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# Cognitive Impairment and Depression among Residents at Elderly Care Home in Baghdad City

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**Abstract: Background:** The elderly population is a large section in the general population and increasing in number due to the advancement of healthcare facilities, longevity versus fertility, declining fertility rates, and rising life expectancy. These people are faced with numerous physical, psychological, and social role changes that challenge their sense of self and capacity to live happily. Many people experience depression in old age, either as a result of living alone or due to a lack of close family ties, and others suffer from cognitive impairment. There is some preliminary evidence that life in old age homes is perceived by inmates as more supportive though the issue is not well studied**. Aims:** This research was designed to determine the prevalence of depression and cognitive impairment among residents of an elderly care home in Baghdad city and to find out the association of depression and cognitive impairment with some of the demographic data (gender, age, marital status, socioeconomic status, and education), Find out the association between Geriatric Depression Scale and Mini-Mental State Exam results**. Methods:** It is a cross-sectional study where a sample of 99 residents in the elderly care home in Baghdad who were over the age of 55 years were assessed by the mini-mental state exam (MMSE), a short form of geriatric depression scale (GDS) consisting of 15 questions, and a structural clinical interview of the tenth international classification and diagnosis (ICD10). The association of demographic, functional, and health-related characteristics which were firstly conducted with depression and cognitive impairment, were examined using multivariate logistic correlation and regression analyses. Results: Ninety-nine residents (55 males and 44 females) with ages ranging from fifty-eight to 80 years old. The mean age was 68 years. The study showed that the prevalence rate of cognitive impairment was 24.2% among dwellers of an elderly care home which is much more than expected. Residents with ages over 70 (p=0.021), being single now (p=0.012), and low socioeconomic status (p=0.002) were significantly associated with cognitive impairment, while gender and education had no significant association. The prevalence of depression was 43.4%. Being single (p=0.003) is strongly associated with depression, while there was no significant association with other studied variables. There was no statistically significant association between depression and cognitive impairment.**Conclusion:** The prevalence rates of depression and cognitive impairment were very high among care home dwellers in Baghdad. Age over 70 and being single with low socioeconomic status were found to be risk indicators for cognitive impairment, while only marital status as being single was a risk factor for depression. The mental health in old people is influenced by stresses on families, economic adversity, and physical problems. National programs should be developed in the community, and health centers focused on Finding and Treating depression and cognitive impairment among the elderly population; optimal physical treatment and special attention and focus on psychosocial factors must be major goals in developing care programs for this frail population.

**Keywords:** Cognitive Impairment, Depression, Elderly Care**.**

## INTRODUCTION

The study and care of elderly people is becoming an important medical field because, in recent years, the number of older persons has been sharply increasing worldwide. [Estabrooks, C.A. *et al*., 2013; Hirdes, J.P. *et al*., 2011].

Between the years 2000 and 2050, the proportion of the world's older adults is estimated to be doubled from about 11% to 22%. [CIHI, 2017; Snowden, M.B. *et al*., 2015; Livingston, G. *et al*., 2017] By the year 2020, more than 15% of the U.S. population will be more than sixty-five years of age [Society, A, 2008], while according to the Central Statistical Organization in Iraq in 2016, those who are over 65 are 3% [Goodarzi, Z.S. *et al*., 2017].

Many factors have contributed to the increase in the elderly, including improvement in living standards and the curbing of science [Jeon, Y.H. *et al*., 2015].

Consequently, there is heightened interest in studying the characteristic of this age group and its mental health problems [CIHI, 2018; Estabrooks, C.A. *et al*., 2009].

Most developed world countries have accepted the chronological age of 65 years as the definition of elderly. But the United Nation has agreed that 60+ denoted as old age [Imran, A. *et al*., 2009].

However, various countries and societies consider the onset of old age as anywhere from the mid-40s to the 70s [Abdul-Rahman, S. *et al*., 2010].

For a study done by WHO of old age in Africa, they set 50 as the beginning of old age. At the same time, the WHO recognized that the





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developing world often defines old age not by years but by new roles, loss of previous roles, or inability to make active contributions to society [Al-Bermany, S. *et al*., 2014].

Ageing brings with it profound changes in social circumstances [Jameel, B. *et al*., 2017].

Retirement affects not only income but also social status, time available for leisure, and social contacts, loss of income is a serious problem facing many elderly people over 65 years of age [Chong, M.Y. *et al*., 2001].

With the breakdown of family structures in many societies, increasing numbers of elderly live alone or in homes for the aged [Ali, N.S. *et al*., 2005]. Losses include: loss of status, loss of independence, and loss of spouse/partner, most elderly have limited income and are unemployed, increase in medical problems compound the dependency and care needs. The elderly face variable degrees of isolation, marginalization, and stigmatization [Miu, D.K. *et al*., 2011]

## METHODS AND SUBJECTS SETTING

The study was done in Al-Rashad Elderly Care Home, which is located in AL- the Rashad area in Baghdad, and it is one of the ten elderly care homes in Iraq that belonging to the Ministry of Labor and Social Affairs; two of them are in Baghdad and the rest are distributed to other provinces.

The elderly care home in Baghdad was established in 1927 to dwell elderlies of both sexes in accordance with the special regulation, including the completion of the male beneficiaries at 60 years old and female 55years old.

The care home offers all care services that include feeding, drinking, clothes, and medical health services, in addition to pocket money which is sixty thousand Iraqi dinars monthly.

The capacity of the house is 110 elderly and currently accommodates 106 adults divided into halls, and each hall accepts ten guests in addition to rooms each room shared by two guests. also there is one hall called mercy department, which is a section specialized for elderly people who cannot take care of themselves.

There are 89 employees in the house to work throughout the day in three divided shifts, but only 15 members are those who usually take care of the residents, including social workers.

**Study Design**

The descriptive cross-sectional study was chosen as the study design to achieve the objective of the study.

The study was conducted between the first of March to the 30th of April in 2019, with three days per week visits

**Sampling**

Participants were all residents present in this elderly nursing home during the time of the study were included.

Only residents who consented were recruited in this study

**Ethical Consideration**

The approval of the Scientific Committee of the Arabic Board for Psychiatry was taken; the agreement of the Ministry of Labor and the Administration of Al Rashad Care Home were also approved.

The written and oral consent of all clients were taken after a full explanation of the aim of the study and insurance of confidentiality of information

**Instruments and Tools**

A demographic data form which includes different variables that designed by the researcher, was used, and the Mini-Mental State Exam, Geriatric Depression Questionnaire, and the ICD10 structural psychiatric interview was used to confirm the diagnosis of depression.

Each resident person was interviewed in his room by the researcher for about one hour.

The socio-demographic data are gender, age, marital status, and socioeconomic status (those who have social security are considered low income with low socioeconomic status, and those who didn't receive social security are considered relatively high income with high socioeconomic status because they had retired salary), and education were deeply tested, while the chronic physical illness and medication treatment didn’t included in the research data because there was no fixed diagnosis and treatment by a physician who checked the residents routinely and this is one of limitations and difficulties in this study.

Assessment for cognitive impairment is done by using the Mini-Mental State Exam (MMSE) or Folstein test, an Arabic form that is used extensively in clinical and researchers setting to measure cognitive impairment and was used in a



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previous Iraqi thesis. (64) It is a 30 –point questionnaire with a cut of point of 23; also, it is commonly used in medicine and allied health to screen for dementia. A score of 19 to 23 suggest mild cognitive impairment, 11 to eighteen suggest moderate, and less than 11 suggest severe cognitive impairment. Followed by the administration of a questionnaire that included the short Geriatric Depression Scale (GDS), the Arabic version of 15 questions [Wrobel, N.H. *et al*., 2004] which is a widely used questionnaire as a diagnostic tool for depression in the elderly worldwide and in Iraq. [Yesavage, J.A. *et al*., 1986] The (GDS) was first created by Yesavage et al. and has been tested and used extensively with the older population. [Letenneur, L. *et al*., 1994] The GDS Long Form is a 30-item questionnaire in which participants are asked to respond by answering yes or no in reference to how they felt over the past 2weeks. A Short Form GDS consisting of 15 questions was developed in 1986. Scores of 0-4 are considered normal, 5-8 indicate mild depression, 9-11 indicate moderate depression and 12-15 indicate severe depression. Those suggestive of depression will be confirmed by applying the international diagnostic checklist for the ICD-10 structured interview, which has been used in previous Iraqi studies for the same purpose. [Ruitenberg, A. *et al*., 2001]

**Statistical Analysis**

Data were introduced into personal computer Microsoft Excel, and SPSS program version 23 were used in the statistical analysis of this study. Figures, frequency, and percentage were used to display the descriptive statistics chi-square test, Fisher's exact test was used where the expected value was less than 5 in more than 20% of cells in the chi-square table, T-test, correlation, and regression tests were used to find out association and differences between related variables as P-value less than or equal 0-05 considered as cut off point.

## RESULTS

**Table 1:** Frequency distribution of residents according to different studied variables

| | | *No.* | *Column N %* |
|---|---|---|---|
| *Gender* | *Male* | *55* | *55.6%* |
| | *Female* | *44* | *44.4%* |
| *Age(years)* | *<64* | *21* | *21%* |
| | *65-70* | *24* | *24.2%* |
| | *71-75* | *37* | *37.4%* |
| | *>75* | *17* | *17.2%* |
| *Marital state* | *Single* | *31* | *31.3%* |
| | *Married* | *14* | *14.1%* |
| | *Divorced* | *20* | *20.2%* |
| | *Widowed* | *34* | *34.3%* |
| *Financial income* | *Low* | *77* | *77.7%* |
| | *High* | *22* | *22.2%* |
| *Education* | *Primary* | *64* | *64.6%* |
| | *Preparatory* | *24* | *24.2%* |
| | *University* | *11* | *11.1%* |
| *Duration of residency* | *<1 yr* | *29* | *29.3%* |
| | *1-4 yr* | *30* | *30.3%* |
| | *5-9 yr* | *21* | *21.2%* |
| | *10yr>* | *19* | *19.2%* |
| *Cause of dwelling at home* | *no familymembers* | *31* | *31.3%* |
| | *no home* | *37* | *37.4%* |
| | *family problems* | *31* | *31.3%* |
| *Past psychiatric history* | *No* | *91* | *91.9%* |
| | *Yes* | *8* | *8.1%* |
| *family history of mental illness* | *No* | *97* | *98.0%* |
| | *Yes* | *2* | *2.0%* |



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| | | | |
|---|---|---|---|
| *family support* | *No* | *78* | *78.8%* |
| | *Son* | *14* | *14.1%* |
| | *Other* | *7* | *7.1%* |
| *Substance use (nicotineaddiction)* | *No* | *81* | *81.8%* |
| | *Yes* | *18* | *18.2%* |

**Table 2:** Distribution of residents according to results of measurement scales

| | | NO | C % |
|---|---|---|---|
| **MMSE** | No cognitive impairment | 75 | 75.8% |
| | Mild cognitive impairment | 13 | 13.1% |
| | Moderate cognitiveimpairment | 3 | 3.0% |
| | Severe cognitive impairment | 8 | 8.1% |
| **GDS** | | | |
| | No Depression | 56 | 56.6% |
| | Depression | 43 | 43.4% |
| | No Depression | 56 | 56.6% |
| **ICD 10** | Mild depression | 24 | 24.2% |
| | Moderate depression | 8 | 8.1% |
| | Severe depression | 11 | 11.1% |

**Table 3:** Association between cognitive impairment and studied variables

| | | Cognitive impairment | | | | SIG |
|---|---|---|---|---|---|---|
| | | No cognitive impairment | | Cognitive impairment | | |
| | | No. | Row N % | No. | Row N % | |
| Gender | Male | 42 | 77.8% | 12 | 22.2% | 0.607 |
| | Female | 33 | 73.3% | 12 | 26.6% | |
| Age | <70yr | 39 | 86.7% | 6 | 13.3% | 0.021 |
| | >70yr | 36 | 66.7% | 18 | 33.3% | |
| Marital state | Single | 17 | 56.7% | 13 | 43.3% | 0.012 |
| | Married | 11 | 78.6% | 3 | 21.4% | |
| | Others | 47 | 85.4% | 8 | 14.5% | |
| Financial income | Low | 52 | 68.4% | 24 | 31.6% | 0.002 |
| | High | 23 | 100.0% | 0 | 0.0% | |
| Education | < Secondary | 45 | 78.9% | 12 | 21% | 0.388 |
| | Secondary > | 30 | 71.4% | 12 | 28.6% | |
| Duration ofresidency | <5yr | 45 | 76.2% | 14 | 24.1% | 0. |
| | >5 yr | 30 | 75% | 10 | 25% | |
| Cause of dwelling athome | no family members | 20 | 64.5% | 11 | 35.5% | 0.116 |
| | no home | 28 | 75.7% | 9 | 24.3% | |
| | family problems | 27 | 87.1% | 4 | 12.9% | |
| Past psychiatric diseases | No | 69 | 75.8% | 22 | 24.1% | FE Pv>0.05 |
| | Yes | 6 | 75.0% | 2 | 25.0% | |
| Family history of mental illness | No | 73 | 75.2% | 24 | 24.7% | FE Pv>0.05 |
| | Yes | 2 | 100.0% | 0 | 0.0% | |
| Family support | No | 58 | 75.3% | 19 | 24.7% | 0.471 |
| | Yes | 17 | 77.2% | 5 | 22.7% | |
| Substance use (nicotine addict) | No | 59 | 72.8% | 22 | 27.1% | FE Pv>0.05 |
| | Yes | 16 | 88.9% | 2 | 11.1% | |
| FE=Fisher Exact test | | | | | | |



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**Table 4:** Association between depression and studied variables

| | | Depression | | | | |
|---|---|---|---|---|---|---|
| | | No Depression | | Depression | | Sig |
| | | N | % | N | % | |
| Gender | Male | 34 | 61.8% | 21 | 38.2% | 0.238 |
| | Female | 22 | 50.0% | 22 | 50.0% | |
| Age | <70yr | 21 | 46.7% | 24 | 53.3% | 0.070 |
| | >70yr | 35 | 64.8.% | 19 | 35.2% | |
| Marital state | Single | 11 | 44% | 14 | 56% | 0.003 |
| | Married | 18 | 90% | 2 | 10% | |
| | Others | 27 | 50% | 27 | 50% | |
| Financial income | Low | 46 | 59.7% | 31 | 40.3% | 0.233 |
| | High | 10 | 45.5% | 12 | 54.5% | |
| Education | < Secondary | 40 | 59.7% | 27 | 40.3% | 0.362 |
| | >Secondary | 16 | 50.0% | 16 | 50.0% | |
| Duration of residency | <5 yr | 33 | 55.9% | 26 | 44.1% | 0.877 |
| | >5 yr | 23 | 57.5% | 17 | 42.5% | |
| Cause of dwelling at home | No family members | 17 | 54.8% | 14 | 45.2% | 0.062 |
| | No home | 26 | 70.2% | 11 | 29.8% | |
| | Family problems | 13 | 41.9% | 18 | 58.1% | |
| Past psychiatric diseases | No | 54 | 59.3% | 37 | 40.7% | 0.060 |
| | Yes | 2 | 25.0% | 6 | 75.0% | |
| Family history of mental illness | No | 55 | 56.7% | 42 | 43.3% | FE |
| | Yes | 1 | 50.0% | 1 | 50.0% | >0.05 |
| Family support | No | 46 | 57.5% | 34 | 42.5% | 0.700 |
| | Yes | 10 | 52.6% | 9 | 47.4% | |
| Substance use | No | 45 | 56.3% | 35 | 43.7% | 0.897 |
| | Yes | 11 | 57.8% | 8 | 42.2% | |

**Table 5:** Association between depression and cognitive impairment

| | | GDS | | | |
|---|---|---|---|---|---|
| | | no depression | | Depression | |
| | | No. | Row N % | No. | Row N % |
| MMSE | no cognitive impairment | 40 | 53.3% | 35 | 46.6% |
| | cognitive impairment | 16 | 66.6% | 8 | 33.3% |
| pv= 0.251 | | | | | |

**Note:** For the statistical purpose and due to the small sample size, the variables (age, education, duration of residency, and family support) had been recategorized.



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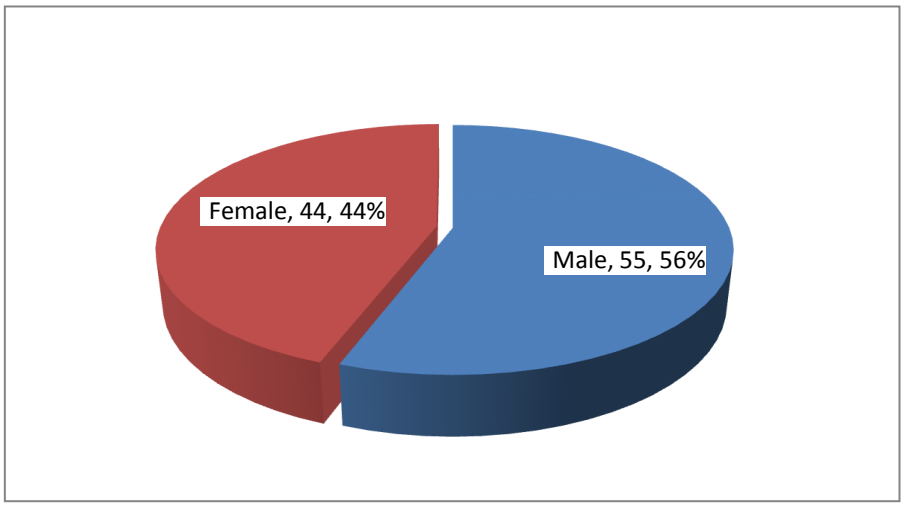


**Figure 1:** Distribution of the dwellers according to gender

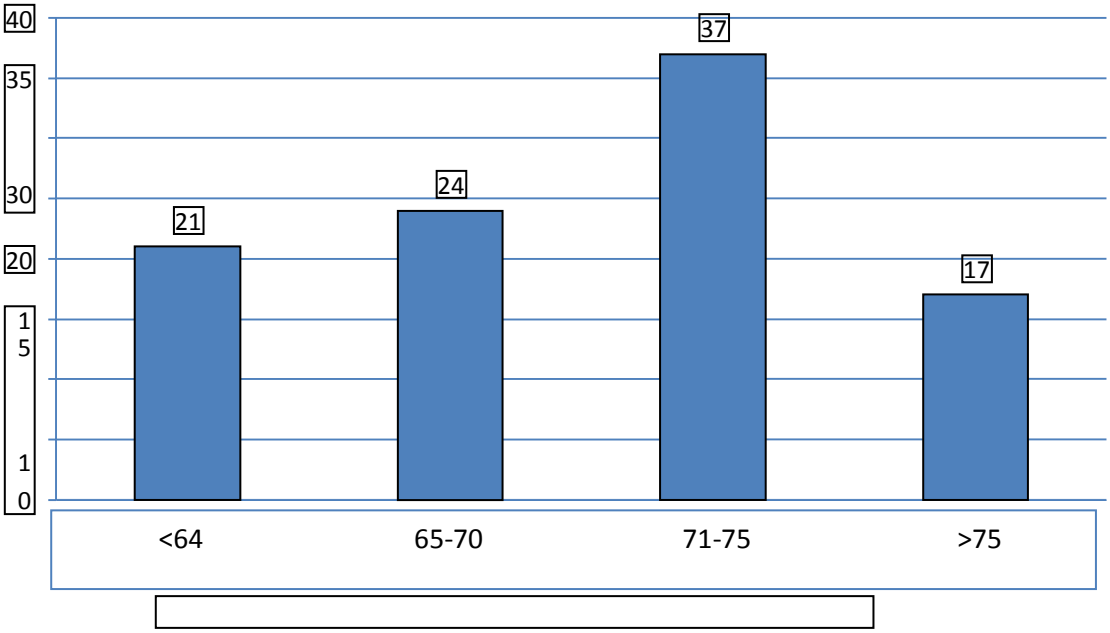


**Figure 2:** Distribution of sample according to age group

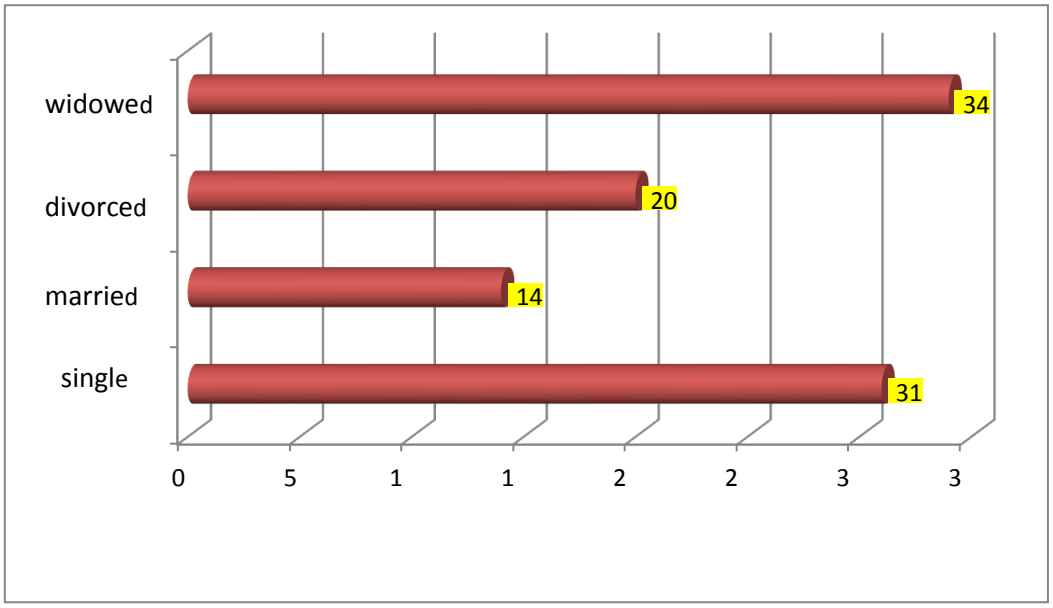






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**Figure 3:** Distribution of studied people according to mariatal state

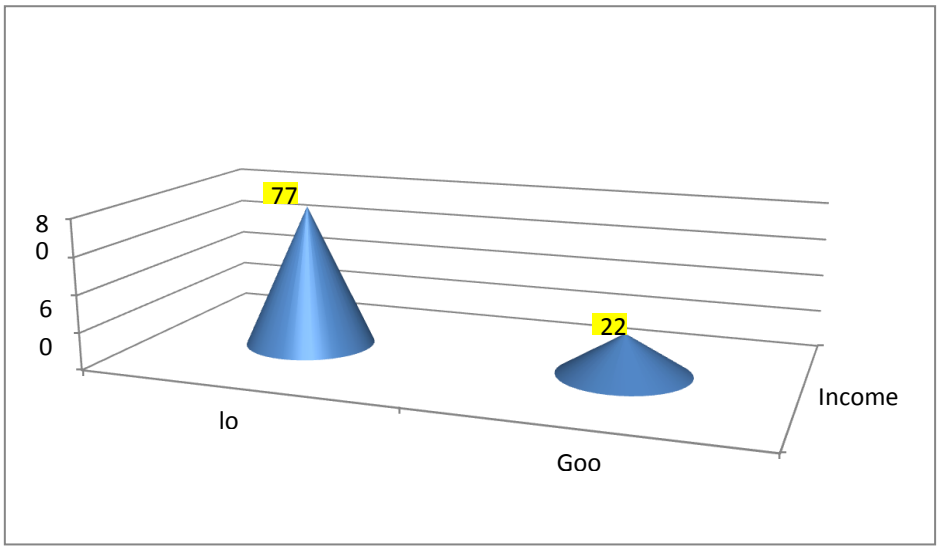


**Figure 4:** Distribution of studied cases according to income

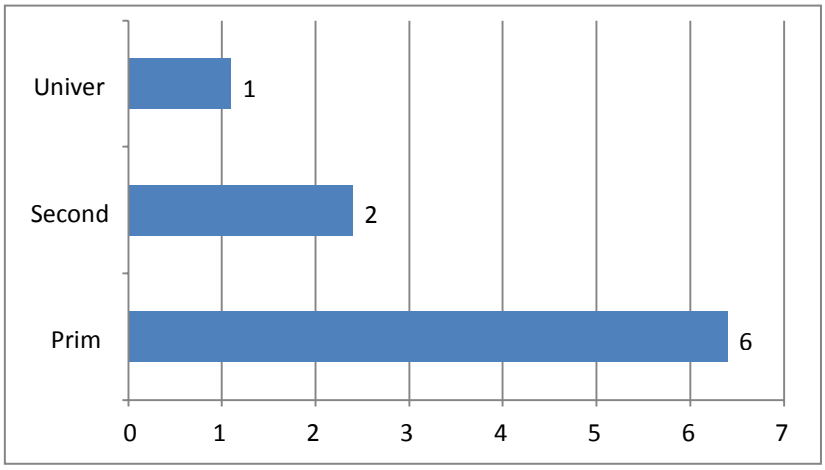


**Figure 5:** Distribution of studied people according to educational level

## DISCUSSION

This is a cross-sectional study of the prevalence of depression and cognitive impairment among residents of an old age care home in Baghdad and tried to find an association between each result and with some of the demographic variables and between the GDS (Geriatric Depression Scale) and MMSE results. The result of the present study showed that 43.4% (n=43) of subjects out of the total sample (99) of the care home dwellers were depressed on GDS-15. The presence of depression was confirmed by ICD-10 depressive criteria. When comparing different studies, it was found that theprevalence rate of depression in old age in this study was consistent with higher rates of depression in elderlies that was recorded by other studies that took place in Baghdad in 2005 using the same tools; the percentage was 39.9% [Ali, N.S. *et al*., 2005]and with other researchers took place on Mosul city in 2009 it was 36.1% and other study done in Mosul in2014 was 65.3%, In AL-Dewanyia Teaching hospital in 2013 was 43.6%, and in Taiwan was 37.7%. [Bozek, A. *et al*., 2016] Although it was much higher than studies done in Iran, 23.5%, (5) Malaysia was, 13.9%. Oman 16.9%, it was nearly similar to studies done in the elderly care homes by using GDS-15 in Briddashram (old age care home) in Nepal in 2013 depression was 57.8% in India was 53.7% (58). The reason for the higher prevalence in the elderly care homes might be institutionalized elderly feel loneless and sadness as they lack social network support and don't feel the level of kinship felt by non- institutionalized aged.

Depression in the patient with ages < 70 group consists of the majority of the sample (53.3%) but with not to a significant value Similar to that found in studies in Al-Diwaniya General Hospital and the previous study that done inMosul city.



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The depressive symptom in late life is usually found to be more prevalent among women than men. In this study, the depressed females were 50.0% of the patients but not to the significant point. This was consistent with all previous mentioned studies. The excess rate had been accounted probably related to the combination of biological and genetic factors, including

Hormonal changes as well as from stress of family responsibility.

The majority of the depressed sample was single, 56%. This finding is in line with that from Nigeria (Gureje, *et al*., 2007) and Ukraine (Bromet, *et al*., 2005). Studies from Lebanon (Karam, *et al*., 2004) and China (Shen, *et al*., 2004) reported higher prevalence rates of mental disorder among those who were never married.

Also, there was a nearly significant association between depression and the family problems that lead to the admission to the care home (P 0.062), and it's clear that reduced quality and quantity of social relationships are associated with increased depressive symptom levels, a similar finding was noticed by George (1996).[Matte, D.L. *et al*., 2016]

Factors like socioeconomic status, education, family history of mental illness, and past psychiatric history didn't have any significant relation in the result of this research.

Prevalence of Cognitive impairment according to the result of MMSE. Among dwellers of Al Rashad, the care home was 24.2% which is consistent with a study done in Brazil which was 22.8% (62), and other study done in the USA was 22.2%. (17)

The finding of this study is higher than similar studies done in Penang, Malaysia, in 2009. (52) As the prevalence of cognitive impairment was 12.3% and in Mexico study was 13.8%, [McCusker, J. *et al*., 2014] This difference could be attributed to the allocation of subjects, the variety of instruments, and the type of sample.

In common with other studies and a study done in the UK, [Maher, A.R. *et al*., 2011] the prevalence of cognitive impairment in this study increased with age, as described in table 3. Most of the findings of this study concur with the UK. Study including a Strong association between marital status and cognitive impairment as a cognitively impaired single person was two times higher than married with a significance of (p 0. 012), as the marital status can affect psychological life, including family contribution.

Lower socioeconomic status was associated with a higher prevalence of cognitive impairment with significant association (p 0.002), and its' is consistent with Mexico and the Rio Grande Do Sul, Brazil study, and this is attributed to the financial stress due to low income as stress is associated with neurodegenerative changes.

Factors like family history of mental illness were not found to be significantly associated with the risk of cognitive impairment, and which is known that cognitive impairment is somewhat multifactorial.

There was no significant association between GDS result and MMSE result, which is inconsistent with previous studies and the Mexico study, and that could be attributed to the small sample size, but it was consistent with a study done in nursing home dwellers living on somatic wards of 14 nursing homes in the North West of the Netherlands

**Limitation of the Study**

Relatively small sample size that may have precluded the detection of results that have been identified with a larger sample size.

Difficulty in communication with old age persons most of them have hearing problems or cognitive impairment.

Absence of medical records about the mental and physical health of the care home dwellers.

## CONCLUSION

Obtained results did show the existence of a serious problem (often not diagnosed) among dwellers of elderly care homes in Baghdad, with the higher prevalence of depression and cognitive impairment among them. As the mental health in old people is influenced by stresses on families, economic adversity & physical problems, this study finds an association between cognitive impairment and the age over 70, being single, and low socioeconomic status; all were found to be risk indicators for cognitive impairment in various levels, while the marital status as being single was a risk factor for depression among these dwellers.

More attention is needed to care for the psychosocial needs of elderly care home residents in Baghdad, and screening for cognitive function and mood is necessary to early intervention.



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