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Strengthening Physical and Mental Autonomy in the Elderly of the Province of Azuay-Ecuador

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Abstract

Introduction: Aging is a natural process that involves various changes in the physical and mental abilities of people. In this context, strengthening autonomy in older adults becomes a priority to ensure their well-being and quality of life. Autonomy not only implies the ability to perform daily activities without depending on third parties, but also maintaining the ability to make informed decisions and actively participate in society. *Objective:* Strengthen the physical and mental autonomy of older adults. *Methodology:* A quasi-experimental study of time series was conducted with the pretest and posttest design modality of a single group. We worked with 115 older adult participants who contemplated the universe of the two geriatric centers, they were selected through an intentional non-probabilistic sampling of all the inmates. Descriptive statistics were performed through frequencies and percentages, Pearson's Chi-square contrasts were also used and a $p < 0.05$ for statistical significance. *Results:* Relationship between the degree of dependence of the Katz test and sociodemographic variables, a statistically significant association is identified between the Dependence of Activities of Daily Living with age (p value = 0.000), degree of dependence of the Lewton and Brody test and sociodemographic variables, a statistically significant association can be identified between the Dependence of Instrumental Activities of Daily Living with age (p value = 0.001) and the level of education (p value = 0.041) and the degree of Cognitive Impairment of the Mini Mental and sociodemographic variables, a statistically significant association can be demonstrated between the symptoms compatible with cognitive impairment or dementia with the level of education (p value = 0.001) and the level of education (p value = 0.001). *Conclusions:* The interventions implemented did not show an improvement in the physical and mental autonomy of older adults, since the results of the post-test were equivalent to those of the pre-test. However, it is important to highlight that maintaining current capabilities is already a significant achievement, especially considering that the natural tendency in this population is progressive deterioration.

Keywords: Strengthening, Autonomy, Older Adult.

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Introduction

Worldwide, the aging of the population represents one of the most accelerated demographic changes and demands for concrete actions in public health policies that guarantee the optimal conditions to promote healthy aging, which entails the improvement of the quality of life of this population (1)

The strengthening of physical and mental autonomy in the elderly is a key challenge in the context of population aging, a reality that affects communities around the world, they need to enjoy independence, self-realization, participation, dignity and care (2). As people reach older ages, maintaining their freedom and decision-making not only contributes to their individual well-being, but also eases the burden on care and health systems. In the future, a dependent society will emerge where the elderly will depend on other people both emotionally and physically (3). However, factors such as declining physical abilities, cognitive changes associated with aging, and social barriers can significantly limit autonomy at this stage of life.

Age causes bodily deterioration that can be delayed by maintaining the habit of practicing healthy activities, always taking into account the state of health of the person and their physical and mental condition. This article addresses the essential strategies to promote and preserve the autonomy of the elderly, focusing on the importance of regular physical activity, strengthening emotions, continuous cognitive stimulation and the formation of social support networks (4). Likewise, the benefits of implementing multidisciplinary interventions that integrate medical, psychological, and social care are explored, with the aim of guaranteeing an active, meaningful, and dignified life for this population. It is necessary to preserve and strengthen the health of older adults, not only to contain health expenditures derived from diseases, sometimes accompanied by dependency, but also to take advantage of the contributions, activity and participation of older adults in society (5)

Through this analysis, it seeks to underscore the need to adopt a proactive and holistic approach that considers not only the individual needs of the elderly, but also the role of families, communities and institutions in their integral well-being

In this context, tools such as the Katz Index have become fundamental resources for assessing and monitoring the functional capacity of older adults in their activities of daily living (6). This instrument allows you to easily and accurately measure the degree of independence in basic tasks such as bathing, dressing, feeding, using the toilet, moving around and controlling toilets. The information obtained not only helps to identify levels of dependence, but also guides the planning of personalized interventions to promote autonomy and prevent functional decline.

The Katz Index is particularly relevant in the design of strategies to strengthen autonomy, as it provides an initial diagnosis of the areas that require support, while facilitating the monitoring of progress achieved through intervention programmes (7). In addition, its use helps to raise awareness among caregivers and health professionals about the importance of addressing functional limitations in a comprehensive way, promoting active ageing with dignity.

Another functional assessment tool, the Lawton and Brody Test, are essential to understand the abilities of the elderly (8), the Lawton and Brody Test allows for the assessment of instrumental activities of daily living (IADL), such as the ability to use the telephone, handle money, prepare meals, administer medications, and make purchases. These activities are crucial because they reflect the level of independence needed to live autonomously in the community.

It is particularly important because it assesses aspects that require physical, cognitive, and social skills. Its application makes it possible to identify early difficulties in the management of more complex tasks that are usually the first signs of loss of autonomy (9). This tool is indispensable not only for designing personalized intervention plans, but also for making informed decisions about the type of support or care the older adult might need, whether at home or in residential settings.

In addition, the Lawton and Brody Test has a preventive value (10), since its regular use facilitates the monitoring of functional aging and helps detect progressive changes in the functional capacity of the elderly. This allows for the implementation of timely strategies that include rehabilitation programs, training in specific skills, and strengthening of social support networks, all with the aim of preserving autonomy and promoting active and healthy aging.

Cognitive assessment plays a crucial role in early identification of alterations in mental abilities that may compromise the independence of the elderly. Among these, the Mini-Mental State Examination (MMSE) (11), or Mini-Mental Test, is widely recognized as a fundamental instrument for the rapid and systematic assessment of key cognitive functions such as orientation, attention, memory, language, and visuospatial skills.

The MMSE is especially valuable because it allows not only to diagnose conditions such as mild cognitive impairment and dementia in early stages, but also to monitor the progress or stabilization of these conditions over time. This tool is essential in the planning of personalized interventions, since the results obtained guide the cognitive rehabilitation and psychosocial support strategies necessary to optimize the quality of life of the elderly (12).

In addition, the Mini-Mental Test facilitates communication between professionals from different disciplines by offering a common standard for assessing and documenting cognitive status. Its use also promotes informed decision-making about the need for specific care, whether at home, in gerontological centers or through cognitive therapy programs.

From a preventive perspective, the MMSE contributes to identifying risk factors associated with cognitive impairment, such as social isolation, chronic diseases or low levels of mental stimulation. This allows for the implementation of proactive interventions aimed at preserving cognitive functions, strengthening autonomy and improving quality of life in aging (13).

To prevent and delay the deterioration of functional capacity in older adults, it is critical to select activities that fit their individual physical condition. These activities must be properly planned, considering the abilities of each person, so that they can perform them without difficulty (14).

The objective of the study is to strengthen the physical and mental autonomy of the elderly, through interventions that encompass a set of cognitive skills whose main purpose is to facilitate adaptation to new and complex situations in the different stages of life, beyond automatic or habitual behaviors (15). These skills include strategies such as problem-solving, concept formation, planning, and the use of working memory. In particular, executive functions are associated with the ability to set goals, think flexibly, inhibit automatic responses to select others more appropriate to the context, develop action plans, self-regulate behavior, and express verbal fluency (16). They can be described as the mechanisms responsible for supervising and regulating cognitive processes during the execution of complex tasks to execute another one more adjusted to the context, as well as with the ability to develop action plans, behavioral self-regulation and verbal fluency.

Materials and Methods

Study Design and Sample Selection

A quasi-experimental study of time series was carried out with the modality of pre-test and post-test design of a single group. We worked with 115 participating older adults who contemplated the universe of the two geriatric centers, they were selected through an intentional non-probabilistic sampling of all the inmates. Each of the participants was explained what the study consisted of and the corresponding informed consent was obtained from those who could obtain it, before the application of the data collection instruments.

For data collection, a questionnaire was used specifically for sociodemographic variables and the Katz test scales (17) that evaluates the daily activities of older adults is composed of 8 items, this scale has been validated in countries such as Spain and Chile with Cronbach's alpha of 0.93. Their score is measured using the Likert scale, where items are answered on a scale of 0 (Dependent), 1 (Requires assistance), and 2 (Independent) (18). The Scale of Lewton and Brody, which assesses the Instrumental Activities of daily living, consists of 8 items with a Cronbach's alpha of 0.94. Their score is measured using the Likert scale, where items are answered on a scale of 1 (Total dependence), 2 (Severe dependence), 3 (Moderate dependence), 4 (Light dependence), and 5 (autonomous) (10) and the Mini Mental(MENTAL STATUS EXAMINATION) consists of 11 items with a Cronbach's alpha of 0.85. Their score is measured using the Likert scale, where items are answered on a scale of 1 (Dementia), 2 (Impairment), 3 (Suspected Pathology), and 4 (Normal) (19).

Statistical Analysis

The data collected through the surveys were transcribed into a digital database and analyzed using the SSPS v.24 program. Descriptive statistics were performed by means of frequencies and percentages, Pearson's Chi-square contrasts were also used to observe association between the variables studied, p-value and confidence interval to measure the relationship between the different variables of the research and compliance with the objectives. The data were tabulated and analyzed, being statistically significant when $p < 0.05$.

Results

A total of 115 older adults who participated in the study, according to sociodemographic characteristics, showed a higher frequency in the age group of 75 to 90 years with 61.7%; with respect to the level of education, 59.3% did not have a level of education, according to sex the highest percentage 61.7% were women and 38.3% were men as can be seen in Table 1.

Variables Sociodemográficas	Frecuencia N=115	Porcentaje 100%
Edad		
Edad Avanzada	21	18,3
Viejas o ancianas	71	61,7
Viejos o longevos	23	20
Sexo		
Hombre	44	38,3
Mujer	71	61,7
Nivel de instrucción		
No aplica	62	53,9
Primaria	43	37,4
Bachillerato	10	8,7

Table 1. Distribution According To Sociodemographic Variables Of 115 Older Adults

Table N.2 shows that the results of the Katz test have the highest percentage, 60.0%, Requires Assistance and with a percentage of 12.2 of the Dependents and only 27.8 are Independent.

Katz Test Interpretation	Frequency N=115	Percentage 100%
Independent	32	27,8
Requires assistance	69	60,0
Dependent	14	12,2

Table 2. Distribution by Katz Test Results of 115 Older Adults

Table N.3 shows the different results of the Lewton and Brody test for the elderly, showing that 62.6% are Total Dependents, followed by 20% of Severe Dependence, 11.3% are dependent, and only 2.6% and 3.5% are Light Dependency and Autonomous, respectively. We must emphasize that they do not have access to instrumental activities, since in geriatric centers they receive full support in this area.

Lewton and Brody Test Interpretation	Frequency N=115	Percentage 100%
Total dependence	72	62,6
Severe dependence	23	20,0
Moderate dependence	13	11,3
Light dependence	3	2,6
Autonomous	4	3,5

Table 3. Distribution by Lewton and Brody Test Results of 115 Older Adults

Table 4. The results of the Mini Mental test applied to Older Adults are shown, where 47.0% have Dementia, followed by 40.9% show Deterioration, 3.5% with Pathological Suspicion and only 8.7% are in the Normal Range.

Mini Mental Test Interpretation	Frequency N=15	Percentage 100%
Dementia	54	47,0
Deterioration	47	40,9
Pathological suspicion	4	3,5
Normal	10	8,7

Table 4. Distribution by Mini Mental Test Results of 115 Older Adults

Table 5. Regarding the relationship between the degree of dependence on the Katz test and sociodemographic variables, a statistically significant association can be identified between the Activities of Daily Living Dependence and age (p=0.000 value).

Sociodemographic Variables	Independent	Requires assistance	Dependent	About 2 / P
Age				24,103
Elderly	0	0	21	0.000
Old or old	3	4	64	
Old or long-lived	6	5	12	
Sex				3,643
Man	4	6	34	0,162
Woman	5	3	63	
Level of education				6,619
Not applicable	8	4	50	0.157
Primary	1	5	37	
High school	0	0	10	

Table 5: Relationship Between Sociodemographic Variables and Interpretation of The Katz Test

Table 6. Regarding the relationship between the degree of dependence on the Lewton and Brody test and sociodemographic variables, a statistically significant association can be identified between the Instrumental Activities of Daily Living Dependence with age (p=0.001 value) and education level (p=0.041 value).

Sociodemographic Variables	Total dependence	Severe dependence	Moderate dependence	Light dependence	Autonomous	About 2 / P
Age						26,8
Elderly	10	3	3	2	3	12

Old or old	40	19	10	1	1	0.001
Old or long-lived	22	1	0	0	0	
Sex						,289,990
Man	27	9	5	1	2	
Woman	45	14	8	2	2	
Level of education						16,099
Not applicable	46	8	7	0	1	
Primary	19	14	5	2	3	0.041
High school	7	1	1	1	0	

Table 6: Relationship Between Sociodemographic Variables and Interpretation of the Lewton and Brody Test

Table 7. Regarding the relationship between the degree of Cognitive Impairment of the Mini Mental and sociodemographic variables, a statistically significant association can be demonstrated between the symptoms compatible with cognitive impairment or dementia with the level of education (p-value=0.001) and the level of education (p-value=0.001).

Sociodemographic Variables	Dementia	Deterioration	Pathological suspicion	Normal	About 2 / P
Age					10,551
Elderly	8	7	1	5	0,103
Old or old	32	31	3	5	
Old or long-lived	14	9	0	0	
Sex					2,234
Man	17	20	2	5	0.525
Woman	37	27	2	5	
Level of education					22,587
Not applicable	36	23	2	1	0,001
Primary	11	22	1	9	
High school	7	2	1	0	

Table 7: Relationship Between Sociodemographic Variables and Interpretation of the Mini Mental Test

Regarding the results of the Post Test, they are the same as the pretest, so it should be noted that with the interventions it was possible to maintain the activities of the elderly, although no progress was obtained.

Discussion

The present study has revealed crucial data on the physical and mental condition of older adults in the province of Azuay, Ecuador. The results obtained are compared with the findings of other research to offer a broader perspective on the subject.

In relation to sociodemographic characteristics, most of the study participants are in the age range of 75 to 90 years (61.7%), and a significant percentage (59.3%) do not have a formal level of education. Women predominate (61.7%), which is consistent with studies carried out in other regions, where a greater representation of women in the elderly population is also observed (20, 21). This phenomenon could be related to longer life expectancy in women (22).

In the Katz index, it was found that in our research 60.0% of older adults require assistance with activities of daily living, and only 27.8% are independent. These findings are consistent with similar studies that report a high level of dependency in older populations, especially in rural contexts or with low access to health services (23). The Lewton and Brody Test showed that 62.6% are total dependents, and only 3.5% are self-employed. Studies in developing countries show comparable figures, underscoring the need for interventions aimed at improving physical functionality and promoting independence (24).

47.0% of the participants had dementia, and 40.9% showed cognitive impairment, according to the Minimental Test. These results are alarming and reflect a similar picture to that found in other studies, where the prevalence of dementia and cognitive impairment is high in populations with low educational attainment (25, 26). The significant association between cognitive impairment and educational attainment ($p=0.001$) reinforces the existing literature that highlights education as a protective factor against cognitive impairment (27).

When analyzing the Association between Dependence and Sociodemographic Variables, it was evidenced that the statistically significant association between dependence on activities of daily living and age ($p=0.000$) is consistent with research indicating that dependence increases with age (28). Likewise, the significant relationship between educational level and dependency according to the Lewton and Brody test ($p=0.041$) supports studies that suggest that a higher educational level is associated with a better ability to perform instrumental activities of daily living (29).

Conclusion

The results of the present study indicate that, after the implemented interventions, no improvement in the physical and mental autonomy of older adults was observed, since the results of the post-test were equivalent to those of the pre-test. However, it is important to note that the maintenance of current capacities is already a significant achievement, especially considering that the natural tendency in this population is progressive deterioration. Getting older adults to maintain their level of physical and cognitive functioning is crucial to their quality of life and represents a victory over the decline that often accompanies aging. These results underscore the importance of continuous, personalized interventions to preserve autonomy and prevent further deterioration.

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