Date of receipt: March 29, 2021
Date of acceptance: August 23, 2022

ORIGINAL ARTICLE

https://dx.doi.org/10.14482/sun.39.02.813.625

Relationship between well-being, cognitive decline, coping with stress, and physical activity during the COVID-19 pandemic in older people in a northern Chilean city

Relación entre el bienestar, deterioro cognitivo, afrontamiento al estrés y actividad física durante la pandemia por COVID-19 en personas mayores de una ciudad del norte de Chile

Ivonne Jorquera-Cáceres[1], Eduardo Guzmán-Muñoz[2], Margarita Vega-Palma[3]

[1] Kinesiologist with a degree in Rehabilitation, Universidad de Tarapacá (Chile). Master in Education from the same university. Professor and researcher, School of Kinesiology, Faculty of Health, Universidad Santo Tomás (Chile). Academic associated with the Center for Research and Innovation in Gerontology (CIGAP), Faculty of Health, Universidad Santo Tomás (Chile) and the Kinesiology Research Center (NIK), Faculty of Health, Universidad Santo Tomás (Chile). Orcid: https://orcid.org/0000-0001-5115-9781. Ivonnejorquera@santotomas.cl

[2] Kinesiologist, Universidad de Talca (Chile). Master in Health and Sports Sciences, Universidad Finis Terrae (Chile), Doctor in Physical Activity Sciences, Universidad Católica del Maule (Chile). Academic and Researcher, School of Kinesiology, Faculty of Health, Universidad Santo Tomás, Chile. Academic associated with Núcleo de Investigación en Kinesiología (NIK), Faculty of Health, Universidad Santo Tomás (Chile). Orcid: https://orcid.org/0000-0001-7001-9004. eguzmanm@santotomas.cl

[3] English teacher, Bachelor's Degree in Education, Universidad de Tarapacá (Chile). Master in Education, with a mention in Inclusive Management, Universidad Santo Tomás, Arica (Chile). Professor of General Education, Universidad Santo Tomás (Chile). Orcid: https://orcid.org/my-orcid?or- cid=0000-0002-3661-5301. margaritavega@santotomas.cl

Correspondence: Klgo. Mg. in Education Ivonne Jorquera-Cáceres. 18 de septiembre 1191, Arica (Chi- le). ivonnejorquera@santotomas.cl. Phone: +56 582578442. Cell: +56 9 81390837.

ABSTRACT

Objective: To assess the relationship between well-being, cognitive impairment, coping measures, and level of physical activity in older people in a COVID-19 pandemic situation in a city in northern Chile, and to compare people with and without mild cognitive impairment (MCI).

Methodology: Cross-sectional study that included 65 elderly people living in the community of Arica (Chile). Their cognitive performance was assessed with the Montreal Cognitive Assessment (MoCA), their coping strategies were measured with the Multidimensional Coping Estimation Inventory (COPE-28), their physical activity levels with the International Physical Activity Questionnaire (IPAQ) short version, and their well-being using the GHQ12 general health questionnaire.

Results: Four variables behaved as predictors of low well-being: female gender (β =1.833; p=0.049); being younger (β = 0.175; p=0.030); using more stress coping block (β =0.706; p=0.001); and less cognitive coping (β = 0.436; p=0.001). In addition, there was a relationship between low well-being and a lower number of METs in people with a moderate physical activity level (r= -0.250; p=0.022). When comparing the results of the variables between subjects with and without MCI, there were no significant differences (p>0.05).

Como citar: Jorquera-Cáceres I, Guzmán-Muñoz E, Vega-Palma M. Relationship between well-being, cognitive decline, coping with stress, and physical activity during the COVID-19 pandemic in older people in a northern Chilean city [Relación entre el bienestar, deterioro cognitivo, afrontamiento al estrés y actividad física durante la pandemia por COVID-19 en personas mayores de una ciudad del norte de Chile]. *Salud Uninorte*. 2023; 39(2): 535-550. https://dx.doi.org/10.14482/sun.39.02.813.625

Relationship between well-being, cognitive decline, coping with stress, and physical activity during the COVID-19 pandemic in older people in a northern Chilean city

Ivonne Jorquera-Cáceres, Eduardo Guzmán-Muñoz, Margarita Vega-Palma

Conclusion: The highest percentage of participants with low well-being was observed in those with less physical activity, female gender, and who use coping blocking as a strategy in periods of stress. It is vital to ensure that older people remain active and maintain adequate coping measures to be more resilient during a crisis.

Keywords: COVID-19, coronavirus, cognitive frailty, physical activity, psychological well-being.

RESUMEN

Objetivo: Evaluar la relación entre bienestar, deterioro cognitivo, medidas de afrontamiento y nivel de actividad física de personas mayores en situación de pandemia por COVID-19 de una ciudad del norte de Chile y comparar entre personas con y sin deterioro cognitivo leve (DCL).

Metodología: Estudio transversal que incluyó a 65 personas mayores que viven en la comunidad de Arica (Chile). Su rendimiento cognitivo fue valorado con la evaluación cognitiva de Montreal (MoCA); sus estrategias de afrontamiento se midieron con el Inventario Multidimensional de Estimación del Afrontamiento (COPE -28); sus niveles de actividad física con el cuestionario internacional de actividad física (IPAQ) versión corta, y su bienestar mediante el cuestionario de salud general GHQ12.

Resultados: Cuatro variables se comportaron como predictores de bajo bienestar: sexo femenino (β =1,833; p=0,049); presentar menor edad (β = 0,175; p=0,030); usar más bloqueo del afrontamiento al estrés (β =0,706; p=0,001); y en menor medida un afrontamiento cognitivo (β = 0,436; p=0,001). Además, existió relación entre bajo bienestar y menor cantidad de MET en personas con nivel actividad física moderada (r= -0,250; p=0,022). Al comparar los resultados de las variables entre sujetos con y sin DCL, no existieron diferencias significativas (p>0,05).

Conclusión: El mayor porcentaje de participantes con bajo bienestar se observó en los de menor actividad física, género femenino y que utilizan el bloqueo de afrontamiento como estrategia a periodos de estrés. Es vital asegurar que las personas mayores permanezcan activas y mantengan adecuadas medidas de afrontamiento para ser más resilientes durante una crisis.

Palabras clave: COVID-19, coronavirus, fragilidad cognitiva, actividad física, bienestar psicológico.

Salud Uninorte
Vol. 39(2), 2023
Barranquilla (Col.)

INTRODUCTION

On January 30, 2020, WHO declared the disease caused by the new SARS-Cov-2 (COVID-19) coronavirus to be an international public health event; since then, 593 million confirmed cases and 6.4 million deaths have been reported worldwide (1).

The promotion of confinement, isolation, and restriction of crowds was a fundamental part of the strategies to prevent its transmission in different countries of the world (2, 3). However, these measures were identified as a risk factor for older persons (OP), since there was evidence of reduced levels of physical activity, increased sedentary behaviors, stress, and sleep disturbances during this time (4, 5).

The presence of cognitive deficits in OP has also been extensively studied before the pandemic (6). MCI is considered an early stage of dementia and refers to cognitive impairment that exceeds what is normally expected for age, but with preserved functionality (7, 9). It has been shown that PM with MCI are more vulnerable to further functional decline and even have a higher risk of mortality during periods of stress (3), and much of the current literature on MCI pays special attention to its prevention, with strategies to avoid sedentary behaviors and maintain a good diet (6, 10).

In recent years, research has been reported that relates physical activity levels and coping measures as strategies to prevent cognitive decline and maintain good well-being (3, 11). However, there is little information on the relationship between assets, coping measures, and physical activity level in PM under a period of stress such as the COVID-19 pandemic, and it is unclear whether people without MCI use the same coping strategies as people with MCI (11).

The objectives of the study were: a) to evaluate the relationship between well-being, cognitive impairment, coping measures, and level of physical activity of OP in a Covid-19 pandemic situation in a city in northern Chile, and b) to compare well-being, coping measures and level of physical activity among people with MCI versus those without MCI.

MATERIALS AND METHOD

A descriptive-correlational, comparative, cross-sectional study was conducted. It was carried out between August and December 2021. The selected sample comprised 65 participants over 60 years of age (49 women and 16 men) living in the community of Arica (Chile), belonging to the municipal program of Comprehensive Support for the Elderly and the "Vínculos" program (Ministry of Social Development, Chile), who were surveyed in person at their homes. The sampling was by convenience and the sample calculation was obtained considering heterogeneity of 50 %, a margin of error of 5 %, a confidence level of 95 % and a total population of 102 OP (64 women and 38 men), determining an n of 81 subjects for this study (51 women and 30 men). GPower *software* (version 3.1.9.6, Franz Faul, Universiät Kiel, Germany) was used for this calculation. Of the 81 potentially eligible participants, 14 did not agree to participate, 1 was infected with COVID-19 at the time of the evaluations, and 1 died before data collection. Participants were excluded if they had a history of injury or illness that prevented physical activity; visual or hearing impairment that prevented communication; scored <18 points on the MoCA assessment; and/or previous diagnosis of dementia. All participants signed an informed consent before data collection, which was approved by the Ethics Committee of the University where the study was conducted (code 63/2021).

Measurement of variables

- *Sociodemographic variables*: The age, sex, and educational level of the participants were recorded. The questions were obtained by applying a questionnaire with questions validated in the National Health Survey (ENS) 2016-2017 (12).

- *Coping measures*: Measures of coping with stress were evaluated with the Multidimensional Coping Appraisal Scale (COPE-28), which consists of 28 items and 14 subscales with questions that are evaluated through an ordinal Likert-type scale with four response alternatives (1 = I never do it to 4 = I do it many times). The 14 subscales are: active coping, planning, instrumental support, use of emotional support, self-distraction, venting, behavioral disengagement, positive reinterpretation, denial, acceptance, regression, substance use, humor, and self-blame (13).

For this study, 4 second-order coping measures were considered, in which the subscales are logically grouped into more general types of coping, based on a previous study (13). Finally, the strategies were: cognitive coping, socially supportive coping, blocking coping, and spiritual coping. The higher the score achieved in each strategy, the greater the use of that coping measure (13).

Salud Uninorte
Vol. 39(2), 2023
Barranquilla (Col.)

COPE-28 is the Spanish version of Carver's COPE Brief (1997) by Morán and Manga (unpublished document). It is an inventory of 28 items and 14 subscales that is answered on an ordinal Likert-type scale with 4 response alternatives (from 0 to 3), ranging from "I never do this" to "I always do this", with intermediate scores.

- *Physical activity level*: The level of physical activity was measured using the International Physical Activity Questionnaire (IPAQ) short version. The indicator of total physical activity was expressed continuously in MET (*Metabolic-energy-equivalents*) and was classified as a low level of physical activity when energy expenditure was ≤ 599 MET/min/week, moderate ≥ 600 MET/min/week, and vigorous ≥1500 MET/min/week (14, 15).

- *Well-being*: The GHQ12 health questionnaire was used to assess psychosocial well-being. Its total score is obtained by the sum of the scores obtained in each of the 12 questions, which have a score ranging from 0 to 3 points. High scores indicate low well-being or lower psychosocial health; 12 points or more indicate the possibility that the person is suffering from an emotional disorder, so in this study the variable was categorized as preserved well-being (GHQ12<12 points) and low well-being (GHQ12 >12 points) based on previous research (3,16,17).

- *Mild cognitive impairment*: the presence of MCI was assessed by the Montreal Cognitive Assessment (MoCA). A 30-question test that assesses different types of cognitive skills. The maximum score is 30 points, to which one point is added if the subject has 12 years or less of formal schooling (18). The cut-off point for determining MCI in a person corresponds to a score > 18 points and ≤ 25 points, since a score ≥ 26 is considered no cognitive impairment and <18 points, a significant cognitive impairment, such as Alzheimer's or dementia(18).

Data analysis

All analyses were performed with IBM SPSS version 23 statistical *software*. Continuous variables were presented as mean and standard deviation and categorical variables as percentages. The Kolmogorov-Smirnov test was applied to determine the distribution of the data. Subsequently, an inferential analysis was performed to study the relationship between the well-being variable, level of physical activity, and the measures of coping. Spearman's correlation (nonparametric) was used to determine the existence or not of a relationship between the variables and the variables were categorized dichotomously or polytomously for multiple linear regression to obtain

Relationship between well-being, cognitive decline, coping with stress, and physical activity during the COVID-19 pandemic in older people in a northern Chilean city

Ivonne Jorquera-Cáceres, Eduardo Guzmán-Muñoz, Margarita Vega-Palma

the β coefficient. The well-being variable was used as reference groups (low psycho-social well-being-conserved well-being). At the same time, a comparative analysis was made to determine the differences between the variables according to a group of people with and without MCI, using the *Mann-Whitney* U statistical test. All analyses used a significance level of 0.05.

RESULTS

Of the population studied (n = 65), 49 (75 %) were women; the average age was 70 ± 5.2 years (minimum 62 and maximum 76 years).

Table 1 presents descriptively the sociodemographic characteristics and the presence of MCI in the sample according to the participants' level of well-being based on the GHQ questionnaire-12. In Table 2, the levels of physical activity and coping measures are also shown descriptively according to the antecedent of well-being.

In summary, the majority of participants presented preserved well-being (74 %) and in a lower percentage low well-being (26 %) (Table 1). The highest proportion of participants with low well-being was observed in subjects with low levels of physical activity (41 %) versus moderate to high physical activity (27 %). The highest use of coping measures in the OP group with low well-being was cognitive coping, as in the group with preserved well-being. It should be noted that in the participants with low well-being, 76 % of participants with MCI were observed versus 58 % of those with preserved well-being (Table 1). Women also presented a higher percentage of participants with low well-being (76 %).

Salud Uninorte
Vol. 39(2), 2023
Barranquilla (Col.)

Table 1. Sociodemographic characteristics, well-being, and presence of MCI according to level of well-being based on the GHQ12 general health questionnaire

Background	Low welfare *n*: 17	Well-being Preserved *n*: 48
Sociodemographics		
Participants (%)	26	74
Age (mean in years and SD)	69,11 +4,45	70,7+5,45
Male or Female (%)		
Woman	76	75
Man	24	25
History of Diabetes (%)		
Yes	53	27
No	47	72
History of HT (%)		
Yes	65	63
No	35	37
Psychosocial well-being		
GHQ12 Questionnaire (mean score and SD)	16,05 +3,78	7,18+2,28
Mild cognitive impairment		
DCL (%)		
Yes	76	58
No	24	42
MoCA test (average score and DS)	23,82+3,21 24,62+2,84	

Table 1. *SD: standard deviation; HT: hypertension. n:65.

Source: own elaboration, 2022.

Relationship between well-being, cognitive decline, coping with stress, and physical activity during the COVID-19 pandemic in older people in a northern Chilean city

Ivonne Jorquera-Cáceres, Eduardo Guzmán-Muñoz, Margarita Vega-Palma

Table 2. Level of physical activity and coping measures according to Well-being variable based on the GHQ12 general health questionnaire

Background	Low welfare n:17	Well-being preserved n:48
Coping measures (MAF)		
Cognitive coping (mean score and SD)	15,7+ 5,43	16,1 +3,49
Coping with social support (mean score and SD)	8,8 +3,28	7,2 +2,83
Coping block (mean score and SD)	12,6 + 5,64	8,1 +3,37
Spiritual coping (mean score and SD)	4,6 + 1,35	4,3+1,48
Physical activity level		
(%)		
Low NAF	41	27
Moderate/high NAF	59	73

Table 2. *MAF: Coping measures/NAF: Physical activity level. / SD: Standard Deviation. n:65.

Source: own elaboration, 2022.

Table 3 shows the factors that are related to decreased well-being in PM with and without MCI. In this context, a significant inverse correlation could be identified between well-being with moderate physical activity (p=0.022), social support coping (p=0.002), and blocking coping (p=0.001). However, when comparing the results between the variables age, well-being, physical activity levels, and coping measures concerning to people with MCI versus people without MCI (Table 4), there were no significant differences (p>0.05).

Finally, the multiple linear regression analysis (Table 5) yielded four variables that were significantly related as predictors of low well-being: belonging to the female sex (p=0.049); younger age (close to 60 years) (p=0.030); using more stress-coping blocks (p=0.001); and to a lesser extent, cognitive coping (p=0.001).

Table 3. Relationship between well-being and study variables

Variables	p-value	r-value
DCL	0,286	0,071
Spiritual Coping	0,168	-0,121
Cognitive coping	0,443	0,018
Coping social support	0,002*	0,359*
Blocked coping	0,001*	0,424*
NAF (METs)	0,252	-0,084
Low AF	0,386	-0,037
Moderate AF	0,022	-0,250*
Intense AF	0,359	-0,046

Table 3. Spearman test statistic. *Significant relationship (sig. <0.05). Dependent variable: well-being. NAF: level of physical activity; PA: physical activity.

Source: own elaboration, 2022.

Table 4. Comparison of participants with mild cognitive impairment vs. no cognitive impairment

Variable	With MCI (mean and SD)	No MCI (mean and SD)	p-value
Age (years)	69,65 +4,88	71,5 +5,68	0,616
Spiritual coping (points)	2,65 + 2,21	2,96 +2,42	0,530
Social coping (points)	6,36 + 2,28	7,25 +2,47	0,359
Cognitive coping (points)	11,80 +4,67	13,04 +5,48	0,647
Coping block (points)	6,23 + 3,46	6,66 + 4,40	0,764
Welfare (points)	8,77+ 4,30	8,83 + 3,37	0,573
Intense NAF (METs)	4420,31 + 4310,53	3867,66 +2382,03	0,522
Moderate NAF (METs)	971,9 +261,30	799,5 + 91,01	0,436
Light NAF (METs)	289,53 +160,96	342,42 +107,60	0,846

Table 4. *MCI: mild cognitive impairment; NAF: Physical Activity Level; SD: Standard Deviation.

Source: own elaboration, 2022.

Relationship between well-being, cognitive decline, coping with stress, and physical activity during the COVID-19 pandemic in older people in a northern Chilean city

Ivonne Jorquera-Cáceres, Eduardo Guzmán-Muñoz, Margarita Vega-Palma

Table 5. Multiple linear regression model

Model	Coef. β	p-value
(Constant)	22,664	0,001*
Female Sex	1,833	0,049*
Age close to 60 years old	0,175	0,030*
Cognitive coping	0,436	0,001*
Blocked coping	0,706	0,001*

Table 5. Legend. Multiple linear regression model. Summary of model r2: 0.409. *Significant relationship (sig. <0.05). Predictors of low well-being or worse psychosocial health: female sex; younger age (close to 60 years); greater use of blocking stress coping; and less use of cognitive coping. Dependent variable: Well-being.

Source: own elaboration, 2022.

DISCUSSION

The primary objective of this study was to evaluate the relationship between well-being, cognitive impairment, coping measures, and level of physical activity of OP in a pandemic situation. The main results indicate that people with higher scores in the GHQ12 questionnaire (low well-being) are female, are closer to 60 years of age, use less cognitive coping strategies, and use blocking as a coping response to stress to a greater extent.

Also, worse performance in the GHQ12 questionnaire was related to participants who presented a lower amount of METs before a moderate level of physical activity and greater use of social coping and blocking of coping. These results could be useful for the implementation of surveillance and promotion programs in the population of OP, who present a high prevalence of sedentary behaviors, which exposes them to worsen their functionality (19, 21).

These findings are consistent with previous reports, in which it has been shown that the more physically active OP tends to have a higher self-perception of socio-psychological well-being and experience lower levels of distress during periods of crisis (3). In our research, the highest percentage of subjects presenting low well-being were participants with less physical activity (41 %), with a negative relationship in the moderate physical activity group, i.e., the lower the METs, the

higher the GHQ12 score (lower psychosocial well-being). However, this result should be interpreted with caution, because the IPAQ instrument, although there is a history of its use in populations older than 69 years, has not yet been validated in people older than 69 years (3,15,22). The decision to use this instrument was due to the Covid-19 pandemic situation (23), since the IPAQ questionnaire assesses leisure time physical activity, home maintenance, occupational and transportation, while other instruments only assess leisure time physical activity (15).

On the other hand, coping measures were characterized using the COPE-28 test, which allows determining four secondary domains (cognitive coping, social coping, spiritual coping, and blocking coping), where the OP group with low well-being used, preponderantly, blocking coping, in contrast to the group with preserved well-being (scores X 12.6 + 5.6 versus X 8.1 + 3.4, respectively). The evidence suggests that positive coping strategies such as cognitive coping measures during a crisis are mostly based on planning in the face of adversity, which reflects people's ability to adapt to problems, whether physical, mobility, or psychological (3). Studies before the pandemic also report that active coping and help-seeking is a strategy commonly used by OP when faced with problems; however, at an older age and when faced with conflicts, they tend to use a more evasive strategy. Education, on the other hand, plays an important role in the use of different strategies, since the more education, the more active and less avoidant coping (24).

Secondarily, this research aimed to compare well-being, coping measures, and level of physical activity between people with and without MCI. There were no significant differences in the comparison of these variables; this could be because people with MCI may have demonstrated that only one cognitive domain was affected; since studies have identified that participants with Unidomain MCI maintain a performance quite similar to PM without cognitive compromise (8, 9). However, in this study, we did not aim to identify which cognitive domain or function may have been more affected by the performance of the MoCA test, so it would be important to consider this in the future.

It is worth noting that in the group of people with low well-being, 76% of participants showed MCI versus 58% in those with preserved well-being, which indicates the importance of following up on diagnostic criteria, instrument protocols, affected domains, and educational level; since several neuropsychological screening tests are usually sensitive to educational and sociocultural factors (25).

Relationship between well-being, cognitive decline, coping with stress, and physical activity during the COVID-19 pandemic in older people in a northern Chilean city

Ivonne Jorquera-Cáceres, Eduardo Guzmán-Muñoz, Margarita Vega-Palma

Women, on the other hand, also presented a higher percentage of low well-being (76 %) with respect to men (24 %); a situation that could be due, to other studies in which a higher percentage of women in the sample, and mostly reporting being housewives, without paid income, and with low educational level, the sociocultural and educational influence could affect the results (3,7,25).

Among the strengths of this research is the use of validated instruments; however, the results should take into account the limitations of a cross-sectional study, which does not allow for establishing cause-effect relationships in the associations among the variables. In addition, we must consider the sample size achieved (74% of the estimated sample) and the use of a physical activity instrument with a limited age range.

In conclusion, the highest percentage of OP with MCI and without MCI who presented low well-being was observed in participants with less physical activity, of female gender, and who use blogging as a coping strategy. These results could be useful for the early identification of at-risk groups and the application of measures to ensure that the OP remains active, maintains adequate strategies to be more resilient during a crisis, and has adequate psychosocial well-being.

Acknowledgments: The authors would like to thank the participants, and the research assistants, specifically Carolina Peralta-Pasten and Felipe Tapia-Aliste for their technical contributions to the study.

Financing: None.

Conflict of Interest Statement: All authors reviewed the manuscript and agreed with its final version. None of the authors report any conflict of interest.

REFERENCES

1. World Health Organization. Coronavirus disease (COVID-19) *Global epidemiological situation* [inter- net], August 2022; 24. Available from:reliefweb.int/report/world/coronavirus-disease-covid-19-wee- kly-epidemiological-update-24-august-2022.

2. WHO. Infection prevention and control in long-stay care facilities in the context of COVID-19. *Organ. World.Health*.2020;1:1-34Availableat:https://apps.who.int/iris/bitstream/handle/10665/331643/WHO-2019-nCoV-IPC_long_term_care-2020.1-spa.pdf?sequen- ce=1&isAllowed=y.

Salud Uninorte
Vol. 39(2), 2023
Barranquilla (Col.)

3. Murukesu RR, Singh DKA, Shahar S, Subramaniam P. Physical activity patterns, psychosocial well-being and coping strategies among older persons with cognitive frailty of the 'we-rise' trial throughout the COVID-19 movement control order. *Clin. Interv. Aging*. 2021vol. 16: 415-429. doi: 10.2147/CIA.S290851.

4. Fernández RS, Crivelli L, Guimet NM, Allegri RF, Pedreira ME. Psychological distress associated with COVID-19 quarantine: latent profile analysis, outcome prediction, and mediation analysis. *J. Affect. Disord*. Jan 2020; 277: 75-84. Doi: 10.1016/j.jad.2020.07.133.

5. Bentlage E et al. "Practical recommendations for staying physically active during the COVID-19 pandemic: A systematic literature review. *Int. J. Environ. Res. Public Health*. 2020. doi: 10.1101/2020.06.24.20138313.

6. Chacón-Valenzuela E et al. Cognitive frailty, an evolving challenge. Medical Univ. 2019; 60(3):1-11. Doi: 10.11144/javeriana.umed60-3.fcde.

7. Custodio N, Duque L, Montesinos R, Alva-Diaz C, Mellado M, Slachevsky A. Systematic Review of the Diagnostic Validity of Brief Cognitive Screenings for Early Dementia Detection in Spanish-Spea king Adults in Latin America. *Front. Aging Neurosci*. September 2020; 12: 1-13. Doi: 10.3389/fnagi.2020.00270.

8. Custodio N, Herrera E, Lira D, Montesinos R, Linares J, Bendezú L. Mild cognitive impairment: where does normal aging end and dementia begin? *An. la Fac. Med*. 2013; 73 (4):321. Doi: 10.15381/anales.v73i4.1032.

9. Olivares-Tirado P. Cognitive Impairment and Metabolic Disorders in Older Adults. *Dep. Stud. and Desarro*. 2020.

10. Hobson N, Dupuis SL, Giangregorio LM, Middleton L. E. Perceived facilitators and barriers to exerci- se among older adults with mild cognitive impairment and early dementia. *J. Aging Phys. Act*. 2020; 28(2): 208-218. Doi: 10.1123/JAPA.2019-0010.

11. Aceiro CB, Torrecilla MA, Moreno M. "Strategies of affrotamiento in older adults. *Memorias Jornadas Jornadas Investig. y Encuentro Investig. en Psicol. del Mercosur* [Internet]. 2020. p. 8-12 [Online]. Available at: https://repositorio.uca.edu.ar/handle/123456789/11563.

12. MINSAL. National Health Survey 2016-2017 Second release of results. Ens 2016-2017. *Encuesta Nacional de Salud*. 2018.p. 50 Available at: http://www.ipsuss.cl/ipsuss/site/artic/20171122/ asocfile/20171122142253/ens_2016_17_primeros_resultados.pdf.

Relationship between well-being, cognitive decline, coping with stress, and physical activity during the COVID-19 pandemic in older people in a northern Chilean city

Ivonne Jorquera-Cáceres, Eduardo Guzmán-Muñoz, Margarita Vega-Palma

13. Morán Astorga C, Landero Hernández R, González Ramírez MT. COPE-28: a psychometric analysis of the Spanish version of the COPE brief. *Univ. Psychol*. 2010; 9(2): 543-552. Doi: 10.11144/javeriana. upsy9-2.capv.

14. Sember V, Meh K, Sorić M, Jurak G, Starc G, Rocha P. Validity and reliability of international physical activity questionnaires for adults across eu countries: systematic review and meta analysis. *Int. J. Environ. Res. Public Health*. 2020; 17(19): 1-23. Doi: 10.3390/ijerph17197161.

15. Mantilla Toloza SC, Gómez-Conesa A. The International Physical Activity Questionnaire. A suitable instrument in the follow-up of population physical activity. *Iberoamerican Rev. Fisioter. y Kinesiol*. 2007;10(1):. 48-52. Doi: 10.1016/S1138-6045(07)73665-1.

16. Min Qin JF, Vlachantoni A, Evandrou M. General Health Questionnaire-12 Reliability, factor structure, and external validity among older adults in India. *Indian J. Psychiatry*. 2018; 60(1): 56.59. Doi: 10.4103/psychiatry.IndianJPsychiatry.

17. Rivas-diez R. General Health Questionnaire (GHQ-12) in Chilean Female Population. *Rev. Argentina Clin. Psicol*. January 2014; XXIII: 251-260.

18. Delgado C, Araneda A, Behrens MI. Validation of the Spanish-language version of the Montreal Cognitive Assessment test in adults older than 60 years old. Neurologia. 2019; 34(6): 376-385. Doi: 10.1016/j. nrl.2017.01.013.

19. Abarza Morales Z. B. Depression in older adults and its relationship with physical activity and sedentary lifestyle in Talca, Chile. Depression in older adults and its relationship with physical activity and sedentary lifestyle in Talca, Chile. *Sci. Lat*. 2021; 5(5): 9719-9733.

20. Kornfeld R. Results of the third national survey on quality of life in old age 2013. *Chile and its elders*. 2013.

21. Robinson E et al. Obesity, eating behavior and physical activity during COVID-19 lockdown: A study of UK adults. *Appetite*. January 2021; 156. doi: 10.1016/j.appet.2020.104853.

22. Valdés Arriagada M, Inostroza Martínez D, Valdebenito LE, Valenzuela A, Veas C. Relationship between physical activity, quality of life and urinary incontinence in a sample of older women in the city of Talca - Chile. *Rev. Fac. Health Sciences UDES*. 2017;4(1): 39. Doi: 10.20320/rfcsudes. v4i1.105.

Salud Uninorte
Vol. 39(2), 2023
Barranquilla (Col.)

23. ODEL Report. "SARS-CoV-2 DISEASE Department of Epidemiology. *Epidemiol. Mi- nist. Salud Chile*. 2021;2. Available at:https://www.minsal.cl/nuevo-coronavirus-2019-ncov/infor- me-epidemiologi-co-covid-19/.

24. Herrera P BL, Fernández L. Coping strategies in relation to stressful events occurring in aging. *Anxiety and Stress*. 2018; 24: 47-52.

25. V.-M. Rojas-Zepeda, López-Espinoza, Cabezas-Araneda, Castillo-Fuentes, Márquez-Prado, Toro-Pedreros. Sociodemographic and morbid risk factors associated with mild cognitive impairment in older adults. *Neuropsychol*. 2021;15(2): 43-56. doi: 10.7714/CNPS/15.2.204.