Percepción subjetiva de la calidad de vida según niveles de actividad física en mujeres mayores chilenas tras la pandemia de covid-19

Subjective perception of quality of life according to physical activity levels in older chilean women after the covid-19 pande

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Abstract

Objective: To analyze the subjective perception of quality of life in Chilean older women according to the levels of physical activity they perform after the COVID-19 pandemic.
Method: This cross-sectional quantitative descriptive study involved 250 older women of whom 120 were physically active (age 68.6±4.6 years; body mass 62.4±3.2 kg; height 1.61±4.3 m; body mass index 24.1±37 km/m2), while 130 were physically inactive (age 71.3±5.2 years; body mass 72.3±5. 9 kg; height 1.58±4.8 m; body mass index 29±8.3 km/m2). Eight dimensions (emotional well-being, interpersonal relationships, personal development, physical well-being, self-determination, social inclusion, rights and material well-being) were analyzed using the FUMAT-24 Scale for the subjective Perception of Quality of Life.
Results: significant differences $p<0.05$ were found in favor of physically active vs. physically inactive older women in 7 dimensions with strong effect sizes (d=1.10 to d=2.06) with magnitudes of change from 12% to 30%. However, no significant differences p=0.34 were reported in the material well-being dimension.
Conclusion: Physically active older Chilean women have a higher subjective perception of quality of life after the COVID-19 pandemic.

Keywords

Keywords: Subjective perception; quality of life; physical activity; older women.

Resumen

Objetivo: Analizar la percepción subjetiva de la calidad de vida de las mujeres mayores chilenas según los niveles de actividad física que realizan tras la pandemia por COVID-19.
Método: Se trata de un estudio cuantitativo, descriptivo de corte transversal, en el que participaron 250 mujeres mayores, de las cuales 120 eran físicamente activas (edad 68,6±4,6 años; masa corporal 62,4±3,2 kg; talla 1,61±4,3 m; índice de masa corporal 24,1±37 km/m2), mientras que 130 eran físicamente inactivas (edad 71,3±5,2 años; masa corporal 72,3±5,5. 9 kg; altura 1,58±4,8 m; índice de masa corporal 29±8,3 km/m2). Se analizaron ocho dimensiones (bienestar emocional, relaciones interpersonales, desarrollo personal, bienestar físico, autodeterminación, inclusión social, derechos y bienestar material) mediante la escala FUMAT-24 para la Percepción Subjetiva de la Calidad de Vida.
Resultados: se encontraron diferencias significativas $p<0.05$ a favor de las mujeres mayores físicamente activas vs. físicamente inactivas en 7 dimensiones con tamaños de efecto fuertes (d=1.10 a d=2.06) con magnitudes de cambio de 12% a 30%. Sin embargo, no se reportaron diferencias significativas p=0,34 en la dimensión bienestar material.
Conclusión: Las mujeres chilenas mayores físicamente activas tienen una mayor percepción subjetiva de la calidad de vida que aquellas mujeres mayores inactivas, tras la pandemia, sin embargo, en relación al bienestar material no se presentaron mayores diferencias.

Palabras clave

Percepción subjetiva; calidad de vida; actividad física; mujeres mayores.

Introducción

Life expectancy has increased worldwide, approaching 91 years of age in women and 86 years of age in men (Robine & Jagger, 2017). However, adding years to life expectancy brings new challenges, since the dynamics of health in old age are complex and require a multidisciplinary approach (Álvarez et al., 2022; Crimmins & Beltrán-Sánchez, 2011). In order to have a lower risk of functional dependence and a good quality of life (Alcañiz & Solé-Auró, 2018). The latter being a predominant indicator used to assess the well-being or sense of well-being in the elderly (Yen & Lin, 2018). An association has been reported between prolonged COVID and decreased health-related quality of life in the elderly between 6 and 12 months after COVID-19 (Shanbehzadeh et al., 2023). Therefore, it is important to carry out activities that lead to a good quality of life during aging (Skałacka & Derbis, 2016), such as the regular practice of physical activity (Wei et al., 2022; Yen & Lin, 2018). This includes different activities such as occupational physical activity, domestic, leisure time, transportation, sports and physical exercise (Gao et al., 2015), being active aging a key factor for a good quality of life during old age (Yen & Lin, 2018).

Very difficult times were experienced worldwide after the appearance of the COVID-19 disease, caused by a virus of the SARS-CoV-2 coronavirus family. The World Health Organization (WHO) declared that the virus was considered a threat to public health and was therefore classified as a "Pandemic" (OMS,2020).

People were confined to their homes, restricting their lives to four walls, and there was a considerable increase in their food intake and the time of sedentary behaviors. On the other hand, the possibility of performing physical activity (PA) was reduced, which was undoubtedly somewhat worrying, since the figures of physical inactivity before the pandemic reached values close to 60% worldwide. (WHO, 2020).

In relation to physical activity after the pandemic, no measures or recommendations have been provided by regulatory bodies (governmental, educational, labor), despite the fact that the benefits of physical activity and exercise in strengthening the immune system have been widely documented (Trujillo et al., 2020). Above all, taking into account that there is sufficient evidence that shows that PA and exercise are protective factors against non-communicable diseases and generate a positive effect on both mental and physical health (Márquez et al., 2020).

To consider an older person physically active, it is recommended that he or she perform 150 min of moderate-intensity activities, or at least 75 min of vigorous-intensity activities, or an equivalent combination including strength, balance, and aerobic exercises (Taylor, 2014). Active aging has been shown to lead to greater self-valence (Langhammer et al., 2018), leading to 77% better physical performance (Langhammer et al., 2018), 90% reduced risk of falling (Pinheiro et al., 2022), 50% better executive control in cognitive function (Langhammer et al., 2018), 15% lower risk of depression (Lage et al., 2021) leading to greater functional independence and improved quality of life (Lepsy et al., 2021). On the contrary, physical inactivity has been shown to be the main cause of cardio metabolic pathologies such as diabetes in 27%, (Cunningham et al., 2020), dyslipidemia 70.5% (H. L. Yang et al., 2022), hypertriglyceridemia 27.6% (H. L. Yang et al., 2022), 53% arterial hypertension (You et al., 2018) leading to a higher risk of depression in 53% (Li et al., 2018), leading to functional dependence affecting their quality of life (Siqeca et al., 2022; Valdés-Badilla et al., 2022), having high direct health care costs annually of $ 53.8 billion in geriatric population (Ding et al., 2017). Which increased during and after the COVID-19 pandemic in the elderly (Oliveira et al., 2022; Shanbehzadeh et al., 2023).

Although it has been demonstrated that active aging leads to a better quality of life along with multiple physical, psychoemotional and social benefits in older people (Wei et al., 2022; Yen & Lin, 2018). It is little known how active aging affects the subjective perception of quality of life in older people (van Leeuwen et al., 2019). These are the way in which people conceptualize and perceive the aging process (Ingrand et al., 2018; Lobos et al., 2021). Social and cultural perceptions are incorporated and internalized in the opinions that older people have about their own aging process (Ingrand et al., 2018; Lobos et al., 2021). However, this subjective perception of quality of life may vary according to gender, country, beliefs and culture (Imbulana Arachchi & Managi, 2023; Liao, 2014). In a study conducted by Lobos et al. (2021) in Chilean elderly people, significant differences $p<0.01$ were detected in women presenting greater satisfaction with life and subjective happiness compared to men. Another study by Pacheco et al. (2021) reported significant differences $p<0.05$ in favor of Ecuadorian elderly people compared to Mexican elderly people who presented greater social interaction and sensory skills. However, in both

Mexican and Ecuadorian nationalities, high levels of physical activity were significantly associated p<0.05 with greater social interaction and autonomy in older people (Pacheco et al., 2021).

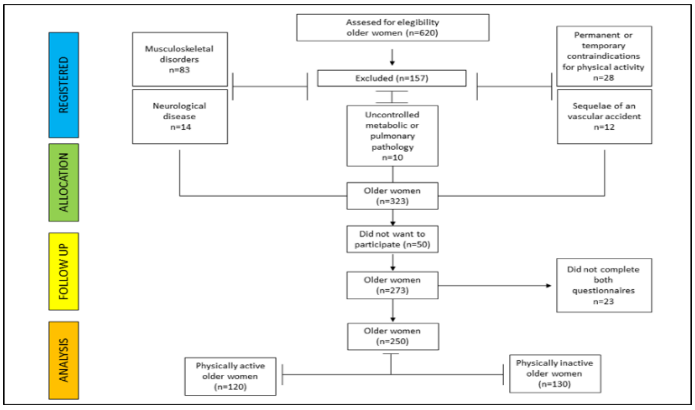
Although there is evidence on the benefits of active aging with the subjective perception of quality of life in older people from different countries (Pacheco et al., 2021). There is little evidence on whether there is a relationship between active aging and the subjective perception of quality of life in Chilean older women after the COVID-19 pandemic (Lobos et al., 2021). On the other hand, it is argued that good levels of Physical Fitness are necessary to maintain health and Quality of Life also in the years of the life cycle that we call maturity of adult life. (Medrano et al., 2023). However, it should be considered that studies should be carried out aimed at improving lifestyle habits that not only address Physical Activity and levels of physical condition, but also studies that take into account other elements to act from a comprehensive perspective. (García et al.; 2024).

There is little evidence on whether there is a relationship between active aging and the subjective perception of quality of life in Chilean older women. Thus, this study aims to analyze the subjective perception of quality of life in Chilean older women according to the levels of physical activity they perform after the pandemic and whether there are differences between physically active (PA) and physically inactive (PI) older women.

Método

In this descriptive quantitative cross-sectional study, 250 older women between 60 and 90 years of age (women 69.9±4.9 years), selected under an intentional non-probabilistic criterion, residents of the Lakes Region, were evaluated. The sample size was calculated from a population of 620 elderly women enrolled in senior centers that perform physical activity and long-stay homes where sedentary activities with low levels of physical activity are carried out. The estimate for the calculation was 212 participants. A confidence level of 95% and a margin of error of 5% were used for this calculation. These analyses were performed using GPower software (version 3.1.9.6, Franz Faul, Universiät Kiel, Germany). As indicated in a previous study (Valdés-Badilla et al., 2022), inclusion criteria were: (i) persons older than 60 years; (ii) enrolled in senior centers or long-stay settings; (iii) physically active (≥150 min/wk of moderate physical activity or vigorous activity ≥75 min/wk) or physically inactive (<150 min/wk of moderate and/or vigorous physical activity) for a period longer than six months (Bull et al., 2020; Valdés-Badilla et al., 2018); (iv) present the ability to understand and follow instructions in context through simple commands; and (v) functionally independent, i.e., have a score equal to or greater than 43 points on the Chilean Ministry of Health's Preventive Medicine Examination for the Elderly (EMAM)(Salud, 2013). Elderly people were excluded if they had: (i) musculoskeletal disorders such as acute or chronic injuries that prevented their normal physical performance; (ii) sequelae of an encephalic vascular accident; (iii) permanent or temporary contraindications for physical activity; (iv) uncontrolled metabolic or pulmonary pathology; (v) diagnosed coagulation problems; (vi) hemodynamic instability on the day of the evaluations and; (vii) presence of diagnosed major neurocognitive disorders. Initially, 480 elderly women were detected; after the inclusion and exclusion criteria process, 250 elderly women remained for the analysis. The recruitment process is presented in Figure I.

Figure 1. Recruitment process flowchart.



All participants were informed of the scope of the study and signed an informed consent form authorizing the use of the information for scientific purposes. The study protocol was reviewed and approved by the Institutional Review Board of the Department of Physical Activity Sciences of the Universidad de Los Lagos (approval number, 1005-022), and was developed following the guidelines of the Helsinki declaration concerning research involving human subjects.

Outcomes

Morphological Measurements

Bipedal height was measured using the Frankfort plane in a horizontal position, with a tape measure (Bodymeter 206, SECA, Germany; accuracy to 0.1 cm) attached to the wall. Body mass was measured using an electronic scale (Omron HBF 514: accuracy to 0.1 kg Osaka, Prefectura de Osaka, Japón), while BMI was calculated by dividing body mass by bipedal height squared (kg/m2). All measurements were performed following the recommendations of the International Society for Advances in Kinanthropometry (ISAK) (Marfell-Jones et al., 2012). The results are presented in Table 1.

Table 1. Basic characteristics of the sample

	Older women PA n=120	Older women PI n=130
Age (years)	68.6±4.6	71.3±5.2
Body mass (kg)	62.4±3.2	72.3±5.9
Height (m)	1.61±4.3	1.58±4.8
Body mass index (kg/m^2)	24.1±3.7	29±8.3

Legend: kg: kilograms; m: meters; kg/m2: kilograms per square meter.

Physical activity levels

The Physical Activity Questionnaire of the Community Model of Healthy Activities for Older Adults Program (CHAMPS), was used to categorize older women as PA or PI, administered to assess the variety of physical activities that older adult participants may engage in, from less intensive forms such as walking or stretching to more vigorous exercise routines (VandeBunte et al., 2022). The questionnaire includes 41 items to evaluate the frequency and duration of light, moderate, and vigorous activities that were performed weekly over the last four weeks. Participants reported whether they participated in an activity during the four-week period and then selected the hours per week spent participating in the activity, rating the duration on a six-point scale from less than 1 to 9 or more hours. Each activity corresponds to a metabolic weight or MET value. Estimated caloric expenditure was calculated by multiplying the estimated duration of each activity by the corresponding MET value, in alignment with published guidelines (VandeBunte et al., 2022). This questionnaire presents an acceptable validity and reliability p=0.70 to measure physical activity levels in elderly people (Hekler et al., 2012).

Subjective Perception of Quality of Life

Subjective perception of quality of life was measured with the FUMAT-24 scale as recommended by previous studies (Cárdenas Soriano et al., 2022; Verdugo et al., 2014), a scale specifically designed to assess quality of life in long-stay home settings and which includes 24 items grouped into 8 categories: emotional well-being, interpersonal relationships, material well-being, personal development, physical well-being, self-determination, social inclusion and rights. The items are ordered on a four-point Likert-type scale (from 1, always or almost always, to 5, never or almost never) and the results generate an overall quality of life index and percentages for each category. This scale has a high validity and reliability p=0.92 to evaluate the subjective perception of quality of life in the elderly (Gómez et al., 2008).

Statistical Analysis

Values were reported as mean ± standard deviation. The Kolmogorov-Smirnov test was applied to determine the normality of the data and Levene's test for homogeneity of variance, yielded non-significant values for all data with a normal distribution. Therefore, the Student's t-test for independent samples was used to compare the active and physically inactive groups on the subjective perception of quality of life in older women. The effect size (ES) was calculated with the cohen's d (Cohen, 1992), considering

(0.20 to 0.49) small; (0.50 to 0.79) moderate; (>0.80) large, the formula used was d= (M1-M2)/SD (Rendón-Macías et al., 2021). In all cases, a significance value of $p < 0.05$ was established. The STATISTICA 8 program was used to perform the statistical analysis.

Results

Statistically significant differences $p<0.05$ in favor of older women PA compared to PI were reported in seven dimensions (emotional well-being, interpersonal relationships, personal development, physical well-being, self-determination, social inclusion and rights) with a very strong ES (d=1.10 to 2.22). However, no significant differences were reported at $p<0.05$ in material well-being. The results are presented in Table 2.

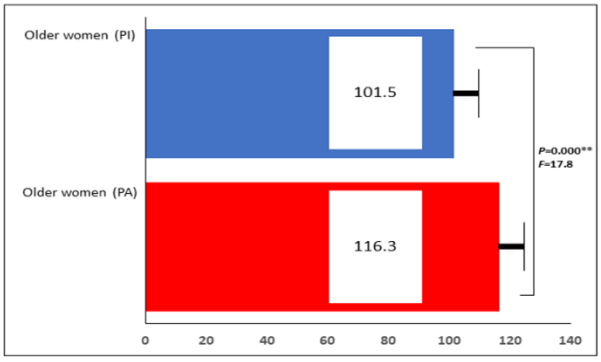
Table 2. Dimensions of subjective perception of quality according to the FUMAT-24 Scale by levels of physical activity in older women.

Score dimensions	Older women (PA)	Older women (PI)	F-value	p-value	Effect size	Magnitude of change (%)
Emotional well-being	30.3±1.56	22.9±7.26	21.4	0.005**	1.40	24.4
Interpersonal relationships	2.29±1.59	18.2±4.9	9.58	0.01*	1.29	20.5
Material well-being	25±1.82	23.4±4.85	7.08	0.34	0.43	6.4
Personal development	28.3±2.83	24.9±3.28	1.34	0.02*	1.10	12
Physical well-being	20.8±1.75	16±4.02	5.28	0.002**	1.54	23
Self-determination	29.3±1.41	20.5±5.85	17	0.000**	2.06	30
Social inclusion	33.4±1.57	28.6±4.16	6.98	0.003**	1.52	14.3
Rights	18±1.82	15.5±1.95	1.15	0.008**	1.32	13.8

Legends: PA: physically active; PI: physically inactive; *: $p<0.05$; **$p<0.01$.

While in the total score on the FUMAT-24 Scale of the quality of life index statistically significant differences $p=0.000$ were reported in favor of older PA women compared to PI with a very strong ES (d=2.22) with a magnitude of change of 12.7%. These results are presented in Figure 2.

Figure 2. Quality of life index score with FUMAT-24



Quality of life index score with FUMAT-24 scale according to levels of physical activity in older women.

Discussion

The main results of the study found that older women PA have a better quality of life index compared to older women PI. Similarly, it was reported that older women PA had better scores in the dimensions of emotional well-being, interpersonal relationships, personal development, physical well-being, self-determination, social inclusion, rights and material well-being compared to older women PI. However, no significant differences were detected in material well-being.

During the COVID-19 pandemic, social distancing led to abrupt lifestyle changes in the elderly, increasing sedentary behaviors and negatively affecting physical health in this age group (Oliveira et al., 2022). Which post-pandemic COVID-19 impact negatively on quality of life in older people physical, emotional and social components associated with the disease along with increased physically inactive aging (Shanbehzadeh et al., 2023). On the contrary, physical activity has been shown to lead to a better quality of life in people aged 18 to 65 years (Marquez et al., 2020). In a systematic review Vagetti et al. (2014) it

was reported that active aging was positively associated with improved quality of life. This supports the results reported by Said et al. (2022) which demonstrate that physical activity leads to improvements in functional capacity and quality of life in older people during and after the COVID-19 pandemic. Similar to what was reported in the present study where improvements were detected in the subjective perception of quality of life in older women PA.

Another result reported in the present study was improvements in favor of older women PA in (self-determination, personal development and interpersonal relationships). Similar to that reported by Haynes et al. (2021) in physically active older people presented greater self-determination of autonomy $p<0.05$ compared to physically inactive older people. Similarly, Kim and Park (2021) reported that physically active older people have a positive effect on interpersonal relationships $p<0.05$ compared to physically inactive older people. While personal development is greater in physically active older people in comparison $p<0.05$ to physically inactive older people (Stephan et al., 2014). Another dimension in which improvements were detected in older PA women in the present study was in well-being associated with quality of life. In a systematic review conducted by Q. Yang et al. (2022) it was reported that older PA persons presented a better subjective perception of quality of life in emotional well-being together with a high correlation ($r=0.297$; $p<0.01$) compared to physically inactive older persons during the COVID-19 pandemic. In another study by Baumbach et al. (2023) it was reported that older people with active aging have better social well-being compared to physically inactive older people who show social exclusion associated with physical inactivity ($\beta=0.09$, $p=0.04$).

Similar to that reported by Gammack (2017) in physically active older people presented higher physical well-being $p<0.05$ compared to physically inactive older people. However, Haynes et al. (2021) reported that physically active older men presented higher material well-being and financial inclusion compared ($\beta=0.413$, $p=0.02$) to physically inactive older men. In the present study it was reported that older women presented higher material well-being compared to physically inactive women with a small ES ($d=0.43$) with a magnitude of change of 6.4% but no statistically significant difference $p=0.34$. This may be due to the fact that material well-being has to do with other factors such as economic income, retirement, and active aging may allow to be more autonomous being able to continue developing jobs of less time and physical effort that allow to have a higher economic income as well as a higher material well-being and financial income (Haynes et al., 2021).

However, older Chilean women have higher rates of functional dependence 70.7% compared to men 29.3% along with lower levels of physical activity which may impact on this variable helping to answer the results in the present study (SENADIS, 2017). However, significant differences $p<0.05$ in favor of older PA women were reported in 7 dimensions of subjective perception of quality of life (emotional well-being, physical, interpersonal relationships, personal development, self-determination, social inclusion and rights) with very strong ES ($d=1.10$ to $d=2.06$) with magnitudes of change from 12% to 30% along with statistically significant improvements $p=0.000$ in the quality of life index with a strong ES ($d=2.22$) with a magnitude of change of 12.7%. This may be because active aging is associated with a better quality of life related to physical, psychological, cognitive and social factors that exert a positive effect on quality of life in older people (Eum & Kim, 2021).

Among the possible limitations of the present study are: (i) not incorporating measurements of cognitive function and/or functional independence in basic activities of daily living; (ii) not including neurophysiological measurements; (iii) not including men in the sample; (iv) the selection of the sample (intentional non-probabilistic; (v) the sampling only in the southern zone does not allow exploring the reality in the central and northern zones of the country of Chile. While among the strengths we find: (i) the detection of a better quality of life in various dimensions through active aging; (ii) being the first study to analyze whether active aging leads to a better subjective perception of quality of life in older women in the southern zone of Chile; (iii) in analyzing the effect of active aging on the subjective perception of quality of life after the COVID-19 pandemic.

Conclusiones

According to the objective of this research, which was: To analyze the subjective perception of the quality of life of Chilean older women according to the levels of physical activity they perform after the

COVID-19 pandemic. It can be said that physically active Chilean older women have a higher subjective perception of quality of life than inactive older women, after the COVID-19 pandemic, according to international recommendations (≥150 min/week of moderate physical activity or vigorous activity ≥75 min/week).

In conclusion, it is important to highlight the importance of performing doses of physical exercise, in order to avoid the deterioration caused by physical inactivity, increased by the confinement to reduced spaces that was experienced due to the restriction measures. COVID-19. Further research into the effects of physical activity on people's COVID-19 prevention, management, prognosis, and recovery is critical.

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