



Dementia Risk factors in Egyptian Elderly Living in Geriatric Homes

KEYWORDS

Dementia, Elderly, Prevalence, Risk factor

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ABSTRACT

Aim: determination of the prevalence of dementia risk factors in Egyptian elderly living in geriatric homes and the significance of each risk factor.

Methods: A study based on two stages was conducted on a sample of two hundred elderly males and females

1st stage was a cross-sectional study on one hundred cognitively intact elderly to assess the prevalence of risk factors of dementia in Egyptian elderly living in geriatric homes.

2nd stage was a case-control study on another group of 100 demented residents to ascertain whether each examined risk factor was significantly associated with having dementia versus normal cognition.

Results: Results revealed that the most frequent risk factor for dementia in our geriatric homes in Cairo was physical inactivity, while the least frequent risk factor was alcohol abuse. The most frequent chronic disease as a risk factor of dementia was hypertension, followed by diabetes mellitus; while the least frequent chronic disease was atrial fibrillation.

Conclusion: Preventable or modifiable risk factors of dementia in our geriatric homes should be focused and paid attention for its modulation.

Introduction

Dementia is one of the most significant public health problems, due to the ageing of the population the prevalence of dementias is increasing.

The World Health Organization predicts that there will be 29 million people worldwide affected by dementia by the year 2020. So it is important to identify the risk factors of dementia in order to develop preventive measures that could modify its course ⁽¹⁾

It is important to eliminate risk factors of dementia in order to maintain quality of life in the elderly and to save cost of medicine and care ⁽²⁾.

Several factors are related to dementia, e.g. age, ethnicity, sex, genetic factors, physical activity, smoking, drug use, education level, alcohol consumption, body mass index, co morbidity, and environmental factors ⁽³⁾.

Cardiovascular risk factors such as hypertension and diabetes mellitus favor the development of both vascular dementia and AD, the two most prevalent subtypes of dementia ⁽⁴⁾.

The vascular component could participate in the neurodegenerative process intensifying the symptoms of the disease ⁽⁵⁾.

Aim of the work: The first section aimed to assess the prevalence of risk factors of dementia in Egyptian elderly living in geriatric homes, second section was to ascertain

whether each examined risk factor was significantly associated with having dementia versus normal cognition.

Methods

A study based on two stages was conducted on a sample of two hundred elderly males and females.

1st stage was a cross-sectional study to assess the prevalence of risk factors of dementia in Egyptian elderly living in geriatric homes. 2nd stage was a case-control study to ascertain whether each examined risk factor was significantly associated with having dementia versus normal cognition. Participants were 100 cognitively intact residents from five geriatric homes in Cairo for stage one. Another group of 100 demented residents from six geriatric homes in Cairo were included for second stage. All participants underwent comprehensive geriatric assessment, medication review, cognitive assessment, also patients had clinical examination done and investigations for assessment of other Co- morbidities as blood glucose levels, ECG, ECHO. DSM IV criteria used for diagnosis of dementia. Also DSM IV criteria used for diagnosis of depression. Functional assessment by Activities of daily living (ADL) (personal care, clothing, moving, going to the toilet, eating) were measured with the Katz scale ⁽⁶⁾, the total score ranges from 0 to 6 with higher scores means better function. Because it was used to identify impairments in basic skills, it may be most useful in populations with preexisting impairments (such as a nursing home setting) or to identify care needs after acute events such as hospitalization ⁽⁷⁾. The Lawton's assessment scale was used to assess abilities in instrumental activities of daily living (IADL), such as giving phone calls,

shopping, driving and using money⁽⁸⁾. The scores range from 0 to 8 with higher scores means better function. Exercise data were collected either with face-to-face interview or from medical records. Data regarding frequency and intensity of exercise were obtained

Assessment and screening of malnutrition was done by using The Mini-Nutritional Assessment (MNA) is a screening tool used to identify older adults (>65 years) who are malnourished or at risk of malnutrition⁽⁹⁾. Scores of 24-30 are considered normal nutritional status; 17-23.5 indicate at risk of malnutrition; less than 17 indicate malnutrition. An advantage of the tool is that no laboratory data are needed⁽¹⁰⁾.

Results

The study revealed that the mean age in cognitively intact & demented groups was 70&75 years, and smoker 27% &5% respectively. Most participants were female 65% among demented groups and malnourished 33 % as shown in table (1)

Hypertension, diabetes mellitus, history of stroke, history of delirium and visual impairment were significantly associated with dementia at geriatric homes.

The most prevalent risk factor of dementia in our geriatric homes was physical inactivity (89%); HTN was the most prevalent chronic disease as a risk factor of dementia (44%) and the least prevalent risk factor was alcohol abuse (0%).

The frequency of physical inactivity among demented group was not detected; also HTN was the most prevalent chronic disease as a risk factor of dementia (66%) and followed by DM (59%). Table (2)

Logistic regression analysis for the significant dementia risk factors showed that the most independent predictors for dementia were: history of delirium, female gender, smoking and the lower educational level. Table (3)

Discussion:

In the present study we evaluated prevalence of dementia risk factors in Egyptian elderly living in geriatric homes in Cairo and ascertain whether each examined risk factor was significantly associated with having dementia versus normal cognition. As people grow older they are increasingly at risk of dementia and consequent disabilities.

The prevention or modification of dementia risk factors is of major importance because this may delay the onset of dementia or slow the rate of its progression and subsequent morbidity, mortality and suffering for older people and their families, and incurs social costs due to hospital and long term care admissions.

Most studies on the risk factors for dementia have focused more closely on AD as this is the most common cause. Age, female sex and low educational level are factors that increase the incidence and prevalence of dementia and, specifically, of AD⁽¹¹⁾. In recent years, the role of the vascular risk factors (hypertension, type 2 diabetes mellitus and hypercholesterolemia) has been included in this evaluation. The existence of a vascular component that reduces cerebral perfusion has been suspected in AD⁽³⁾.

The current study showed that the most frequent risk factor for dementia in our geriatric homes in Cairo is physical inactivity (89%), while the least frequent risk factor is alcohol abuse (0%). The most frequent chronic disease as

a risk factor of dementia is hypertension (44%), followed by diabetes mellitus (30%), while the least frequent chronic disease as a risk factor of dementia is atrial fibrillation (4%).

A study of 13,272 long-term care residents in Spain found that almost two thirds of patients met at least one hypertension criterion⁽¹²⁾.

Also in this study HTN found to be a significant risk factor of dementia (P-value: 0.002). This consistent with **Igase et al.**⁽¹³⁾ Who stated that there is a dependent relationship between the occurrence of HTN and the risk of developing dementia in old age.

Diabetes mellitus (DM) frequency in our competent study group is 30% so it is the 2nd prevalent chronic diseases after HTN as a risk factor of dementia in Cairo geriatric homes. Similarly, a study was conducted on a total of 1952 elderly institutionalized patients in 14 nursing homes in (Spain) and found that diabetes prevalence is 26.44% which concluded that DM prevalence in nursing homes is high⁽¹⁴⁾. Moreover, in this study we found diabetes to be a significant risk factor of dementia (p-value <0.001).

As regard exercise history, although prevalence of physical inactivity in our geriatric homes is high (89%) which was found to be the most frequent risk factor of dementia this explained by limited financial support to this geriatric homes as all of them were governmental, None of the demented participants had a history of regular exercise. (due to recall problems and absence of file reporting)

As regard age and gender, the mean age of our study cognitively intact participants was 70.710±7.064 & for demented participants 75.100±7.03 years. Female residents in geriatric homes in Cairo were found to be near half of all residents (49%).

Advanced age and female gender were significant risk factors of dementia in our study (P-value: 0.008 and 0.022, respectively) with odds ratio 11.019 for female gender. Similar to the current study **Martinez et al.**⁽¹⁵⁾ In their study of 1756 healthy subjects and 175 patients with dementia, The risk factors for dementia and AD were female sex ,age ,stroke and depression. Also this agree with study done by **EL Tallawy et al.**⁽¹⁶⁾ in their study in Al-Quseir city in Egypt : They found that the estimated prevalence rate of all types of dementia was 2.01% for those aged 50 years and more, 3.83% for those aged 60 years and more, 8.12% for those aged 70 years and more, and 13.5% for those aged 80 years and more. The prevalence rate of dementia doubles every decade.

The prevalence of illiteracy in our study was found to be 17%. Illiteracy was found to be a significant risk factor of dementia (P-value <0.001), also odds ratio for education found to be (0.543) .This means that higher educational level is protective against dementia development. Similar to study which was conducted on 507 Senegalese elderly population aged 65 years and over with a mean age of 72.4 years (±5.2). They found, that age (P-value <0.045), education (P-value <0.02), and family history of dementia (P-value <0.0001) were associated with dementia⁽¹⁴⁾.

Family history of dementia in the current study was only 7% and it was not found to be a significant risk factor for dementia. The explanation of our founding may be due to recall bias, as well as the difficulty to obtain family history from an elderly especially if he/she was demented.

In this study, history of residing in rural areas was not a significant risk factor of dementia (P-value: 0.447). In contrary to **Nunes et al.** (17) they found that the prevalence of cognitive impairment is higher in rural compared with urban populations. This controversy can be explained by the fact that the percentage of participants who were residing in rural areas was small (7% in the competent group and 10% in the demented group) and this actually was expected because our sample was collected from geriatric homes in Cairo, a governorate in which no rural areas are present.

Smoking prevalence in our study group was (27%) for current smoking and (7%) for ex-smoking. These figures are more than the results of **Carvalho et al.** (18) in their descriptive study on 13 Homes for the aged in Distrito Federal. They found that the prevalence of current smoking was 17.3%. We related our results to our cultural factors. Also we found that smoking either current or previous was a significant risk factor for dementia (P-value <0.001), with odds ratio of smoking to be 5.876.

In the current study we found that there is significant difference between the study groups as regards BMI (P-value:0.001) as the competent group is higher in their BMI than demented group. These results do not support the hypothesis of a detrimental effect of high BMI on impaired cognition and subsequent dementia in the elderly. The explanation of our finding is that the demented elderly were more commonly malnourished or at risk of malnutrition compared with the competent participants by mini nutritional assessment.

Stroke prevalence in our geriatric homes was found to be 16%. Also stroke in this study found to be a significant risk factor of dementia (P-value: 0.008). Past history of delirium in our competent group was low (4%). Also we found that history of delirium is a highly significant risk factor of dementia (P-value <0.001) with odds ratio 27.802.

As regard depression, its prevalence in our geriatric homes was found to be high (21%). Our finding of higher depression rates is mostly because depression was commoner in patients who move into a care home. A cross sectional

study on 435,568 patients aged ≥65 care home residents with a community control group in England and Wales, they found that prevalence of depression in nursing home residents was 23.5% (19).

As regard history of head trauma, its frequency in our study was found to be low (8%) and we found no significant difference between the study groups as regards head trauma (P-value: 0.292). This inconsistent with **Fleminger et al.** (20) in their case-control studies which were they found an association between a history of previous head injury and the risk of developing alzheimer's disease. The explanation of our finding is mostly based on the difficulty in obtaining the history of head injury from demented participants or their caregivers as we depended on file record which was taken during admission. Moreover, previous head trauma is commonly not recorded in patients' medical records especially if the trauma was mild and did not result in serious injury.

Frequency of visual impairment in the current study was only 15%. This result was inconsistent with many other results that showed a high rate of visual impairment in nursing homes (21).We can explain this controversy with our results by the difference in the method of diagnosis of visual impairment, as we depended mainly on history taking and medical records and not visual acuity measurement. Visual impairment in our study was found to be a significant risk factor for dementia (P-value <0.001).

As regard hearing impairment, its Frequency in the current study was 10%. This result was inconsistent with **Garahan et al.** (22) they found that 77% of residents had at least a mild hearing loss in the better ear, and 51% had a moderate to severe hearing loss. Again, we explain this controversy with our results by the difference in the method of diagnosis of hearing impairment, as we depended mainly on history taking and medical records and not full audiometric testing.

Disclosure statement:

No potential conflicts of interest were disclosed.

GRAPHICS:

Table 1: Basic characteristics of study participants.

	group						Chi-square		
	cognitively intact		demented		Total		P-value	X ²	
	N		N		N	%			
Age	Range	60-80		60-84			9.6	0.008*	
	Mean±SD	70.710±7.064		75.100±7.03					
SEX	Male	51		35		86	43.00	5.222	0.022*
	Female	49		65		114	57.00		
SMOKING	smoker	27		5		32	16.00	68.247	<0.001*
	Ex smoker	7		61		68	34.00		
	non smoker	66		34		100	50.00		
Education	Illiterate	17		52		69	34.50	43.387	<0.001*
	Primary	15		23		38	19.00		
	Secondary	10		9		19	9.50		
	Preparatory	23		7		30	15.00		
Exercise	High	35		9		44	22.00	200.000	<0.001*
	No	89		0		89	44.50		
	Unknown	0		100		100	50.00		
	Yes	11		0		11	5.50		

BMI	Normal	35		61		96	48.00	16.512	0.001*
	Over weight	27		16		43	21.50		
	Obese	34		19		53	26.50		
	Underweight	4		10		14	7.00		
MNA	Not at risk	84		38		122	61.00	47.123	<0.001*
	At risk	12		29		41	20.50		
	Malnourished	4		.33		37	18.50		
Residence	Urban	93		90		183	91.50	0.579	0.447
	Rural	7		10		17	8.50		

Table 2 Comorbidities of study participants.

	group							Chi-square	
	cognitively intact		demented		Total		X ²	P-value	
	N		N		N	%			
Hypertension (HTN)	Yes	44		66		110	55.00	9.778	0.002*
	No	56		34		90	45.00		
DM	Yes	30		59		89	44.50	17.026	<0.001*
	No	70		41		111	55.50		
Hearing impairment	Yes	10		18		28	14.00	2.658	0.103
	No	90		82		172	86.00		
Visual impairment	Yes	15		59		74	37.00	41.527	<0.001*
	No	85		41		126	63.00		
Delirium	Yes	4		44		48	24.00	43.860	<0.001*
	No	96		56		152	76.00		
Head trauma	Yes	8		3		11	5.50	2.460	0.292
	No/Unknown	92		98		190	95.00		
Depression	Yes	21		23		44	22.00	0.117	0.733
	No	79		77		156	78.00		
Stroke	Yes	16		32		48	24.00	7.018	0.008*
	No	84		68		152	76.00		

Table 3: Multiple regression analysis for dementia risk factors

	B	S.E.	Wald	Sig.	Odd	95.0% C.I. for odd	
						Lower	Upper
DM	-0.067	0.552	0.015	0.903	0.935	0.317	2.760
HTN	0.877	0.574	2.338	0.126	2.404	0.781	7.404
Delirium	3.325	0.948	12.295	0.000*	27.802	4.334	178.338
Stroke	-0.806	0.881	0.836	0.361	0.447	0.079	2.514
Visual impairment	0.660	0.643	1.054	0.305	1.936	0.549	6.830
Female gender	2.400	1.009	5.653	0.017*	11.019	1.524	79.655
Previous occupation	-0.200	0.670	0.089	0.765	0.818	0.220	3.044
Marital status	0.097	0.246	0.156	0.693	1.102	0.680	1.787
Smoking	1.771	0.590	8.994	0.003*	5.876	1.847	18.695
Education	-0.611	0.213	8.243	0.004*	0.543	0.358	0.824
Exercise	-5.458	28.162	0.038	0.846	0.004	0.000	3.99485E+21
Constant	-5.434	2.335	5.416	0.020	0.004		

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