Anxiety and depression and their correlation between mild cognitive impairment and Mini-Mental impairment in older adults

Ansiedad y depresión y su correlación entre el deterioro cognitivo leve mediante el Mini-Mental en el adulto mayor

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Abstract

In people older than 65 years, depression affects quality of life; depressed older adults generally have more anxiety. Objective: To determine mood states and their relationship with mild cognitive impairment in older adults. In the present investigation, depression was evaluated by means of the Beck Test, anxiety by means of the Hamiliton Test and cognitive deterioration by means of Mini Mental to 10 participants of the "Geronto Geriatrics" center of the State of Durango. Methodology: This is a quantitative, exploratory, non-experimental, observational and cross-sectional study with descriptive and correlational statistical analysis. Contribution: Chronbach's alpha of the analyzed data refers that the higher the anxiety and depression, the higher the prevalence of mild cognitive impairment with a moderate positive significance. The correlation between anxiety and neurocognitive functions was significant r = .50 with p = .55 with 95% reliability. And the correlation between depression and neurocognitive functions with an r = .40, with p = .15 with 95% reliability. The high frequency of the incidence of anxiety in the sample studied plus the significant correlation suggest the need to implement programs to address anxiety and depression in adulthood.

Depression, anxiety, older adults, Beck test, Hamilton test, Mini-Mental Test

Resumen

En las personas mayores de 65 años, la depresión afecta la calidad de vida; los adultos mayores deprimidos generalmente tienen más ansiedad. Objetivo: Conocer los estados de ánimo y su relación entre el deterioro cognitivo leve en el adulto mayor. En la presente investigación se evaluó depresión mediante el Test de Beck, ansiedad mediante el Test de Hamiliton y deterioro cognitivo mediante Mini Mental a 10 participantes del centro "Geronto geriátrico" del Estado de Durango. Metodología: Es un estudio cuantitativo, de tipo exploratorio, no experimental, observacional y trasversal con un análisis estadístico descriptivo y correlacional. Contribución: El alfa de Chronbach de los datos analizados refiere que a mayor ansiedad y depresión, mayor prevalencia de deterioro cognitivo leve con una significancia positiva moderada. La correlación entre ansiedad y funciones neurocognitivas resultó significativa r = .50 con p = .55 con una confiabilidad al 95%. Y la correlación entre depresión y funciones neurocognitivas con una r = .40, con p = 0.15 con una confiabilidad del 95 %. La alta frecuencia de la incidencia de la ansiedad en la muestra estudiada más la correlación significativa, sugieren la necesidad de implementar programas de atención a la ansiedad y depresión en la edad adulta.

Adulto mayor, Depresión, Ansiedad, Test Mini-Mental

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Introduction

The affective or emotional component of the daily life of the older adult, often deprived of the warmth and support of the family group or a minimum of positive social interactions, confers different meanings to the gradual reduction of various biological, cognitive or sensory functions and, with it, a greater vulnerability to various agents or pathogenic factors. (Tello-Rodríguez, T, Alarcón, Renato D., Vizcarra-Escobar, Darwin, 2016, cited by Zambrano-Calozuma & Estrada-Cherre, 2020, p.10).

There are elements to take into account that determine the maintenance of cognition in the elderly patient such as; pathologies of the patient, social support, mood and the presence of geriatric syndromes such as frailty and osteopenia (Zambrano-Calozuma & Estrada-Cherre , 2020, p.9).

With ageing, there is the consequence of a degenerative process at the organic level, due to the accumulation of molecular errors, including in the brain. Dr. María Sagrario Manzano, a neurology specialist in Madrid at the Infanta Cristina Hospital, mentions that in the ageing brain, only certain areas where executive functions and memory are involved are affected. Throughout this process, neurons decrease in size and others die (Riojas-Duarte & Quintana-López, 2021, p. 9).

Memory and attention are higher brain functions that, under normal conditions, allow human beings to perform appropriately in personal and social life. To a large extent we are what we remember, and in doing so we can guide and inform our present and future behaviour (Zanín, Gil, & De Bortoli, 2004, p. 32).

Since these functions are of utmost importance for our lives, the question arises as to whether mood influences the alteration of these functions, hence the aim of this research, which is to know the processes of attention and memory and their relationship with mood in the elderly by applying the following tests: Hamilton test, Beck test and Mini-Mental Screening Test.

Justification

It is known that memory and attention are the main aspects of executive functions; with the passage of time, the quality of life and health of people is affected by a decline in their functionality, which has social, mental and physical consequences (Riojas-Duarte & Quintana-López, 2021, p. 8).

Age-related memory problems are a cognitive alteration considered normal; they are mild forgetfulness. It has been suggested as a normal stage in the elderly. This event is known as Age-Related Memory Impairment (ARMD), but this cognitive alteration is not considered a disease (Sosa Sosa, 2016, p. 18).

Carbajal (2007) explains that in our country the majority of older adults who consult for memory loss do not have cognitive disorders, what they present are these subjective memory losses, where they believe they present a decrease in some cognitive function but in reality this loss is not made known after the corresponding tests have been carried out. This subjective loss is strongly related to anxieties, fears of developing dementia, relationship conflicts and attention problems of older adults (Sosa Sosa, 2016, pp. 18 - 19).

In accordance with the above and seeing the importance of attention and memory in everyday life, it was considered important to carry out this research in order to verify the impact that the mood of older adults may have in relation to the loss or development of dementia. r in relation to the loss or deterioration of attention and memory. Based on the above, the interest of the present research lies in investigating attention and memory in older adults and their relationship with mood.

Problem

Depression is a common illness worldwide, with an estimated 3.8% of the population affected, including 5.0% among adults and 5.7% among adults over 60. Approximately 280 million people worldwide have depression. Depression can become a serious health condition. It can cause the affected person to suffer greatly and function poorly at work, at school and in the family. In the worst cases, depression can lead to suicide. More than 700 000 people die by suicide each year (WHO, 2021).

According to the World Health Organisation (WHO), dementia and depression affect approximately 5% and 7% of the world's older population, respectively. Anxiety disorders affect 3.8% of the older population (WHO, 2017).

Older people with depressive symptoms have poorer functioning compared to those with chronic medical conditions such as lung disease, hypertension or diabetes. (WHO, 2017).

Hypothesis

H_o: "Attention and memory processes are unrelated to older adults' mood states".

H_i: "Attention and memory processes are related to mood states in older adults".

Objectives

General objective

To know the mood states and their relationship between mild cognitive impairment in the elderly.

Specific objective

- To find out the total score of the Beck test for depressive mood in older adults.

- To find out the total score of the Hamilton test for anxious mood in the elderly.

Theoretical framework

Background

Depression is a mental illness that affects more than 350 million people worldwide, with older adults being one of the most vulnerable groups.

According to the IMSS, depression is a disease that is related to a decrease in serotonin, which is a neurotransmitter that regulates the emotions of well-being and sleep; it causes a change in their energy, and is reflected in a series of alterations in which feelings of sadness and low willpower dominate (IMSS, 2020). (IMSS, 2020).

According to the National Institute for the Elderly (INAPAM), depression can cause great suffering and disrupts daily life. Worldwide, depression affects 7% of the general population of older people.

In Mexico, studies report that depression is the most frequent affective disorder in people over 60 years of age, that is, 15-20% in the outpatient population, increasing to 25-40% in hospitalised patients (INAPAM, 2019).

With regard to anxiety symptoms, it was found that 19.3% of the adult population has symptoms of severe anxiety, while another 31.3% show symptoms of minimal or some degree of anxiety, and 49.3% do not have anxiety (INEGI, 2021).

It is estimated that in Mexico at least 14.3 per cent of citizens suffer from generalised anxiety disorders, the most common mental health illness in the country, followed by depression and addictions, both at a percentage of 9 per cent (Senado de la Republica, 2019). (Senado de la Republica, 2019).

The world's population is ageing rapidly. Between 2015 and 2050, it is estimated that the proportion of older adults in the world will almost double, from around 12 per cent to 22 per cent. In absolute terms, this is an expected increase from 900 million to 2 billion people over the age of 60. Older people face special physical and mental health problems that need to be recognised.

More than 20% of adults aged 60 years and older suffer from a mental or neurological disorder (excluding headache disorders) and 6.6% of all disability (disability-adjusted life years-ADALYs) among people aged 60 years and older is attributed to mental and neurological disorders. (WHO, 2017)

Attention and memory

Memory:

Memory is a neurocognitive function that enables previously stored information to be recorded, encoded, consolidated, retained, stored, retrieved and recalled. While learning is the capacity to acquire new information, memory is the capacity to retain the information learned (Portellano, 2005, p. 227).

Basically, we can establish two main types of memory according to the time elapsed for its storage: short-term memory and long-term memory (Portellano, 2005, p. 233).

1. Short-term memory (STM)

This is the process of initial retention of information for a short period of time ranging from a few fractions of a second to several minutes, although some authors place the time limit of short-term memory at 30 seconds. Before the perceptual processing of information can take place, it is necessary that a sensory encoding of the stimuli to be memorised takes place, which is why within short-term memory there are several modalities: sensory memory, immediate memory and working memory (Portellano, 2005, p. 233). (Portellano, 2005, p. 233).

2. Long-term memory (LTM)

This is the ability to retain information for longer periods of time or permanently. LTM also refers to the ability to recall information after an interval of time when the subject has focused attention on another task. (Portellano, 2005, p. 235)

Attention:

Attention is in charge of carrying out the information selection process within the nervous system, being the fundamental element that articulates all cognitive processes. Alterations in attention always produce cognitive disorders of greater or lesser intensity (Portellano, 2005, p.143).

Attention is not a unitary process but a complex, dynamic, multimodal and hierarchical functional system that facilitates the processing of information, selecting the relevant stimuli to carry out a specific sensory, cognitive or motor activity. Attention, therefore, consists of selectively focusing on a given stimulus, filtering, discarding and inhibiting unwanted information. In order to carry out any cognitive process, it is necessary that a certain degree of selection of the stimuli that access the nervous system is previously produced, through the implementation of attentional mechanisms (Portellano, 2005, p. 143).

As a complex function, not only are several areas of the nervous system involved, but attention is at the crossroads of multiple sub-functions such as level of awareness, orientation, concentration, processing speed, motivation, direction, selectivity or alternation. According to this, the structure of attention is made up of different hierarchical layers of greater or lesser complexity, which are articulated in the form of neural networks located in various nerve structures. The more passive processes related to involuntary attention are located in the deeper areas of the brain, while those requiring a greater degree of voluntary selection are located in the cortical areas. The supramodal structure of attention is articulated in three levels of increasing complexity: alertness, sustained attention and selective attention (Portellano, 2005, p. 143 - 144).

Adulto mayor

In Mexico, Adulto Mayor is considered to be a person over 60 years of age and refers to the stage that adds up all the experiences of life and passes through most of the family, professional and social goals. But it also marks the beginning of a stage where people present conditions of physical, social and economic vulnerability. (GOB, 2017).

Ageing involves a series of physical, psychological and social changes related to changes in all organs, including the brain. With the passage of time, a series of cognitive modifications begin involving memory, language, perception and attention. These cognitive changes constitute one of the central factors of late life (Ardila & Rosselli, 2007, p. 227).

Individuals between 55 and 74 years of age are considered young senile, those over 75 years of age are considered old senile, and those over 85 years of age are considered older senile. (Ardila & Rosselli, 2007, p. 227).

Mental health

According to the WHO, mental health is a state of well-being in which an individual is aware of his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community. (WHO, 2018)

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Mental health is fundamental to our collective and individual capacity as human beings to think, emote, interact with each other, earn a living and enjoy life. On this basis, the promotion, protection and restoration of mental health can be considered a vital concern of individuals, communities and societies around the world. (WHO, 2018)

Mental health has an impact on physical health and vice versa. For example, older adults with physical health conditions such as heart disease have higher rates of depression than those who are healthy. In addition, untreated depression in an older person with heart disease can negatively affect their outcome. (WHO, 2017)

Anxiety

Anxiety comes from the Latin anxietas. Meaning the condition of an individual experiencing uneasiness, commotion, worry, nervousness. For medicine, anxiety is an anxious stage that can arise along with a neurosis or other type of illness and that does not give rise to rest and relaxation of the patient, it is also an emotional response or set of responses that includes: subjective or cognitive aspects of unpleasant character, determined physiological aspects (Guerrón, 2016 cited by Tenesaca Camacho, 2021, p. 20).

The term anxiety refers to the combination of different physical and mental manifestations that are not attributable to real dangers, but that manifest themselves either in the form of a crisis or as a persistent and diffuse state, which can reach panic (Marks, 1986 cited by Sierra, Ortega, & Zubeidat, 2003, p. 15).

In summary, anxiety refers to a state of agitation and unpleasant restlessness characterised by the anticipation of danger, the predominance of psychic symptoms and the sensation of catastrophe or imminent danger, that is, the combination of cognitive and physiological symptoms, manifesting a startle reaction, where the individual tries to seek a solution to the danger, so that the phenomenon is perceived with total clarity (Sierra, Ortega, & Zubeidat, 2003, p. 17).

Anxiety can present itself in three forms: 1) normal, in which there are affective manifestations in response to a stimulus from both the external and internal world; 2) pathological, where, unlike normal anxiety, there is no previous stimulus; and 3) generalised anxiety, which is characterised by vague and inexplicable prolonged fears unrelated to an object (Acuña, 2009, p. 21). (Acuña, 2009, p. 21).

Depression

Depression is a common illness worldwide, affecting an estimated 3.8% of the population, including 5% of adults and 5.7% of adults over 60. Globally, approximately 280 million people have depression (WHO, 2021).

Depression is a common mental health disorder. It is characterised by persistent sadness and a lack of interest or pleasure in previously rewarding and enjoyable activities. It can also disturb sleep and appetite, and is often associated with fatigue and lack of concentration. Depression is a major cause of disability worldwide, and has a significant impact on the burden of disease. The effects of depression can be prolonged or recurrent, and can dramatically impair a person's ability to function and live a rewarding life (WHO, 2021).

Depression in older adults is a common pathology, which is associated with comorbidities, excessive use of health resources, suicide and mortality. It is generally underdiagnosed and undertreated. Within it, two types are distinguished: 1) Early-onset depression that begins before the age of 60, and occurs in older adults as recurrent or chronic depression and 2) Late-onset depression that begins after the age of 60 and is associated with more neurological changes and dementia (Bruning, 2019, cited by Tenesaca Camacho, 2021, p.12). (Bruning, 2019, cited by Tenesaca Camacho, 2021, p.12).

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In people over 65, depression affects quality of life; depressed older adults generally have more anxiety, somatic complaints, poor prognosis and high mortality. Contrary to popular belief, depression is not a natural part of ageing and can often be reversed with prompt and appropriate treatment. However, if left untreated, depression can accelerate physical, cognitive and social decline (Venegas, 2016, cited by Tenesaca Camacho, 2021, p. 12).

Attention and memory impairment in older adults

Instruments

Hamilton test

It is a scale whose objective is to assess the intensity of anxiety. It consists of a total of 14 items that assess the psychological, physical and behavioural aspects of anxiety. In addition, one item specifically assesses depressed mood.

The items are non-specific manifestations of anxiety, without having demonstrated their usefulness for the assessment of a specific anxiety disorder.

The time frame of reference is the last three days for all items, except the last item, which assesses the subject's behaviour during the interview.

It is a hetero-applied scale, created with simple instructions to assign the most appropriate scores for each patient, in order to increase inter-rater reliability.

The following is a brief description (valid for all 13 items)

1 Identify from all possible symptoms for each item the most problematic symptom in the last few days, and which is certainly due to anxiety.

2 Determine for that symptom these three aspects: its severity, its frequency of depression and the disability or dysfunction it produces.

a. Severity: 1-mild (minor). 2-moderate (disturbance). 3-severe (very annoying) 4- the worst symptom I have ever experienced.

b. Time/frequency: 1- infrequent. 2-occurs in the middle of the day or less. 3-occurs most of the day. 4-occurs almost all the time.

c. Disability: 1-symptoms do not interfere with activities. 2 - symptoms interfere with some activity. 3-symptoms cause inability to carry out daytime activities (social, work and family). 4-symptoms cause inability to perform activities in two or more of the above areas.

Correction and interpretation

It provides an overall measure of anxiety, which is obtained by the sum of the scores obtained. The recommended cut-off points are:

   0-5 No anxiety

   6-14 Mild Anxiety

   >15 Moderate/severe anxiety.

Beck Depression Test (BDI-IA)

The Beck Depression Scale is one of the instruments frequently used to assess depressive symptoms (González et al., 2014).

The Beck Depression Inventory, second edition (BDI-IA) is a self-report instrument composed of 21 items, whose purpose is to measure the severity of depression in adults and adolescents aged 13 years and older.

This version of the BDI was developed to assess symptoms corresponding to the diagnostic criteria for descriptive depressive disorders in the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV, 1994) of the American Psychiatric Association (Beck, 2009).

The Beck Inventory meets the psychometric requirements for valid use in our setting. In terms of factorial composition, construct validity, discriminant validity and internal consistency, they corroborated the adequate psychometric properties of the BDI-IA, which support it as a sufficiently valid and reliable instrument for the measurement of depressive symptoms in the Mexican population, which also supports the cross-cultural validity of the instrument (Beck, 2009); (Beltrán, 2012).

The cut-off scores proposed by Beck et al. (1996) were found to be appropriate for discriminating between different degrees of depression (see table 1).

Total scores	Level of depression
<=9	Normal.
10-15	Slightly depressed.
16-24	Moderately depressed.
25-62	Severely depressed.

Table 1 Total score for the interpretation of the results of the Beck Test inventory

Mini-Mental Screening Test

The Mini-Mental State Examination (MMSE) is a written test commonly used as part of the process when considering a diagnosis of dementia, with a maximum score of 30, with lower scores indicating more severe cognitive problems.

It is one of the most widely used tools worldwide due to its brevity and easy application (Tombaugh and Mcintyre, 1992), it has 10 areas of assessment: spatial-temporal orientation, three-word registration, attention fixation, memory, verbal nomination, repetition and comprehension, reading, writing and visuospatial construction, (Mora Villalobos, et al., 2017). The cut-off point established for the MMSE defines "normal" cognitive function and is generally set at 24, although theoretically it could be anywhere between 1 and 30 (Arevalo-Rodriguez I, cited by Llamuca Quinaloa, Macías Guamangate, Miranda Caisaluisa, & Tapia Cerda, 2020, p. 317).

It is mandatory when starting the test to begin by collecting the patient's data, as well as their level of schooling and the work they did before retirement (the year they started school and the year they finished it). started school and the year in which they finished, approximately). This will also help to create a degree of trust with the patient and facilitate their collaboration.

If we analyse the MMSE, we can see that it consists of 5 sections: (1st) Orientation, (2nd) Fixation, (3rd) Calculation and attention, (4th) Memory and (5th) Language and praxis.

When carrying it out, we should not interrupt it, especially the sequence of fixation, calculation and attention and memory. Between the 1st and 2nd, and between the 4th and 5th we can make a brief pause if the patient is tired or very nervous, trying to reassure them and tell them that it is not an exam.

Range Level of anxiety

< = 24 Probable cognitive impairment.

> 24 No cognitive impairment.

With all this we will have reached the end of the test and we will have to make the correction for age and cultural level. After reviewing the MMSE, the following agreement is reached (see table 2).

Range	Level of anxiety
< = 24	Probable cognitive impairment
> 24	No cognitive impairment

Table 2 Total score for the interpretation of the results of the mini-mental screening test

Schooling refers to the age at the end of school, not to the number of years of schooling. Broadly speaking, the first group includes those who have not completed primary school, the second group includes those who have completed primary school and those who have a baccalaureate, and the third group includes those who have a baccalaureate or university degree.

Patients with depression and anxiety tend to score low in this type of test due to impaired attention and concentration, without this being indicative of MCI or dementia (the response of "I don't know, I don't know" to simple orientation or calculation questions is characteristic, which they end up doing if we insist that they pay attention and make an effort).

Research methodology

The present study is an exploratory, non-experimental, observational, cross-sectional study with descriptive and correlational statistical analysis. The complex variables of mood, anxiety and depression were analysed for their relationship with neurocognitive functions by means of mini mental. In addition, the following variables were considered: age, gender and school grade.

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For the statistical analysis of the characteristics of the studied population, measures of central tendency were used and for the correlational analysis a Pearson correlation coefficient was used.

Inclusion criteria were participants aged between 60 and 90 years from the Geronto Geriatric Centre who wished to participate in the study and had signed a letter of informed consent, therefore those who did not wish to participate were excluded.

As elimination criteria, participants who left any of the assessment tests unfinished, previous neurodegenerative diseases and non-attendance to the assessments as well as patients who wished to withdraw from the study were discarded.

According to these criteria, out of a total of 20 patients, 10 were eliminated, leaving a total of 10 valid cases for the research.

Procedure

The participants were patients attending a geriatric geriatric centre called "caring for those who gave us life" in the city of Durango. Data collection was carried out during the month of February 2021, culminating at the end of February of the same year.

Informed consent was obtained after signing the informed consent form in accordance with the official Mexican standards 004-ssa3-2012 on clinical records and 040-ssa2-2004 on information, and the instruments for data collection and interpretation of the results were applied.

The following tests were used for the study: "Beck test", "Hamilton test" and "mini mental screening test".

The Beck depression test is a 21-item self-administered inventory that assesses the intensity of depression. For each item, the subject has to choose the statement that, from a set of four alternatives (always in order of severity), best fits his or her mood during the last week. Each item is scored from 0 to 3 points depending on the alternative chosen, the resulting total score has a range between 0 and 63 points.

The Hamilton test is a hetero-applied scale consisting of 14 items assessing psychological, physical and behavioural aspects of anxiety. The time frame of reference is the last three days for all items except the last item, which assesses the subject's behaviour during the interview.

It is classified by the following severity values: 1, mild, of little importance; 2, moderate severity and disturbances; 3, severe disturbances derived from the symptoms, very annoying; 4, the worst symptom ever experienced. Each item is valued from 0 to 4 points depending on the alternative chosen, and its cut-off points are: 0-5: no anxiety. 6-14: mild anxiety. >15: moderate/severe anxiety.

The mini-mental screening test is a screening instrument that evaluates cognitive alterations. Depending on the scores obtained by the subject, it is able to distinguish between normal cognitive functioning, mild, moderate and severe dementia.

It consists of 5 sections: (1st) Orientation, (2nd) Fixation, (3rd) Calculation and attention, (4th) Memory and (5th) Language and praxis.

After the application of the 5 sections we will have reached the end of the test and we will have to correct for age and cultural level. After reviewing the MMSE we arrive at the following suggestions or guidelines for interpretation:

Probable cognitive impairment:

Score < 24

No cognitive impairment: Score > 24.

The identification of the signalistic variables and academic performance (gender, age and school average) was obtained through the application of a clinical survey.

Statistical analysis of the information obtained was carried out using Excel software.
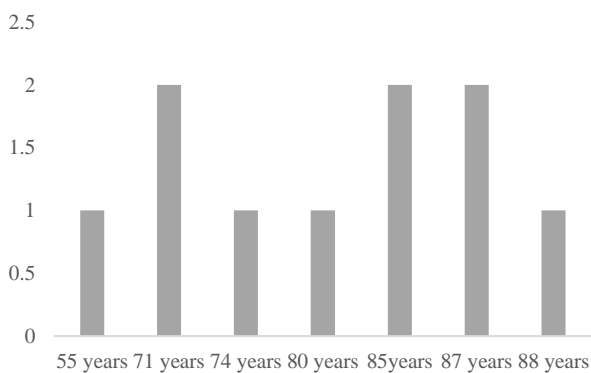
Results

The sample studied consisted of 10 participants, who attend the "Geriatric Centre: caring for those who gave us life", of which 8 are female and 2 are male (see graphic 1).
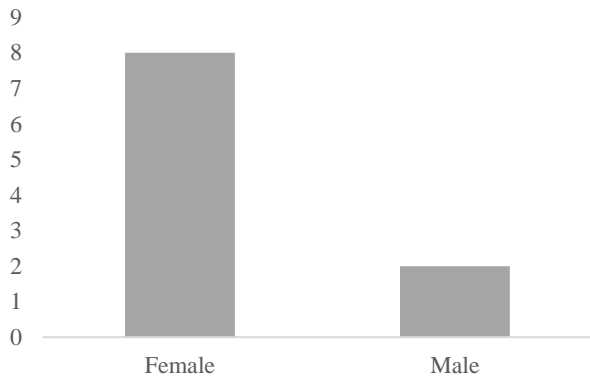
Graphic 1 Frequency by gender

The mean age of the participants was 78.3 years, with a minimum of 55 years and a maximum of 88 years, with a mode of 71 years and a mean of 82.5, the standard deviation was 10.57 (see graphic 2).

Graphic 2 Frequency by age

The reliability of the results obtained in the evaluation of the Hamilton Anxiety Test was a Chronbach's alpha .69 (very reliable).
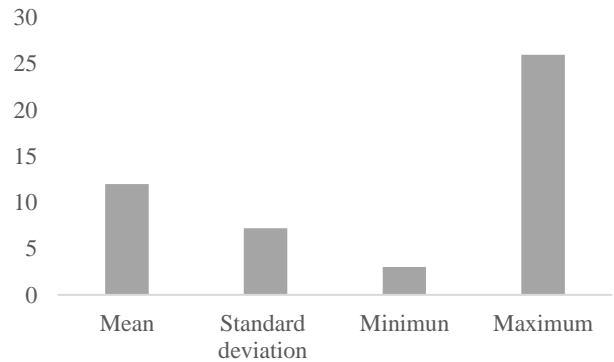
As for the results obtained from the assessment of anxiety using the Hamilton test, 2 participants (20%) did not show any level of anxiety, while 8 participants (80%) showed some degree of anxiety. Of which, according to the Hamilton scale, 6 participants represent 60% and are at a mild level of anxiety. And 2 participants corresponding to 20% are at a moderate/severe level of anxiety (see table 3).

Range	Frequency	Percentage	Level of depression
< = 9	7	70%	Normal
10 – 15	0	0%	Mild
16 – 24	0	0%	Moderate
25 +	3	30%	Severe

Table 3 Results of the Hamilton test (Anxiety)

Thus, the mean total score of the Hamilton Anxiety Test is 12 with a standard deviation of 7.21. This indicates that most of the participants report mild anxiety.

This indicates that most participants report mild anxiety (see Graphic 3).

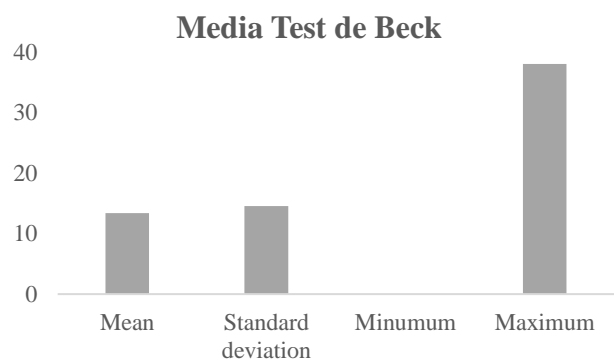**Graphic 3** Measures of central tendency of Hamilton's total score

The reliability of the results obtained in the evaluation of the Beck Depression Test was with a Chronbach's alpha of .90 (excellent reliability).

As for the results obtained from the assessment of depression using the Beck test, 7 participants (70%) did not show any level of depression, while the other 30% showed severe depression (see table 4).

Range	Frequency	Percentage	Anxiety level
0 – 5	2	20 %	No anxiety
6 – 14	6	60 %	Mild
> 15	2	20 %	Moderate / Severe

Table 4 Results of the Beck's test assessment

The mean of the total Beck test score is 13.4, a median of 8 and a mode of 9, a standard deviation of 14.56, a minimum value of 0 and a maximum of 38 (See graphic 4).

Graphic 4 Measures of central tendency of the total Beck score

Article

This indicates that 70% of the population is within normal parameters while 30% is at a severe level of depression.

The reliability of the results obtained from the Mini-Mental Test was Chronbach's alpha of .66 (very reliable).

As for the results obtained from the Mini-Mental Test, 8 participants (80%) showed probable cognitive impairment, while 2 participants (20%) showed no cognitive impairment (see table 5).
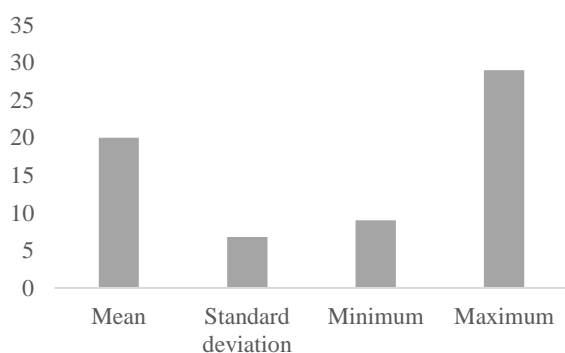
Range	Frequency	Percentage	Level of anxiety
< = 24	8	80%	Probable cognitive impairment
> 24	2	20%	No cognitive impairment

Table 5 Results of the evaluation of the Mini-Mental test

Measures	Score
Mean	20
Median	22
Mode	24
Standard deviation	6.79

Table 6 Mini-mental test results

This indicates that 80% of the population show probable cognitive impairment (see graphic 5).

Graphic 5 Measures of central tendency of the Mini-Mental total score

Correlational analysis

Pearson's correlational analysis between anxiety and mini-mental impairment showed a moderate positive significance with r = .50 with p = .55 and 95% reliability, which indicates that the higher the level of anxiety, the greater the cognitive impairment or the greater the prevalence of mild dementia.

	Average	Anxiety score
Pearson correlation	Pearson correlation	Pearson correlation
Sig. Bilateral	Sig. Bilateral	Sig. Bilateral
N.	N.	N.
*Correlation is significant at the 0.05 level (bilateral).		

Table 7 Correlation between anxiety and cognitive impairment

In the following Pearson correlational analysis between depression and mini-mental impairment, a moderate positive significance level was found with an r = .40, with p = 0.15 with 95% reliability, which indicates that, in a moderate positive way, the higher the level of depression, the greater the cognitive impairment or the greater the prevalence of mild dementia.

	Average	Anxiety score
Pearson correlation		.40*
Sig. Bilateral		0.15
N.	10	10
* Correlation is significant at the 0.05 level (bilateral).		

Table 8 Correlation between depression and cognitive impairment

Conclusion

In the present investigation, relevant data were found between mood states (anxiety and depression) and mild cognitive impairment, as 80% of the population manifested anxiety correlated with cognitive impairment. However, only 20% of the population showed depression correlated with cognitive impairment.

Therefore, the greater the alteration of mood (anxiety and depression), the greater the prevalence of mild cognitive impairment in the elderly.

Finally, the general and specific objectives are fulfilled and our research hypothesis is accepted in the "Geriatric geriatric geriatric centre of the state of Durango".

It is of great interest to continue with the research since the results cannot be extrapolated because it is only a pilot study, however there is a moderate positive correlation between the alteration of mood and cognitive processes.

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Therefore, it is recommended to provide attention and support to the elderly in terms of mood, as this has a great impact on their mental health. It is also proposed to stimulate neurocognitive functions or to implement workshops.

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