Original Article

Identifying elders with neuropsychiatric problems in a clinical setting

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ABSTRACT

Objective: Multiple health problems among the elderly necessitate a comprehensive enquiry to detect problems early and also initiate treatment. We utilized available validated instruments to comprehensively identify older persons with neuro-psychiatric problems including dementia and comorbid medical ailments in the screening desk of the geriatric clinic. **Materials and Methods:** Individuals aged 60 years and above seeking outpatient care at NIMHANS during a 2-year period (October 2008-September 2010) participated. We used General Health Questionnaire (12-item), AD8, questions to identify psychoses and neurological problems and a checklist of common medical ailments. A probable clinical diagnosis was made at the end by medical personnel based on ICD-10. **Results:** A total of 5,260 individuals were screened and more than one-third (36.7%) were women. About 50% had psychological distress (≥2 on GHQ-12), 20.1% had probable cognitive impairment (≥2 on AD8) and about 17% had symptoms suggestive of psychoses (≥1 on Psychoses screener). More than 65% had either a neurological or neurosurgical problems (≥1 on Neurological screener) and headache was the commonest complaint. At probable diagnosis, more than 50% had a neurological problem and over 30% had psychiatric disorders. Of these the most common psychiatric illnesses were psychotic disorders (22.0%), mood disorders (21.4%) and dementia (14.4%). The most common medical comorbidity included hypertension (36.4%), visual impairment (31.8%) and joint pains (30.5%). Nearly 80% had one or more medical comorbidity in addition to psychiatric illness. The overall set of instruments took about 15-20 minutes. It systematically and comprehensively guided in evaluating the elderly for neuropsychiatric problems and hence was collated to constitute the Instruments for Comprehensive Evaluation of the Elderly (ICE-E). **Conclusions:** ICE-E was brief, easy to administer and improved decision making even by personnel from a non-medical background. The instrument aided in systematically detecting neuro-psychiatric problems among the elderly (including psychological distress and cognitive changes) and other medical comorbidities.

Key words: Comorbidity, elderly, instruments screening, mental health, neuro-psychiatric problems

Introduction

More than 85 million people are aged above 60 in India and this number is estimated to reach 325 million by the year 2050.[1] Nearly half the health burden in India is expected to be borne by older adults in another 20 years.[2] In India, the neuro-psychiatric component in service delivery is glaringly deficient. Chronic diseases of the brain and mind have not received the desired priorities.[3] However, the health of the elderly is getting greater attention with the Government of India bringing out the guidelines toward establishing a National Program for Health Care of the Elderly (NPHCE).[4] The guidelines aim at enhancing the health care of the elderly using multiple strategies (geriatric clinic, memory clinics, geriatric wards, domicile visits, etc.) and is being undertaken in phases. Notwithstanding this, neuropsychiatric problems remain relegated to the back. Ignorance, lack of appropriate tools and/or established protocols for managing the neuro-psychiatric problems of the elderly are possible reasons for this disparity in service provision.

While older adults are at high risk of developing multiple comorbid medical conditions,[5] psychiatric morbidity in old age is associated with increased

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risk of hospitalization[6] and high levels of functional dependency, behavioral problems and cognitive impairment are observed in older adults admitted in general hospitals.[7] Therefore, evaluating older adults for mental health problems and cognitive status is essential.[8] Early detection of these problems confers an advantage to the individual, the health system and the society. However, the challenge is to choose one or more instruments/tools which comprehensively and systematically detects problems and facilitates treatment. This paper attempts to address these issues and discusses our experience in systematically identifying elderly with neuropsychiatric and medical problems.

Theoretically, a combination of validated specific instruments should work well. However, addition of each instrument would increase the time for administration and also make it difficult to administer. The desirable instrument should be concise, easy to administer, serve other purposes such as monitor treatment response and have a reasonably quick scoring time.[9] There are specific screeners for mental health problems such as depression[10,11] or cognitive impairment[12] but none that comprehensively identifies neuropsychiatric problems along with medical ailments. In this study we used existing instruments/tools which could help us comprehensively evaluate adults aged 60 years and above for neuropsychiatric and medical problems at the screening desk in the Geriatric clinic.

Materials and Methods

Individuals aged 60 years and above registered at the out-patient screening services in National Institute of Mental Health and Neurosciences (NIMHANS) Bangalore, India, were screened by research staff of Geriatric services. Through consultative meetings the frequently and widely used screening instruments, primarily those which systematically detect mental health problems, cognitive impairment, neurological and medical problems among older adults were listed. Those identified in the process [Table 1] were reviewed, based on the brevity (less than 5 minutes to administer), easy to use and feasibility in routine clinical setup. The final set of instruments consisted of four screening instruments, a brief description of which is given below.

The General Health Questionnaire: The General Health Questionnaire[13] is one of the most widely used screening instruments to detect common mental health problems among individuals across ages. The shorter version (GHQ-12) is translated to many local languages[14,15] and is a good clinical screening tool for psychiatric morbidity.[11,16] GHQ-12 has four options for each item, the two less favorable answers are combined and coded 1 and the two more favorable coded as 0, with total scores ranging from 0 to 12. With a cut-off score of ≥2 it has good sensitivity and specificity.[15,17]

The AD8: The AD8[18] is a brief 8-item measure to identify cognitive impairment among older adults. The total scores range from 0 to 8, with a cut-off score of ≥ 2. It has good sensitivity (74%) and specificity (86%) for detecting dementia.[18]

The Neurological screener: The 12-item questionnaire developed for the Bangalore Urban and Rural Neuroepidemiological (BURN) survey detects symptoms related to major neurological disorders.[19] With a

Table 1: Widely used screening instruments to detect mental health problems and cognitive impairment among elderly

	Screening instruments	Remarks
Mental health problems	Self-reporting questionnaire SRQ-20/24	20-item, self administered
	General health questionnaire GHQ-12	12-item, self administered, 5 minutes
	Geriatric depression scale GDS-15	15-item, self administered, 5-10 minutes
	Primary health questionnaire	9-item, self administered,
Cognitive impairment	Mini mental state examination-MMSE	By trained interviewer, 10 minutes
	Hindi mental status examination-HMSE	Hindi adaptation of MMSE, For illiterate rural elderly
	Clock drawing tests	For literates, standardized interpretation of drawing by clinician, 2 minutes,
	Seven minute neurocognitive screening battery	4-subtests-memory, verbal fluency, visuo-construction and orientation, by trained interviewer, 6-11 minutes
	Mini cog	For literates; by interviewer, 3-word recall+clock drawing test, 3 minutes
	AD8	8-item, patient administered and/or informant interview, <3 minutes
	Memory impairment screen	4-item, by interviewer, 4 minutes
	Cognitive impairment test (6-CIT)	6-item, by interviewer, 3-4 minutes
	General practitioner assessment of cognition-GPCOG	Both patient assessment and informant interview, 6 minutes

sensitivity of 95%, specificity of 98% and a positive predictive value of 68%, the symptom checklist includes headache, speech abnormality, paralysis of limbs, seizures, gait difficulty and memory deficits. The total scores range from 0 to 12.[19]

The Psychoses screener: The 4-item screener for detecting psychoses (non-validated) is based on key symptom parameters of psychoses: Delusions, hallucinations, talking/muttering to self and any other strange behaviors. Depending on the presence or absence of the above symptoms, the total scores ranges from 0 to 4.

Medical Illness Screener: A checklist for common medical ailments, adapted from the Cumulative Illness Rating Scale – Geriatrics,[20] completed the set of instruments along with questions to document the socio-demographic details.

All individuals screened were provisionally diagnosed by medical personnel among the research staff, before being referred to concerned departments for detailed evaluation and treatment as per routine clinical services of the hospital [Figure 1]. Diagnoses such as dementia, mood disorders and other psychiatric illness were made according to ICD-10 criteria.[21] EpiInfo[22] was utilized to develop the database of screened individuals.

Results

Socio-demographics
We screened 5,260 individuals aged 60 and above during a 2-year period (October 2008-September 2010). The mean age of respondents was 66.3 years (±6.24), with a majority (71%) belonging to the 60-69 year age group [Figure 2] and more than one-third were women (36.7%).
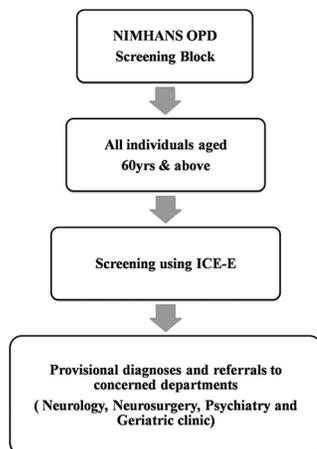
Burden of morbidity
Mental and neurological problems
GHQ-12 was complete on 4,890 individuals (92.9%) [Table 2]. Half of them (50.0%) had a score ≥ 2 indicating possible psychological distress and this was significantly higher among women ($P < 0.001$). The AD8 could be administered to 5,231 individuals (99.4%) and one-fifth (20.1%) had probable cognitive impairment with no significant gender differences. Nearly one-fifth (16.8%) had one or more symptoms suggestive of psychoses (talking/muttering/laughing to self: 72.9%; strange behaviors: 69.3%; delusions: 55.8%; hallucinations: 40%). Nearly two-thirds with psychoses (61.3%) were positive for cognitive impairment. Psychotic symptoms were more common among women than men and was statistically significant ($P = 0.001$). More than two-thirds (65.8%) of those screened had at least one neurological symptom; common ones being headache (26.3%), difficulty in walking (16%), speech abnormalities (12.6%) and paralysis of arms or legs (12.1%). Significant gender differences were observed: Headache was more common among women, whereas walking difficulty, speech abnormality and

Table 2: Gender differences across ICE-E instruments

	Male (%)	Female (%)	P value
Ghq-12 (score ≥ 2)	1410 (45.2)	1032 (58.2)	<0.001
AD8 (score ≥ 2)	632 (19.1)	418 (21.8)	0.022
Psychoses screener (score ≥ 1)	481 (14.5)	403 (20.9)	<0.001
Presence of both psychotic symptoms and cognitive impairment	298 (8.9)	244 (12.6)	0.001
Neurological screener (score ≥ 1)	2197 (66)	1264 (65.5)	0.714
Headache	683 (20.5)	702 (36.4)	<0.001
Walking difficulty	647 (19.4)	196 (10.2)	<0.001
Speech abnormality	502 (15.1)	160 (8.3)	<0.001
Paralysis of arms or legs	504 (15.1)	132 (6.8)	<0.001

Neurological screener, Highest frequency of symptoms mentioned

Figure 1: Flow chart depicting screening services for older adults in the hospital
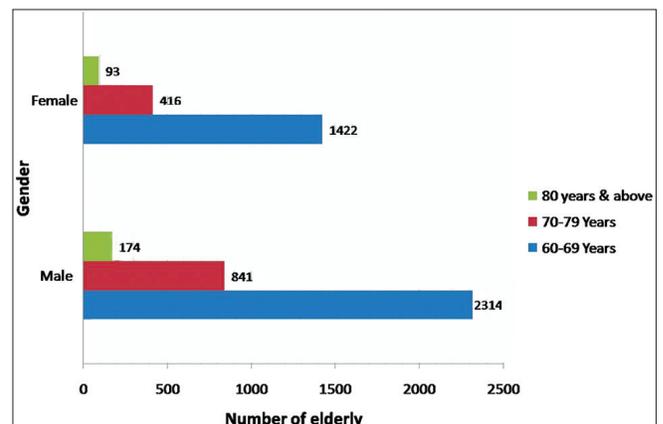

Figure 2: Age distribution among screened population

paralysis of arms or legs was frequent among men. The provisional clinical diagnosis arrived at is depicted in Figure 3. The data on clinical diagnoses was unavailable for about 8% of older adults.

Provisional diagnoses among those screened positive

Individuals with a provisional diagnosis of mood disorder, other non-psychotic illness such as anxiety, somatoform disorders and with either a neurological or neurosurgical illness were positive (≥2) on the GHQ (87.9%, 86.1% and 40%, respectively) [Table 3]. The psychoses screener identified 95.9% individuals diagnosed with psychotic illness (N = 365), 50% of persons with dementia (N = 239) and more than 25% among individuals with substance dependence (N = 97). The AD8 identified cognitive impairment among 98.7% individuals with dementia, 53.9% with psychotic illness and about 35% with mood disorders. The neurological screener identified neurological symptoms among 87% individuals with neurological illness and 69% with neurosurgical illness.

Medical comorbidity

Hypertension (36.4%), visual impairment (31.8%), musculoskeletal ailments (30.5%), diabetes mellitus (21.4%) and gastro-intestinal disorders (18.2%) were the common medical illness reported [Table 4]. Diabetes and hypertension were reported by 722 individuals (13.7%). Musculoskeletal ailments and thyroid disorders were more frequent among women, whereas, stroke and genito-urinary complaints were common in men. Among psychiatrically ill older adults, 77% had at least one medical comorbidity.

Discussion

This is a large hospital-based study that enquired into the neuropsychiatric and medical problems among the elderly. The set of individual validated instruments which was put together, assisted the clinician to be systematic and comprehensive. While the focus was on neuropsychiatric problems, medical problems were also included as mental health is integral component of health problems.

Many instruments have been utilized to detect common mental health problems and psychological distress,[10,11,23] but the General health questionnaire[13] is widely used. The shorter version (GHQ-12) works as well as the longer
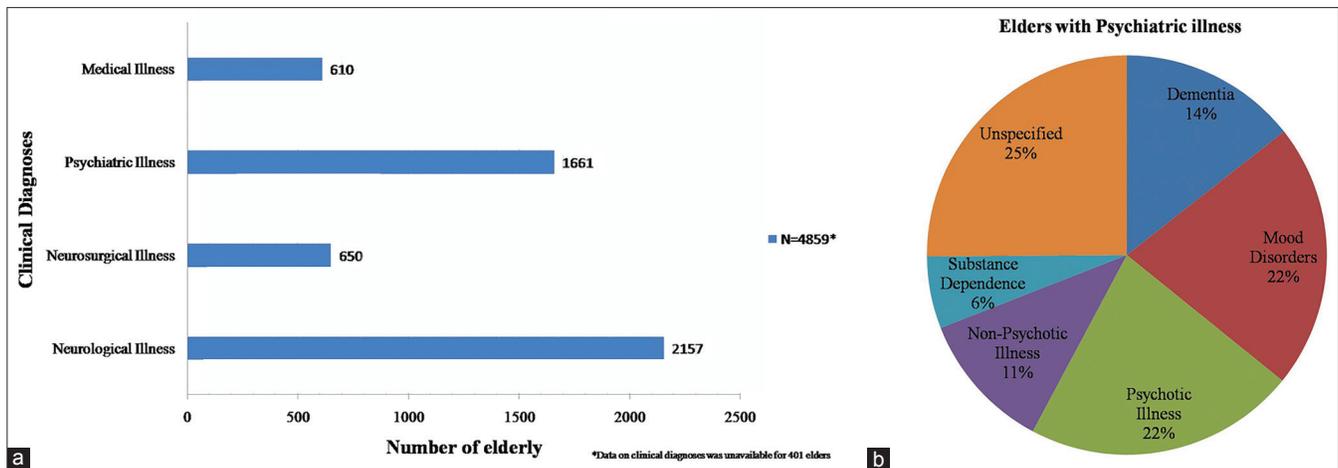
Figure 3: (a and b) Provisional diagnoses among the screened population

Table 3: Comparison of screening instruments and provisional diagnoses

	Neurological illness	Neurosurgical illness	Psychiatric illness						Medical illness
			Mood disorder	Psychotic illness	Other non-psychotic illness	Dementia	Substance dependence	Unspecified	
N#	2157	650	356	365	187	239	97	417	610
Ghq-12* (score ≥2) (%)	42.8	40.9	87.9	76.6	86.1	48.4	45.9	68.2	34.5
P-4 (score ≥1) (%)	4.8	3.7	27.2	95.9	9.1	50.2	25.7	39.5	0.8
AD8** (score ≥2) (%)	11.5	8.7	35.4	53.9	9.1	98.7	18.5	36.9	3.4
N-12 (score ≥1) (%)	87.8	68.9	51.9	38.6	47.1	69	64.9	47.2	39.8

*Ghq-12 could be administered on 4890 individuals, Neurological illness-2045, Neurosurgical illness-610, mood disorders-333, psychotic illness-295, non-psychotic illness-187, Dementia-159, Substance dependence-87, Unspecified-378, medical illness-602, no diagnosis-388, **AD8 could not be administered on 29 individuals (0.5%), #Out of 5260, for 401 individuals, clinical diagnoses data was unavailable

Table 4: Reported medical comorbidities among those screened

	Male N=3329 (%)	Female N=1931 (%)	P value
Hypertension	1187 (35.6)	726 (37.6)	0.167
Sensory impairment	1175 (35.3)	695 (36)	
Visual impairment	1044 (31.3)	633 (32.7)	0.300
Hearing impairment	233 (6.9)	120 (6.2)	0.298
Musculoskeletal/Orthopedic	924 (27.7)	682 (35.3)	<0.001
Diabetes	757 (22.7)	368 (19)	0.001
Gastro-intestinal	615 (18.4)	342 (17.7)	0.530
Stroke	397 (11.9)	135 (6.9)	<0.001
Chronic respiratory diseases	365 (10.9)	171 (8.8)	0.016
Genito-urinary	414 (12.4)	108 (5.5)	<0.001
Heart disease	348 (10.4)	156 (8.1)	0.005
Seizures	185 (5.5)	78 (4)	0.017
Dyslipidemia	104 (3.1)	46 (2.4)	0.140
Endocrine-thyroid	38 (1.1)	51 (2.6)	<0.001
Psychiatric illness and medical comorbidities (N=1661)			
Psychiatric illness and 1-medical comorbidity	262 (28)	213 (29.4)	
Psychiatric illness and 2-medical comorbidity	194 (20.7)	164 (22.6)	
Psychiatric illness and 3 or more medical comorbidities	276 (29.5)	170 (23.5)	

version (GHQ-28)[13] and is useful in detecting anxiety, depression, social dysfunction and loss of confidence among older adults.[24] The four questions to identify psychotic symptoms complemented the GHQ-12 in identifying both severe and common mental health disorders. Memory deficit seen in dementia is often overlooked as age-related memory loss; hence evaluation of cognitive status among elderly is important. Mini Mental Status Examination (MMSE), Hindi Mental State Examination (HMSE), clock drawing tests, memory impairment screen and AD8 identify cognitive impairment.[12,23,25-27] Of these, MMSE is widely used while AD8 is a new addition that is not frequently used in the Indian setting. However, AD8 is quick, informant based, is sensitive for cognitive change among elderly and reliably differentiates demented from non-demented individuals.[28] Thus, AD8 can be used as a common screening tool to identify cognitive change regardless of the etiology.[18,28] The screener from the BURN survey[19] helped to identify a large proportion of individuals with neurological problems and is simple, comprehensive and brief.

Utilizing the validated screening instruments as a combination has given us unique insights: It aided in picking up a substantial number of psychiatric and neurological cases which would otherwise have gone undetected. GHQ reveals the frequent sleep disturbances

amongst older people,[29] and also identify the hidden burden of psychological distress among elders with neurological illness. The psychoses screener besides identifying severe mental health problems complemented the AD8 in identifying psychotic symptoms frequently seen in persons with dementia.[30] In addition, the set of instruments was easy to use and did not pose any major problems in administration. The provisional diagnosis was made by a trained medical doctor. However, a final confirmation by a psychiatrist using standard measures would have been ideal.

Burden of morbidity
Psychological distress
Nearly half of the elderly screened by GHQ scored above the cutoff indicating psychological distress and the gender difference were significant (more women than men). Earlier studies reports greater distress with increasing medical morbidity and that women experience greater distress than men.[31]

Mental and neurological problem
Psychotic symptoms in older persons have various causes: Progressive dementing illness, late-onset schizophrenia, delusional disorders, early onset psychotic illness extending in late life, late onset mood disorders, psychotic disorders caused by medical conditions or medications and delirium.[30,32,33] In the present study, psychotic symptoms were more commonly observed as a result of late-onset psychosis, dementia with psychotic symptoms and also amongst those with late-onset mood disorders. The psychotic symptoms were more commonly observed among older women than men which corresponds to previous literature.[34]

Depression is the most common mental health problem among the elderly in India,[35] followed by anxiety disorders, dementia and substance dependence.[36-38] In our study we found preponderance of psychotic illness and mood disorders (including depression), possibly due to use of separate instruments. Headache was the most common symptom among individuals positive on the neurological screener and was reported mostly by older adults with depression, dysthymia or somatoform disorders. Our study supports finding by Drayer and colleagues that older adults with somatic complaints such as headache or fatigue may actually be depressed and rating scales should consider these symptoms for an accurate measure of depression severity.[39]

Medical morbidity
Hypertension, sensory impairment (vision and hearing), musculoskeletal ailments, diabetes and gastro-intestinal complaints in that order, were the common medical

conditions detected. These are comparable to other Indian studies,[36,40-44] including, the observed significant differences between women and men.[5,40,44] and the proportion of other medical conditions common among the elderly such as stroke, chronic respiratory diseases, genitourinary complaints, heart diseases and seizures.[45,46] Stroke and genitourinary complaints are common among men than women.[46,47] Among elders with psychiatric illness, a majority had one or more co-morbid medical conditions which is comparable to earlier studies.[5,48]

Healthcare seeking

Majority of the individuals screened were aged between 60-69 years and almost two-thirds were men. While there are similar reports,[36,44,49] the gender differences in seeking care (more men than women) is noteworthy. That a greater proportion of male elderly in 60-69 year age group seek care presents a two-fold challenge: The need to develop appropriate services for the visiting group and importantly as there are multiple comorbidities and particularly chronic ones then the greater need for follow-up care.

Conclusions

This is the first large study which has comprehensively screened and reported neuropsychiatric and medical problems among the elderly who seek health care. Neuropsychiatric problems among geriatric group are highly prevalent.[37] Depression, the most common disorder[48,50] along with memory impairment among elderly patients go undetected as age-related changes and thus are not counted as treatable conditions. The substantial burden of neuro-psychiatric problems is overlooked and presence of psychological distress among persons with neurological and neurosurgical patients are neglected. Our study adopted four commonly used screening instruments to comprehensively evaluate the elderly for a wide array of neuro-psychiatric problems which could be referred to as Instruments for Comprehensive Evaluation of the Elderly (ICE-E). The experience using ICE-E was that it was comprehensive brief, easy to administer, not personnel intensive and could be used by non-medical personnel with adequate training. Apart from aiding the diagnostician, the instrument assists clinician in planning better management strategies.

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