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Quality of life of institutionalized older adults. Quasi-experimental study in a residential center in Tlaltenango, Mexico

Calidad de vida de adultos mayores institucionalizados. Estudio cuasi-experimental en un centro residencial de Tlaltenango, México

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Abstract

This chapter presents the results of a study that sought to modify the level of quality of life reported by older adults institutionalized in a residential center. A quasi-experimental study of repeated measures was carried out, without a control group. The study was carried out in three stages. First, users were evaluated using the WHOQOL-OLD BREF scale. Second, they were provided with treatment to modify their quality of life. Third, they were re-evaluated using the same scale. Adults in the care home reported a low level of quality of life before treatment. After treatment the levels increased. The Student t test was applied to compare the scores reported by the study participants before and after treatment. The result of this test allows us to attribute a statistically significant increase in quality of life to the treatment developed. This result is relevant in practical terms, because it partially suggests that the treatment is effective and can be expanded for clinical purposes.

Quality of life, Older adults, Autonomy, Social interaction, WHOQOL-OLD

Resumen

El presente capítulo expone los resultados de un estudio que buscó modificar el nivel de calidad de vida reportado por adultos mayores institucionalizados en un centro residencial. Se efectuó un estudio cuasi-experimental de medidas repetidas, sin grupo de control. El estudio se desarrolló en tres etapas. En primer lugar, los participantes del estudio fueron evaluados usando la escala WHOQOL-OLD BREF. En segundo lugar, se les proporcionó un tratamiento para modificar su calidad de vida. En tercer lugar, fueron reevaluados usando la misma escala. Los adultos del centro de cuidado reportaron un nivel bajo de calidad de vida antes del tratamiento. Después del tratamiento este nivel se incrementó. Para comparar las puntuaciones, se aplicó la prueba t Student. El resultado de esta prueba permite atribuir un aumento estadísticamente significativo de la calidad de vida al tratamiento desarrollado. Este resultado es relevante en términos prácticos, porque sugiere parcialmente que el tratamiento es efectivo y puede ser expandido a otros contextos con propósitos clínicos.

Calidad de vida, Adultos mayores, Autonomía, Interacción social, WHOQOL-OLD

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Introduction

This article reports the results of a study that sought to determine whether the modification of the quality of life of institutionalised older adults is attributable to an intervention project whose implementation was focused on manipulating the perception of autonomy, social interaction and affective states. For this purpose, we worked with a group of older adults in a residential care centre, located in the municipality of Tlaltenango, Mexico.

The available literature defines older adults as people who live a moment in their life trajectory, in which the organism, and functioning capacities deteriorate (Del Mar-Molero, Pérez-Fuentes, Gázquez, Mercader, 2015).

Some studies report that these conditions of human ageing produce physical and mental health conditions, as well as dependence, loneliness and social disruptions. These are summarised in loss of roles and decreased activities with others (Martínez Reig, Ruano, Sánchez, García, Rizos, Soler, 2016).

Because of this, according to Del Mar-Molero (ibidem), they would be expected to adapt less effectively to these conditions; considering that illness, loss of functional abilities and deterioration of mental health are factors that moderate such adaptation.

In this framework, the concept of behavioural plasticity, proposed by Baltes and Baltes (1990), is relevant, as it focuses attention on the processes of adaptation to the changes that occur in the ageing process.

Therefore, it would be presumed that the ability of older adults to adapt to the situations of this stage should be based on adequate types and levels of resources and social support for a more successful transition in this stage of life (Hernández, 2016).

Intuitively, older adults tend to re-signify their perception of themselves and the stage of life they are in based on the material resources and support available to them to adapt to their situation (Hurtado Taborda, Castañeda Valderrama, Ceballos Gómez and Escobar Torres, 2019).

However, older adults do not age in the same way. This process of ageing and adaptation is affected by both positive and negative experiences. These experiences are acquired outside or inside residential care facilities in their old age (Etxeberria Mauleon, 2014; Moral García, Orgaz García, López García, Amatria Jiménez, Maneiro Dios, 2018). When institutionalised, older adults generally generate a negative perception (Reyes Cisneros, 2018).

In this sense, the results of some studies suggest that adequate adaptation to ageing is beneficial for mental and physical health, and that this can be achieved by improving quality of life, for example, through access to resources or through effective interventions on variables such as autonomy (Guerrero, Galván, Vásquez, Lázaro, & Morales, 2015).

Research by Bazargan, Cobb, Assari and Bazargan-Hejazi (2023) provides evidence in this regard. Their findings suggest that adjustment to ageing in African American and Latino older adults in the United States is conditioned by significantly lower levels of quality of life. Financial strain, chronic illness, untreated pain, sleep disorders and unequal access to services all contribute to lower levels of quality of life compared to their white peers.

Similarly, Koponen, Löyttyniemi, Arve, Honkasalo and Rautava (2023), based on the results of an experimental study, suggest that individually tailored cultural activities through work plans can ensure a higher quality of life for older adults in residential care facilities.

Similarly, Justo, Perez Marques and Carvalho (2023) through experimental research have shown that programmes that improve cognition and memory also improve the mood and quality of life of older adults.

In another recent study, Charlton, McQuaid and Wallace (2023) have found that, despite reported anxiety and depression, social support is very important in ensuring quality of life in middle-aged and older autistic adults. Intervening with improvements in social support can have a significant impact on their quality of life. In accordance with this review, which has been aimed at pointing out the importance of intervening in the conditions of ageing.

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The hypothesis of the present study states that the positive modification of the quality of life of institutionalised older adults is attributable to a treatment focused on manipulating their autonomy, social interaction and affective states.

Theoretical framework

Quality of life

Quality of life is a complex construct, which has been defined by multiple authors, from different theoretical perspectives from different disciplines, such as economics, psychology, medicine, sociology, as observed in the following paragraphs.

The World Health Organisation initially defined quality of life as a wide-ranging state, complexly interwoven with physical health, physiological state and level of independence. It has subsequently established that this construct refers to "an individual's perception of his or her position in life in the context of the culture and value system in which he or she lives, in relation to his or her expectations, standards and concerns" (WHO, 2002).

For Gómez-Vela and Sabeh, E. (2009), quality of life refers to different objectives, such as people's needs and their levels of satisfaction, access to services.

According to Ardila (2003), quality of life has an objective and a subjective dimension, both characterised by different dimensions.

According to Vera (2007), it refers to well-being and life satisfaction, which is related to one's own life experience, health, social interaction and environment.

Santiesteban, Pérez, Velázquez and García (2009) refer to quality of life as a state of physical, emotional, social, spiritual and occupational well-being that allows people to satisfy their needs.

Components of quality of life

According to Ardila (Ibid.), the concept of quality of life is made up of two main dimensions: an objective one, which refers to the satisfaction of basic needs, health and functional capacities; and a subjective one, related to the evaluation of well-being.

Quality of life in the elderly

Taking into account both dimensions and the previous definitions, in the study reported here, the quality of life of older adults during old age has been defined as a state of both objective and subjective well-being. In the objective dimension, it refers to the ability to function and to satisfy the needs of people. The subjective dimension refers to the assessment of the older adults' own state of psychological well-being.

Functioning capacities

According to Nussbaum (2012), capabilities are the basic minimum requirements for a humanly dignified existence. They do not only refer to the abilities residing within or the physical predispositions of individuals, but include the freedoms and opportunities created by the combination of these personal faculties and the environment.

For Nussbaum (ibid.), the following functional capabilities are the main ones: to live a life of normal length, without dying prematurely; to be in good health, to be adequately nourished, among others; to move freely from place to place and safely; to use the senses, to imagine, think and reason; to have affective ties with other things, animals and people; to live together and engage in various forms of social interaction; to be interested in the environment; to enjoy leisure activities; to have control of the environment or autonomy.

According to this approach, the quality of life of older adults depends on the objective recognition that they are realising, albeit in varying ways, the aspects mentioned in the previous paragraph.

Subjective well-being

Ryff (1989), defines psychological well-being as the effort of individuals to give meaning to life, to set goals and to achieve personal fulfilment. According to Diener (2000), subjective well-being refers to the perception of a state of fulfilment characterised by pleasant affective states of satisfaction, joy and happiness, which people can report. From this definition it can be inferred that quality of life is also associated with the perception of a psychological state of satisfaction and fulfilment with the kind of life that is momentary or long-lasting.

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Factors associated with quality of life in old age

According to Zetina (1999), old age is a process of deterioration that occurs at advanced ages and is usually associated with a decrease in physical and mental capacities, unlike other stages of life that are considered to be growth and development.

These physical, psychological and social changes experienced by older adults during old age make them a vulnerable population, i.e., exposed to risks of different types, disabilities, maladaptation to changes or situations in the environment that affect their objective and subjective well-being (Busso, 2002).

Due to these circumstances, it has been found that the main factors associated with the decline in the quality of life of older adults in old age are greater exposure to diseases (mainly chronic degenerative) that are physically incapacitating, conditions of economic dependence, poverty and a decrease in the degree of autonomy (Busso, 2002; Vera, 2007).

In this regard, the results of recent research by Shanbehzadeh, Zanjari, Yassin, M., Yassin, Z. and Tavahomi (2023) are illustrative. These authors found that the symptoms of so-called Long COVID (fatigue, pain, low physical activity and communication problems) have had a negative impact on the quality of life of many adults in residential care facilities.

It has also been found that the quality of life of older adults results from the combination of different factors such as decent housing, clothing, food, available goods, perceived social support, social interactions (Guantiva and Quiroga, 2018) and personal variables such as age and gender (Rodríguez, 2007).

From the above, the need arose to confirm the effect on quality of life of an intervention proposal, which was focused on manipulating the perception of three variables derived from the functioning capacities approach, namely: autonomy, social interactions and affective states in a group of older adults aged 65 and over, institutionalised in a residential care centre.

Substantive definitions

For the practical purposes of this study, affective states were defined as sustained and persistent emotions, positive or negative, reported as intimate experiences and that can be perceived by those who interact with people (García, Maldonado and Ramírez, 2014).

Autonomy refers to a person's set of abilities to choose, make decisions independently and take responsibility for the consequences of their actions (Álvarez, 2015).

Finally, social interaction refers to the processes that occur when a unit of action produced by one individual acts as a stimulus for another individual's unit of response in co-presence (Marc and Picard, 1992).

Methodology to be developed

Research design

An explanatory-correlational research was developed, with a quantitative approach, following a quasi-experimental design and without a control group. In particular, a repeated measures design was carried out (Hernández, Fernández, Baptista, 2014), that is, with measurement before and after a treatment designed to modify the quality of life of older adults.

Population and unit of analysis

The population is made up of elderly people institutionalised in a residential centre, in which care and attention functions are performed on a supplementary basis. By definition, in Mexico, the elderly constitute a segment of the total population aged $\geq$ 65 years. The corresponding unit of analysis is elderly persons who are formally institutionalised by their relatives in a residential care facility. The specific institution that was selected is located in the municipal capital of Tlaltenango, Zacatecas, Mexico.

Inclusion criteria were to be male or female, aged 65 years or older, and to be institutionalised in a residential care centre. Exclusion criteria were having any limitation or mental state that affected participation in the dynamics and the quality of self-reported information (e.g. symptoms of depression, memory failure and senile dementia problems).

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Sampling procedure

The selection of the units of analysis was based on the census procedure, since in the municipality of Tlaltenango there is only one residential centre for older adults and the number of people institutionalised in that centre was significantly small, so all adults institutionalised in that residential centre were involved.

Description of participants

Based on the established criteria, older adults who met the inclusion criteria were invited to participate. There were 13 participants aged ≥ 65 years, of whom 5 were men and 8 were women. The minimum age was 69 years and the maximum age was 112 years, with a mean age of 88.

The study participants were assessed on their physical and mental health status using a database of the residential centre, which was generated by the responsible authorities and updated longitudinally during the time of the study.

Collection of information

In order to collect the information relevant to the dependent variable, the Quality of Life in Older Adults Scale was applied World Health Organization Quality of Life of Older Adults (WHOQOL-OLD) (1995).

In particular, the adapted version of the WHOQOL-OLD BREF scale was applied in Mexico (Acosta, Echevarria, Garcia, Serrano, & Vales, 2013), as well as in Peru (Queirolo, Barbosa, & Ventura, 2020). This more compact version consists of 24 Likert-type items, grouped into 6 dimensions or factors: 1) Sensory Skills (HS), 2) Autonomy (AUT), 3) Past, Present and Future Activities (APPF), 4) Social Participation (PS), 5) Death (MA), and 6) Intimacy (INT). Each dimension consists of four items.

For each item, there are five response options to choose from, which represent the state in which each participant perceives himself/herself. The response options follow an ordinal scale, and are paired with numerical values ranging from 1 to 5, so that the highest scores correspond to the most favourable states reported by individuals.

The sum totals for each dimension can range from 4 points to 20. The sum of the scores of the items allows to construct the total score of the scale (120), as well as its expression in a Quality of Life Index (QLI) when divided by the total number of items.

Procedure

The empirical research was conducted in four phases which are described in some detail below. In the first phase of the research, which started in the first week of October 2022, firstly, permission was sought from the management of the residential care centre and, secondly, the informed consent form was given to the family members and authorities of the residential care centre. Thirdly, an initial quality of life assessment of the institutionalised older adults was developed by applying the WHOQOL-OLD BREF scale to all older adults in the residential care facility.

This instrument was administered by two psychologists responsible for the treatment of the older adults in the residential centre. This process involved reading each question (modulating the voice to ensure understanding of each item), as well as showing the adults some alternative answers with figures or emoticons.

In the second phase of the research, which took place between November 2022 and February 2023, different activities were developed as part of the treatment. The aim was to generate a positive impact on the quality of life of the older adults in the nursing home. In this way, various group dynamics were carried out during four months. Some activities were developed to improve functional autonomy and dependency in decision-making. Other activities were carried out to improve the feelings, empathy and self-esteem of the elderly. Finally, some activities were carried out to facilitate communication, social participation and interaction of older adults.

In the third phase of the research, which took place at the end of February 2023, the second measurement with the WHOQOL-OLD BREF scale was carried out on all the older adults in the residential centre, who had previously answered the scale and also completed the intervention activities.

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In the fourth and last phase of the empirical research, during the months of March and April 2023, a data base was elaborated and, between the months of May and June, the data were cleaned and analysed, as well as the preliminary report of results.

Plan for the statistical analysis of the data

The information collected from the first and second surveys was used to create a database. Once cleaned, this database was used to carry out the statistical analysis of the variable under study. This process was carried out with SPSS software in two main stages: one of descriptive analysis and the other of inferential analysis.

The first was carried out in five stages. First, a statistical characterisation of the frequency distributions of the items was carried out. Secondly, the normality and homogeneity features of the item distributions were evaluated. Third, a convergent validity analysis was carried out to judge the degree to which the dimensions of the construct were measured. Fourth, the reliability of the scale measurement was analysed using Cronbach's alpha coefficient (α). Fifth, we worked on the characterisation of the frequency distributions of the six dimensions of the scale at the two measurement moments: before and after the treatment.

The second stage of the analysis plan consisted of a hypothesis test to determine the levels of variance achieved in the average scores of the dimensions and the total scale score. In fulfilment of this objective, a Student's t-test was performed to assess the difference in means.

Results

Analysis of normality and homogeneity of the test items

From the analysis of the pre-treatment measurement, mean item scores range from 0.20 to 3.20. This trend of responses can be characterised as a trend of responses in the range of 0.20 to 3.20. This trend of responses can be characterised as a set of low-level scores, taking as a reference that the values of the response options of the items vary from 1 to 5.

When analysing the skewness and kurtosis of their frequency distributions, it is observed that they are close to a normal distribution, with slight biases of negative skewness in the items that make up the following dimensions: Intimacy (INT); Past, Present and Future Activities (APPF); Social Participation (PS) and Death and Dying (MA).

In summary, the above results indicate low scores and an acceptable level of normality in the frequency distributions of most of the scale items (Table 1).

Likewise, the results indicate that most of the items have an adequate degree of homogeneity, since they meet the criteria of presenting corrected item-test correlations (ritc) greater than 0.30 in a positive sense.

However, taking into account the values of the discrimination index and the discrimination coefficient, the decision was taken to remove the scores of items R1, R2 and R10 from the total scale, as they did not meet the homogeneity requirements, as they were lower than 0.30 in the discrimination index and the discrimination coefficient and, in some cases, they were even negative (table 2).

Evidence of validity based on the correlation of dimensions

Prior to the validity analysis, a normality analysis was required. This analysis was carried out using the Kolmogorov-Smirnov technique. As a result, a p-value ≥ 0.05 was recorded as the level of statistical significance in five of the dimensions and in the total score of the scale. Therefore, it was concluded that they have a normal distribution, with the exception of the intimacy dimension.

Therefore, we started with the parametric tests of convergent validity of the dimensions and the total scale. In particular, by means of the maximum likelihood test. The results of this test indicate that all the dimensions of the scale have levels of statistical significance located in the rejection zone (p value ≤ 0.05) for the KMO test and Bartlett's sphericity test.

Likewise, the principal component analysis in the six dimensions yielded an average value above 0.5. This value confirms the existence of a six-dimensional structure in the WHOQOL-OLD BREF scale.

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Moreover, validity analysis based on intra-dimension correlations shows that four of the dimensions have positive and significant relationships with other dimensions of the scale as well as with the total scale scores. Only one dimension: Death and Dying has significant negative relationships with several dimensions, and the dimension Sensory Abilities was found to have no significant relationship with the dimensions and the scale. These results suggest an acceptable level of construct measurement validity with the WHOQOL-OLD BREF scale.

Reliability analysis by internal consistency

On the other hand, to determine the reliability of the scale, Cronbach's alpha coefficient (α) was estimated. This was applied to the two measurements taken: before and after the treatment. The analysis with this technique yielded the following values for each dimension: Sensory Abilities (α = 0.67); Autonomy (α = 0.81); Death and Dying (α = 0.56); Present, Past and Future Activities (α = 0.73); Social Participation (α = 0.86); Intimacy (α = 0.92). As can be seen, all values exceed 0.60. This trend indicates an adequate reliability of the WHOQOL-OLD scale measurements performed.

As for the total scale score, the alpha test yielded a value α = 0.87, which indicates an excellent reliability of the scale.

Test-retest reliability análisis

In addition to the above analyses, Cronbach's alpha coefficient (α) was calculated to estimate the reliability of the WHOQOL-OLD BREF scale based on the correlation of scores recorded before and after treatment. At the end of the analysis the following results were recorded per dimension: Sensory Abilities (α = 0.65); Autonomy (α = 0.86); Present, Past and Future Activities (α = 0.77); Social Participation (α = 0.85); Death and Dying (α = 0.70); Intimacy (α = 0.97).

As can be seen, all values exceed the value of 0.60. As for the total scale score, the test yielded a very high value (α = 0.91), which indicates an excellent level of reliability of the measurements made before and after treatment with the WHOQOL-OLD BREF scale.

Descriptive analysis by dimension

Following the validity and reliability analysis of the scale, a descriptive analysis was carried out for each of the dimensions and the total scale score. The particular aim was to characterise the frequency distributions and some aspects of their position and shape.

Concerning the pre-treatment measurement, the results show a trend of low scores on all dimensions. The scores lie close to between 2 and 8 maximum points. Contrasting these values with the total possible sum (= 20 points) indicates very low levels in each dimension. Furthermore, a low total score (31.8) of the scale is observed. Comparing this value with the maximum possible sum (= 120 points) suggests a low level of quality of life (Table 3).

On the other hand, the standard deviation values of the pre-treatment measurement do not indicate the presence of outliers. This is consistent with the values recorded in the skewness of each dimension and in the total scale score.

As for the post-treatment measurement, higher scores were recorded for each dimension, ranging from 6 to 10 points. There was also a noticeable increase in the total score (48.6, i.e. 17 points higher than in the first application) (table 3).

In the post-treatment measurement, the standard deviation values also do not indicate the presence of outliers. This is consistent with the skewness values of each dimension and of the total scale score.

On the other hand, when analysing the skewness and kurtosis of each dimension, it is observed that their values are close to a normal distribution, as the skewness does not exceed 1.5, with slight skewness biases in all dimensions.

Overall, although the reported levels remain low, the post-measurement results suggest that study participants reported increases in the WHOQOL-OLD BREF scale measure after treatment.

In theoretical terms, this result suggests that the treatment generated an improvement in the quality of life of the group of institutionalised older adults who participated in the study.

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Hypothesis testing

Therefore, in order to attribute the variance or increase in mean quality of life scores to the treatment, a hypothesis test with greater statistical power and precision was performed. For this purpose, a test of difference of means was performed, using the Student t-test. The objective was to evaluate the presence of a statistically significant variance between the mean scores recorded before and after treatment. Once the analysis was completed, the result indicates that the total scale score registers a p-value ≥ 0.05.

Based on the null hypothesis of this statistical test, it was decided to reject the null hypothesis. This concludes that there was a statistically significant increase in the total score of the quality of life scale recorded after treatment.

Anexxes

Reagent per dimension	Media	Asymmetry	Curtosis
HS R1.	2.70	0.687	-1.043
HS R2.	2.70	0.953	-0.637
AUT R3.	1.00	0.000	-1.393
AUT R4.	0.80	2.261	5.879
AUT R5.	1.70	0.192	1.092
MA R6.	0.70	0.742	-1.640
MA R7.	0.20	1.779	1.406
MA R8.	0.60	2.602	7.135
MA R9.	2.20	-0.237	-2.300
HS R10.	1.60	1.020	2.256
AUT R11.	1.40	0.280	-1.663
APPF R12.	1.50	0.839	-0.468
APPF R13.	0.80	1.241	0.946
PS R14.	0.40	1.658	2.045
APPF R15.	3.20	-0.484	-2.277
PS R16.	1.90	-0.253	-1.898
PS R17.	2.20	-0.453	-1.274
PS R18.	2.00	0.000	-2.571
APPF R19.	2.80	-0.272	-0.896
HS R20.	2.30	-0.042	-1.238
INT R21.	0.40	0.484	-2.277
INT R22.	0.60	-0.484	-2.277
INT R23.	0.50	0.000	-2.571
INT R24.	0.60	-0.484	-2.277

Tabla 1 Estadísticos de los reactivos de la escala WHOQOL-OLD BREF, medición antes del tratamiento
Source: Own Elaboration

Reactivos	ID	CD
R1	-0.125	-0.511
R2	-0.125	-0.251
R3	0.125	0.475
R4	0.375	0.590
R5	0.375	0.739
R6	0.375	0.058
R7	0.25	0.805
R8	0.625	0.771
R9	0.5	0.283
R10	-0.125	-0.083
R11	0.75	0.891
R12	0.375	0.257
R13	0.5	0.855
R14	0.375	0.899
R15	0.5	0.502
R16	0.625	0.815
R17	0.625	0.580
R18	0.5	0.613
R19	0.375	0.560
R20	0.25	0.398
R21	0.25	0.668
R22	0.25	0.729
R23	0.125	0.465
R24	0.25	0.729

Table 2 Discrimination index and discrimination coefficient of the WHOQOL-OLD BREF scale, pre-treatment measurement. Note: ID = Discrimination Index, CD = Discrimination Coefficient
Source: Own Elaboration

Statistic		HS	AUT	MA	APPF	PS	INT
Average before	31.8	8.3	4.9	3.7	6.3	6.5	2.1
Average after		10.2	9.1	6.1	8.8	8.1	6.3

Table 3 Average scale dimension scores and average total WHOQOL-OLD BREF scale score, pre- and post-treatment measurements
Note: HS = Sensory Skills, AUT = Autonomy, APPF = Present, Past and Future Activities, PS = Social Participation, MA = Death and Dying, INT = Intimacy
Source: Own Elaboration

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Conclusions

The research reported in this article sought to improve the quality of life levels of institutionalised older adults in a residential care centre located in Tlaltenango, Mexico.

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As in the study by Acosta et al. (2013) and Queirolo et al. (2020), the results confirm that the measurement of the applied instrument presents a six-dimensional structure, an adequate level of validity, and excellent reliability. These features make this scale a suitable instrument for clinical applications.

Regarding the theoretical implications of the study, it can be concluded that the increase in the quality of life of the older adults participating in the study is attributable to the operation of the treatment, which manipulated the perception of autonomy, affect and social interactions of institutionalised older adults.

Finally, it is important to note that this study was not without limitations. Among the main ones is the type of design used. With the design used in this study, only a possible causal relationship can be suspected from the findings. It is therefore recommended to continue the investigation of the variable under study using an experimental design. This should have a control group and a randomised and paired allocation of participants in the groups.

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