International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

A Study of Psychiatric and Physical Morbidity among Residents of Old Age Home

Vaishali N Hegde[1], Srinivas Kosgi[2*], Satheesh Rao[3], Nagesh Pai[4], Shankarappa M Mudgal[5]

[1]Assistant Professor, Department of Psychiatry, Father Muller Medical College, Fr Muller Road, Kankanady, Mangalore 575002
[2]Assistant professor, Department of Psychiatry, K S Hegde Medical Academy, Deralakatte, Mangalore 575018
[3]Professor and Head, Department of Psychiatry, K S Hegde Medical Academy, Mangalore
[4]Professor of Psychiatry, Graduate School of Medicine, University of Wollongong, Academic Suite – Block C, Level 8, Crown Street, Wollongong NSW 2500.
[5]Associate professor, Department of Medicine, Raichur Institute of Medical Sciences, Raichur

[*]Correspondence Email: kosgi_s@yahoo.co.in

Received: 1/03//2012 *Revised: 9/03/2012* *Accepted: 15/03/2012*

ABSTRACT

Aims/objectives: To determine the frequency of psychiatric and physical morbidity and also to look into the association between psycho- social factors, morbidity and disability among residents of old age home.

Materials and Methods: Study was conducted at an old age home where two hundred and forty five residents were screened using short psychiatric evaluation schedule (SPES).Hundred and ten residents scoring ≥ 4 on SPES suggestive of psychopathology were further evaluated. Information regarding socio-demography, past & present medical and psychiatric illness history was collected. Each individual's detailed physical examination findings were recorded and Mini-International Neuropsychiatric Interview (MINI), social support scale, disability scale, HMSE were administered.

Results: The average prevalence of psychiatric disorders was found to be 7.4±3.9 with variable frequency; 58.2% (F=64) depressive disorders, 30 %(F=33) dysthymia, 8.2 %(F=9) Psychotic disorders, 2.7% (F=3) GAD, 0.9 %(F=1) dysthymia and GAD. Among physical disorders prevalence of cardiovascular problems were found in 57.6%, ophthalmological problems in 38.7% and respiratory problems in 28.8%.HMSE scores show 86.7% of residents with variable degrees of cognitive difficulties. Past physical illness was found in 24.5% of residents. 22.6% of

residents had family history of psychiatric illness. Forty percent of residents had moderate to good social support. 37.3% of residents had moderate disability. Frequency of psychiatric disorders showed high degree of correlation (r^2 = 0.414) with gender, past history of psychiatric illness and HMSE scores (P value ≤ 0.05). Similarly, duration of stay at the old age home (in years) and monthly income before entry into the residential care was highly correlated (r^2=0.481; p value < 0.05) with disability.

Conclusion: High prevalence rates of psychiatric and physical morbidity and their high degree of correlation with various physical and psychosocial factors warrant the urgent need to address psychological, psychosocial and physical needs of the elderly staying at old age homes.

Key words: Prevalence, Psychiatric illness, Physical illness, Correlation

INTRODUCTION

Ageing of population is an obvious consequence of the process of demographic transition. As a result of decline in mortality due to better health care, we have seen relatively faster growth of elderly compared to general population. In 1901 size of the elderly population was 12 million, in absolute terms. It increased to 71 million in 2001 and is likely to reach 113 million in 2016. [1-2] The proportionate increase is much higher in the rural areas than in the urban. It is expected that elderly women will outnumber elderly men in the future. [3]

Like many traditional societies, India too is facing a unique situation in providing care for elderly. Existing support systems like joint families and community care are fast disappearing. Elderly are ill equipped to cope with their lives in the face of infirmity and disability. Therefore the onus of caring for the elderly is much more on the state than the family and this necessitates the creation of adequate institutional support systems. As per statistics, there are total of 371 old age homes all over the country available for the sick of which 118 homes are exclusively for women. [4] Elderly are vulnerable to physical and psychological problems and addressing these problems are an important aspect of any old age home. The Epidemiologic Catchment Area Study has recognized depression, cognitive disorders, phobias, alcohol use disorders and suicide as the commonest psychiatric disorders in elderly. [5]

Along with physical and psychological problems psychosocial factors like loss of social roles, financial constraints, death of spouse or friends, etc predispose older people to mental disorders.

The present study was undertaken with an objective of understanding the frequency of psychiatric and physical morbidity and also to look into the relationship between psycho- social factors, morbidity and disability among the elderly staying in an old age home.

Description of old age home

The Abhaya Ashraya is situated near Mangalore University about fifteen kilometers from Mangalore city, Karnataka. It was previously run by an NGO and recently taken over by The Social Welfare Department, Government of Karnataka. It provides care for senior citizens and destitutes.

It currently provides stay for two hundred and eighty five residents with separate sections for males and females. Majority of residents were brought by family members and a small percentage by voluntary organizations. The people brought by these organizations are the ones who are abandoned by family members or found on streets. The cost of maintenance of these

people is borne by the old age home itself along with financial contributions from many organizations.

Medical services are provided by a medical college in Mangalore with a physician visiting the home once a week and a psychiatrist once a month. There is a separate room for medical checkups and visiting doctors. Separate medical records and medication kits are maintained for each resident. A permanent nurse regularly checks vitals and dispenses medications. Any emergencies are shifted to the medical college hospital where separate geriatric wards are provided and treatment given at concessional rates.

Routine activities of the residents involved prayers, reading news papers, watching TV, chatting, helping in making beds, cooking, serving and cleaning. Residents are taken to temples on a regular basis. They are allowed to visit their relatives for a day or two with permission and similarly visits from family are also encouraged.

MATERIALS AND METHODS

Ethics: Prior consent was taken from the authorities before interviewing the inmates and individual consent from the inmates was also taken.

The study was conducted between October 2005 and Jan 2007

Inclusion criteria

The study included residents aged 60 and above, residing continuously for at least one year at the old age home and able to speak either Kannada or English

Tools

- Socio-economic status scale [6]
- Screening instrument: Short Psychiatric Evaluation Schedule (SPES) [7]
- Mini International Neuropsychiatric Interview (M.I.N.I). [8]
- Hindi Mental Status examination(HMSE) [9]
- Social support scale [Appendix I]
- Disability rating scale [Appendix II]

Procedure

The residents were approached individually for consent with prior permission from authorities. Two hundred and forty five residents were screened using short psychiatric evaluation scale (SPES).The hundred and ten residents who scored $\geq$ 4 suggestive of some psychopathology were evaluated further.

The socio-demographic details, past and present history of medical and psychiatric illness of 110 residents were collected. Additional information was obtained from the supervisor and medical records with prior consent from individuals.

Detailed physical examination including vitals and systemic examination was done and information recorded. Each resident was administered MINI tool for diagnostic evaluation for presence of psychiatric illness. The social support among residents was enquired by administering social support scale. Cognitive functions were assessed by administering HMSE. In order to see the impact of physical and psychiatric morbidity on functioning of the individual, Disability Rating Scale was administered.

Statistics

Data analysis was done using statistical package for social sciences (SPSS) version 10

Statistical methods used: Descriptive analysis, Pearson's correlation and multiple regression analysis.

RESULTS

Table-I: SOCIODEMOGRAPHIC DETAILS

Variables	Mean	SD		Frequency	Percentage
Age (years)	68.4818	7.0278	60 -70years	56	69.1
			71-80 years	26	23.5
			81-90 years	8	7.2
Duration of stay in old age home in years	5.3136	2.97			
Education in years	2.718	1.382			
Socioeconomic status			LSES	85	77.3
			MSES	25	22.7
Gender			Male	55	50
			Female	55	50
Marital status			Unknown	4	3.6
			Married	56	50.9
			Separated	7	6.4
			Divorced	7	6.4
			Widowed	18	16.4
			never married and not co- habiting	18	16.4

CHART-I

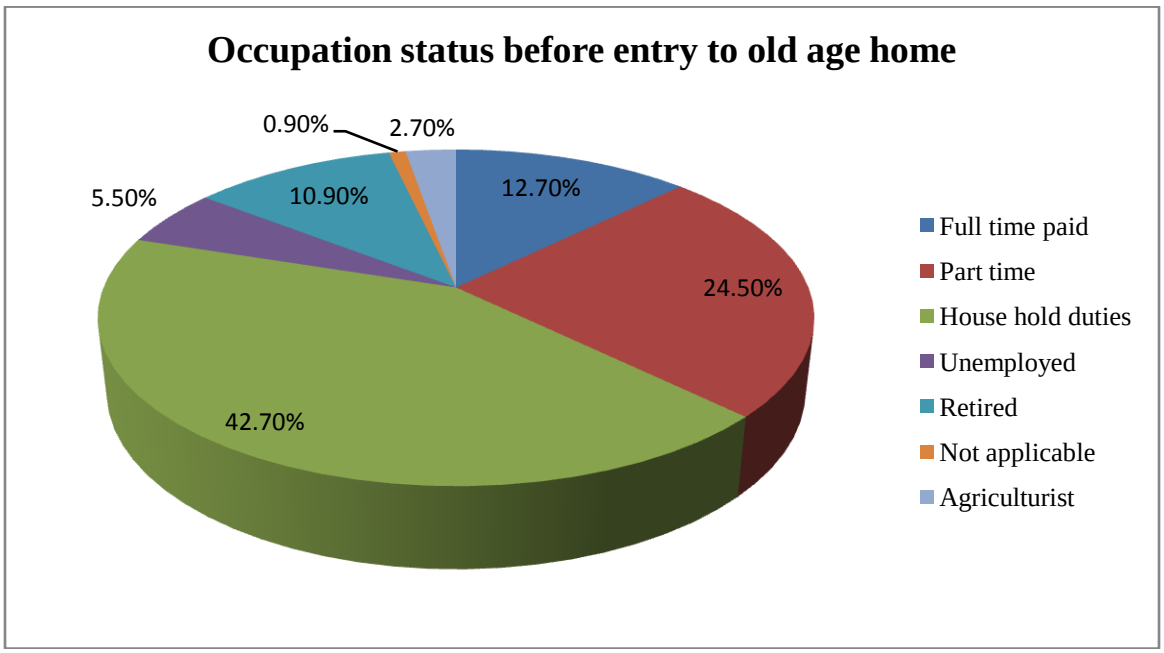

CHART-II

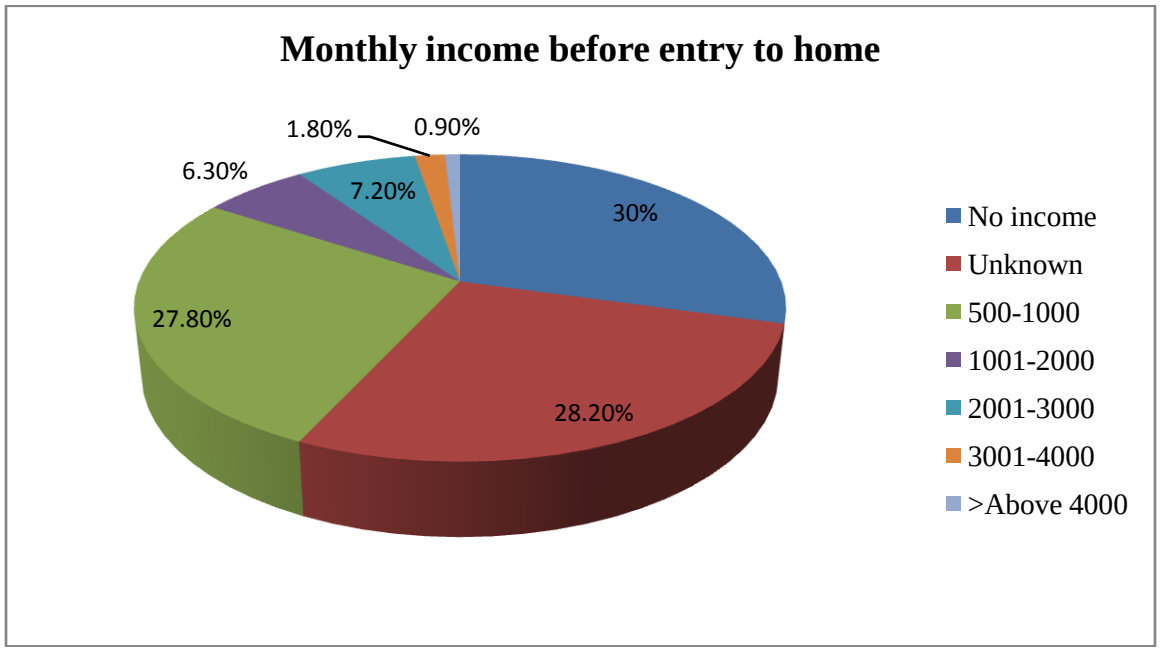

CHART-III

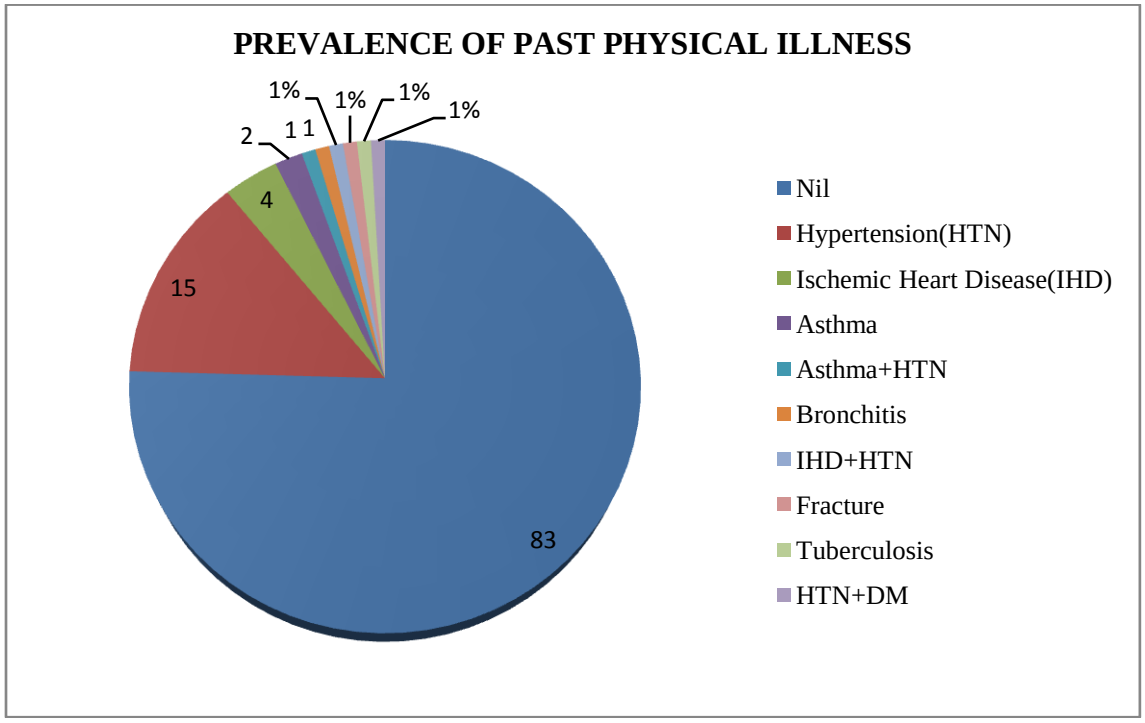

CHART-IV

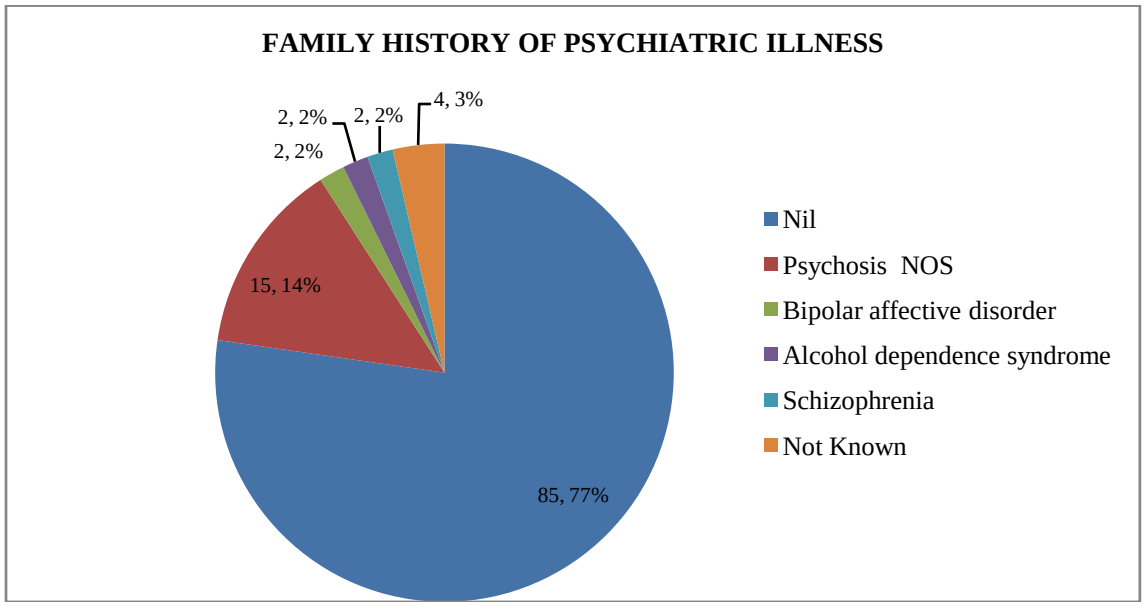

TABLE-II
Physical variables of the population N=110

Physical variables		Mean	SD	Range	Frequency	Percentage
Wt		53.35	7.1			
Height (Cm)		157.01	7.1			
BMI		21.6	2.4			
BP (mmHg)	Systolic	136.97	13.89			
				140-148	34	30.9
				150-158	12	10.9
				160 -168	6	5.5
				170-178	1	0.9
				180-188	1	0.9
				190-200	1	0.9
	Diastolic	85.07	9.93	61-70	15	13.64
				71-80	37	33.6
				81-90	39	35.4
				91-100	17	15.4
				101-110	10	9.1
				111-120	1	0.9
HR (beats /min)		79.9	6.18	61-70	12	10.9
				71-80	47	42.7
				81-90	51	46.4

CHART-V

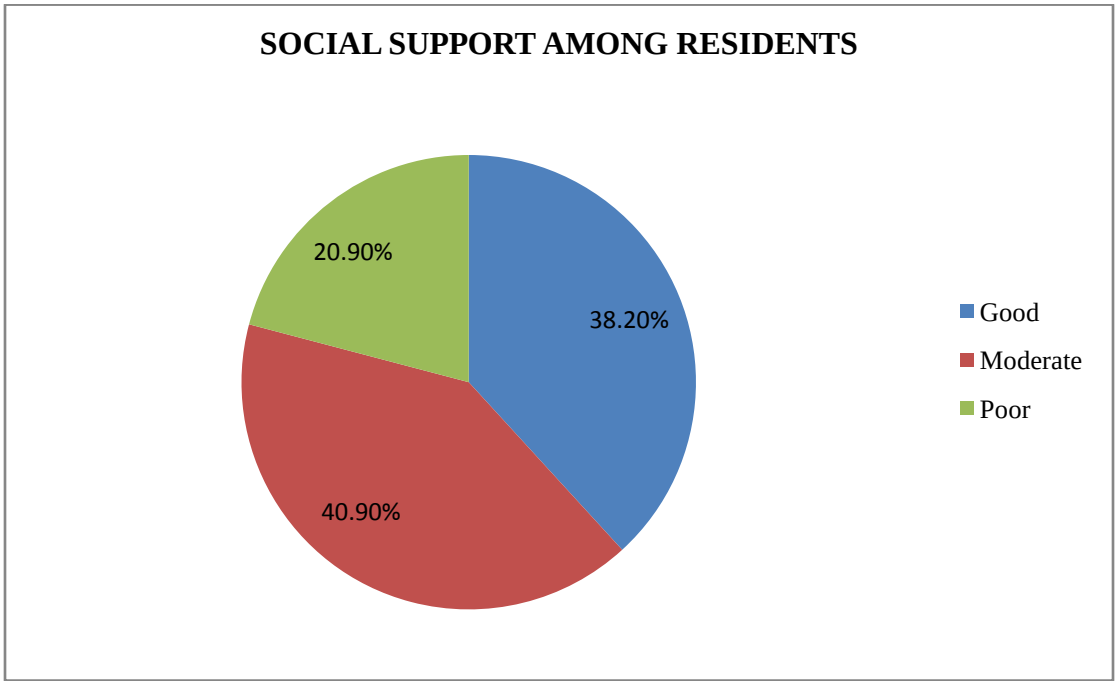

Table –III: Prevalence of Physical disorders and its Subtypes N=110

Variables		Mean	SD	
Average Number of Physical illnesses		5.95	5.2	
Physical disorders	Frequency	Percentage	Subtype	Frequency	Percentage
Cardiovascular	64	57.6	Hypertension	57	51.8
			IHD	5	4.5
			HTN+IHD	2	1.8
Cerebrovascular	6	5.4	Transient Ischemic Attack	1	0.9
			Stroke	3	2.7
			Parkinson's disease	1	0.9
			Head Injury	1	0.9
Ophthalmological	43	38.7	Cataract	39	35.1
			Unilateral Blindness	2	1.8
			Prosthetic eye	2	1.8
Audiological	10	9	Hearing impairment	9	8.2
			Hearing aid	1	0.9
Respiratory	32	28.8	Tuberculosis	4	3.6
			Bronchial Asthma	17	15.5
			Chronic Bronchitis	11	10.5

Musculoskeletal	21	18.9	Arthritis	14	12.7
			Fracture	2	1.8
			Arthritis and Fractures	1	0.9
			Backache	3	2.7
			Scoliosis	1	0.9
Dermatological	2	1.8	Scars	1	0.9
			Psoriasis	1	0.9
Endocrinological	2	1.8	Diabetes	2	1.8
Gastrointestinal	4	3.6	Gastritis	4	3.6

CHART-VI

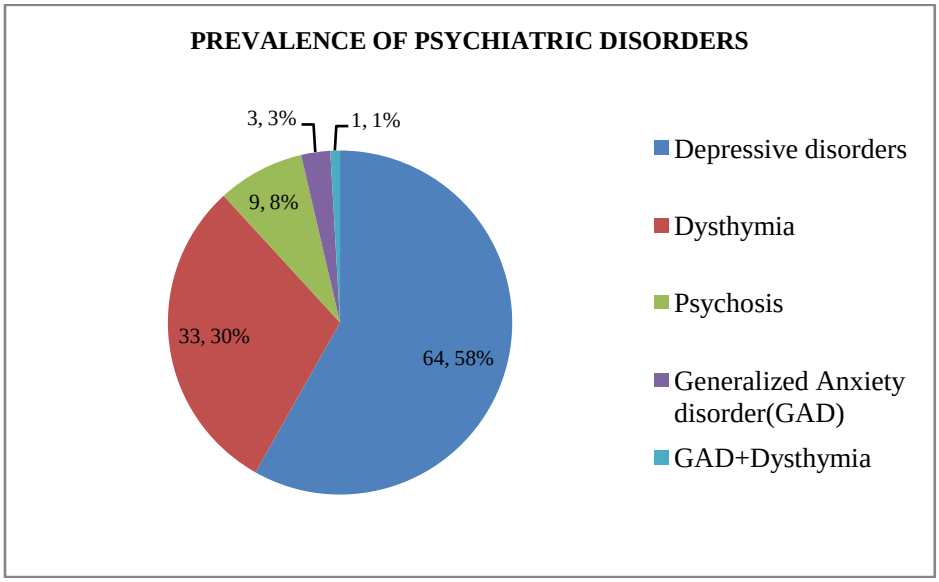

CHART-VII

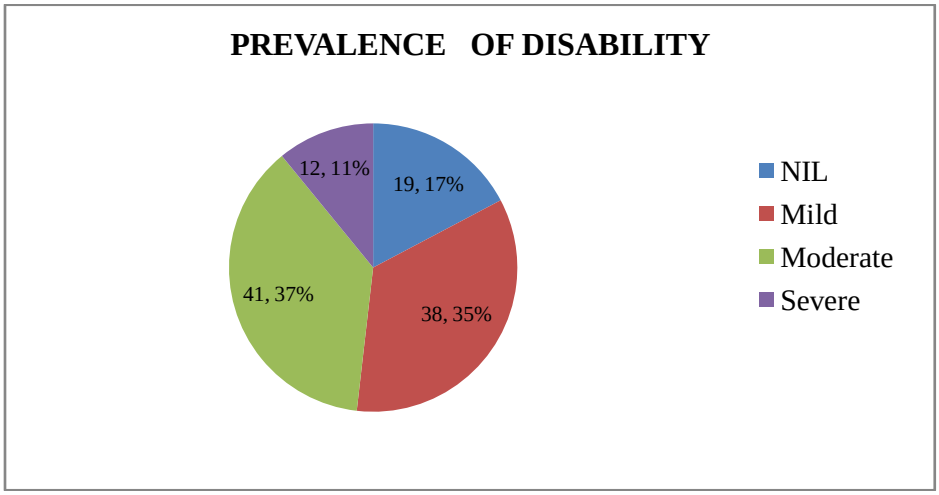

Table – IV

Significant Pearson's correlation between psychosocial, physical and frequency of psychiatric disorders			
Dependent variable	Independent Variables	Pearson's correlation	Significance P value
Psychiatric disorders	GENDER	0.269(**)	0.005
	PHYSDIS	-0.189(*)	0.048
	PASTPSY	0.405(**)	0.000
	HMSE	- 0.127	0.185
	Heart rate	0.208(*)	0.029
** Correlation is significant at the 0.01 level (2-tailed)			
* Correlation is significant at the 0.05 level (2-tailed).			

Table -V

Degree of correlation between different significant variables and psychiatric disorders N=110

VARIABLES	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	Std Error	Beta	t	Sig (P Value)
Constant)	-6.072	7.795		-.779	.438
GENDER	2.252	.926	.292	2.431	.017
PHYSDIS	-2.741E-03	.101	-.004	-.027	.978
PASTPSY	2.415	.793	.310	3.047	.003
HMSE scores	-.167	.084	-.199	-1.978	.051
Heart rate	2.946E-02	.064	.047	.461	.646

R square = 0.414

Table-VI

Significant Pearson's correlation between psychosocial, physical, psychiatric disorders and disability			
Dependent Variable	Independent Variables	Pearson's correlation	Significant P value
Disability	Age	0.312 (**)	.001
	Duration of stay at residential care in years	0.272(**)	.004
	Monthly income before coming to residential care	-0.314(**)	.001
	Physical illnesses	0.350(**)	.000
	Respiratory illness	0.212(*)	.026
	Hearing Impairment	0.205(*)	.032
	Past Physical illnesses	0.231(*)	.015
** Correlation is significant at the 0.01 level (2-tailed)			
* Correlation is significant at the 0.05 level (2-tailed).			

Table-VII

Degree of correlation between different variables and disability N=110

VARIABLES	Unstandardized Coefficients		Standardized Coefficients		
	B	Std Error	Beta	t	Sig (P Value)
CONSTANT)	-1.177	1.728		-0.681	0.498
AGE	2.052E-02	0.013	0.160	1.623	0.109
DSTAYYEA	7.720E-02	0.029	0.255	2.661	0.009
MONTHLYI	-3.188E-04	0.000	-0.324	-2.426	0.018
PHYSDIS	2.841E-02	0.022	0.162	1.278	0.205
RESPIRAT	5.574E-02	0.092	0.066	0.606	0.546
AUDIO	.125	0.325	0.040	0.385	0.701
PASTPHYS	6.497E-02	0.046	0.144	1.425	0.158

R square = 0.481

DISCUSSION

Two hundred and forty five residents staying in the Abhaya ashraya, an old age home were examined with a primary objective of looking into frequency of psychiatric morbidity. On screening, it was found that 110 (44.8%) residents had an average score of 5.9±1.4 on SPES suggestive of some psychopathology. The average age of the resident population was found to be 68.5±7.04 years which meets the WHO defined criteria for geriatric population. [10]

The sex distribution pattern of geriatric population found in The National Health Survey data shows a male preponderance, the same has been reflected in epidemiological studies by Das et al, Rahul et al and Reddy et al. [11- 13] The impact of this variation has been reflected on prevalence rates of psychiatric illness in these studies. This bias has been reduced in the present study, as there is an equitable distribution of the sexes with limitations that, the study population is composed of institution based and screened residents.

This residential care being situated in the rural area caters its services to lower socioeconomic population. This has been reflected in the findings that 77.3% of the study population belonged to lower socioeconomic status. The average number of schooling years was found to be 2.7±1.4. These literacy years and rate are much lower than the studies by Reddy, purty et al, serap et al which has reported 27.8 % to 78.7 % of population being illiterates or had less than 10 years of schooling. [13-15]

Old age is marked by many life events especially loss of spouse, long term friends and interpersonal problems with family members. When we examined these factors in the present population we found that 80.1 % inmates were married out of which 16.4 % widowed, 6.4 % divorced and equal numbers were separated. Feeling of loneliness and constrained relationship with the children was the reason to seek voluntary admission and was more among the widow population. Some of them with poor financial status of their children were forced to stay in the old age home. More number of the male residents expressed a desire to see their children, grand children. Das et al and Reddy reported 50 % of widowed population seeking old age home care in their studies. [11, 13]

Ageing process restricts the occupational functioning and also the role as

an earning member of the family. Many a times social and family support is dependent on financial status of the individual; more so in an era where families are becoming nuclear. On examining these factors in the present population, we found that 40 to 50 % elderly were employed for house hold duties and 7.7 % had their income from gainful occupations prior to joining the old age home. Most of the residents had moderate or good social support. One can conclude that adjustment problems and emotional issues rather than financial or social support were the reasons for seeking residential care.

Process of ageing predisposes oneself to physical illnesses, causing direct impact on functioning of the individual. Dysfunction is evident more so when the individual has had physical illness in the past. Ormel et al in his study lists six most prevalent chronic medical conditions [22.8%: HTN, 17.4%: heart problems, 14%; arthritis, 11%; lung problems, 7.5%; vision impairment,7%; DM] among the individuals that accounted to present dysfunction. [16] Reddy mentions in his study that 10 percent of inmates had past physical illness. [13] On examining the residents for presence of past physical illnesses, 24.5% of them had physical illnesses in the past with variable frequencies [13.6%: HTN, 0.9 %: HTN+DM, 3.6 %: IHD, 0.9%: HTN+IHD, 0.9%: PTB, 0.9: Fracture, 1.8%: B asthma, 0.9% HTN+B asthma, 0.9% Bronchitis]. The average number of past physical illnesses per resident in the population is 5.9 ±5.2. This distribution pattern is higher than in studies by Purty et al and Eun Kyung et al which have reported 2.77 and 1.62 ± 1.35 illnesses per person respectively. [14, 17]

On examining family members of residents we found that 22.6 % of them had psychiatric illness with variable frequencies (13.6%; Psychoses NOS, 1.8 %; bipolar, 1.8% ADS; 1.8% schizophrenia).

The average prevalence of psychiatric illness among residents is 7.4±3.9 disorders per person with variable percentage of distribution (58.2% depressive disorders; 30% dysthymia; 8.2% Psychoses, 2.7%. GAD; 0.9 % dysthymia and GAD).These average prevalence rates were also found in general population studies by Venkoba Rao (8.9%) and Dube (2.83%). [18-19]

Late life depression presents in different patterns. It may present has weight loss, lack of response to pleasurable stimuli or objective changes in mood but are not reported spontaneously. Such sub-syndromal presentations are reflected in the wide range of prevalence rates of late onset depression. Review of large scale studies shows prevalence of late life depression in the range of 2 to 40%, either in the community dwelling, hospital based or old age home population. [17, 19-22]

By analyzing various factors we can hypothesize that 58.2% of prevalence of depression might be because of psychosocial stressors and long duration of stay in the old age home.

The prevalence rate of psychoses among residents is 8.2%. Large scale epidemiological studies by Venkoba Rao, Sethi et al, Varghese et al, Thakore et al and Seamus V Mcnulty et al have reported prevalence rates in the range of 3 to 12%. [18, 23-25] The reason for psychoses in elderly is multifactorial. It may be due to hostile environment, fraud and distrust by close associates or sensory deprivation. In certain cases it may be a manifestation of cortical degeneration and cerebrovascular insults on brain. European literature refers such psychoses as 'late life paraphrenia'. It manifests as increased cautiousness and distrust of family and friends to overt paranoid delusions. The role of heredity in causation of late onset psychoses is not well studied, but statistically, we can conclude

that prevalence of psychoses might have been influenced by 13.6% of family members suffering from psychoses

Anxiety is a frequent symptom among elderly due to physical illnesses like thyroid and vascular disorders. Many a times it could be a primary symptom of anxiety disorder or as part of personality disorders. In addition, psychosocial factors also contribute to anxiety and depressive symptoms. It is observed that prevalence rates of depression and anxiety remain same as that in general population and people having transient ischemic attacks or after a stroke. With such multifactorial causation, large scale epidemiological studies by Venkoba Rao, Krishnamurthy, Sethi et al, Varghese et al, Blazer et al, Regier et al reported prevalence of anxiety disorders in the range of 1 to 50%, but in majority rates remained up to 10%. [18, 22-24, 27-28] In our study, the prevalence rate of anxiety disorders is in the same range as that of above studies. Out of which, GAD contributed 2.7% and 0.9 % coexisted with dysthymia. In a study like this it is difficult to tap sub syndromal anxiety symptoms and underlying pathological changes in brain, but presence of anxiety symptoms, warrants careful examination for presence of vascular pathology and co-morbid disorders.

On evaluation with HMSE, we found that 86.7% of the residents had difficulties in cognitive functions; 63.6 % had mild difficulties, 20.9% moderate and 1.8 % had severe difficulties. The reason for such cognitive difficulties could be a part of normal ageing or as a disease process like vascular or degenerative changes. However in specific populations like this, it has been found that chronic institutionalization predisposes to cognitive dysfunction. Studies by Kay et al, Henderson and Small et al have reported prevalence rates up to 50% in institutionalized people and increase in severity with advancing age. [29-31] By careful examination of the study population, one can hypothesize that lifelong poor cognitive performance due to low intelligence or lack of education, chronic institutionalization or advancing age are possible causes for large prevalence rates of cognitive dysfunction.

The consequences of the physical and psychological illnesses are on the functionality of the individual. The measurement of functionality is by percentage of disability in an individual. Joshi et al had observed that out of 87.5% of elderly who had disability, 66% were distressed physically, psychologically or both and with increase in the number of morbidities, the psychological well being deteriorated and disability increased. He also mentions physical illnesses like Asthma, COPD, hypertension, osteoarthritis, etc were significantly associated with disability .He found that 61% of subjects with visual impairment and 20% with hearing impairment had severe disability and poor health perception. History of fall and fall frequency was seen to be significantly associated with disability and psychological distress. [32] Shah et al, reports prevalence of visual and hearing impairment in causing disability. [33] Verbrugge et al, Ford et al, Guccione et al and Boult et al reported in their studies that stroke, respiratory diseases, incontinence, and arthritis were found to cause disability. [34-37]

On examining the residential population with disability rating scale, we found that 37.3% of residents needed others' help to carry out their occupation and day-to-day activities suggestive of moderate disability, 34.5% were able to carry out occupation and routine activities but not as efficient as earlier suggestive of mild disability and 10.9% of residents were totally unable to carry out occupation or day to day activities suggestive of severe disability.

Relationship between psychosocial, physical and frequency of psychiatric disorders

On correlating we found that there is a positive relationship between frequency of psychiatric disorders and gender, past history of psychiatric disorders at 1% level of significance. Heart rate showed positive relationship at 5% level of significance, suggesting risk factors for psychiatric disorders.

Physical disorders show negative correlation with psychiatric disorders at 1% level of significance. On multiple regression analysis, we found that gender, past history of psychiatric illness and HMSE scores were able to explain 41.4% of this effect on the frequency of psychiatric disorders suggested by high correlation values at $P \leq 0.05$ and $r^2 = 0.414$ though HMSE scores did not show significant association.

Relationship between psychosocial, physical, psychiatric disorders and disability

On correlating we found that there is a positive relationship between disability and age, duration of stay in years, physical illness at 1% level of significance and with past physical illness at 5% level of significance. Among physical illnesses respiratory illness and hearing impairment show positive correlation with disability at 5% level of significance, suggesting risk factors for disability. Monthly income before coming to residential care shows negative correlation with disability at 1% level of significance, suggesting a factor providing immunity to disability.

To establish the degree of correlation of these factors on disability we did multiple regression analysis. We found that duration of stay in years and monthly income before entry into the residential care was highly correlated (since $p < 0.05$) with disability(R square = 0.481).These two parameters were able to explain 48.1% of effect on disability.

CONCLUSION

On examining various factors in the above population we found that adjustment problems and emotional issues in family prompted individuals to seek old age home care. On an average, six physical illnesses were prevalent per person. Nearly half the proportion of population had prevalence of psychiatric morbidity with depression and cognitive deficits being commonest. Lifelong poor cognitive performance, lack of education and chronic institutionalization were contributing factors for high prevalence of cognitive deficits. The family history has contributed to the prevalence of psychosis. Though prevalence of anxiety disorders remained low, less than 1% also coexisted with depression. The severity of disability was in the range of mild to moderate.

Duration of stay in years and monthly income showed high degree of association with disability while gender, past history of psychiatric illness and cognitive dysfunction showed high degree of association with frequency of psychiatric illness.

The study was limited to a single old age home and lacked control group to validate the findings. There is scope to study similar aspects in different old age homes. The above findings warrant emergency interventions at different levels of policy making in order to create more state sponsored old age homes and the need for addressing psychological, psychosocial and physical needs of the elderly.

REFERENCES

1. Registrar General and Census Commissioner, India, Census of India 1991.
2. Registrar General and Census Commissioner, India, Census of India2001. Government of India, Ministry of Home affairs. Available at http://censusindia.net
3. The sex and age distribution of population. United Nations (UN) 1990
4. Directory of old age homes in India 2002. Help Age India. Regional office Delhi India. Available at http://www.helpageindia.org
5. National Policy on Older persons. Ministry of social Justice and empowerment shasthri bhavan NewDelhi.1996; 4-6. Available at http://socialjustice.nic.in/hindi/pdf/npopcomplete.pdf.Accessed on Aug 2008.
6. Bhardwaj RL. Manual for socio-economic status scale. Agra: National psychological corporation 2001.
7. Pfeiffer E. A Short psychiatric evaluation scale for assessment of psychiatric morbidity in elderly patients. J American Geriatric Soc. 1975; 23:433-441.
8. Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E T et al. The Mini-International Neuropsychiatric Interview (MINI): The development and validation of a structured diagnostic psychiatric Interview for DSM IV and ICD 10.J Clin Psychiatry 1998; 59 Suppl 20:22-23.
9. Ganguli M, Ratcliff G, Chandra V, Sharma S, Gilby JE, Pandav R et al. A Hindi Version of the MMSE: the development of a cognitive screening instrument for a largely illiterate rural elderly population in India. International Journal of Psychiatry.1995; 10:367-377.
10. A consensus statement on concepts, terminology and contribution to improve living conditions of elderly people with mental disorders and their families. Division of Mental Health and Prevention of substance abuse. World Health Organization Geneva, 1996. Available at http://whqlibdoc.who.int/hq/1996/WHO_MNH_MND_96.7.pdf
11. Das N P, Shah U. A study of old age homes in the care of the elderly in Gujarat. A project report prepared as a part of Research at the population research Centre, M S University of Baroda. 2004 Dec. Available at http://prcs-mohfw.nic.in/writereaddata/research/416.html.
12. Prakash R, et al. A study of morbidity pattern among geriatric population in an urban area of Udaipur Rajasthan. Indian journal of community Medicine. Jan-Mar 2004. 29 Suppl 1:35-35
13. P K Reddy. Psychiatric morbidity in people aged sixty and above residing in the homes for the aged in Bangalore. MD thesis done at National Institute of Mental Health and Neurosciences, Bangalore, submitted to Bangalore University 1987.Accessed from NIMHANS Library in 2007.
14. Purty A J, Bazroy J, Kar M, Vasudevan K, Veliath A, Panda P. Morbidity Pattern among the Elderly Population in the Rural Area of Tamil Nadu. Turk J Med Sci. 2006; 36: 45-50.
15. Serap Inal, Feryal Subasi, Serap M Ay ,Osman Hayran. The links

between health-related behaviors and life satisfaction in elderly individuals who prefer institutional living.BMC Health Services Research. 2007; 7:30.
16. Ormel J, Kempen GIJM, Penninex BWJH, Brilman EI, Beekman ATF and Van Sonderen E Chronic medical conditions and mental health in older people: disability and psychosocial resources mediate specific mental health effects. Psychological medicine. 1997; 27:1065-1077.
17. Eun-Kyung, Changsu Han, Sang mee Ahn Jo, Min Kyu Park, sungsoo Kim, Eunkyung Kim et al. Morbidity and related factors among elderly people in south Korea; results from Ansan Geriatric (AGE) cohort study.BMC Public Health. 2007; 7:10.
18. Venkoba Rao A, Madhavan T. Geropsychiatric Morbidity survey in a Semi urban area near Madurai. Indian J Psychiatry.1982; 24: 258-267.
19. Dube K C .A study of prevalence and biosocial variables in mental illness in a rural and urban community in Uttar Pradesh, India. Acta psychiatr Scand. 1970; 46:327-359.
20. Blazer D, Hughes DC, George LK: The epidemiology of depression in an elderly community population. Gerontologist. 1987; 27:281-287.
21. Ramachandran V, Menon SM, Ramamurti P. Psychiatric disorders in subjects aged over fifty. Indian J Psychiatry. 1979; 22:193–8.
22. Krishnamurthy C.N. A study of the prevalence and pattern of mental disorders in people aged 50 years and above in a rural community and their treatment needs. M.D. Thesis submitted to Bangalore University 1985.Accessed from NIMHANS library in 2007.
23. Sethi BB, Gupta SC, Mahendran RK, Kumari P. Mental Health and Urban Life: A study of 850 families.Br J Psychiat. 1974;144:293-296
24. Verghese A, Ahmed Beig, Senseman LA, Sundar Rao P.S.S, Benjamin V. A social and psychiatric study of representative group of families in Vellore Town. Ind. J. Med. Res 1973.61:608-620.
25. Thackore VR, Gupta SC, Suraiya M. Psychiatric morbidity in North Indian community.Brit.J.Psychiat.126:364-391.
26. Seamus V. McNulty. Care needs of elderly people with schizophrenia. Assessment of an epidemiologically defined cohort in Scotland. The British Journal of Psychiatry. 2003. 182:241-247.
27. Blazer DG, George LK, Hughes DC. The epidemiology of anxiety disorders: an age comparison, in anxiety disorders in the elderly. Edited by Salzman C, Lebowitz B. New York, Springer, 1991. Pp17-30.
28. Regier DA, Burke JD, Christie K A:Co-morbidity of affective and anxiety disorders in population based studies: The NIMH epidemiological catchment area (ECA) programme, in Maser JD, Cloninger CR (eds.):Co-Morbidity of anxiety and depressive disorders, American Psychiatric Press, Washington. DC.1990.
29. Kay DWK, Bearnish P, Roth M. Old age mental disorders in New Castle-upon Tyne. Part I British Journal of Psychiatry. 1964:10:146-58.
30. Henderson JG, Strachan RW. Sub cortical dementia. Br Med J (Clin

Res Ed). 19Apr 1986. 292(6527): 1035–1036.
31. Small G W, Rabins PV, Barry PP, et al. Diagnosis and treatment of Alzheimer's disease and related disorders: Consensus statement of the American Association for Geriatric Psychiatry, The Alzheimer's association, and American Geriatric Society. JAMA 1997. 278:1363-1371.
32. Joshi K, Rajesh Kumar,Ajith Avasthi. Morbidity Profile and its relationship with disability and psychological distress among elderly people in North India. International Journal of Epidemiology. 2003;32:978-987
33. Shah B, Prabhakar AK. Chronic morbidity profile among elderly people. J Med Res. 1997; 106:265.
34. Verbrugge LM, Lepkowski JM, Imanaka Y. Co morbidity and its impact on disability**.** Milbank Q 1989; 67:450–84.
35. Ford AB, Folmar SJ, Salmon RB, Medalie JH, Roy AW, Galazka SS. Health and function in the old and very old**.** J Am Geriatr Soc. 1988. 36:187–97.
36. Guccione AA, Felson DT, Anderson JJ et al. The effects of specific medical conditions on the functional limitations of elders in the Framingham study. Am J Public Health. 1994; 84:351–58.
37. Boult C, Kane RL, Louis TA, Boult L, McCaffrey D. Chronic conditions that lead to functional limitation in the elderly people. J Gerontol Med Sci. 1994 49:28–36.

Appendix-I

Social Support Scale

The social support scale was devised by Aneshensel et al in 1982 to measure the social support of patients. The scale contain the questions pertaining to the number of close relatives and close friends they had, with 'close' described as people you could feel at ease with, could talk about private matters and call for help.

The scoring for social support was done as follows

Absent- Having no close friend, no close relative or spouse
Poor- Having one or more than one close friend
Moderate- Having one close relative and /or one or more than one close friend
Good- Healthy spouse with close relative and/or close friend

Appendix-II

Disability Rating Scale

Disability Rating Scale designed by Venkoba Rao (1984), includes severity on various parameters as following:

Nil- No problem in carrying out one's occupation or routine work.
Mild- Subject is continuing to carry out his occupation and routine work but not as efficiently as earlier.
Moderate- Subject needs the help of others to carry out his occupation and day-to-day activities.
Severe- Subject is totally unable to carry out his occupation or day today activities

****