Evaluation of the Cognitive Level in Adults over 60 Years

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ABSTRACT

The objective of the present study is to assess cognitive level in adults over 60 years. To carry out this research, a population study was applied and a representative sample was calculated using a 95% confidence level and a 5% error allowed. The MMSE instrument was used to achieve the stated objective. When comparing the two delegations, it is observed that there is a slight difference of affectation in the population, giving Iztapalapa the delegation affected by the 4.36% of its population on Iztacalco.

Keywords-- *Cognitive level, adultsand MMSE instrument*

INTRODUCTION

The increase in the life expectancy of the population has brought with it an increase of the diseases that appear in old age, being important to investigate those factors that cause physical incapacity and associated with an intellectual deterioration affecting directly the quality of life of the patient . Chronological age in itself is not a rigid determinant of intellectual deterioration, since it is the result of a progressive functional loss or senile pathology, in addition it is important in the maintenance of intellectual capacities the persistence of the use of these (Motivation) being a brake or delay to its involution (Matamala, Pizarro and Ponce, 2013).

Pinzon and Chuquizán (2014) point out in their work that the cognitive is that which is related to knowledge. This, in turn, is the accumulation of information that is available thanks to a learning process or to experience. Ecured (2017) mentions that

cognitive / cognitive development focuses on thought processes and behavior that reflects these processes. It is the basis of one of the five perspectives of human development accepted mostly (the other four are the psychoanalytic perspective, the learning perspective, the evolutionary / sociobiological perspective and the contextual perspective).

Healthy aging belongs to a semantic field that has been growing widely in recent years, based on the global demographic change, which has established a new consideration of aging. Traditionally, old age was thought of as a stage of cognitive loss. It is now stated that the aging process is characterized by being a multidimensional and multidirectional process, there is a great variability in this process and the cognitive plasticity and it maintains the long wing of the whole life being possible to reach a healthy adulthood and free Of disability. In 1987 one of the most influential definitions on the ways of aging is proposed, dividing this concept into three main categories: usual aging refers to those individuals who would exhibit an average decline of cognitive functions, not pathological, only determined by age . Successful aging indicates the set of people who exhibit a minimal loss at the cognitive level when compared to younger subjects. Health conditions, optimal physical functioning, and good cognitive functioning prevail in the different studies. (Fernández, et al., 2010)

Greenwood and Parasuraman (2010) point out that in spite of the large number and diversity of studies concerning cognition in adulthood, there is a certain consensus in them about areas that are frequently

impaired in normal aging. Firstly, the slowing down in information processing and the decrease in attentional capacity. Changes in these cognitive functions begin early, around 40 years of age, where the decline in the speed of responses to different external stimuli and the ability to maintain care for prolonged periods of time would begin. As a consequence, older adults would take more time to perform various cognitive tasks and tire more quickly than younger people. It would be evidenced, as the age advances, a decline in the capacity to control the contents of the working memory, to exclude relevant information and to delete contents that are no longer important, secondly, a great amount of investigations have tried to determine the Impact that aging has on memory. In this cognitive area not all facets would be affected in the same way, nor in the same degree. There would thus be relatively preserved memory systems, while others would be highly susceptible to the effects of age. Explicit memory would be more affected than implicit memory, and within explicit memory, episodic memory would suffer more decline than semantic memory. This last system would continue increasing from the 35 to the 40 years until the 55-60, moment in which would begin to descend of more gradual form.

For its part, the Instituto Superior de Estudios Sociales y Socio sanitarios (s / f) notes that it is a fact that, as we grow older, we are losing many capacities and others are decreasing until reaching very low limits. One of the most well-known cases that happens when reaching old age is cognitive impairment. Continuing with the ideas of the same author, he mentions some causes of the cognitive deterioration, among which they stand out:

➢ Changes in relation to society. One of the main factors that affect the loss of faculties is to isolate oneself from the world around them and not have contact with other people. This loneliness causes a lack of interest and lack of interest that ends directly impacting on people's abilities, and of course, in memory, causing it to decrease.

➢ Psychological changes. The psychology of each one directly affects the mental faculties of the person. On the one hand stress disorders or depression can make the wear of neurons is greater, thus, causing memory loss. On the other hand, the negative thoughts about not being able to perform actions associated with old age make

that many older people do not try to improve and to perform the actions that before they could do. It is necessary to take into account that with old age, regardless of the deterioration or not, there are faculties that are inevitably slowed, with what must be assumed to be normal and not be carried away by the pessimism of not feeling as vigorous as years ago.

➢ Changes in the body. Finally, there are specific changes of the organism that lead to the suffering of a more severe cognitive degeneration. Loss of neurons and rapid non-regeneration of neurons, loss of sight with inability to recognize objects properly ... are some of the changes in the body that can affect the cognitive deterioration of a person

GENERAL OBJECTIVE

Evaluate the cognitive level of patients two centers located in different delegations within Mexico City by taking the screnning test the Minimental State Examination (MMSE).

SPECIFIC OBJECTIVES

➢ Evaluate in two delegations the cognitive deterioration, in this case Iztapalapa delegation and Iztacalco delegation.

➢ Applying the test to adults over 60 at random in both delegations, a small interview that consists of a MMSE, is a test that can be used to know the cognitive state Of adults in a systemic and comprehensive way. It consists of 11 questions that check some areas of cognitive functioning, orientation, recording or attention of memory as well as the speech of each of the 60 year olds.

➢ Apply 150 tests in each delegation with 90% reliability, which will be analyzed and compared to each other.

➢ Evaluate the evidence from both delegations to conclude on which delegation is highest the percentage and which is lower.

➢ Know which delegation prevails between both, the percentage of damaged in their cognitive state that exists in each delegation, and the percentage that does not suffer cognitive impairment.

JUSTIFICATION

The reason for the test is to know in depth the cognitive state of the population that is included in the age of 60 and 90 years. The purpose is to conclude through statistical methods the prevalence of mental health problems that afflict the population of Mexico City. In different areas between them Ramos Millán and Santa Martha Acatitla, since according to my visual appreciation not all the elderly, that comprise between that parameter of ages have a problem of mental health. That is why the respective surveys will be carried out, so that they can later be graphed and thus know exactly what percentage of the population has cognitive problems, as well as the level of dementia that each of the adults interviewed.

METHODOLOGY

The calculation of the sample for the calculation of the sample was used the formula proposed by Dr. Herrera (2012) who proposes for a finite sample the following:

$$n = \frac{z_\alpha^2 * N * p * q}{i^2 * (N-1) + z_\alpha^2 * p * q}$$

Where:

n = Sample size
N = Total population
Z = value corresponding to the gauss distribution
p = expected prevalence of the parameter to be evaluated, if not known (p = 0.5)
q = 1- p
i = error expected to be committed

The formula developed is shown below:

$$n = \frac{(1.96)^2 * 245 * 0.5 * 0.5}{(0.05)^2 * (245-1) + (1.96)^2 * 0.5 * 0.5} = \frac{235.298}{0.61 + 0.9604} = \frac{235.298}{1.5704} = 149.83 = 150$$

The analysis of the above formula shows that for the study, using a 95% confidence interval, a margin of error of 5%, a probability of success of 0.5 and a probability of failure of 0.5, 150 people must be surveyed.

INSTRUMENT USED

According to the Universidad Complutense Madrid. (S / f) indicates the following characteristics of the test used in the investigation, which are the following:

➢ Name: Mini Mental State Examination

➢ Original name: Mini-Mental State Exam (MMSE)

➢ Authors: Folstein, Folstein and McHugh

➢ Versions: There are reduced versions and versions that can be administered by phone (Telephone-Assessed Mental State, TAMS, Telephone Interview for Cognitive status, TICS)

➢ Spanish adaptation: Lobo, A .; Saz, P et al., 2002

➢ Type of instrument: test

➢ Objectives: Detection of cognitive disorders.

➢ Population: Elderly or other people in whom cognitive impairment is suspected.

➢ Number of items: 30 questions

➢ Description: It briefly evaluates the mental state and allows to observe the progression of the cognitive state.

➢ Evaluate the following areas: orientation in space, time, coding, attention and concentration, memory, language and visual construction.
➢ Quality criteria:

➢ Reliability: The internal consistency of the instrument ranges from 0.82-0.84. Its inter-dependency reliability is 0.83 in patients with dementia, 0.95 in patients with different neurological disorders, and 0.84-0.99 in elderly residents. As to their intraclass correlation

coefficients, they range from 0.69 to 0.78 in elderly subjects. The inter-agreement level reached Kappa = 0.97 for 5 evaluators. Its reliability test-retest - between one day and nine weeks - reaches indices ranging from 0.75 to 0.94 in patients with dementias; 0.56 in patients with delusions; And 0.60-0.74 in patients with schizophrenia. As expected, reliability declines over time, especially in the elderly and with disorders.

➤ Validity: Significant correlations of MMSE with various measures of intelligence, memory and other aspects of cognitive functioning have been observed in a wide variety of populations, using instruments such as the Weschler Adult Intelligence Scale (WAIS), Weschler Memory Scale, Concentration and Memory Scale (IMC), Clock Drawing Test, Alzheimer's Disease Assessment Scale (ADAS-COG), or Dementia Rating Scale (DRS). The test has also been linked to the Daily Life Activities Index (ADL), finding the best cut-off point in 23 for this type of task. The Mental Mini maintains good correlations with other measures such as the clinical evaluation of an expert, the assessment of nursing, with levels of needs, etc. Some studies have found significant scale correlations with biological damage identified by computed tomography, MRI, or autopsy.

➤ Application time: 5-10 minutes.
➤ Application standards: The evaluator is demanding the tasks (say in which country, province ... is, etc) to the person and the person is responding or performing the requested questions or tasks.

Table 1 represents an example of the Gantt diagram of the project.

Table 1: Example of Gantt Diagram.

ACTIVITY	MONTH					
	1	2	3	4	5	6
PLANNING OF THE INVESTIGATION.	■					
APPLICATION OF THE EVALUATION INSTRUMENT		■	■			
SAMPLING EVALUATION.				■	■	
CONCLUSIONS OF THE INVESTIGATION.						■

RESULTS ANALYSIS

The results obtained were as follows. First the results of the people of the Iztacalco delegation are presented. Table 2 represents the score obtained in the test (left column) and the number of people that obtained this weighting (right column).

Table 2. Example of Results

CALIF. ONT.	FRECUENCIA
4	1
5	1
5.6666	2
6	2
7	7
7.3333	2
7.6666	2
8.3333	5
8.6666	10
9	4
9.3333	29
9.6666	16
10	69

Figure 1 represents the results obtained from the analysis of the study, where 84.98% of the individuals studied do not suffer from any cognitive deterioration, whereas 15.02% of the people studied suffer some cognitive deterioration.

whereas 19.38% of the people studied suffer some cognitive deterioration.
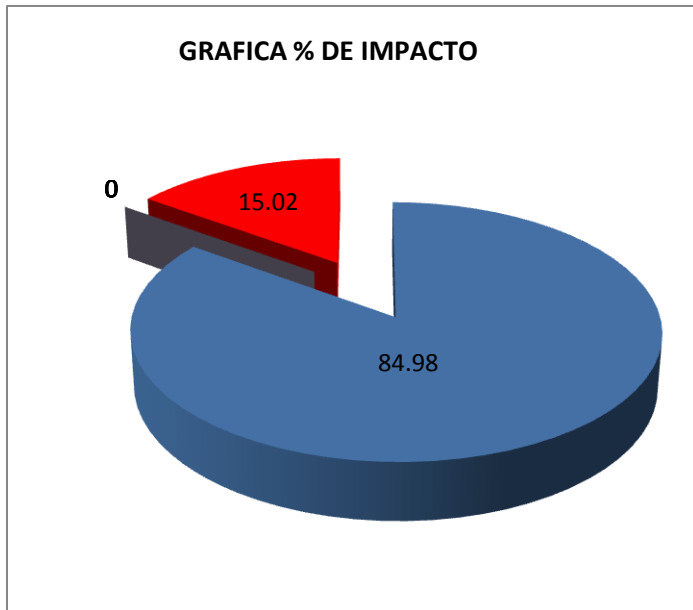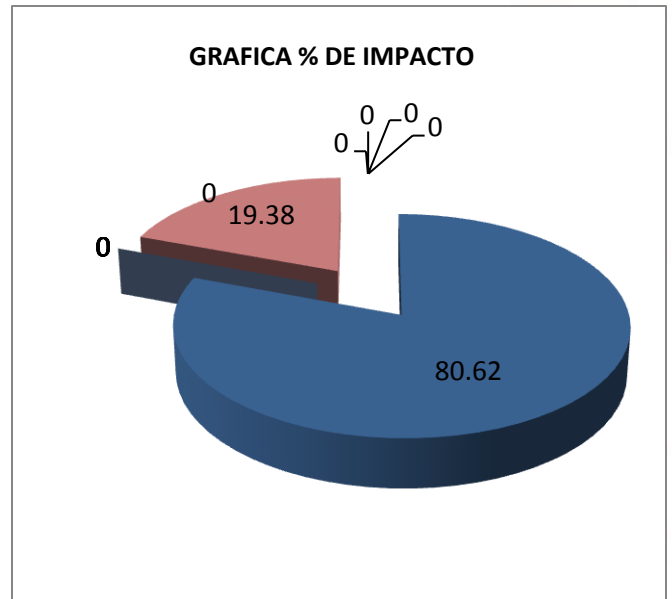

Figure 1: Example of Results.

Figure 2: Example of Results.

The results of the people of the Iztapalapa delegation. Table 3 represents the score obtained in the test (left column) and the number of people that obtained this weighting (right column).

Table 3: Example of Results

CALIF. OBT.	FRECUENCIA
4.3333	2
4.6666	1
5	2
5.3333	5
5.6666	8
6	10
6.3333	15
6.6666	9
7	7
7.3333	15
7.6666	12
8	13
8.3333	15
8.6666	14
9	6
9.3333	8
9.6666	5
10	3

Figure 2 represents the results obtained from the analysis of the study, where 80.62% of the people studied do not suffer from any cognitive deterioration,

CONCLUSION

As a result of the research that was carried out on the application of an instrument to detect the cognitive state in elderly people, with a range of age between 60 to 90 years.

It was carried out randomly in two Iztacalco and Iztapalapa delegations, with the following results:

Iztacalco

Statistical analysis shows that 84.98% of this population does not suffer from any cognitive deterioration, with an average score of 8.2 over the minimum grade of 6.0 from the maximum of 10, 15.02% of this population has a cognitive impairment with An average rating of 4.88 on the qualification destined to be failing in the minimum range of 4 to 5.999.

It is concluded that 90% of the population does not suffer from cognitive deterioration and for this reason performs all their basic and instrumental activities of daily life and 15.02% suffer from some type of deterioration that limits some of their instrumental activities His life, example: to make purchases, to use

the telephone, to inhale his medicines and to have a socially active life.

Iztapalapa

For this delegation the statistical analysis shows that 80.62% of this population does not suffer from any cognitive deterioration having an average rating of 7.99 on the approval rating range from 6.0 to the maximum of 10, 19.37% of this population has a deterioration Cognitive with an average rating of 4.99 on the qualification destined as reprobatoria in the minimum range of 4,333 to 5,666.

It is concluded that 80.62% of the population does not suffer from cognitive deterioration and for this reason performs all their basic and instrumental activities of daily life and 19.37% suffer from some type of impairment that limits some of their instrumental activities of their lifetime.

When comparing the two delegations, it is observed that there is a slight difference of affectation in the population, giving Iztapalapa the delegation affected by the 4.36% of its population on Iztacalco.

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ANNEXED:

EXAMPLE OF THE COGNITION STATUS MEASUREMENT INSTRUMENT

MINI MENTAL STATE EXAMINATION (MMSE)

Basado en Folstein et al. (1975), Lobo et al. (1979)

Nombre:　　　　　　　　　　　　　　　　　　Varón [ ]　　Mujer [ ]
Fecha:　　　　　　　　　　　F. nacimiento:　　　　　　　Edad:
Estudios/Profesión:　　　　　　N. Hª:
Observaciones:

¿En qué año estamos?　0-1 ¿En qué estación?　0-1 ¿En qué día (fecha)?　0-1 ¿En qué mes?　0-1 ¿En qué día de la semana?　0-1	ORIENTACIÓN TEMPORAL (Máx.5)	
¿En qué hospital (o lugar) estamos?　0-1 ¿En qué piso (o planta, sala, servicio)?　0-1 ¿En qué pueblo (ciudad)?　0-1 ¿En qué provincia estamos?　0-1 ¿En qué país (o nación, autonomía)?　0-1	ORIENTACIÓN ESPACIAL (Máx.5)	
Nombre tres palabras: Peseta-Caballo-Manzana (o Balón- Bandera-Árbol) a razón de 1 por segundo. Luego se pide al paciente que las repita. Esta primera repetición otorga la puntuación. Otorgue 1 punto por cada palabra correcta, pero continúe diciéndolas hasta que el sujeto repita las 3, hasta un máximo de 6 veces. Peseta 0-1　Caballo　0-1　Manzana 0-1 (Balón 0-1　Bandera　0-1　Árbol　0-1)	Nº de repeticiones necesarias FIJACIÓN-Recuerdo Inmediato (Máx.3)	
Si tiene 30 pesetas y me va dando de tres en tres, ¿Cuántas le van quedando?. Detenga la prueba tras 5 sustracciones. Si el sujeto no puede realizar esta prueba, pídale que deletree la palabra MUNDO al revés. 30 0-1　27 0-1　24 0-1　21 0-1　18 0-1 (O 0-1　D 0-1　N 0-1　U 0-1　M 0-1)	ATENCIÓN-CÁLCULO (Máx.5)	
Preguntar por las tres palabras mencionadas anteriormente. Peseta 0-1　Caballo　0-1　Manzana 0-1 (Balón 0-1　Bandera　0-1　Árbol　0-1)	RECUERDO diferido (Máx.3)	
.DENOMINACIÓN. Mostrarle un lápiz o un bolígrafo y preguntar ¿qué es esto?. Hacer lo mismo con un reloj de pulsera. Lápiz 0-1　Reloj　0-1 .REPETICIÓN. Pedirle que repita la frase: "ni sí, ni no, ni pero" (o "En un trigal había 5 perros")　0-1 .ORDENES. Pedirle que siga la orden: "coja un papel con la mano derecha, dóblelo por la mitad, y póngalo en el suelo". Coje con mano d. 0-1 dobla por mitad 0-1 pone en suelo　0-1 .LECTURA. Escriba legiblemente en un papel "Cierre los ojos". Pídale que lo lea y haga lo que dice la frase　0-1 .ESCRITURA. Que escriba una frase (con sujeto y predicado) 0-1 .COPIA. Dibuje 2 pentágonos intersectados y pida al sujeto que los copie tal cual. Para otorgar un punto deben estar presentes los 10 ángulos y la intersección.|0-1	LENGUAJE (Máx.9)	
Puntuaciones de referencia　27 ó más: normal 24 ó menos: sospecha patológica　12-24: deterioro 9-12 : demencia	Puntuación Total (Máx.: 30 puntos)	

a.e.g.(1999)