

Psychosocial Impact of the COVID-19 Pandemic on the Adult Population of Buenos Aires

Impacto psicosocial de la pandemia por COVID-19 en adultos de Buenos Aires

JUAN JOSÉ HERRERA-PAZ¹, PAMELA BOBADILLA-JACOB², DARIO BEN IGOLNIKOF³, SEBASTIÁN GARCÍA-ZAMORA⁴, CARLA SANDOVAL¹, MARCELO CANCER⁵, EMANUEL GONZÁLEZ DÁVILA⁶, SEBASTIÁN WOLFF⁶, DAVID WOLFF⁶, JOSÉ MIGUEL PICCO⁶

ABSTRACT

Background: In March 2020 the World Health Organization (WHO) declared the SARS-CoV-2 coronavirus a pandemic, and since then a remarkably large psychological experiment has been carried out in the world: social isolation.

Objectives: The aim of this study was to analyze the impact of social isolation on healthy habits and some psychosocial and behavioral aspects during the confinement and restrictions imposed by the pandemic in the metropolitan area of Buenos Aires (AMBA).

Methods: An anonymous survey, excluding medical personnel, was carried out through social networks (WhatsApp, Instagram, Facebook and e-mail),

Results: After 7 days of sending the link 2,912 people had answered the survey. Age was between 40 and 60 years in 48.2% of participants, with a predominance of women. In 43.53% of cases, respondents perceived changes in their lifestyle, such as a twofold increase of hours in front of electronic devices during quarantine. This was accompanied by a more sedentary lifestyle, since 83.5% exercised before the pandemic but only 6.4% maintained the prior hours of weekly physical activity. Altered eating habits was reported by 43.52% of participants and 41% referred symptoms compatible with depression, anxiety, sadness, reluctance or hopelessness.

Conclusions: Our study suggests that psychological wellbeing and healthy habits are threatened by confinement in the face of the COVID-19 pandemic, so it is necessary to implement measures to prevent consequences in our population.

Keywords: Coronavirus Infection / Psychology - Social isolation - Mental Health - Healthy Lifestyle - Anxiety - Depressive Disorder.

RESUMEN

Introducción: En marzo de 2020, la Organización Mundial de la Salud (OMS) declaró a la enfermedad SARS-CoV-2, coronavirus, una pandemia. Desde ese momento, se lleva a cabo un experimento psicológico notablemente grande en el mundo: el aislamiento social.

Objetivos: Analizar la repercusión del aislamiento social sobre los hábitos saludables y algunos aspectos psicosociales y conductuales durante el confinamiento y las restricciones impuestas por la pandemia en el área metropolitana de Buenos Aires (AMBA).

Material y métodos: Se confeccionó una encuesta y se convocó por redes sociales (WhatsApp, Instagram, Facebook, e-mail) a que la respondieran en forma anónima todos excepto el personal médico.

Resultados: Tras 7 días de enviado el correspondiente enlace, habían contestado la encuesta 2912 personas; el 48,2% de ellas tenía entre 40 y 60 años y en su mayoría eran mujeres. El 43,53% percibieron modificaciones en sus hábitos de vida, como el aumento en las horas frente a dispositivos electrónicos, que se duplicó en la cuarentena. Esto se acompañó de mayor sedentarismo: el 83,5% hacía ejercicio antes de la pandemia, pero solo el 6,4% mantuvo la cantidad de horas semanales de ejercicio que hacía antes del aislamiento. El 43,52% presentó alteración en sus hábitos alimenticios y el 41% refirió síntomas compatibles con depresión, ansiedad, tristeza, falta de voluntad o desesperanza.

Conclusiones: Nuestro estudio sugiere que el bienestar psicológico y los hábitos saludables son amenazados por el confinamiento establecido para contener la transmisión de COVID-19, por lo que es preciso implementar medidas para prevenir consecuencias en nuestra población.

Palabras clave: Infección por Coronavirus/Psicología - Aislamiento social - Salud Mental - Estilo de Vida Saludable - Ansiedad - Trastorno Depresivo

REV ARGENT CARDIOL 2020;88:437-442. <http://dx.doi.org/10.7775/rac.v88.i5.18857>

SEE RELATED ARTICLE: REV ARGENT CARDIOL 2020;88:405-406. <http://dx.doi.org/10.7775/rac.v88.i5.19081>

Received: 06/26/2020 – Accepted: 08/27/2020

Address for reprints: José M. Picco - F. Moreno 1221 Pcia de Mendoza. E-Mail: piccojose@gmail.com

¹ Cardiology Service, Fundación para la Lucha contra Enfermedades Neurológicas de la Infancia, FLENI, Ciudad Autónoma de Buenos Aires, Argentina.

² Cardiology Service, Instituto Cardiovascular Lezica, Buenos Aires, Argentina.

³ Cardiology Service, Sanatorio de la Trinidad, Ramos Mejía, Buenos Aires, Argentina

⁴ Cardiodiagnostic Service, Investigaciones Médicas, Ciudad Autónoma de Buenos Aires, Argentina.

⁵ Cardiology Service, Instituto Argentino de Riñón y Trasplante, Ciudad Autónoma de Buenos Aires, Argentina.

⁶ Instituto de Cardiología y Medicina del Deporte Wolff Mendoza, Argentina.

INTRODUCTION

The new SARS CoV-2 coronavirus that causes the disease called COVID-19 was first reported in Wuhan, China, in December 2019. (1, 2) Due to its rapid spread throughout the world in the following months, in March of this year the World Health Organization classified this new disease as a pandemic. (3)

In this framework, many countries have applied various measures in order to contain the spread of the virus. Among them is social distancing or isolation, and interruption of work, educational and sporting activities, recreational-cultural events and travel, among others.

This situation, though it seems to be effective in health terms, poses a challenge regarding its psychological repercussions due to different sources of stress generated by uncertainty, fear of contagion, separation from loved ones, financial difficulties, plus negative changes in lifestyle such as increased sedentarism and altered eating habits. (4)

In this context, the inhabitants of the Autonomous City of Buenos Aires and the metropolitan area (AMBA) are under one of the longest social confinements on the planet. Thus, although some measures of emotional support and containment have been put into practice, it is unknown whether they are enough to mitigate the adverse effects that this situation entails.

In addition, there is also the negative impact of abandoning or decreasing physical activity, which, performed periodically not only reduces cardiovascular disease, but also favors the strengthening of the immune system and improves lung capacity, lowering the possibility of serious complications associated with contagion. (5, 6, 7)

Therefore, we set out to explore the impact of social isolation on healthy lifestyle habits and its psychological repercussions on adults living in AMBA, in order to know their perception of this experience.

METHODS

An anonymous survey was carried out with non-probability convenience sampling using a "snowball" strategy (8), seeking to evaluate changes in healthy lifestyle and experiences associated with compulsory confinement. The questionnaire was digitally disseminated, using electronic means to voluntarily invite people to participate through e-mail, WhatsApp and social networks. The data was automatically uploaded into a template for further analysis.

Four domains were evaluated with a total of 36 questions: sociodemographic data, history of physical activity and healthy lifestyle habits, changes caused by quarantine (mainly modifications in the diet, exercise, cardiovascular risk factors, alcohol consumption and use of screens), and repercussion of quarantine on the psycho-emotional sphere (principally fear of infection, frustration, financial losses, worries and, anxiety).

The study was carried out for seven days, inviting persons ≥ 18 years of age, who resided in the Autonomous City of Buenos Aires or the province of Buenos Aires and whose work was not linked to health, to participate.

Statistical analysis

Continuous variables were expressed as mean and standard deviation or median and interquartile range, according to their distribution. Normality was assessed using several methods, including graphic tools (histograms, "normal probability plot"), skewness, kurtosis, and the Wilk-Shapiro test. Categorical variables were expressed as numbers and percentages.

Student's t test was used to compare groups with continuous variables and normal distribution. When the distribution was non-normal, the Wilcoxon rank-sum test was applied. Proportions were compared using the chi-square test or Fisher's exact test according to the frequency of observed values. In all cases, an alpha error of 5% was assumed to establish statistical significance. STATA 13.0 software package was used for statistical analysis. .

Ethical considerations

Researchers fully adhered to the National Law on Protection of Personal Data (N° 25326), the Declaration of Helsinki of the World Medical Association and the international ethical guidelines for biomedical research in human beings of the Council of International Organizations of Medical Sciences (CIOMS). Accordingly, an alert was added before starting the questionnaire that established: "your data will be treated with professionalism and confidentiality in accordance with the personal data law number 25326. Your answers will be anonymous". Then, participants were requested to press the "start" command to continue with the survey. Additionally, handling of the data originally collected before their codification was carried out by the first and last author of the study, to maximize their confidentiality.

RESULTS

The survey was answered by 2,912 persons, 48.2% of which were between 40 and 60 years of age, 65% were women, 44% had university studies and 20.3% a postgraduate degree. In 47.6% of cases, participants expressed being full-time employees, while 30.7% worked independently.

When inquiring about cardiovascular history, 4.5% of participants expressed having coronary or vascular disease in at least one territory. Table 1 summarizes the remaining population characteristics.

During the confinement period, a significant proportion of participants perceived relevant changes in their daily habits; 44.7% expressed that they ate a less healthy diet, while 19.9% replied with "maybe" to this question. In addition, 29.2% expressed having increased their alcohol consumption. Regarding the use of screens, 42.9% reported spending on average less than 5 hours a week before quarantine. However, only 15.9% replied that they used a screen for less than 5 hours during quarantine, while 49.5% expressed that they did so for more than 10 hours per week ($p < 0.0001$) (Figure 1).

Prior to quarantine, 79.2% of participants reported practicing some sport or training activity: 49.6% between 3 and 6 hours a week, 22.6% more than 6 hours a week, while the remaining 27.8% declared less than 3 hours a week on average. When asked about training time during quarantine, 20.7% stated not do-

Table 1. Population and demographic characteristics of the surveyed participants

Characteristic	Frequency
Age:	
- under 20 years	72 (2.50%)
- 20 to 40 years	833 (28.6%)
- 40 to 60 years	1,404 (48.2%)
- over 60 years	603 (20.7%)
Educational level:	
- primary	29 (1%)
- high school	384 (13.2%)
- tertiary	626 (21.5%)
- university	1,282 (44.0%)
- postgraduate	591 (20.3%)
Work	
- salaried employment	1,388 (47.6%)
- independent	894 (30.7%)
- unemployed	282 (9.7%)
- retired	348 (12.0%)
Place of residence:	
- Autonomous City of Buenos Aires	1,735 (59.6%)
- Buenos Aires province	1,072 (36.8%)
- not declared	105 (3.6%)
Cohabitants at home:	
- people without risk *	1,717 (59.0%)
- people at risk *	723 (24.8%)
- live alone	472 (16.20%)
Risk factors or pre-existing diseases:	
- hypertension	418 (14.4%)
- diabetes mellitus	58 (2%)
- hypercholesterolemia	327 (11.2%)
- vascular disease **	131 (4.5%)
- other cardiac diseases ***	158 (5.4%)
- smoking	272 (9.3%)
- other chronic diseases +	17 (0.6%)

* risk, understood as family members with increased probability of suffering infections or presenting adverse outcomes with COVID-19.

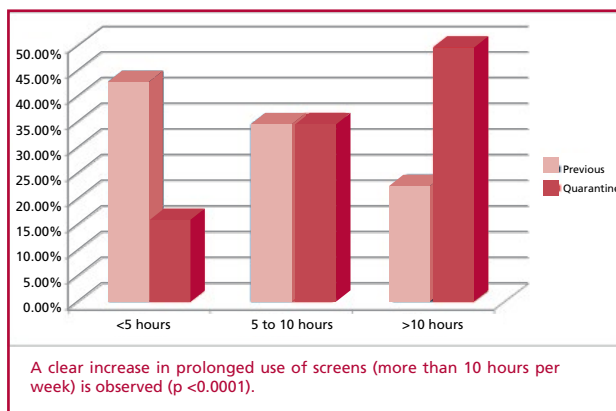
** history of ischemic heart disease, acute myocardial infarction, any method of revascularization (angioplasty or surgery), stroke or transient ischemic attack and peripheral vascular disease in any territory.

*** heart failure, atrial fibrillation, moderate or severe valve disease, valve replacement surgery, congenital heart disease.

+ non-cardiovascular pathologies declared by participants.

ing any type of physical activity, while 37.4% exercised less than 3 hours a week. Only 9.2% of participants said they performed more than 6 hours of training per week ($p < 0.0001$).

In 40.2% of cases participants stated that they were not afraid of becoming infected by COVID-19; however, 73.4% said they were worried about a relative getting infected, and additionally 14% expressed that "maybe" they were worried about this. During quarantine, 66.5% of participants acknowledged having visited people outside their family nucleus, with a predominance in favor of those with no fear of conta-

**Fig. 1.** Use of screens per week, before and during quarantine

tion (72.9% vs. 65.5%, $p = 0.005$).

When evaluating the psycho-emotional aspects of social isolation, 54.4% of participants reported having experienced sadness (urge to cry, grief or sorrow), 41.1% expressed feeling depressed (apathy, unwillingness and hopelessness) and 49.9% acknowledged feeling anxiety (restlessness, apprehension, uncertainty or feeling of catastrophe). Globally, 67% of participants expressed having experienced at least one of these moods, and when including respondents who answered "maybe" to any of these questions, this percentage rose to 85.9%. It should be noted that almost one in three participants said that they experienced sadness, anxiety and depression (Figure 2).

We found a statistically significant trend towards greater feelings of sadness among younger participants; thus, 88.9% of those under 20 years of age, 80.8% of people between 20 and 40 years, 74.5% of participants between 40 and 60 years and 60.5% of those over 60 years expressed this feeling in a positive or potential way ("maybe") ($p < 0.0001$). Very similar results were observed for the self-report of anxiety and depression; conversely, fear of contagion showed an inverse relationship with age. Financial concerns were similar at all ages except for those over 60 years of age (Figure 3).

During confinement, physical or verbal violence was perceived by 8.6% of participants while 7.6% answered this question with "maybe". In a more pronounced way, 68.2% of surveyed persons answered affirmatively or with "maybe" when asked about fear for their future financial situation (Figure 2).

Finally, 77.6% of participants stated that being able to perform physical activity would definitely improve their emotional state or their perception of health (Table 2); additionally, 19.7% answered that this would probably happen. In fact, this perception was statistically more frequent among most participants who declared that they presented alterations in their psycho-emotional sphere.

DISCUSSION

Our study showed that in the context of the COVID-19 pandemic, compulsory social isolation has had an important impact on the population, both on eating habits, exercise and emotions. We observe that this type of stress favors the adoption of unhealthy eating habits, with increased alcohol consumption, and that lack of freedom to perform physical activity outdoors or in gyms increases the degree of sedentarism.

In addition, and unable to be dissociated from the former, there are repercussions on the state of mind of the population, which show a clearly negative tendency. This is not an isolated event of our society, but has already been evaluated by other studies carried out in other confinement situations, such as the 2009 SARS

epidemic in China, where social isolation and loneliness were associated with alcohol and drug abuse. (9)

Sedentary lifestyle and physical inactivity are among the main modifiable cardiovascular risk factors worldwide, and directly related to cardiovascular disease and all-cause mortality. (10) Given the circumstances of the pandemic and the measures taken to control it, we observed a marked reduction in physical activity in the population during the quarantine period. This is more relevant if we consider that a significant proportion of the population analyzed considered that exercising would improve their emotional state. In fact, the individuals who manifested the greatest impact on their psychological sphere were those who gave the greatest importance to the relationship be-

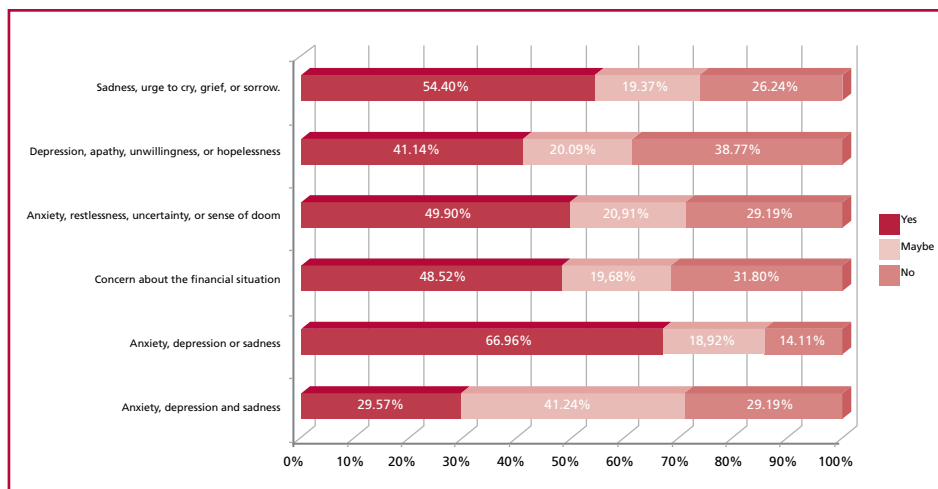


Fig. 2. Self-report of the psychosocial impact of isolation

Approximately two out of three participants in the survey reported experiencing psycho-emotional alterations.

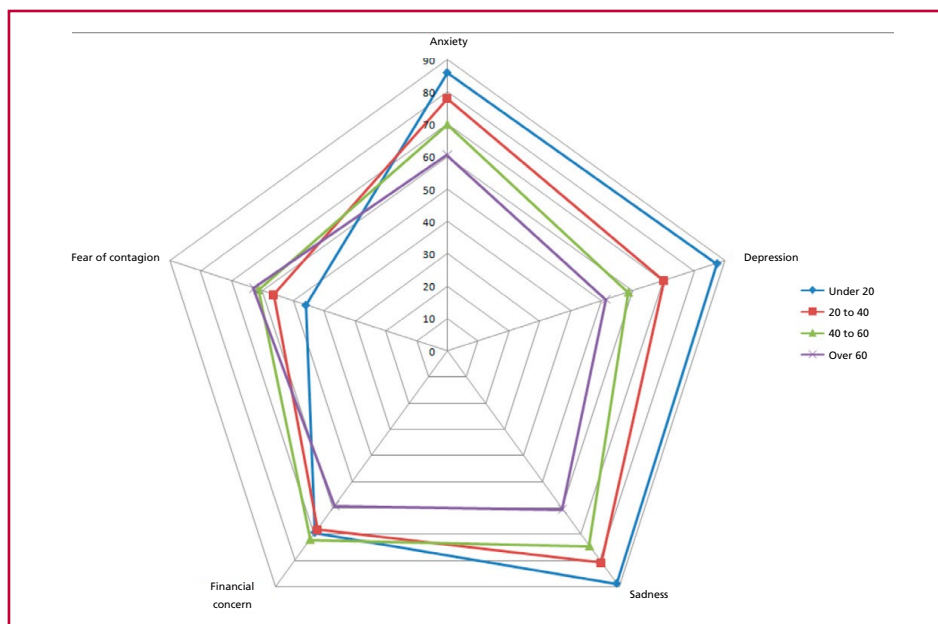


Fig. 3. Differences in self-perceived psycho-emotional state, fear of contagion and financial concern according to age.

It can be seen how sadness, depression and anxiety domains were more frequent at a younger age. On the other hand, fear of contagion showed an inverse relationship with age. Financial concern was similar at all ages, with the exception of those over 60 years of age. The answers "yes" and "maybe" were evaluated together.

Table 2. Self-perception regarding the impact that the possibility of doing physical activity would have on their psycho-emotional sphere.

Feeling	Women (n = 108)	No Improvement with PA (n=155)	p
Sadness	74.5% (2,053)	61.3% (95)	<0.0001
Depression	61.6% (1,699)	54.2% (84)	0.065
Anxiety	71.4% (1,969)	60.0% (93)	0.002
Financial concern	68.6% (1,892)	60.7% (94)	0.038
Fear of contagion with COVID-19	59.6% (1,644)	62.6% (97)	0.47

PA: Physical activity.

Values correspond to the proportion of patients who felt a certain sensation after dividing the population among those who considered that their experiences would improve with physical activity and those who considered that this would not happen. Due to this, the sum of the percentages exceeds 100%.

tween physical activity and mood. This relationship between exercise and psychic evolution was very clearly established in our survey. It will be very important to observe if they return to their usual physical activity and if this has a favorable psychological effect.

The decrease in physical activity was accompanied by changes in habits such as more time in front of electronic devices and an increase in the consumption of fast and unhealthy foods.

Prolonged television viewing is one of the most prevalent behaviors in industrialized countries and has been associated with morbidity and mortality (11). Spending more time watching television is associated with increased fatal and non-fatal risk of cardiovascular disease. It is estimated that more than 2 hours of television use is an independent risk factor regardless of weight, body mass index, waist circumference and other variables. (12) This change in the habit of our population would not be a minor fact, since the majority (48%) of those surveyed spends more than 10 hours in front of a screen and 79% of them are between 20 and 60 years old. While this can be assumed to be transitory, it will be important to see how it evolves when social isolation ends.

Beyond cardiovascular risk, the pandemic is having enormous psychological, social and economic impact. Several lines of research had previously focused on understanding how societies define the origin and impact of epidemics and how they deal with them, with emotional coping as key to the process. (11) In today's unprecedented situation, it is difficult to predict the psychological and emotional consequences that the pandemic and the imposed social isolation will have. Studies carried out in China, the first affected country, showed that fear of the unknown and uncertainty can develop mental disorders such as stress, anxiety, somatization and adverse behaviors such as increased alcohol and tobacco consumption. (11)

According to the latest official report of 2018, 14.8% of the Argentine population has some type of mental disorder. (13) With the disruptive situation and implications of the coronavirus epidemic, pre-existing disorders are aggravated. Moreover, in the healthy population, this external stressor is also a problem, because it can lead to anxiety or depression disorders

as manifested by the majority of our respondents. It is interesting to see that the younger the respondents, the more emotionally affected they are. This raises questions leading to short- and mid-term concerns, as for example the impact that this alteration will have on the state of mind of the population, or if the mere end of this disruption will be enough for individuals to return to normality.

Evidence shows that prolonged isolation and loneliness can be associated with increased depression and suicidal behavior. (14)

Fear, uncertainty, and stigmatization are common in any biological disaster, making adequate mental health and clinical interventions essential.

Finally, it is necessary to note that our study has some limitations that deserve to be pointed out. First, the interviewed population has some peculiarities that limit the generalization of the observations. Thus, participants were predominantly middle-aged people, with a high educational level and full-time employees. Second, the participants' self-report could underestimate or overestimate some of the variables surveyed; however, it represents the perception of their experiences, especially with regard to psychosocial aspects. Third, since there is no data on the participants prior to confinement, it is not possible to assert that moods such as sadness, anxiety or depression are its product, and not a previous experience, perpetuated or aggravated by isolation. Moreover, one must be cautious when analyzing the associations found, since the study design does not allow asserting that there is causality between the findings.

However, we believe that the large sample size is a strength that at least partially compensates for some of the limitations mentioned.

CONCLUSIONS

Our study suggests that psychological wellbeing and healthy habits have been markedly altered by confinement in the face of the COVID-19 pandemic in a significant proportion of participants. It would seem that these effects are more evident in younger people, and that they could be alleviated with physical activity. Moreover, the high proportion of adults concerned about their financial future is shocking. Although the

future health consequences of these findings are difficult to predict, the implementation of mitigating measures should be considered.

Further studies are needed in order to confirm or refute these observations.

Conflicts of interest

None declared. (See the authors' conflicts of interest forms on the website/Supplementary material).

REFERENCES

1. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. *Lancet* 2020;395:470–3. [https://doi.org/10.1016/S0140-6736\(20\)30185-9](https://doi.org/10.1016/S0140-6736(20)30185-9)
2. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *N Engl J Med* 2020;382:1199–207. <https://doi.org/10.1056/NEJMoa2001316>
3. Ganatra S, Dani SS, Shah S, Asnani A, Neilan TG, Lenihan D, et al. Management of Cardiovascular Disease During Coronavirus Disease (COVID-19) Pandemic. *Trends Cardiovasc Med* 2020. <https://doi.org/10.1016/j.tcm.2020.05.004>
4. Rubin GJ, Wessely S. The psychological effects of quarantining a city. *BMJ* 2020;368:m313. <https://doi.org/10.1136/bmj.m313>
5. Engeseth K, Prestgaard EE, Mariampillai JE, Grundvold I, Liestol K, Kjeldsen SE, et al. Physical fitness is a modifiable predictor of early cardiovascular death: A 35-year follow-up study of 2014 healthy middle-aged men. *Eur J Prevent Cardiol* 2018;25:1655–63. <https://doi.org/10.1177/2047487318793459>
6. Tiberi M, Piepoli MF. Regular physical activity only associated with low sedentary time increases survival in post myocardial infarction patient. *Eur J Prev Cardiol* 2019;26:94–6. <https://doi.org/10.1177/2047487318811180>
7. Chen P, Mao L, Nassis GP, Harmer P, Ainsworth BE, Li F. Coronavirus disease (COVID-19): The need to maintain regular physical activity while taking precautions. *J Sport Health Sci* 2020;9:103–4. <https://doi.org/10.1016/j.jshs.2020.02.001>
8. Perez DF, Nie JX, Ardern CI, Radhu N, Ritvo P. Impact of participant incentives and direct and snowball sampling on survey response rate in an ethnically diverse community: results from a pilot study of physical activity and the built environment. *J Immigr Minor Health* 2013;15:207–14. <https://doi.org/10.1007/s10903-011-9525-y>
9. Wu P, Fang Y, Guan Z, Fan B, Kong J, Yao Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. *Can J Psychiatry* 2009;54:302–11. <https://doi.org/10.1177/070674370905400504>
10. Lavie CJ, Ozemek C, Carbone S, Katzmarzyk PT, Blair SN. Sedentary Behavior, Exercise, and Cardiovascular Health. *Circ Res* 2019;124:799–815. <https://doi.org/10.1161/CIRCRESA-HA.118.312669>
11. Ozamiz-Etxebarria N, Dosil-Santamaria M, Picaza-Gorrochategui M, Idoiaga-Mondragon N. Stress, anxiety, and depression levels in the initial stage of the COVID-19 outbreak in a population sample in the northern Spain. *Cad SaudePublica* 2020;36:e00054020. <https://doi.org/10.1590/0102-311x00054020>
12. Grøntved A, Hu FB. Television viewing and risk of type 2 diabetes, cardiovascular disease, and all-cause mortality: a meta-analysis. *JAMA* 2011;305:2448–55.
13. Stagnaro JC, Cía AH, Aguilar Gaxiola S, Vázquez N, Sustas S, Benjet C, et al. Twelve-month prevalence rates of mental disorders and service use in the Argentinean Study of Mental Health Epidemiology. *Soc Psychiatry Psychiatr Epidemiol* 2018;53:121–9. <https://doi.org/10.1001/jama.2011.812>
14. Serafini G, Parmigiani B, Amerio A, Aguglia A, Sher L, Amore M. The psychological impact of COVID-19 on the mental health in the general population. *QJM* 2020. <https://doi.org/10.1093/qjmed/hcaa201>