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A Study on Mental health status and factors influencing mental health status of geriatric population in selected rural areas of Kamrup district, Assam.

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Abstract
Background: *The most common mental and neurological disorders of elderly 60 years and above are dementia and depression, which affect approximately 5% and 7% of the world's older population, respectively. Mental health problems are under-identified by health care professionals and older people themselves, and the stigma surrounding these conditions makes people reluctant to seek help.*
Aim: *The aim of the study is to assess mental health status and their influencing factors among geriatric population in selected rural areas.*
Objectives: *1.To assess the mental health status of geriatric population.*
2.To identify the factors influencing the mental health status of the geriatric population.
Material and Methods:*A community based cross-sectional survey was conducted by using multi stage random sampling technique to select 350 number of elderly persons (60 years and above) from two Community Development Blocks of Kamrup district, Assam. The tool used for data collection was structured interview schedule that comprises of collecting socio-demographic profiles of those aged 60 years and above by using Pareek and Trivedi's socio-economic (Rural) scale and addition of 10 items, the assessment of mental health status of those aged 60 years and above by assessing their cognitive levelsthrough Mini Mental Status Examination (MMSE) and assessing depressed mood by Geriatric Depression scale short form. Data gathered was analysed by using descriptive and inferential statistics.*
Results:*The findings of the study revealed that out of the total study subjects, females (61.28%) out numbered males(48.63%). Among females, majority were widows, illiterate and unemployed. Highest number of respondents (62.57%) were in socio-economic class-IV. Majority of the elderly persons were suffering from cognitive impairment and depression. Through logistic regression it can be concluded that socio-demographic variables had a strong bearing on generating cognitive impairment and depression.*
Conclusions:*This study clearly demonstrates an alarmingly higher prevalence of mental health disorders in elderly people. So, there is an urgent need for improving the overall situation of the rural elderly people in the setting of detrimental socio-economic condition.*
Key Word: *Elderly, MMSE, Cognition, Geriatric Depression scale. BPL, Socio-economic status.*

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I. Introduction

The world's population is ageing rapidly. Between 2015 and 2050, the proportion of the world's older adults is estimated to almost double from about 12% to 22%. In absolute terms, this is an expected increase from 900 million to 2 billion people over the age of 60[1]. Older people face special physical and mental health challenges which need to be recognized.The most common mental and neurological disorders in this age group are dementia and depression, which affect approximately 5% and 7% of the world's older population, respectively.

Dementia is a syndrome, usually of a chronic or progressive nature, in which there is deterioration in memory, thinking, behaviour and the ability to perform everyday activities. It mainly affects older people, although it is not a normal part of ageing.It is estimated that 50 million people worldwide are living with dementia with nearly 60% living in low- and middle-income countries. The total number of people with dementia is projected to increase to 82 million in 2030 and 152 million in 2050.

Depression can cause great suffering and leads to impaired functioning in daily life. Unipolar depression occurs in 7% of the general older population and it accounts for 5.7% of YLDs among those over 60 years old. Depression was found to be a common diagnosis in the geriatric population[2]. The prevalence of major depression was reported to be around 60/1000 in the general population in an Indian study[3]. The prevalence of

neurotic depression in rural elderly was found to be 13.5%. Depression is both underdiagnosed and undertreated in primary care settings. Symptoms are often overlooked and untreated because they co-occur with other problems encountered by older adults. people with depressive symptoms have poorer functioning compared to those with chronic medical conditions such as lung disease, hypertension or diabetes. Depression also increases the perception of poor health, the utilization of health care services and costs.

Data from a recent epidemiological study indicated an average of 20.5% mental health morbidity in older adults. Accordingly, it was found that, at present, 17 – 13 million older adults(total population 83.58 millions) are suffering from mental health problems in India[4]. Mental health problems are under-identified by health-care professionals and older people themselves, and the stigma surrounding these conditions makes people reluctant to seek help. With this background, the researcher intends to conduct a study on mental health status and factors influencing mental health status of geriatric population in a representative sample of a rural area of Kamrup district, Assam.

Research problem:

"A Study on Mental health status and factors influencing mental health status of geriatric population in selected rural areas of Kamrup district, Assam."

Objectives:

1**.**To assess the mental health status of geriatric population.

2**.** To identify the factors influencing the mental health status of the geriatric population.

Operational Definition:

Elderly: Refers to persons male or female whose age is 60 years and above.

Geriatric population: Refers to the population whose age is 60 years and above.

Age: The age are considered from the voter list of 2020 and are matched with documents such as pension certificate, ration card etc.

Cognition: Cognitive function refers to individual's ability to absorb, store, integrate and utilize information. The cognitive function include orientation to person, time and place, memory i.e. Ability to remember three objects after one minute; concept utilization i.e. Ability to understand and explain concepts (abstract idea) etc; compute numbers, judgement, follow commands, etc. To assess cognitive level an adaptation of Folstein`s[5] Mini Mental Status Examination (MMSE) was used.

The Geriatric Depression Scale: Short form (Lenore and Greenberg 1986)[6] which was specifically designed to assess the depressed mood in older adults.

Literacy: The literacy status of the elderly population was recorded based on information given by them. Classification was made on the following:

- ***Literate-*** those who were able to read and write with understanding in any language. (2011 census)
- ***Illiterate-*** those who were not able to read and write.

Below Poverty Line (BPL) Families: In this study **BPL families** mean the families who are having the BPL card provided by the Govt.

Socio-economic status: Refers to the socio-economic status of the family determined by the scores on related items in modified form of Pareek's method of socio-economic classification[7].

Delimitation:

The study is delimited to:

1) Selected rural areas of undivided Kamrup district.

2) Elderly people who were in the age of 60 years and above.

Elderly people who were present at home during the period of data collection.

II. Materials And Methods

Research Approach:

The Research Approach adopted for the study was quantitative descriptive survey approach

Research Design:

The Research Design selected for the study was community based cross sectional descriptive survey design.

Study Setting:

The present study has been undertaken in the undivided Kamrup district of Assam. The undivided Kamrup district consists of two newly developed districts namely Kamrup and Kamrup (Metropolitan) district. There are 17 development blocks under undivided Kamrup district. Out of the 17 development blocks, Dimoria and Kamalpur development blocks were selected randomly for the study. Out of the 183 villages of Dimoria block,

18 villages were selected randomly for the study and the names of these villages are Maloibari, Pub Maloibari, Rewa, Teteliguri, Tetelia, Mitani, ChamataPathar, Kamarkuchi, Nazirakhat, Tepesia, Baruabari, Hahara, Kamalajari, Borkhat, SonapurPathar, Gumoria, Amarapathar and Hatkhola.Kamalpur Development block has 12 Gaon Panchayat comprising of 66 villages. Out of 66 villages, 7 villages were selected randomly for the study and the name of these villages are Borka, Dorakohora, Baruajani, Bamungaon, Piolikhata, Khorikat and Jalimura.

Study Population:
The study population comprise of all elderly people of 60 years and above covering 18 selected villages of Dimoria Development Block and 7 selected villages of Kamalpur Community Development block.

Sample:
Sample consisted of elderly population 60 years and above from 18 selected villages of Dimoria Community Development Block and 7 selected villages of Kamalpur Community Development Block.

Sample Size:
The total population of 60+ for the Dimoria and Kamalpur Development Block were estimated at 2307 and 1055. It was decided that 10 per cent of this estimated geriatric population would be representative of the population and was therefore taken up for this study which gave the sample size of 240 for Dimoria and 110 for Kamalpur Development block. Thus, the total sample size came to (240 +110) = 350.

Sampling technique:
A multistage random sampling technique was used in the present study.

Criteria for Sample selection:
Inclusion Criteria

1. Elderly persons who were in the age group of 60 years and above.
2. Elderly persons who reside in the selected villages.
3. Elderly people who were willing to participate in the study.
4. One elderly persons from each selected household.

Exclusion Criteria:

1. Elderly people whose names were not included in the voter list.
2. Elderly people who were bedridden and could not stand properly.
3. Elderly people who were semi-conscious or unconscious.

Description of the Tool:
Data collection instrument was structured interview schedule which has two sections. **Section- I** consists of socio-demographic profile of the aged 60 years and above by using Pareek and Trivedi's socio-economic (Rural) scale and addition of 10 items.
Section-II consists of the assessment of mental health status of the aged 60 years above. It consisted again of two parts. **Part A** included standardized instrument Mini Mental status Examination (MMSE) to assess cognitive level of elderly which included orientation to person, time and place; memory i.e. ability to remember three objects after one minute; concept utilization i.e. ability to understand and explain concepts (abstract idea), etc. which was adapted to suit the older persons of rural Assam and the high level of illiteracy (72% as per 2001 Census & NSSO survey 2007-08).[8] Items that required drawing of a geometrical figure, and writing or reading were omitted (leaving maximum score of 26 versus the maximum score of 30 of the original MMSE).out of the total score of 26, minimum score obtained was 9 and maximum was 24. To interpret the cognitive level, the scores were divided into 25^{th} and 75^{th} percentile. Thus the cognitive level was divided into following score range:-

Cognitive level	Score range
Poor cognition	< 17
Moderate cognition	17– 22
Normal cognition	>22

Part B included Geriatric Depression scale short form (Lenore & Greenberg 1986) which was specifically designed to assess the depressed mood in older adults. It consisted of 15 questions requiring 'yes' or 'no' answer. The sensibility and specificity of the GDS was 92% to 89%.The individual scoring of 0-4, 5-8, 9-11, 12-15 indicates normal, mild, moderate & severe depression respectively.

Variables of the study:
Socio-demographic variables - These were- age, sex, religion, caste, marital status, type and size of family, education, occupation, source of income, per capita income per month, presence of BPL card, financial dependency, type of house, social participation, Land, farm power & material possession.
Research variables- The research variables in this study were mental health status of the elderly and factors influencing their mental health status.

Procedure Methodology:
After obtaining formal permission from the Chairman of Ethical Committee, Guwahati and SDMO of Sonapur PHC,Kamalpur PHC and CDPO of Sonapur and Kamalpur ICDS block to get their cooperation in the procedure of data collection. ASHA, ASHA supervisors, Anganwadi workers, village leaders and active members of village MahilaMandals of respective villages were contacted before starting the actual process of data collection in order to obtain their participation. A comprehensive team was formed. Team members included were: ANM, ASHA/ASHA supervisor and AWW. ASHAs specially led the team to reach the elderly.

Statistical Analysis:
Data were coded, organized in a master sheet and Statistical Package for the Social Sciences (SPSS) was used for data analysis. Descriptive and inferential statistics like frequency table, percentage, mean, standard deviation, Tukey –Kramer multiple comparison test and logistic regression analysis would be used to find out the variables which have the strongest impact on the mental health was useful for analysing the data.

III. Result

Section-I : Socio-demographic characteristics of sample

Majority of the respondents is of the age group 60-69, both in case of males and females. In case of females however percentage is much higher (61.28%) than males (48.63%) in this age group.More than 95 percent of the respondents were Hindu. The caste representation of respondents were 12.86 percent SC, 17.14 percent ST, 29.43 percent OBC and 39.71 percent General caste. 94.57 percent of the respondents are married and only 5.14 percent are unmarried and 34.57 percent of respondents are widow.Respondents are distributed between joint and nuclear families almost in equal proportion. Nuclear family is prominent among the males (53.42%) in almost equal proportion as that of the joint families to (53.92%) females.42.29 percent respondents families are having more than five members.Majority of the respondents is literate and a considerable proportion of them are also illiterate (38.86%). Among the females majority is illiterate (58.83%).15.71 percent of the respondent are still working and their numbers are more among males constituting 22.60 percent.Regarding past occupation of the respondents, 46 percent of the female respondents were housewife and the strength of the total unemployed was 16.29 percent; of the remaining respondents 16.86 percent were cultivators and 10.85 percent were service holders. Among the female respondents as much as 90.69 percent were unemployed.Regarding sources of income 37.14 percent respondents are dependent on children followed by 21.43 percent on pension.The majority of the respondents' (32.00%) per capita income is between Rs. 500 & Rs1499/. Only 10.57 percent of the respondents' per capita income exceeds Rs 10,000.Around one third (32.57%) of the respondents belong to below poverty line category and they hold BPL cards, while 61.71 percent are of non BPL category respondents.Only 20.28 percent respondents were financially independent. Majority (75.58%) was dependent either fully (52.29%) or partially (26.29%). Among the women respondents proportion of dependent was more i.e. 66.67 percent of them were fully dependent and 21.08 percent were partially dependent.Majority (56.57%) of the respondents is having *kutcha* houses followed by brick houses in respect of 22.86 percent.Regarding social participation 49.42 percent respondents are associated with at least one organization and more, while 45 percent respondents are having no such association.Majority (61.43%) of the respondents has land less than 1 acres followed by respondents having 1 acre of land (25.43%). Among the respondents 11.14 percent were landless.Regarding farm power, majority (55.71%) of the respondents do not posses any animals. 29.14 percent posses either one or two animals. Only 2.86 percent possess five to six animals.78.57 percent of the respondents do not have any farm, only 20.86 percent respondents have some type of farms and majority has poultry farms. 13.24 percent women are having poultry farms where 8.91 percent males have such farms. In respect of socio economic classes, no respondent was found in the socio-economic class I. Highest number of respondents (62.57%) are in socio-economic class IV. Among the males a considerable proportions are in socio-economic class II (37.67%) occupying second position while in case of females, the next higher category is the socio-economic class V (28.43%).

Section-II: Mental Health Status of the Geriatric Persons

Mental health status of the geriatric persons were assessed under two areas (i) cognition (mental status) by using the instrument MMSE and (ii) affect (depression) by using Geriatric Depression Scale(short form).

2.1(1): Assessment of cognition level N=350

	Male				**female**				**total**			
	60-69	**70-79**	**80+**	**total**	**60-69**	**70-79**	**80+**	**total**	**60-69**	**70-79**	**80+**	**Grand total**
Normal cognition	34 23.29	29 19.86	05 03.42	68 46.58	19 09.31	06 02.94	01 00.49	26 12.75	53 15.14	35 10.00	06 01.71	94 26.86
Moderate cognition	31 21.23	19 13.01	8 05.48	58 39.72	52 25.49	29 14.22	03 01.47	84 41.17	83 23.72	48 13.71	11 03.14	142 40.57
Poor Cognition	06 04.11	07 04.79	07 04.79	20 13.70	54 26.47	35 17.16	05 02.45	94 46.08	60 17.14	42 12.00	12 03.43	114 32.57
Total	**71** **48.63**	**55** **37.68**	**20** **13.70**	**146** **100**	**125** **61.27**	**70** **34.31**	**09** **04.41**	**204** **100**	**196** **56.00**	**125** **35.71**	**29** **08.29**	**350** **100**

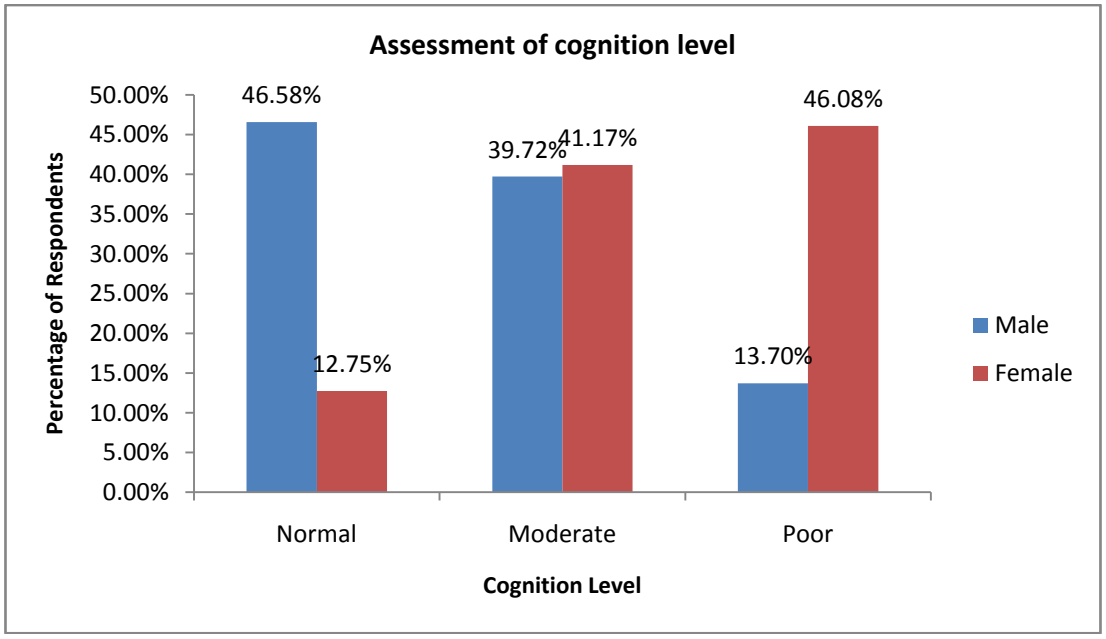

Figure1: Assessment of Cognition Level

In the above Table 2.2.1(1), it may be observed that as much as 40.57 percent of the respondents were having moderate cognition while 32.57 percent were having poor cognition. Female respondents are prominently having moderate cognition than males. As against 41.17 percent of females in this category, percentage of male was 39.72. However, among the elderly men, highest percentage i.e 46.58 % appears against the normal cognition level while in case of women the highest percentage i.e. 46.08 % appears in the category of poor cognition.

Table- 2.1(2): Multiple comparison of pairs test in terms of their cognition level

Cognition Level	**Mean**	**SD**	**SE**	**"q"**	**p value**
Normal cognition(A)	29.605	23.921	16.915	(A)(B)=0.7971 (A)(C)=0.01664 (B)(C)=0.7804	(A)v(B)=NS, p >0.05 (A)V(C)=NS p>0.05 (B)v(C) =NS, p< 0.05
Moderate cognition(B)	40.445	1.025	0.7250		
Poor cognition (C)	29.89	22.896	16.190		

One way analysis of variance shows that p value is 0.8234 which cannot be considered significant. Variation among column means is also not significantly greater than expected by chance. Multiple comparison tests conducted with the null hypothesis that "respondents do not differ significantly in terms of their cognition level" shows that if the value of "q" is greater than 5.910, then the "p" value is less than 0.05.

The table reveals that mean percentage of respondents who are of normal cognition is 29.605. But respondents with moderate cognition have the highest mean percentage. Multiple comparison of pairs test shows

that none of the column means significantly differ from each other. Thus it appears that respondents differ significantly in respect of their cognition level.

2.2: Depression Scale:

While assessing the mental health status, the depression level was attempted to gauge. For this purpose, the geriatric Depression scale was used as tool.

2.2(1): Table: Age-sex wise distribution of Depression Level N=350

Depression	Male				Female				Total			
	60-69	70-79	80+	total	60-69	70-79	80+	total	60-69	70-79	80+	Grand total
Normal	26 17.81	19 13.01	7 04.79	52 35.62	28 13.73	16 07.84	0 00.00	44 21.57	54 15.43	35 10.00	07 02.00	96 27.43
Mild Depression	30 20.54	25 17.12	8 05.48	63 43.15	51 25.00	29 14.22	03 01.47	83 40.68	81 23.14	54 15.43	11 03.14	146 41.71
Moderate Depression	12 08.21	10 06.85	5 03.42	27 18.49	30 14.71	17 08.33	04 01.96	51 25.00	42 12.00	27 07.71	09 02.57	78 22.29
Severe Depression	03 02.05	1 00.68	0 00.00	04 02.73	16 07.84	08 03.92	02 00.98	26 12.75	19 05.43	09 02.57	02 00.57	30 08.57
Total	**71 48.63**	**55 37.68**	**20 13.70**	**146 100**	**125 61.27**	**70 34.31**	**09 04.41**	**204 100**	**196 56.00**	**125 35.71**	**29 08.29**	**350 100**

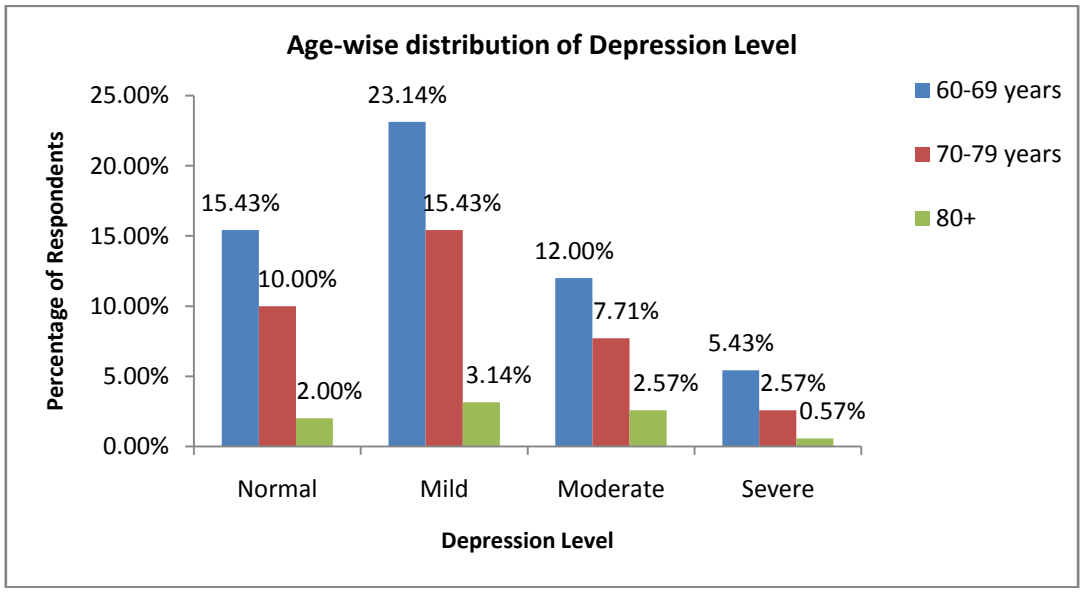

Figure2: Age-wise Distribution of Depression level of Respondents

The findings are presented in the table-2.2(1). It may be observed that majority of the respondents are suffering from various degrees of depression i.e. from mild to severe. Elderly persons suffering in mild depression are prominent as they consist of 41.71 percent of the respondents. They are followed by elderly person having moderate depression. 8.57 percent are found to be suffering from severe depression.

Among the women respondents, 12.75 percent are in the level of severe depression. While it is only 02.73 percent in respect of men. Both in case of male and female respondents, severe depression is prominent in the age group 60-69. Thereafter it gradually gets reduced.

Table-2.2(2): Depression Scale: Mean and SD

Depression level	N	Mean		Std Deviation	Variance
	Statistic	Statistic	Std Error		
	350	02.12	0.048	0.906	0.820

Calculated mean of depression level is 2.2(2) –i.e the distribution has a tilt towards moderate depression level and already in the level of mild depression [this is because normal depression is taken as 1 and then the other three categories are taken as 2,3, and 4 respectively]. Standard error of sample mean shows that mean is very close to the population parameter as the difference between the two (i.e population mean and the

sample mean) is quite negligible .The calculated standard deviation of the distribution shows that mean ± 2 SD covers the whole data range and therefore the distribution may be taken as normal.

P value in ANOVA test comes to 0.0317 is considered significant. Variation among column means also significantly greater than expected by chance. Multiple comparison test was conducted with the hypothesis that "various depression levels do not significantly differ". The test shows that if the value of "q" is greater than 5.757, then the "p" value is less than 0.05

Table-2.2(3): Depression level Mean, SD and Multiple Comparison Test

Type of Depression	Mean	SD	SE	"q"	p value
Normal (A)	29.095	10.642	07.525	(A)v(B)=2.647	(A)v(B)=NS, p >0.05
Mild Depression(B)	41.915	01.747	01.235	(A)v(C)=1.517	(A)V(C)=NS p>0.05
Moderate depression (C)	21.745	04.603	03.255	(A)v(D)=4.409	(A)(D)= NS p>0.05
Severe depression(D)	07.74	03.255	05.010	(B)v(C)=04.164	(B)v(C) =NS, p>0.05
				(B)v(D)=7.056	**(B)v(D) = S p<0.05**
				(C)v(D)=2.892	(C)v(D)=NS p>0.05

Mean percentage is highest in respect of mild depression. "q" value is highest between the levels mild and severe depression implying that there is significant difference between mild depression and severe depression level. In all other cases the mean values between the columns does not differ significantly.

Section-III: Determine the factors influencing Mental health status of the geriatric population

Assessment of cognitive level and other socio-demographic variables

Table-3.1(1): Assessment of cognition level & other social variables

Gender	**Normal cognition**		**moderate**		**poor cognition**		**total**	
	Nos	**%**	**Nos**	**%**	**Nos**	**%**	**Nos**	**%**
Male (n=146)	68	46.58	58	39.72	20	13.70	146	41.71
Female (n=204)	26	12.75	84	41.17	94	46.08	204	58.29
Age Group								
60-69 (n=196)	53	27.04	83	42.35	60	30.61	196	56.00
70-79(n=125)	35	0.28	48	0.38	42	0.33	125	35.71
80+ (n=29)	6	20.69	11	37.93	12	41.38	29	8.29
Marital Status								
Married	64	36.16	74	41.81	39	22.03	177	50.57
unmarried	5	27.78	6	33.33	7	38.89	18	5.14
widow	15	12.40	50	41.32	56	46.28	121	34.57
widower	10	29.41	12	35.29	12	35.29	34	9.72
Family type								
single	49	28.49	64	37.21	59	34.30	172	49.14
joint	45	25.28	78	43.82	55	30.90	178	50.86
Literacy level								
illiterate	12	08.82	57	41.91	67	49.26	136	38.86
can read only	1	5	0	00.00	1	5	2	0.57
can read & write	11	24 44	17	37.78	17	37.78	45	12.86
primary school	23	25.27	43	47.25	25	27.47	91	26.00
middle school	18	5	14	38.89	4	11.11	36	10.29
high school	19	67.86	9	32.14	0	00.00	28	08.00
graduate	10	83.33	2	16.67	0	00.00	12	03.42
Occupational status								
Having occupation	12	21.82	20	36.36	23	41.82	55	15.71
no occupation	82	27.80	122	41.36	91	30.85	295	84.29
sources of income								

nil	4	16.67	9	0.37	11	45.83	24	6.86
pension	25	33.33	26	34 .67	24	0.32	75	21.43
savings	3	0.75	0	00.00	1	0.25	4	1.14
rent	3	13.64	5	22.73	14	63.64	22	6.29
allowances	1	33.33	1	33.33	1	33.33	3	0.86
dependent on children	29	22.31	59	45.38	42	32.31	130	37.14
any other	29	31.52	42	45.65	21	22.83	92	26.28
Dependency Status								
Dependent	30	16.39	78	42.	75	40.98	183	52.29
Partially dependent	27	29.35	35	38.04	30	32.60	92	26.28
independent	36	50.70	26	36.62	13	17.33	75	21.43
socio-economic class								
class I	0	00.00	0	00.00	0	00.00	0	
Class II	2	0.5	1	0.25	1	0.25	4	1.14
Class III	33	50.77	25	38.46	7	10.77	65	18.57
Class IV	56	25.57	87	39.73	76	34.70	219	62.57
Class V	3	04.84	29	46.77	30	48.39	62	17.72

From the above Table-3.1(1) it may be seen that more men than women are having normal cognition. Among the women 46.08 percent are having already poor cognition. In case of age group, the trend shows that more the age the greater is the chance of being poor cognition. Going by marital status, we may see that widowed women have tendency of having poor cognition. However, very few among the married respondents are having poor cognition. In a nuclear family, there is greater chance for the persons of having poor cognition. Literacy level shows the trend that more the persons are literate, lesser is the chance of having poor cognition. Occupation does not show any trend in this case. In case of income as a variable, it may be seen that those who does not earn a regular income, more of them are having poor cognition. Similar is the case with those who are dependent but the partially dependents are in a better off position. Thus dependency has a direct relationship with the poor cognition. Similar is the case with socio-economic class. The more we go down the socio-economic category the more we find the cases of poor cognition.

3.1(2): Logistic regression for Cognition Level

In this part of the study we employed logistic regression analysis to predict the probability about various aspects of the mental and physical health status of the participants considering his/ her (predictor' variable) age group, gender, occupational status, marital status, income, social status, etc.

Statistical analysis was performed using SPSS (Statistical Package for the Social Sciences) software, version 16 to analyse the logistic regression for one model. Summary of the cases is presented while discussing each dichotomous variables namely, Cognition level, depression scale, social health status, nutritional status, and functional ability status. All the intermediate values of these variables are adjusted to the two extreme values. Depending on its inclination the other grouping variables are taken as usual with definition.

Table-3.1(2): Logistic Regression analysis of cognitive level

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
							Lower	Upper
Age	.296	.198	2.233	1	.135	1.344	.912	1.981
Gender	.798	.317	6.349	1	.012	2.222	1.194	4.135
Family type	.170	.225	.568	1	.451	1.185	.762	1.844
Education level	-.229	.081	8.051	1	.005	.795	.679	.932
Occupation	.014	.164	.007	1	.932	1.014	.735	1.399
Dependency	-.181	.168	1.150	1	.284	.835	.600	1.161
Housing	-.528	.172	9.372	1	.002	.590	.421	.827
Socio- econstatus	.342	.251	1.847	1	.174	1.407	.860	2.303
Maritalstatus	.000	.117	.000	1	.997	1.000	.794	1.258
Income	-.020	.091	.050	1	.823	.980	.820	1.170
Constant	-.587	1.666	.124	1	.725	.556		

a. Variable(s) entered on step 1: Age, Gender, Family type, Education level, Occupation, Dependency, Housing, Socio-economic status, marital status, Income.

The above table shows the association of cognition level (normal cognition, or poor cognition) of the respondents with different related factors e.g., age, sex, marital status, education, job status, income , socio-economic status etc. . The results show that gender is the more effective factor of respondent's cognition level. Genders as a factor is two times more likely to be associated with the cognition level (OR=2.22, 95%, CI= 1.19-4.13). Socio-economic status (OR=1.407, 95%, CI= 0.8- 2.3), and age (OR=1.344, 95%, CI= 0.9- 1.9) are the two other relatively associated variables which have impact on the cognition level. Other social variables are not closely associated.

3.2: Assessment of Depression and other socio-demographic variables

Table-3.2(1): Depression and other social variables

Gender	**Normal**		**Mild**		**Moderate depression**		**Severe depression**		**Total**	
	Nos	**%**	**Nos**	**%**	**Nos**	**%**	**Nos**	**%**	**Nos**	**%**
Male	52	35.62	63	43.15	27	18.49	4	02.74	146	..
Female	44	21.57	82	40.20	53	25.98	25	12.25	204	
Age Group										
60-69	54	27.55	81	41.33	42	21.43	19	09.69	196	100
70-79	35	28.00	53	42.40	29	23.20	8	06.40	125	
80+	7	24.14	11	37.93	9	31.03	2	06.90	29	
Marital Status										
married	60	33.90	67	37.85	37	20.90	13	07.34	177	
unmarried	5	27.78	7	38.88	6	33.33	0	00.00	18	
widow	24	19.83	55	45.45	26	21.49	16	13.22	121	
widower	7	20.59	16	47.06	11	32.35	0	00.00	34	
Family type										
single	45	26.16	66	38.37	46	26.74	15	08.72	172	
joint	51	28.65	79	44.38	34	19.10	14	07.87	178	
Literacy level										
illiterate	29	21.32	50	36.76	36	26.47	21	15.44	136	
can read only	01	50.00	01	50.00	0	00.00	00	00.00	02	
can read & write	13	28.89	22	48.89	10	22.22	00	0.00	45	
primary school	22	24.18	43	47.25	20	21.98	06	06.59	91	
middle school	14	38.89	15	41.67	6	16.67	01	02.78	36	
high school	11	39.29	10	35.71	6	21.43	01	03.57	28	
graduate	06	50.00	04	33.33	2	16.67	00	00.00	12	
Occupational status										
Having occupation	14	25.45	25	45.45	15	27.27	01	01.82	55	
no occupation	82	27.80	120	40.68	65	22.03	28	09.49	295	
sources of income										
nil	06	25.00	10	41.67	5	20.83	03	12.50	24	
pension	26	34.67	34	45.33	12	16.00	03	04.00	75	
savings	03	75.00	00	00.00	00	00.00	01	25.00	04	
rent	06	27.27	11	50.00	05	22.73	00	00.00	22	
allowances	01	33.33	01	33.33	01	33.33	00	00.00	03	
dependent on children	29	22.30	58	44.62	31	23.85	12	09.23	130	
any other	25	27.17	31	33.69	26	28.26	10	10.87	92	
Dependency Status										
Dependent	45	24.59	76	41.53	46	25.14	16	08.74	183	
Partially dependent	23	25.00	35	38.04	24	26.09	10	10.87	92	
independent	28	39.44	32	45.07	9	12.68	2	02.82	71	
socio-economic class										

class I	0	00.00	0	00.00	0	00.00	0	00.00	0	
Class II	1	25.00	2	50.00	0	00.00	1	25.00	4	
Class III	24	36.92	33	50.77	8	12.31	0	00.00	65	
class iv	61	27.85	88	40.18	53	24.20	17	07.76	219	
class V	10	16.13	22	35.48	19	30.65	11	17.74	62	

The above table shows that age and sex wise depression level gradually gets reduced from moderate to severe and that women have higher tendency to get depressed. Depression at the mild level is closely associated with the widower and widows.

3.2(2): Logistic regression for Depression and other socio-demographic variables

Table-3.2(2): Logistic Regression Analysis of Depression

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
							Lower	Upper
age	.159	.185	.738	1	.390	1.172	.816	1.686
Gender	.460	.302	2.316	1	.128	1.583	.876	2.862
Marital status	-.064	.114	.315	1	.575	.938	.750	1.173
Family type	.128	.209	.377	1	.539	1.137	.755	1.713
occupation	.149	.163	.839	1	.360	1.161	.844	1.598
dependency	-.119	.163	.536	1	.464	.888	.645	1.221
income	.000	.087	.000	1	.998	1.000	.843	1.185
housing	-.076	.107	.498	1	.480	.927	.751	1.144
Socio-economic class	.552	.226	5.980	1	.014	1.736	1.116	2.701
Constant	-3.749	1.403	7.139	1	.008	.024		

a. Variable(s) entered on step 1: age, sex, marital, family type, occupation, dependency, income, housing, socio-economic class.

The logistic regression analysis is done to predict the probability that a participant would have depression considering his/ her (predictor' variable) age group, gender, occupational status, marital status, etc.

Summary of the case is presented below. For this study "depression" has been taken as secondary variable which is dichotomous in the sense that we have considered only "having no depression" as 1 and having depression as "2" with few adjustments here and there. The other grouping variables are taken as usual with definition. From our observed data we have 72.57 per cent of the respondents have mild to severe depression while only 27.43 per cent are normal or without depression.

Table -.3.2(2) shows the logistic regression coefficient, Wald test, and odds ratio for each of the predictors. Employing a .05 criterion of statistical significance, it appears that age, gender, marital status, family type, occupation, dependency, income housing socio-economic status, these variables have significant partial effects.

The Exp(B) column in table above presents the extent to which raising the corresponding measure by one unit influences the odds ratio. Thus EXP(B) can be interpreted in terms of the change in odds. If the value exceeds 1 then the odds of an outcome occurring increase; if the figure is less than 1, any increase in the predictor leads to a drop in the odds of the outcome occurring. For example, the EXP (B) value associated with Gender is 1.583. Hence when gender is raised by one unit (one person) the odds ratio is 1 time as large and therefore respondents are 1 more times likely to belong to the depression group.

The variable in equation table presents that 95 per cent confidence levels do not overlap we, can conclude that compared to variables like dependency, housing , marital statuses, the variable like socio-economic class , gender , age, family type , occupation , and income has a strong bearing on generating depression .

IV. Discussion

The present study shows that as much as 40.57 percent of the respondents are having moderate cognition while 32.57 percent are having poor cognition. Female respondents are prominently having moderate cognition than males. As against 41.17 percent of females in this category, percentage of male is 39.72. However, as against 46.58 percent normal cognition of male respondents there were 46.08 percent females having poor cognition. Similar findings were reported by Anil Kumar MN et al (2011)[9]. From their study it reveals that 68% of the elderly had no cognitive impairment, 22% had mild and 10% had severe cognitive impairment. Similarly, Kutlu R. et al (2006)[10] in their study in Konya, Turkey observed that 57% elderly were evaluated as normal score and 43% as abnormal score. The cognitive impairment was higher among women than men.

The present study shows that 41.71 percent of the respondents are suffering from mild depression which is followed by respondents having moderate depression (22.29%). 8.57 percent are found to be suffering from severe depression. Among the women respondents 12.75 percent are in the level of severe depression, while it is only 02.73 percent in respect of men. Both in case of males and female respondents, severe depression is prominent in the age group 60-69. The study conducted by Devi et al (2007)[11] showed that majority of the study subjects had moderate depression (58%) and about 19 percent of them had severe depression and that majority of the study subjects were females. Another study by Jain and Aras (2007)[12] showed that 45.9 percent of the study population were depressed where proportion was more in respect of females (57.8%). These findings are consistent with the findings of the present study.

V. Conclusion

The study was successful in unveiling important and significant facts regarding the socio-demographic characteristics, mental health status of geriatric population of the mentioned study area. A considerable number of respondents were widows. Among the females majority were illiterate and unemployed. Majority of the elderly were financially dependent either fully or partially. Highest numbers of respondents were in socio-economic class-IV.

This study brought to our notice that majority of the elderly persons were suffering from cognitive impairment and depression. Through logistic regression it can be concluded that socio-demographic variables had a strong bearing on generating cognitive impairment and depression. To improve quality of life, rectification of poor health status through affordable health service for disease screening and better management of mental health and greater health awareness are necessary particularly among low socio-economic group. It is feasible to provide community based geriatric health care services utilizing the existing health infrastructure in rural areas. But to sustain this, it is very essential to have well motivated and trained health manpower who can identify the mental health problems of the aged and to have the support and involvement of family members, community leaders and other Non Governmental Organization. Further there is need of conducting training and orientation programmes for medical and paramedical staffs to understand and tackle the mental health problems specific to the geriatric population.

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