

Research Article

A Descriptive Study of the First 100 Patients Presenting to Memory Clinic Service in Qatar: Challenges, Complexities and Opportunities

Anoop Sankaranarayanan^{1,2*}, Hanadi Al Hamad¹, Sameer Acharath Valappil¹, Faizal Umminiyattle¹, Tarun Ramachandran³, Essa Al Sulaiti^{1,4} and Rajvir Singh⁵

¹Department of Geriatrics, Hamad Medical Corporation, Doha Qatar

²Department of Psychiatry, Memorial University, New Found land

³Department of Occupational Therapy, Hamad Medical Corporation, Doha Qatar

⁴Department of Home Health Care Services, Hamad Medical Corporation, Doha Qatar

⁵Department of Cardiology, Hamad Medical Corporation, Doha Qatar

Corresponding author

Anoop Sankaranarayanan, Consultant Psychiatrist, Community Mental Health, 65 Brunswick Street, Fredericton, New Brunswick E3B 1G5, Canada, Tel: 1 506 444 3241; Email: anoopshank2000@gmail.com

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Keywords

- Dementia
- Cognitive impairment
- Behavioral and psychological problems of dementia
- Vascular dementia

Abstract

Background: There is a dearth of research examining the prevalence, types and unique cultural perspectives of dementia from the Middle East region. This study aims to elaborate and discuss the clinical and socio-demographic profile of patients presenting to a newly developed specialized memory-clinic service in Qatar and bridge the gap.

Methods: Socio-demographic and clinical data of the first 100 patients presenting to the memory clinic between 2012 and 2015 were analyzed to study the diagnosis, type, severity, and comorbidity.

Results: There were more men than women (54:46) and the average age was 75 (\pm 8) years. Vascular dementia was the commonest type seen in our study (36%). Vascular risk factors were seen in the majority of our patients. 63% of patients had behavioral and/or psychological problems at the time of presentation and majority of the patients (72%) presented later in the course of their illness (moderate and more severe stages of the illness). Qatari patients were significantly more likely to present with more advanced stages of dementia ($p=0.02$) and also have behavioral and/or psychological problems at the time of presentation ($p=0.008$).

Conclusion: Our study identifies important cultural and clinical differences to findings from the West. There is need for further research to understand the reasons for delayed presentation in this culture while studying the role for primary prevention in reducing incidence of vascular risk factors and vascular dementia.

ABBREVIATIONS

LAMI: Low and Middle Income (LAMI) Countries; MENA: Middle East and North Africa; DSM: Diagnostic and Statistical Manual; APA: American Psychological Association; BPSD: Behavioral and Psychological Symptoms of Dementia; CMAI: Cohen-Mansfield Agitation Inventory; FIM: Functional Independence Measure; GDS: The Global Deterioration Scale; SD: Standard Deviations; MMSE: Mini Mental State Examination; AD: Alzheimer's Disease; VAD: Vascular Dementia; PDD: Parkinson's

Disease Dementia; DLB: Dementia of Lewy Body; MCI: Mild Cognitive Impairment; MOCA: Montreal Cognitive Assessment; CKD: Chronic Kidney Disease

INTRODUCTION

Dementia is associated with significant disability, caregiver burden and treatment costs [1]. It is therefore increasingly recognized as a challenging illness, particularly among the elderly, both in the western world [2] and the low and middle-income

(LAMI) countries [3]. In addition, clinical evidence indicates that a sizeable proportion of elderly patients have a comorbid diagnosis of hypertension, diabetes, and/or dyslipidemia [4-6] and many of these patients are misdiagnosed or otherwise not identified. The exact prevalence rate for dementia worldwide, therefore, is unknown [7]. A recent systematic review have however estimated the prevalence of dementia at 5-7% for those over 60 years in most world regions, suggesting that roughly 35.6 million persons in the world have dementia [8]. The prevalence of dementia is expected to increase further over the next three decades (particularly in the developing countries) to reach 115.4 million by 2050 [9].

People in the Middle East enjoy long life expectancy; further, research findings have consistently demonstrated that cardiovascular diseases are a major health problem in this region [10]. It is therefore reasonable to expect that dementia is a common problem among the elderly in this region. The number of dementia patients in the Middle East and North Africa (MENA) is predicted to rise 300% by 2040 [11], which mean the region needs to be prepared for such a crisis.

Unfortunately, there is a dearth of research publications on dementia from the Middle Eastern countries, which makes it difficult to know the full extent of dementia in this region, as well as to understand the complexities and challenges surrounding the diagnosis in this region. Qatar is a small country with a thriving economy and high quality of life. According to 2014 statistics, there were just over 18,000 people who were above the age of 65 out of a total population of 2.1 million; in other words, elderly represented less than 1% of the total population with a gender ratio of 1.5 males to 1 female [12]. The low numbers of elderly in Qatar makes it an ideal place to study geriatric syndromes such as dementia. The aim of our study is to bridge this gap by describing findings from a recently commenced memory clinic service in Qatar; specifically we will describe the clinical profile and associated findings of patients presenting to the memory clinic in Doha

MATERIALS AND METHODS

This study describes the socio-demographic and clinical profile of the first hundred patients referred to a specialist memory clinic service that was commenced within the department of Geriatrics at the Rumailah Hospital on the 31st of December 2012. This weekly clinic staffed by a consultant psychiatrist, a consultant or specialist geriatrician, an occupational therapist and a nurse received referrals for patients with memory problems from geriatricians, primary care physicians and neurologists.

We used the Diagnostic and Statistical Manual (DSM IV) diagnostic criteria [13]. Clinical assessment is complemented with laboratory investigations and neuroimaging studies as appropriate and where possible; in certain cases, when patients present in advance stages or where patient had significant behavioral issues, these were not done. Behavioral and Psychological Symptoms of Dementia was assessed using the Cohen-Mansfield Agitation Inventory [14]. We used the Functional Independence Measure (FIM) to measure activities of daily living as this provides a direct and observed rating of the degree of disability and burden of care [15]. Its reliability

and validity is well established [16] and it has been applied in dementia research earlier [17,18]. The Global Deterioration Scale (GDS) for assessment of primary degenerative dementia [19] was used to assess severity of dementia. GDS identifies seven stages from stage 1 (no deficit) to stage seven (severe dementia), including provision for subjective cognitive impairment. The reliability and validity of the instrument is well established [20].

We used clinical and socio-demographic data collected for the first 100 patients who presented to the clinic from the 31st of December to 2012 to 31st January 2015. The Medical Research Center at Hamad Medical Corporation (HMC) provided ethics permission to use the data from memory clinic to undertake this study (Research Proposal # 13403/13).

STATISTICAL ANALYSIS

We used the SPSS 21.0 statistical package for the analysis. Descriptive statistics mean and standard deviations (SD) were calculated for interval variables whereas frequency and percentages were calculated for categorical variables. Student t tests were performed to see association between Qatari and Non-Qatari for continuous variables and Chi-square tests to study the association between categorical variables. A two-tailed P value of < 0.05 was considered significant. We did not undertake multi-variate analysis as this was only a descriptive study.

RESULTS

Table 1 summarizes the socio-demographic and clinical data of the first 100 patients who presented to the memory clinic. Majority of our patients were of Arab origin (90%) and Qataris were the single largest nationality group (47%). Table

Table 1: Socio-demographic and clinical profile of patients.

Variable	N=100 (%)
Age in years	75 ± 8
Gender (M:F)	54:46:00
Nationality/Ethnicity	
Qatari	47
Other Arabic ^a	43
Other Asian	8
European	2
Comorbidities	
Hypertension	77
Type II Diabetes Mellitus	61
Dyslipidemia	63/97* (65%)
Stroke	42
Coronary Artery Disease (CAD)	22
Chronic Kidney Disease (CKD)	8
Vitamin D Deficiency	84/98* (86%)
Anaemia	63/99* (64%)
Hypothyroidism	17/99* (17%)
Smoking	11
Vitamin B 12 Deficiency	10/87* (11%)

^aArab countries consists of 22 countries in the Middle East and North Africa, apart from Qatar, this includes Algeria, Bahrain, Comoros Islands, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen.
 *Indicates data not available for the entire cohort.

2 provides details about the type of dementia, severity, neuroimaging findings and other pertinent factors seen in our patient population. Vascular dementia was the commonest type of dementia seen in our clinic (36%). Most patients (37%) had moderate levels of dementia on presentation, and majority of our patients presented later in their course (72%). 87% of patients had neuroimaging done; 76% of patients who had neuroimaging showed evidence of small vessel disease. Behavioral and/or psychological problems were seen in 63% of our patients, with depression being the commonest presentation (41%). Vascular risk factors were common (hypertension in 77%, dyslipidemia in 65% and type II diabetes mellitus in 61%). We explored for differences between Qatari and non-Qatari patients with respect socio-demographic (age and gender) and clinical parameters (dementia type, dementia severity; presence of BPSD; presence of vascular risk factors-Type II Diabetes Mellitus, Hypertension, and Dyslipidemia; Vitamin B 12 deficiency and Vitamin D

Table 2: Type, severity and associated findings of dementia.

Variable	N =100(%)	
Dementia Type		
Vascular Dementia (VaD)	36	
Alzheimer's Dementia (AD)	25	
Mixed Dementia	23	
MCI (Including Vascular Cognitive Impairment)		
Pseudo-dementia	4	
PDD/DLB	3	
Advance Dementia	3	
Neuro-imaging findings (n=87)		
Brain Atrophy	75 (86%)	
Cerebral Small Vessel Disease		
White Matter Hyper-intensities	58 (67%)	
Perivascular Space	4 (5%)	
Recent small sub-cortical infarcts	6 (7%)	
Lacunar Infarcts	21 (24%)	
Cerebral Microbleed	1 (1%)	
Any	66 (76%)	
Old infarcts		
	30 (34%)	
Incidental findings β		
Basal ganglia calcification	8 (9%)	
Meningioma	2 (2%)	
Colloid cyst in Foramen Monroe	1 (1%)	
Behavioral and Psychological Symptoms of Dementia (BPSD)		
Behavioral Problems	37	
Depression	41	
Psychosis	25	
Apathy	9	
Any BPSD	63	
Dementia Severity	GDS	FIM
Nil	0	3
Subjective Cognitive Impairment	1	0
Mild Cognitive Impairment (MCI)	6	0
Moderate	21	20
Moderately Severe	37	42
Severe	21	35

Table 3: Differences between Qatari and Non-Qatari patients.

Variable	Qatari (N=47)	Non-Qatari (N=53)	p-Value
Age in years	75.6 (\pm 7)	73.9 (\pm 9)	0.31
Gender (males)	28	26	0.3
Dementia type (Vascular)	32	27	0.08
Dementia severity			
(Moderate and more)	39	33	0.02*
BPSD (Any)	36	27	0.008*
Type II Diabetes Mellitus	33	28	0.08
Hypertension	39	38	0.18
History of stroke	24	18	0.08
History of CAD	12	10	0.42
Vitamin D Deficiency	39	45	0.79
Vitamin B 12 Deficiency	1	9	0.02*

Figures with \pm Indicates Standard Deviation
 CAD: Coronary Artery Disease

deficiency) studied. Interestingly we found that Qatari patients were significantly more likely to present with more severe stage of dementia and with some form of behavioral and psychological symptoms, but significantly less likely to present with Vitamin B 12 deficiency. There was also a trend for association with type II diabetes mellitus (p=0.08), history of strokes (p=0.08) and vascular forms of dementia (including mixed type) (p=0.08).

DISCUSSION

Very few studies have described the status of dementia in the Gulf region; to the best of our knowledge, this is the first study that describes experiences from a memory clinic setting in this region. We had a number of interesting findings that sets it apart from findings typically described from western settings.

Firstly, we found that vascular dementia was the single most common (36%) dementia type in our memory clinic; this number rose to 60% on combining Vascular and mixed types. It has been suggested that Vascular Dementia and Mixed Dementia may have more in common than Mixed Dementia and Alzheimer's Dementia [21]. This is in keeping with a high load of cerebral small vessel disease (76% of those had neuroimaging) found in our cohort. Our finding that vascular dementia is the commonest category is not in keeping with previous reports of Alzheimer's dementia being the commonest type of dementia both from Qatar [22] and elsewhere in the Gulf region [23]. There may be several explanations for this difference; firstly, our sample was derived from a specialist memory clinic setting, whereas the previous studies [22,23] were hospital-based. It is possible that the hospital-based cases had more advanced dementia and therefore were inaccurately classified due to the more advanced nature of their disease. Hamad et al., [22] employed modified Mini Mental State Examination (MMSE), which does not discriminate well between Alzheimer's and vascular dementia [24]. It is also important to note that the combined vascular and mixed dementia (37%) in Hamad et al., study [22] was higher than that of Alzheimer's (29%). The higher prevalence of vascular etiology in our patient population may also be reflective of rising rates

of cardiovascular diseases and associated risk factors among the Gulf population [10]. The high prevalence of cardiovascular risk burden among Qatari population is well established [25,26]. This is important from a preventive or public health “model” as it is likely that vascular load of dementia can be reduced by modifying vascular risk factors and thereby dementia. For example, Japan has reported reduction in incidence of stroke and vascular dementia over the past three decades as a result of lifestyle modification [27]. Majority of our patients presented with behavioral and psychological symptoms of dementia (BPSD) at the time of first presentation. Qataris were significantly more likely to present with BPSD and also to present later (i.e., have moderate or more severe forms of the illness at the time of presentation). Delayed diagnosis of dementia has numerous adverse outcomes for patients and their caregivers, including social and behavioral complications that can be minimized with earlier detection. As such, increasing early detection is a critical first step in improving the quality of life for patients and their families because it can prolong independence in daily functioning [28]. Hamad et al., [22] had highlighted how erroneous beliefs contributed to late presentation in Qatar. Ghalib [29] sites stigma and local cultural practices as reasons for delayed presentation in neighboring United Arab Emirates. Other studies also demonstrate how culture influences the way its individuals’ define, perceive, and respond to illness [30-32]. For example, a study conducted in Australia that aimed to identify how dementia is understood and perceived by members from different cultural groups found that the terminology used for dementia “*Kharaf*” (which means that the person has lost their mind) seems to further strengthen negative perceptions and stigma in Arab communities [33]. Similarly a study done among Arab lay persons in Israel demonstrated that emotional reactions to people with Alzheimer’s disease (AD) are grounded in cultural definitions and beliefs; the study also found that lower levels of education can lead to negative reactions, which in turn creates avoidance from the individual suffering from AD [31]. It is therefore important to study how social and cultural factors influence or impede the early detection, diagnosis, and treatment of dementia among persons in Qatar. Such a study should explore attitudes and perceptions of dementia among family members living with patients and identify symptoms that trigger help-seeking behaviors among patients with dementia in Qatar. We found that 86% of our patients had evidence of Vitamin D Deficiency. In a previous study from Qatar, our group identified that 72% of our elderly patient population had vitamin D deficiency [34]. Vitamin D deficiency has been shown to be associated with hypertension [35], stroke [36], dementia and cognitive decline [37,38]. We did not, however, find any association between vitamin D deficiency and vascular category (combined vascular and mixed dementia) in our group. There is the opportunity to study this phenomenon better, particularly to study the role of vitamin D supplementation in patients with dementia. Our study is not without limitations. This is a cross-sectional descriptive study of patients attending a specialized memory clinic service. While the clinic was started to streamline dementia care in Qatar, some patients may have continued to consult in neurology and psychiatry. Therefore this may not be the complete list of all dementia presentations in Qatar over the study period. However considering the facts that this trend reduced over the three year period (as evidenced

by increasing referrals from psychiatry and neurology) and we saw the entire range of patients with dementia in our clinic, we do not expect any differences in socio-demographic and clinical profiles of patients presenting to these other services. Further, neither psychiatry nor neurology department run a stand-alone specialized memory clinic service. We did not employ any standardized cognitive instruments and instead used a combination of established tests for different domains. For example, orientation was tested for self (ability to say their full name and age), others (family members and/or carers present), place (current location, floor, city and country), and time (time of day, day, date, month and year). We tested attention by asking the patient to count backwards; typically we started with serial 7s from 100 and if the patient could not perform this, moved on to serial 3s from 30, and finally asking to count backwards from 10 if they failed serial 3s. We tested memory by presenting four words (ball, table, car, man) at the beginning and asking them to recall it after 5 minutes and at the end of the interview. We used the modified Boston Naming Test-short version (15 items) to assess speech and the clock-drawing test as a measure of visuo-spatial function and executive function. There are several reasons why we did not use a standardized battery. Firstly, expert clinical diagnosis is considered gold standard at the individual patient level [39]. Secondly, a number of our patients were illiterate and would not have been able to complete items requiring reading or writing (such as in MOCA or MMSE). For this reason it has been suggested that such instruments may be inappropriate for use in societies with low literacy [40]. Further, although previous attempts were made to develop norms for established cognitive instruments in Arab population [41,42], most of these studies have been done in select local population with small samples. These studies also differ with regards the norms; for example, Al Rajeh et al., [41] suggested different cut-offs for educated young (less than 24) and less than 19 for illiterate patients on a translated version of MMSE, whereas Dahbour et al., [42] recommended a score of 21 and below for those with basic education. These instruments therefore may not be readily usable in other Arabic speaking countries; this is because Arabic is a very rich language with nuances in preferred words and slang depending on the country. Finally, use of tests that focus on single domain (e.g. memory dysfunction) or emphasize on “cut-off scores” rather than profiles of impairment are less likely to be of use particularly in specialized settings such as memory clinics [43].

For reasons elaborated above, a better alternative is to employ instruments adapted for local cultures that are culture and language fair, such as the Vellore screening instrument [44]. Our experience suggests that the best fit for Qatar would be to employ a combination of comprehensive history, locally adaptable measures for activities of daily living and neurocognitive assessment that assesses the primary cognitive domains. With regards locally measurable activities, we found that enquiring about prayers was particularly informative in our patient population. Prayers have a very important place in Muslim culture and careful history about prayers and related behaviors can provide important insights. The impact of stroke on the ability to pray has been described [45]. Mohamed et al., [45] also describes the various steps and rituals involved in Muslim

prayers in detail. To summarize the main characteristics, *Salat* is performed similarly across the world at five specific times spread across the day. It begins by performing the preparatory ablution (*wudhu*) following which, the person positions them self so as to face the direction of *Ka'bah* in Mecca and simultaneously recite prayers while moving through set positions [45]. Depending on the severity of dementia and the cognitive domains affected, individuals can have difficulties undertaking any or all of these different steps. For example, individuals who have visuo-spatial difficulties report finding it difficult to navigate their way to the local mosque and back; this is particularly relevant in Muslim men. Those who are poorly oriented to time of day have difficulties identifying which of the five prayers they are undertaking. People who had executive dysfunction have difficulties coordinating the different steps required during prayers and those who had memory dysfunction struggle to follow the rituals and repetitions. Purists may argue that clubbing vascular dementia and mixed dementia is not appropriate. However, it has been recognized and accepted that "pure" vascular dementia is less common [46], that CSVD is an important cause of vascular dementia [47] and that the overlap of pathologies between vascular and mixed dementia is complex [48] making it difficult to accurately tease the two out clinically. We believe these reasons justify viewing the two diagnoses together especially when they share common risk factors.

Finally it must be stated that memory clinic comprises one important component of care for patients with cognitive disorders. Boada et al., [49] describes what is required for an effective system. This includes the administrative oversight that ensures availability of services to provide dissemination of information (to improve awareness); coordination of care between the different agencies (to reduce delay); memory clinic service (to provide timely and specialist assessment and management); continuity of care (to support independence in their natural environment as long as possible) and facilities to undertake clinical research (to ensure that services meet the local needs). In Qatar, we are fortunate to have the administrative will, support and leadership to develop the required services and the geriatric services includes well established home health care services, acute care services and long-term care services all within its umbrella to ensure a holistic and seamless care. Further, with the establishment of Academic Health System in Qatar [50], there is a focus on clinical research that benefits patient care. All of this places Qatar at a unique advantage in championing care of people with cognitive disorders in the region.

CONCLUSION

Dementia and cognitive disorders are seen among elderly living in Qatar; however there are important differences noted. For example, the higher vascular load indicates that there is role for primary prevention. Further, culture influences both how people exhibit their difficulties and what family may consider normal or acceptable and when help is needed. Further research is needed to develop locally adaptable tools that pick up cognitive disorders reliably so as to screen and identify individuals earlier. Attempts should also be made to remove and reduce stigma and misconceptions.

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