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# PROFILE OF DEMENTIA PATIENTS FROM A TERTIARY CARE CENTER IN KARACHI, PAKISTAN

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## ABSTRACT:

**BACKGROUND:** According to an estimate currently over 46 million people live with dementia worldwide and 58% reside in developing countries. However like some other developing countries, not much is known about the demographics, characteristics, and associated conditions of those suffering from dementia in Pakistan.

**OBJECTIVE:** To study profile of dementia patients from a tertiary care hospital in Karachi, Pakistan.

**METHODS:** Data was collected from records of patients who presented to the outpatient clinic in Psychiatry department at the Aga Khan Hospital, Karachi from January 2015 until January 2016. DSM-IV TR was used to diagnose dementia. A questionnaire was designed to collect demographics, co morbid conditions, neuropsychiatric symptoms, family history, presence or absence of imaging, and MMSE scores.

**RESULTS:** Total number of patients was 100. Mean age was  $66 \pm 27$  years and 56% were females. 25% of the patients had more than 14 years of education and family history was positive in 39%. The type of dementia most commonly diagnosed was Alzheimer's disease accounting for 63 % of total cases. 54% of all dementia patients had hypertension, as comorbid condition. Depression was the most common neuropsychiatric symptom present in 41% of all dementia cases.

**CONCLUSION:** The clinical characteristics, presentations, and demographics of patients with dementia are not very well explored in Pakistan. This study explored features such as mean age of presentation, gender, education, and common symptoms of dementia in a tertiary care setting in Karachi, Pakistan. More clinical data and registries are needed to address specific needs of this population.

**KEY WORDS:** Alzheimer Dementia, Pakistan, developing countries, Lewy body disease, 10/66

## INTRODUCTION:

Older population in the world is on the rise and is expected to increase by 66% in Asia in the next 15 years as longevity and life span are increasing. As a result incidence and prevalence of conditions associated with old age are also increasing including

dementia which is expected to reach to 75 million by 2030 [1]. Of all the people with dementia 58% are estimated to live in low and middle income countries (LMICs); this number will rise to 63% in 2030 and 68% by 2050 [2]. The number of people with dementia in Asia alone is more than those in America and Europe

combined.

The profile of dementia patients, associated risk factors, manifestations of symptoms, and trajectory of disease may vary across regions and may be different in LMICs than in high income countries. This makes it imperative to study dementia in LMICs as has been done in the past decade especially by the Alzheimer Disease International 10/66 Dementia Research Group initiative with research programs in about 20 LMICs including India [3].

According to the World Bank data Pakistan is a lower middle income country in South East Asia with an estimated population of 185 million in 2014. It is currently the sixth most populous and will become the third most populous country in the world by 2050 [4]. However not much is known about the demographics, characteristics, and associated conditions of people with dementia in Pakistan. Arsalan et al [5] reported demographics of 60 dementia patients in 2011 from Shifa International hospital in Islamabad, Pakistan. Recently a study was published by Awan et al [6] validating mini mental state exam (MMSE) score in Urdu in Pakistan.

## MATERIALS AND METHODS:

Data was collected from medical records of patients diagnosed with dementia consecutively by the author (QK), who is a psychiatrist and a behavioral neurologist, in Psychiatry clinic at the Aga Khan Hospital, Karachi from January 2015 until January 2016 according to DSM-IV TR (Diagnostic and Statistical Manual of Mental Disorders-IV Text Revision) followed by detailed neurologic examination. Creutzfeldt - Jakob disease (CJD) was diagnosed according to CDC diagnostic criteria for probable CJD. Other than demographic details, information was collected about co morbid conditions, neuropsychiatric symptoms, family history, presence or absence of imaging, and MMSE scores for which a pre designed proforma was used. MMSE is a screening instrument and has limited use especially due to education and gender bias. Baseline tests such as thyroid stimulating hormone (TSH), vitamin B 12 levels, and liver function tests (LFTs) were done in majority of the patients.

Ethical approval was taken from Aga Khan Hospital institutional review board (IRB). Data was analyzed using SPSS V 19 IBM. Chi square test was used to analyze categorical variables like gender and t test was used to analyze continuous variables like age, socio demographics and clinical factors.

## RESULTS

Total number of patients was 100 (N=100). Mean age was  $66 \pm 27$  years. The interquartile range was 17(58-75) years. Of the total, 56% were females. About one quarter had more than 14 years of education, and one quarter had no formal education and the rest lied in between. Family history of dementia was reported to be present in 39%.

### Table 1

Alzheimers (AD) was the most common dementia accounting for 63 % of total cases occurring as stand-alone diagnosis or in the form of mixed dementia, followed by Lewy Body Dementia (LBD) (24%), and vascular dementia (VaD) (17%) as stand-alone or mixed. About two thirds of all AD cases were females. About 50% of all dementia patients had hypertension, and more than half of those had AD. 34% had diabetes mellitus and two-thirds of all had AD, and 33% had hypercholesterolemia as comorbid conditions

### Table 2

Computed Tomography (CT) Brain was done in 19 % and Magnetic Resonance Imaging (MRI) in about half of the patients while 37% of the patients did not have any imaging done. Mean MMSE score at the time of presentation was 19. Average MMSE score of the group with no formal education was 15 and the group with more than 14 years of education was 19. One third of people were not testable at presentation majority being females with no or low education and reporting shorter duration of symptoms.

Average duration of symptoms at the time of presentation was about two and a half years with 40% of people reporting duration of symptoms to be  $\leq 12$  months. There was no significant difference between the MMSE score of the group that reported duration of disease to be less than 12 months than those whose duration of symptoms was reported to be more than 3 years however the average education of former group was 7 years and of the latter one was 14 years. AD was the most common diagnosis in both groups (50-55%). There were 3 cases of Creutzfeldt- Jakob disease (CJD) and no case of posterior cortical atrophy (PCA) in the former group and 3 cases of PCA and no case of CJD in the latter group. More number of fronto temporal dementia (FTD) and normal pressure hydrocephalus (NPH) cases was also present in the latter group. Distribution of LBD, VaD and other dementias was

similar in the two groups. 3 patients with dementia as well as their families denied having any memory problems; 2 of them were females with low or no education and with a diagnosis of AD. The third was a male patient with 14 years of education and with a diagnosis of LBD.

Depression was the most common neuropsychiatric symptom present in 41% of all dementia cases followed by delusions (38%), visual hallucinations (21%), apathy (18%), and auditory hallucinations (9%). Majority of patients with visual hallucinations had LBD as a stand-alone diagnosis or as mixed dementia. Apathy was present mostly in AD and LBD cases. Symptoms of parkinsonism were present in 37% of the patients, majority of them with LBD.

### Table 3

### DISCUSSION:

Profile of dementia patients in developing countries may be different from those in developed countries. There is scarcity of clinical data from dementia patients in Pakistan. The data presented in this paper shows that the mean age of presentation of dementia patients was 66 years. The registry of dementia patients from Islamabad, Pakistan reported mean age to be 70.5 years and a study from Karachi reported a similar age of presentation at 66.7 years [6]. A study from Brazil reported mean age of dementia patients to be 77.1 years [7]; however mean age was reported to be 66.2 years in an Indian cohort [8] which is similar to ours. There was a higher number of females among all dementia cases in general and among all AD cases in particular which was not the case in the two other Pakistani studies, however it is in keeping with the international data [9]. Mean MMSE score at the time of presentation in our study was 19 and mean score in a MMSE validation study conducted in Karachi was 18.5 which are almost identical figures [6]. There was an almost equal number of people with low or no formal education and people with high education in our cohort; this may be due to tertiary care setting of the hospital that caters to a wide range of people. The average age at presentation was not different in patients with low or no education and those with higher education. Majority of patients with low or no education were females and were not testable at the time of presentation which may be suggestive of increased severity at the time of presentation or late presentation; however this group interestingly reported shorter duration of symptoms. Only a minority of patients with higher education was in the "not testable group" and higher education group also reported longer duration of

symptoms; this may be due to increased awareness of this group about dementia symptoms. MMSE was used for cognitive testing in our study which also has education and gender bias [6]. The average duration of symptoms was two and a half years which is similar to Indian cohort that reported 2.3 years as the mean duration of symptoms [10]. Among those who denied any memory problems were females with low education and one patient had LBD in which neuropsychiatric symptoms may be more prominent than memory problems. Patients with non-amnesic dementias such as PCA, FTD, and NPH reported longer duration of symptoms which could also be due to delay in diagnosing and identifying non-amnesic dementias in non-specialized clinics. Family history of dementia was reported to be present in 39% of our patients. The registry from Islamabad reported positive family history in 35 % of the patients, while the figure from Indian cohort was lower [5].

In our cohort AD was the most common diagnosis (63%) followed by LBD and VaD. The registry from Islamabad reported the most common diagnosis to be AD but was reported in only 28 % of the patients, followed by Parkinsons disease dementia and VaD [5]. In Indian cohort as well however AD was the most common diagnosis reported to be present in 37 % of the patients followed by VaD and FTD [11]. AD is believed to be the most common type of dementia worldwide constituting 60 % of all dementia cases in developed and developing countries followed by vascular dementia [9]. It is interesting to see LBD as the second most common diagnosis in our cohort; one explanation for this could be that this cohort is from psychiatry clinic where patients with psychotic symptoms are more commonly referred and these patients may not have marked short term memory loss. In our experience LBD is less commonly diagnosed in general neurology clinics. It is also interesting to observe that in Islamabad cohort Parkinsons disease dementia (PDD) was the second most common diagnosis and the patients in this study were recruited from neurology clinics [5]. It is also possible that some of these may have been LBD cases. The explanation for fewer cases of VaD in our cohort could also be non-neurological setting, and a separate stroke clinic at the hospital. We also think that lack of recognition of behavioral neurology/memory clinic as a separate entity also results in less number of referrals made.

Hypertension, diabetes, and hypercholesterolemia showed significant association with dementia and AD as is known from the world literature [12].

About 50 % of the patients in our cohort had Brain MRI done which is similar to the figure from Islamabad registry; however CT scan was done in significantly

fewer patients in our cohort. This may also be because of greater reliance on clinical and cognitive examination findings for diagnosis by the author (QK) especially in cases of LBD.

Among neuropsychiatric symptoms depression was the most common in our cohort followed by delusions, hallucinations, and apathy. However we know that neuropsychiatric symptom presentation may vary according to dementia type and severity. Late presentations and psychiatric setting of the study may also have affected these results. Parkinsonism was present in 37 % of our patients and similar figure (36.7 %) was reported by the registry in Islamabad [4]; however almost all patients who had parkinsonism were LBD patients in our cohort while most of them had a diagnosis of PD in Islamabad registry cohort. This may also be due to the sub-specialty setting of the study and emphasizes the need for recognition and diagnosis of LBD cases in both settings.

This study has many limitations. The sample size is small and is from a private, tertiary care setting of an urban hospital and so the findings may not be generalizable; however some findings are similar to findings from Islamabad. Patients are recruited from the department of Psychiatry and may show some features that may be different from the ones seen in Neurology setting. Severity of dementia is not rated and MMSE scores may not be representative of severity of cognitive decline due to education and gender based biases.

## CONCLUSION

The clinical characteristics, presentations, and demographics of patients with dementia are not very well explored in Pakistan. This study explored features such as mean age of presentation, gender, education, and common symptoms of dementia in a tertiary care setting in Karachi, Pakistan. More clinical data and registries are needed to address specific needs of this population.

## ABBREVIATIONS:

LMICS: Low and middle income countries; MMSE: Mini mental state exam; DSM-IV TR: Diagnostic and Statistical Manual of Mental Disorders-IV Text Revision; IRB: Institutional review board; SPSS: Statistical Package for the Social Sciences; AD: Alzheimers dementia; LBD: Lewy Body Dementia; VaD: Vascular dementia; CT: Computed Tomography; MRI: Magnetic Resonance Imaging; CJD: Creutzfeldt- Jakob disease; PCA: Posterior cortical atrophy; FTD: Fronto temporal dementia; NPH: Normal pressure hydrocephalus; PDD:

Parkinsons disease dementia

Declarations:

This study does not involve any procedures involving experiments on human or animal subjects. The study was exempted from full review by the Ethical Review Committee, Aga Khan University. ERC number 3438-Psy-ERC-15

Consent to publication:

This manuscript does not contain data about any individual person's details, identifiers, images, or videos.

Availability of data and material:

The data reported in the paper can be obtained from the corresponding author on request.

Competing interests:

There are no financial and non-financial competing interests involved in this study.

**TABLE 1: PATIENT DEMOGRAPHICS**

Variables	Frequency (%)
<b>Gender</b>	
Male	44
Female	56
<b>Age (in years)</b>	
40-49	09
50-59	20
60-69	29
70-79	26
80-89	14
90-99	02
<b>Education</b>	
No formal education	24
Primary	13
Secondary	12
Intermediate	10
Graduate	19
Post graduate	22
<b>Family History</b>	
Absent	61

Present	39
<b>Socio economic status</b>	
Lower	57
Middle	22
Upper	21
<b>Duration of illness (in months)</b>	
12 or less	40
13-24	21
14-36	18
37 or more	21

**TABLE 2: DIAGNOSIS AND CO-MORBIDITIES**

Diagnosis	Hypertension % (N)	Diabetes % (N)	Hypercholesterolemia % (N)
AD	42 (16)	31 (12)	29 (11)
Primary diagnosis: AD Sec Diagnosis: LBD	55 (5)	22 (2)	22 (2)
Primary			
diagnosis: AD Sec diagnosis: VaD	100 (6)	83 (5)	66 (4)
bvFTD	40 (2)	20 (1)	20 (1)
LBD	43 (3)	43 (3)	14 (1)
Primary diagnosis: LBD Sec diagnosis: AD	100 (4)	00	25 (1)
Primary diagnosis: LBD Sec diagnosis: VaD	100 (2)	50 (1)	100 (2)
PCA	00	00	33 (1)
PDD	00	00	50 (1)
PSP	00	33 (1)	00
sCJD	00	100 (2)	100 (2)
Semantic FTD	00	00	00
VaD	100 (3)	00	100 (3)
Primary diagnosis: VaD Sec diagnosis: AD	80 (4)	40 (2)	40 (2)
Others	67 (4)	50 (3)	100 (6)

**Table 2.** AD: Alzheimers disease, Sec: secondary, LBD: Lewy body dementia, VaD: vascular dementia, bvFTD: behavioral variant of fronto temporal dementia, PCA: posterior cortical atrophy, PDD:

Parkinsons disease dementia, PSP: progressive supranuclear palsy, sCJD: sporadic Creutzfeldt- Jakob disease

**Table 3: Diagnosis and Neuropsychiatric symptoms- % (N)**

Diagnosis	Depression	Bipolar	Schizophrenia	Delusions	AH	Apathy	PK	VH
AD	39 (15)	0	0	31 (12)	5 (2)	15 (6)	7 (3)	5 (2)
PDia: AD SDia: LBD	55 (5)	00	00	55 (5)	11 (1)	11 (1)	55 (5)	55 (5)
PDia: AD SDia: VaD	50 (3)	0	0	33 (2)	0	16 (1)	33 (2)	0
bvFTD	40 (2)	20 (1)	0	60 (3)	0	20 (1)	0	0
LBD	43 (3)	28 (2)	0	71 (5)	14 (1)	86 (6)	100 (7)	43 (3)
PDia: LBD SDia: AD	0	0	0	100 (4)	50 (2)	0	75 (3)	75 (3)
PDia: LBD SDia: VaD	100 (2)	0	0	50 (1)	0	0	100 (2)	100 (2)
PCA	67 (2)	0	0	0	0	0	33 (1)	33 (1)
PDD	0	0	0	50 (1)	50 (1)	0	100 (2)	100 (2)
PSP	33 (1)	33 (1)	0	0	0	0	100 (3)	0
sCJD	50 (1)	50 (1)	0	0	0	0	50 (1)	50 (1)
Semantic FTD	50 (1)	0	0	0	0	0	0	0
VaD	33 (1)	0	0	33 (1)	33 (1)	33 (1)	33 (1)	0
PDia: VaD SDia: AD	40 (2)	20 (1)	0	20 (2)	0	40 (1)	20 (2)	20 (2)
Others	50 (3)	17 (1)	33 (2)	50 (3)	17 (1)	0	50 (3)	17 (1)

**Table 3** AH: Auditory hallucinations; PK: Parkinsonism; VH: Visual hallucinations; PDia: primary diagnosis; SDia: secondary diagnosis; AD: Alzheimers dementia; LBD: Lewy body dementia; VaD: vascular dementia; bvFTD: behavioral variant of fronto temporal dementia; PCA: Posterior cortical atrophy; PSP: Progressive supranuclear palsy; sCJD: sporadic Creutzfeldt Jakob disease; semantic FTD: semantic fronto temporal dementia

## REFERENCES

- [1]. Ferri CP, Prince M, Brayne C, Brodaty H, Fratiglioni L, Ganguli M, et al. Global prevalence of dementia: a Delphi consensus study. *Lancet*. 2005. 366(9503):2112-7
- [2]. Ferri CP, Jacob KS. Dementia in low-income and middle income countries: Different realities mandate tailored solutions. *PLoS Med*. 2017 Mar. 14(3): e 1002271
- [3]. Alzheimer's Disease International (2017) <https://www.alz.co.uk/1066/participants.php>. Accessed 15 Dec. 2017.
- [4]. Khan Q. Dementia: Challenges of practice in Pakistan. *Neurology*. Nov 25;83(22):2091-2
- [5]. Arsalan Ahmad, Ismail Khatri, Maimoona Siddiqui, Nilofer Khan, Sascha Kamal, Nadia Mehboob. Dementia in Pakistan: initial results from our registry at a tertiary care hospital. *Alzheimer's & Dementia*. 2011. Volume 7, Issue 4, Supplement, Pages S767
- [6]. Safia Awan, Naila Shahbaz, Syed Wasim Akhtar, Arsalan Ahmad, Sadaf Iqbal, Sellal Ahmed, Haider Naqvi, and Mohammad Wasay. Validation Study of the Mini-Mental State Examination in Urdu Language for Pakistani Population. *The Open Neurology Journal*. 2015. 9, 53-58
- [7]. Camargo CHF, Retzlaff G, Justus FF, Resende M. Patients with dementia syndrome in public and private services in southern Brazil. *Dement. Neuropsychol*. 2015. 9(1):64-70
- [8]. Kalaria, RN, Maestre GE., et al. (2008) Alzheimer's disease and vascular dementia in developing countries: prevalence, management, and risk factors. *The Lancet Neurology* 7.9: 812-826.
- [9]. Burns A, Iliffe S. Dementia. *BMJ Clinical research ed*. 2009. 338:b75.
- [10]. Gowri K I, Suvarna A, Thomas H B., et al. Dementia in developing countries. *Dement Neuropsychol*. 2014. 8(2):132-140
- [11]. Wimo A, Winblad B, Aguero-Torres H, von Strauss E. The magnitude of dementia occurrence in the world. *Alzheimer disease and associated disorders*. 2003. 17 (2):63-7.
- [12]. Goldstein, F. C., Ashley, A. V., Endeshaw, Y., Hanfelt, J., Lah, J. J., & Levey, A. I. Effects of Hypertension and Hypercholesterolemia on Cognitive Functioning in Patients with Alzheimer's Disease. *Alzheimer Disease and Associated Disorders*. 2008. 22(4), 336-342.

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Qurat ul Ain Khan; concept, data collection, data analysis, manuscript writing, manuscript review

Sana Siddiqui; concept, data collection, data analysis, manuscript writing, manuscript review

Mohammad Zaman; concept, data collection, data analysis, manuscript writing, manuscript review

Abdullah Waqar; concept, data collection, data analysis, manuscript writing, manuscript review

Sumera Aziz Ali; concept, data collection, data analysis, manuscript writing, manuscript review