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Evaluation of health-related quality of life in physically active and physically inactive students during the COVID-19 pandemic in Iran

Hamid Reza Sadeghipour\textsuperscript{a}, Abdossaleh Zar\textsuperscript{a,}\textsuperscript{*}, Ali Pakizeh\textsuperscript{b}, Roger Ramsbottom\textsuperscript{c}

\textsuperscript{a} Department of Sport Science, School of Literature and Humanities, Persian Gulf University, Boushehr, Iran
\textsuperscript{b} Department of Psychology, School of Literature and Humanities, Persian Gulf University, Boushehr, Iran
\textsuperscript{c} Department of Sport, Health Sciences and Social Work, Oxford Brookes University, Oxford OX3 0BP, UK

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ABSTRACT

Covid-19 is an acute respiratory syndrome that can effect on lifestyles. The aim of the present study was to compare the health-related quality of life (HRQoL), physical component summary (PCS) and mental component summary (MCS) scores in physically active (PA) and physically inactive (PI) during the Covid-19 pandemic. Three hundred and twenty-six (182 women; 144 men) studying at the Persian Gulf University participated in the study. The HRQoL Questionnaire (SF-12) was used to collect information. Significant differences in HRQoL score, MCS score and PCS score were observed between physically active and inactive men and women, as well as between physically active and inactive men, and finally between physically active and inactive women (\(P < 0.01\)). Data from the present study suggests higher levels of physical activity, even during social restrictions imposed by the current global pandemic, results in significantly greater scores for HRQoL.

1. Introduction

Covid-19, or coronavirus, is an acute respiratory syndrome that spread from China, resulting in a global pandemic (Zhu et al., 2020). Although quarantine may seem reasonable in order to maintain population health, it is considered an unpleasant experience that can lead to a variety of mental health problems, including depression, anxiety, fear, loneliness, and dissatisfaction and can also change lifestyles and significantly affect the quality of life (Bao et al., 2020). A recent study in China showed that female students in initial phase of the Covid-19 symptoms, experienced higher levels of stress and anxiety (Wang et al., 2020). In addition, Pietrobelli et al. (2020) reported that students' lifestyles changed significantly during a Covid-19 quarantine period; namely levels of physical activity showed a significant decrease.

'Quality of Life' is a multidimensional concept that is influenced by physical health, personal development, psychological states, level of independence and social relationships and is based on individual perception (Ghafari et al., 2013). Quality of life metrics have been reported for different sections of society (e.g. elderly men and women, soldiers and smokers), furthermore studies have shown that exercise can improve the quality of life in these populations (Ahmadi et al., 2020; Zar et al., 2018; Zar et al., 2019).

Exercise and physical activity are recommended as therapy in both healthy and unhealthy populations (Vina et al., 2012). An increase in ‘Machine’ or ‘Technological’ lifestyles has significantly reduced levels of physical activity (Rind et al., 2014). Individual (home) quarantine due to Covid-19 and decreased levels of physical activity lead to changes in lifestyle across densely populated urban cities. Decreased levels of physical activity is another lifestyle factor (like obesity) which acts to increase the chance of early mortality from Covid-19. Therefore, it is vital that we understand the effect of Covid-19 on quality of life and promote ameliorating strategies globally. Decreased levels of physical activity affects everyone from the person engaging in recreational activities to the elite athlete. Currently the impact of home quarantine during the Covid-19 pandemic, specifically comparing physically active versus inactive individuals has not been investigated, here we seek to address this issue.

2. Materials and methods

The present study was a cross-sectional post-event study conducted at the Persian Gulf University. Three hundred and twenty-six students volunteered to participate in the present study. Participants were divided into two groups physically active (PA) and physically inactive...
Table 1
Comparisons of quality of life in men and women subjects.

| Variable                        | Men       | Women     | p value |
|---------------------------------|-----------|-----------|---------|
| Mental component summary        | 12.53 ± 2.25 | 12.21 ± 2.28 | 0.307   |
| Social function                 | 3.26 ± 1.38 | 3.19 ± 1.46 | 0.718   |
| Vitality                        | 2.75 ± 0.94 | 2.57 ± 1.15 | 0.199   |
| Mental health                   | 5.32 ± 1.11 | 5.23 ± 1.07 | 0.601   |
| Emotional problems              | 1.19 ± 0.86 | 1.20 ± 0.94 | 0.925   |
| Physical component summary      | 7.56 ± 1.98 | 7.41 ± 1.84 | 0.587   |
| Body pain                       | 1.11 ± 0.96 | 1.38 ± 0.89 | 0.004*  |
| Understanding of your life      | 1.88 ± 0.99 | 1.65 ± 1.17 | 0.126   |
| Physical function               | 3.06 ± 1.14 | 2.78 ± 1.19 | 0.087   |
| Physical health                 | 1.65 ± 0.83 | 1.59 ± 0.75 | 0.585   |
| Health-related quality of life  | 20.10 ± 3.44 | 19.62 ± 3.09 | 0.312   |

Data are presented as the mean ± standard error of the mean.

*P value ≤ 0.05 considered significant.

(PI) (182 women: 80 PA and 102 PI, and 144 men: 68 PA and 76 PI). Individuals who participated in at least 3 sessions (45 min per session) of physical activity or exercise per week were included in the “physically active” group and Physically inactive people – will have to be those people reporting less than 1 sessions per week of PA were included in the inactive group (participants complete a self-report questionnaire) (Zar et al., 2019). Data were collected by The Health Quality of Life Questionnaire (SF-12) and the Demographic Characteristics Questionnaire.

The health-related quality of life questionnaire (HRQoL) includes a mental component (MCS) and physical component summary (PCS). Mental Component Summary (MCS) includes Social Function, Vitality, Mental Health and Emotional problems scales. The Physical Component Summary (PCS) includes Body Pain, understanding of one’s life, Physical Function and Physical health scales (Zar et al., 2019). It should be noted that in the quality of life and related scales, a higher score denotes a ‘better’ status.

This study was performed in accordance with the principles described in the Declaration of Helsinki (2013) and approved by the Research Ethics Committee of Jahrom University of Medical Sciences (ethics code: IR.JUMS.REC.1399.044).

The Kalmogorov-Smirnov test was used to evaluate the normality of the distribution of findings and independent t-tests were used to evaluate the research findings. Also SPSS 18 software was used with a significance level of α = 0.05 which was considered significantly different.

3. Results

The results showed that there was no significant difference in HRQoL score (p = 0.312), MCS score (p = 0.307) and PCS score (p = 0.58) between men and women. Because the HRQoL score for men (20.10 ± 3.44) and women (19.62 ± 3.09) was less than 24; both groups demonstrate poor HRQoL (Table 1; Fig. 1 A).

There was a significant difference between physically active and inactive men and women in HRQoL score (p = 0.001), MCS score (p = 0.002), PCS score (p = 0.001), social function score (p = 0.014), mental health score (p = 0.019), emotional problems score (p = 0.009), body pain score (p = 0.024), physical function score (p = 0.001) and physical health score (p = 0.001). Total score of HRQoL of physically inactive (18.49 ± 3.46) and active (20.96 ± 2.47) was less than 24, so both groups possess poor HRQoL (Table 2; Fig. 1 B).

There was a significant difference between physically active and inactive male in HRQoL score (p = 0.001), MCS score (p = 0.001), PCS score (p = 0.001) the mental health score (p = 0.21), emotional problems score (p = 0.001), physical function score (p = 0.001), and physical health score (p = 0.001), and physical function score (p = 0.001).
A significant relationship was reported between quality of life and health. Inactive (18.34 ± 2.26) men was less than 24, and active (20.45 ± 2.41) and inactive (18.58 ± 3.54) women was less than 24, both groups demonstrate ‘poor’ Health. There was a significant difference between physically active and inactive women in HRQoL score (Table 2; Fig. 1D). The results of the present study showed that, the quality of life scores of both men and women were less than 24; both groups demonstrating ‘poor’ quality of life. There were no significant differences between the sexes in the scores of total mental and physical health. These results indicated that regardless of physical activity, Covid-19 and its resulting quarantine has led to a significant decline in quality of life in both male and female students. In previous studies in non-coronary conditions, 54.31% of students had a score above 24 and a good quality of life, and a significant relationship was reported between quality of life and health literacy (Khaleghi et al., 2019). Haleem et al. (2020) stated that Covid-19 widely affected the lives of different communities in important areas of health, economy and society, all of which led to a decrease in their quality of life (Haleem et al., 2020).

4. Discussion

In the present study, the quality of life in the general scale of mental health and the general scale of physical health in physically active students was higher compared with inactive students but quality of life scores of both groups were similar. It seems that fear, anxiety and quarantine restrictions have made their overall quality of life score very unsatisfactory. Zhang et al. (2020) reported that an increased prevalence of Covid-19 significantly increased negative emotions. Contrastingly maintaining regular physical activity helped to relieve negative emotions (Zhang et al., 2020). Under the current Covid-19 pandemic being physically active has the potential to improve quality of life. We suggest that the World Health Organization and the Health Services of the different nation states promote physical activity via educational content and other means. For example delivering exercise interventions via telehealth increases levels of support for ‘at risk’ populations (Bland et al., 2020).

In our study, physically active female students scored higher only in the physical dimension. Adibelli and Sümen (2020) stated that during the Covid-19 period, more than half of the research samples (children aged 7–13) were overweight and inclined to sleep more (Adibelli & Sümen, 2020). In the present study, any change in body mass as a result of quarantine was not evaluated, but a lack of significant difference in mental health scores between physically active and inactive women may be due to a concern about a weight gain (due to quarantine restrictions). Moreover, it has been shown that lower scores and lowered physical activity among girls is a particular concern - because they show even lower levels of physical activity compared with men outside of school and university (Bann et al., 2019) and this issue can have a direct impact on the overall mental health and quality of life of women.

5. Conclusion

During the quarantine period of Covid-19, the quality of life in physically active students was higher and physically active men scored higher for both mental and physical health compared with their inactive peers. The results of the present study, supports previous research, showing that physical activity during quarantine (imposed by Covid-19) can be an important way to promote mental and physical health. However, this study should be conducted in a wider range of socio-demographic individuals affected by the pandemic. Finally, depending on the length and strictness of containment policies, the type and method of effective intervention in improving the level of physical activity and quality of life of people involved in the Covid-19 epidemic must be carefully designed and promoted.

Confirmation of ethical compliance

The authors of this article, while observing the rules and provisions of ethical regulations, including the Helsinki Declaration and obtaining informed consent from the participants and full assurance of the confidentiality of the collected information and complete freedom to participate in the study as well as leaving the study, conducted the present study. The study approved by the Research Ethics Committee of the Jhrom University of Medical Science (ethics code: IR.JUMS.REC.1399.044).

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The authors have not received any founds.

Availability of data

The data that support the findings of this study are available from the corresponding author, [author initials], upon reasonable request.
CRediT authorship contribution statement

HS: Conceptualization, Methodology, Investigation, Writing - original draft, Writing - editing, Visualization. A Z: Conceptualization, Methodology, Investigation, Writing - original draft, Writing - editing, Visualization, Project administration, Formal analysis Funding acquisition. AP: Conceptualization, Methodology. RR: Writing- Original draft preparation, Writing – editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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