrobial Agents*, 55(3), 105924. <https://doi.org/10.1016/j.ijantimicag.2020.105924>

Lei, P.-W., & Wu, Q. (2007). Introduction to structural equation modeling: Issues and practical considerations. *Educational Measurement: Issues and Practice*, 26(3), 33–43. <https://doi.org/10.1111/j.1745-3992.2007.00099.x>

Mamun, M. A., & Griffiths, M. D. (2020). First COVID-19 suicide case in Bangladesh due to fear of COVID-19 and xenophobia: Possible suicide prevention strategies. *Asian Journal of Psychiatry*, 51, 102073. <https://doi.org/10.1016/j.ajp.2020.102073>

Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin*, 103(3), 391–410. <https://doi.org/10.1037/0033-2909.103.3.391>

Mukhtar, S. (2020). Psychological health during the coronavirus disease 2019 pandemic outbreak. *International Journal of Social Psychiatry*, 0020764020925835. <https://doi.org/10.1177/0020764020925835>

Mykletun, A., Stordal, E., & Dahl, A. A. (2001). Hospital Anxiety and Depression (HAD) scale: Factor structure, item analyses and internal consistency in a large population. *The British Journal of Psychiatry*, 179(6), 540–544. <https://doi.org/10.1192/bjp.179.6.540>

Ohaeri, J. U., & Awadalla, A. W. (2009). The reliability and validity of the short version of the WHO Quality of Life Instrument in an Arab general population. *Annals of Saudi Medicine*, 29(2), 98–104. <https://doi.org/10.4103/0256-4947.51790>

Rocha, N. S. da, Power, M. J., Bushnell, D. M., & Fleck, M. P. (2012). The EUROHIS-QOL 8-item index: Comparative psychometric properties to its parent WHOQOL-BREF. *Value in Health*, 15(3), 449–457. <https://doi.org/10.1016/j.jval.2011.11.035>

Roy, D., Tripathy, S., Kar, S. K., Sharma, N., Verma, S. K., & Kaushal, V. (2020). Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian Journal of Psychiatry*, 51, 102083. <https://doi.org/10.1016/j.ajp.2020.102083>

Rubin, G. J., & Wessely, S. (2020). The psychological effects of quarantining a city. *BMJ*, *368*.
<https://doi.org/10.1136/bmj.m313>

Schmidt, S., Mühlhan, H., & Power, M. (2006). The EUROHIS-QOL 8-item index: Psychometric results of a cross-cultural field study. *European Journal of Public Health*, *16*(4), 420–428.
<https://doi.org/10.1093/eurpub/cki155>

Sherbourne, C. D., & Stewart, A. L. (1991). The MOS Social Support Survey. *Social Science & Medicine*, *32*(6), 705–714. [https://doi.org/10.1016/0277-9536\(91\)90150-B](https://doi.org/10.1016/0277-9536(91)90150-B)

Shereen, M. A., Khan, S., Kazmi, A., Bashir, N., & Siddique, R. (2020). COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *Journal of Advanced Research*, *24*, 91–98.
<https://doi.org/10.1016/j.jare.2020.03.005>

Shigemura, J., Ursano, R. J., Morganstein, J. C., Kurosawa, M., & Benedek, D. M. (2020). Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: Mental health consequences and target populations. *Psychiatry and Clinical Neurosciences*, *74*(4), 281–282. <https://doi.org/10.1111/pcn.12988>

Steele, H. (2020). COVID-19, fear and the future: An attachment perspective. *Clinical Neuropsychiatry*, *17*(2), 97–99. <https://doi.org/10.36131/CN20200213>

Terkawi, A. S., Tsang, S., AlKahtani, G. J., Al-Mousa, S. H., Al Musaed, S., AlZoraigi, U. S., Alasfar, E. M., Doais, K. S., Abdulrahman, A., & Altirkawi, K. A. (2017). Development and validation of Arabic version of the Hospital Anxiety and Depression Scale. *Saudi Journal of Anaesthesia*, *11*(Suppl 1), S11–S18.
https://doi.org/10.4103/sja.SJA_43_17

The WHOQOL Group. (1998). Development of the World Health Organization WHOQOL-BREF Quality of Life Assessment. *Psychological Medicine*, *28*(3), 551–558.
<https://doi.org/10.1017/S0033291798006667>

Tull, M. T., Edmonds, K. A., Scamaldo, K. M., Richmond, J. R., Rose, J. P., & Gratz, K. L. (2020). Psychological outcomes associated with stay-at-home orders and the perceived impact of COVID-19 on daily life. *Psychiatry Research*, *289*, 113098. <https://doi.org/10.1016/j.psychres.2020.113098>

Van Damme, W., & Van Lerberghe, W. (2000). Editorial: Epidemics and fear. *Tropical Medicine & International Health*, *5*(8), 511–514. <https://doi.org/10.1046/j.1365-3156.2000.00599.x>

World Health Organization. (2020). *Global research and innovation forum: Towards a research roadmap*. [https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-\(pheic\)-global-research-and-innovation-forum](https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-(pheic)-global-research-and-innovation-forum)

Xiang, Y.-T., Yang, Y., Li, W., Zhang, L., Zhang, Q., Cheung, T., & Ng, C. H. (2020). Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *The Lancet Psychiatry*, *7*(3), 228–229.
[https://doi.org/10.1016/S2215-0366\(20\)30046-8](https://doi.org/10.1016/S2215-0366(20)30046-8)

Tables

Table 1. Sample characteristics (n= 1029)

Characteristics	Frequency	%
Sex		
Male	542	52.7
Female	487	47.3
Marital status		
Single	430	41.8
Married	559	54.3
Divorced	34	3.3
Widowed	6	0.6
Education level		
High school or less	214	20.8
Diploma	94	9.1
Bachelor	522	50.7
Master/PhD	199	19.3
Employment		
Student	311	30.2
Employed	486	47.2
Unemployed	169	16.4
Retired	63	6.1
Monthly income*		
9,999 or less	589	57.2
10,000–15,999	208	20.2
16,000 or more	232	22.5
Region		
Central region	227	22.0
Northern region	77	7.5
Southern region	241	23.4
Eastern region	114	11.1
Western region	370	36.0
Personal diagnosis of COVID-19 (yes)	29	2.8
Family member diagnosis of COVID-19 (yes)	46	4.5

Note: *Saudi Riyal

Table 2. Means and standard deviations (SD) of study variables (n= 1029)

Variable	Mean (SD)	Skewness	Kurtosis	Cronbach's alpha
FCV-19S	16.73 (5.67)	0.54	0.13	0.87
HADS-A	4.93 (4.22)	1.08	0.73	0.86
HADS-D	5.72 (4.09)	0.64	0.07	0.79
HADS-T	10.65 (7.67)	0.87	0.45	0.89
EUROHIS-QOL	31.32 (6.33)	-0.69	0.14	0.87
MOS-SSS-6	22.62 (6.37)	-0.72	-0.25	0.90

Note: FCV-19S, Fear of COVID-19 Scale; HADS-A, Hospital Anxiety and Depression Scale-Anxiety; HADS-D, Hospital Anxiety and Depression Scale-Depression; HADS-T, Hospital Anxiety and Depression Scale-Total score; EUROHIS-QOL, European Health Interview Survey-Quality of Life; MOS-SSS-6, Medical Outcomes Study Social Support Survey

Figures

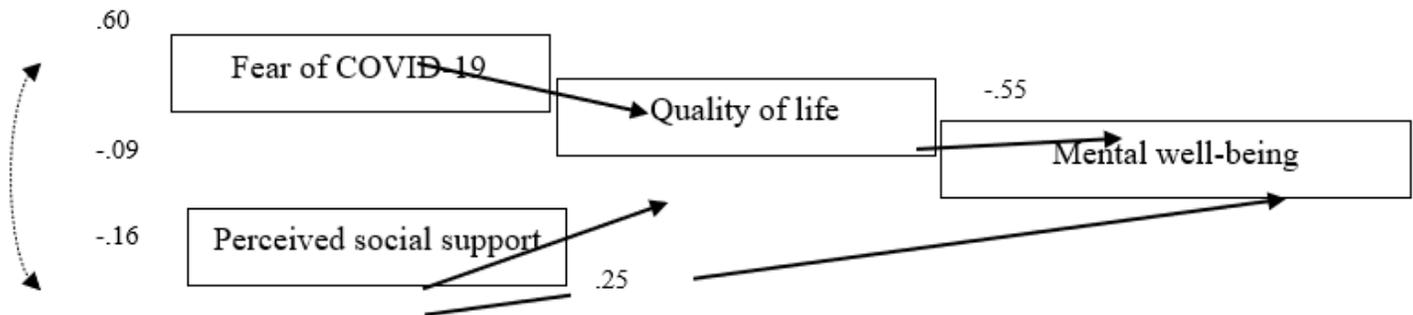


Figure 1

Path diagram of the tested structural equation model for all study participants. Notes: 1. The path standardised regression weight estimates were shown only when statistically significant ($p < .05$). 2. For non-significant relationships, directive arrows are shown with dashed lines. 3. Errors for all pertinent measures were removed to improve clarity of the figure. 4. Key fit indices and chi-square calculations were standardized RMR= .017, CFI= .988, RMSEA= .076, $\chi^2= 6.94$, $df= 1$, $p < .05$.