"COMPREHENSIVE GERIATRIC ASSESSMENT AMONG ELDERLY PEOPLE RESIDING IN RURAL AREA OF BELAGAVI DISTRICT: A CROSS - SECTIONAL STUDY"

Submitted by

(REG. NO.BD0121002)

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In

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JAWAHARLAL NEHRU MEDICAL COLLEGE, KAHER,
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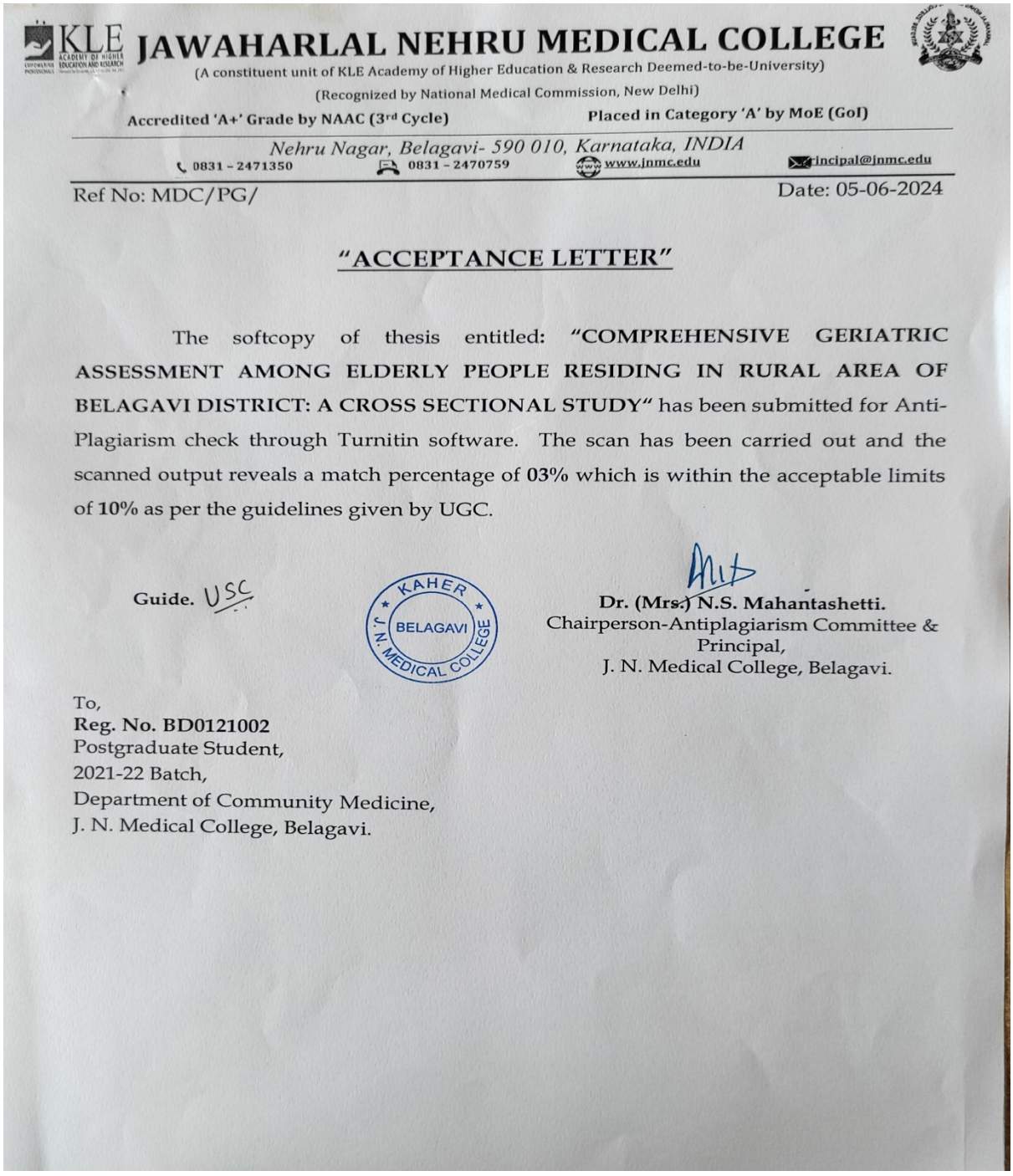

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Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"COMPREHENSIVE GERIATRIC ASSESSMENT AMONG ELDERLY PEOPLE RESIDING IN RURAL AREA OF BELAGAVI DISTRICT: A CROSS-SECTIONAL STUDY"** is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee.

(Dr. Smita Sonoli)
Member Secretary
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi.

For **(Dr. Harsha Hegde)**
Chairman,
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi

LIST OF ABBREVIATIONS USED

S. No	Abbreviations	Expansion of the abbreviations
1.	CGA	Comprehensive Geriatric Assessment
2.	S-E Class	Socio Economic Class
3.	PHC	Primary Health Centre
4.	NFHS	National family health survey
5.	PUC	Pre Under Graduate College
6.	ASHA	Accredited Social Health Activist
7.	PR	Pulse rate
8.	BP	Blood pressure
9.	RR	Respiratory rate
10.	BMI	Body mass index
11.	W:H Ratio	Waist Hip Ratio
12.	ADL	Activities of Daily Living
13.	IADL	Instrumental Activities of Daily Living
14.	χ 2	Chi – square
15.	MCT	Monte Carlo Test
16.	OR	Odds Ratio
17.	IEC	Institutional Ethics committee

18.	CM	Chief Minister
19.	SPMSQ	Short Portable Mental Status Questionnaire
20.	GDS	Geriatric Depression Scale
21.	FRAT	Falls Risk Assessment Test
22.	MPI	Multiple Prognostic Index
23.	WHO	World Health Organization
24.	OPDs	Out Patient Departments
25.	NCD	Non-Communicable Disease
26.	DM	Diabetes Mellitus
27.	ORAI	Osteoporosis Risk Assessment Instrument

ABSTRACT

BACKGROUND AND OBJECTIVES

Many undiagnosed problems are prevalent among the geriatric population due to a lack of awareness about their health conditions. By 2030, 1 in 6 people in the world will be aged 60 years or over. By 2050, the world population of people above 60 years will double (2billion). According to National Census 2011, there are nearly 104 million elderly people in India; According to NFHS 5, age 60 and older 12 percent of the household population. Multimorbidity is a state with co-occurrence of multiple chronic diseases in the same person. Falls are the second leading cause of unintentional injury deaths worldwide. Each year an estimated 684 000 individuals die from falls globally of which over 80% are in low- and middle-income countries. Adults older than 60 years of age suffer the greatest number of fatal falls. CGA-based care has been shown to lead to enhanced function, reduced institutionalization rates, and lower mortality among elderly hospital inpatients. Community-based CGA proves highly effective for individuals who prefer not to visit hospitals. Hence this community based cross sectional study need to be conducted in rural area of Belagavi district to assess the health status & Falls risk among elderly people.

METHODOLOGY

Community based Cross-sectional study was conducted among 470 geriatric people in five subcenters of Primary Health Centre (PHC), Vantamuri which is a rural field Practice area of department of Community Medicine, Jawaharlal Nehru Medical college, KAHER, Belagavi. The participants will be selected from Vantamuri, Bhutramanahatti, Honega, Kakati A, Kakati B sub-centres systematically randomized for the attainment of sample size from 1st October 2022 to 30th September 2023.

Inclusion Criteria:

Elderly people who lives in Vantamuri at-least for 5years.

Exclusion Criteria:

Elderly people who are hospitalized,

Elderly people who are bedridden,

Elderly people who have speech difficulty.

A questionnaire was prepared to get information about socio-demography, Health status & falls risk. Data was analyzed using SPSS software (Trial version 23). Frequency and percentage were used for describing categorical variables. Chi square test was used to find the association between two categorical variables and P value of < 0.05 was considered as statistically significant.

RESULT

Study participants were 241(51%) male & 229(49%) female. Mean age of study participant is 66 ± 6yrears. Most of the study participants were illiterate(62%) &home makers(47.4%). Most of the participants were belongs to Joint family(61%) & the Socio- Economic class IV(53%). Among 470 participants 54% dependent & 46% independent. Among 470 participants prevalence of visual impairment, hearing impairment & cognitive impairment were 50%, 28%, 46.5% respectively. Prevalence of functional impairment was 76%. Depression & insomnia prevalence were 10% & 15.5% respectively. 36.5% of total participants were having falls risk. 57% participants were having at least 3 problems out of 7 problems. More common problems are Functional impairment, visual impairment, cognitive impairment. Association of sociodemographic factors like age, sex, education occupation, marital status, family type, socioeconomic class with various impairment were significant.

CONCLUSION: This study concludes we can know about the health status & falls risk of the elderly people in a better way by using CGA based tools. We can aware the people about many undiagnosed problems.

KEYWORDS: CGA, Multimorbidity, Health status, Undiagnosed problems, Falls risk.

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"COMPREHENSIVE GERIATRIC ASSESSMENT AMONG ELDERLY PEOPLE RESIDING IN RURAL AREA OF BELAGAVI DISTRICT: A CROSS - SECTIONAL STUDY"

INTRODUCTION

Ageing is the main reason for many diseases. Ageing occurs due to the gradual build-up of diverse molecular and cellular damage as time passes[1]. Ageing will cause the brain atrophy in older adults. It will lead to cognitive function disorder & dementia.

As a result, there is a progressive decline in both physical and mental abilities, an increasing susceptibility to illnesses, and ultimately, mortality. Frailty arises as a consequence of ageing, leading to the development of geriatric syndromes characterized by changes in physical structure, cellular metabolism, disruptions in homeostasis, and neurodegenerative processes[2].

Many undiagnosed problems are prevalent among the geriatric population due to a lack of awareness about their health conditions. Most commonly visual impairment, hearing impairment, functional impairment, cognitive impairment, insomnia, falls were undiagnosed problems in elder people. "Multimorbidity defined as occurrence of many chronic problems at a same time in the same person"[3].

By 2030, 1 in 6 people in the world will be aged 60 years or over. By 2050, the world population of people above 60 years will double (2billion)[1]. 104 million people were >60years old in India by the report of census 2011; According to NFHS 5, age 60 and older 12 percent of the household population.

"CGA is a multi-dimensional inter-related diagnostic method to decide A elderly person's medical, psychological and functional ability in order to develop and implement an integrated plan for treatment"[4].

CGA-based care has been shown to lead to enhanced function, reduced institutionalization rates, and lower mortality among elderly hospital inpatients. Furthermore, CGA or comparable multidisciplinary interventions hold the potential to improvise the functional capacity, changing the mobility in frail persons[5-7].

"Fall is defined as occurrence of rest on the floor inadvertently"[1]. Many risk factors can cause A fall in old age persons. Falls can cause the physical injuries like fractures, lacerations, haemorrhagic problems which will leads to immobility & psychological isolation and depression among patients[8].

Falls are the second leading cause of unintentional injury deaths worldwide. Each year an estimated 684 000 individuals die from falls globally of which over 80% are in low- and middle-income countries[1]. Adults older than 60 years of age suffer the greatest number of fatal falls. 37.3 million falls that are severe enough to require medical attention occur each year[1].

Multimorbidity is, however, not only confined to the older population, with 35% of people aged 55–64 years and 55% of people aged 65–74 years having multimorbidity[9]. Among >80years population, prevalence of multimorbidity was 70% [10].

Those with the lowest wealth have a 47% higher chance of multimorbidity. Prevalence of visual impairment, hearing impairment, cognitive impairment and depression more among elderly people[9].

The simultaneous diagnosis and treatment of multiple diseases in a single individual present a major obstacle in India's healthcare system. A more suitable and systematic approach is required for detecting comorbidities effectively. Enhancing the life expectancy of the elderly population necessitates a standardized level of care encompassing preventive programs and proactive diagnostic and therapeutic interventions.

Community-based CGA proves highly effective for individuals who prefer not to visit hospitals. Hence this community based cross sectional study need to be conducted in rural area of Belagavi district to assess the health status & Falls risk among elderly people.

Objectives

1.To assess the health status of the geriatric population

2.To assess the falls risk in geriatric population

Review of Literature

Many studies were conducted for diagnosing multimorbidity with using the CGA tool in elderly people. It showed that many diseases were undiagnosed before CGA assessment and also patients were not aware of it. So, CGA can delay the progression & complication of chronic diseases.

Systematic Review

One systematic review study about CGA usage in primary care showed that CGA was accepted by participants. 97 full texts were screened by this author & he selected the 4 studies for reviewing. CGA based care given by A geriatrician or nurse. They have done the follow-up for 1- 2years. After 12 months period of using of CGA, the diagnosis of geriatric syndrome by PCPs was improved. Fenton et al. study showed that CGA intervention was cost effective which will reduce in healthcare costs by 26%. Fenton et al. study showed that reduction in hospital admission in intervention group compared with control at 48 months[12].

Comprehensive Geriatric Assessment

A cross sectional study was conducted about Comprehensive Geriatric Assessment in Bangalore among 70 elderly patients. Pre-designed & pretested questionnaire was used for sociodemographic details and CGA was done for all participants. 31% of the participants were having visual impairment. Hearing impairment prevalence was 34%. Prevalence of depression & dementia were 17% & 14.28% respectively. 48% of the participants were having functional impairment. 31.42% participants were having falls risk[2].

In 2019, A cross sectional study was conducted in KEM Hospital, Mumbai among 262 geriatric patients about CGA Screening in a tertiary care hospital in India showed that more undiagnosed diseases among participants was seen. It was 58.65% to 95.45%.

Most common undiagnosed conditions were Depression & functional impairment. Prevalence of this undiagnosed conditions was more than 95%.

Significant association of the OPDs with the undiagnosed problems was seen. That included fall risk in Orthopaedic OPD, insomnia in Surgery OPD & malnutrition in the General OPD[13]. A study was conducted in Vorarlberg, Austria about CGA in general practice among 115 aged above 75 years showed that 74% had hearing impairment & 76% had depression. Prevalence of cognitive impairment, urinary incontinence and falls risk was respectively 19%, 67.9%, 36.7%. On average 6.4 of 14 possible geriatric problems and also 43.7% participants were having each problem. Undiagnosed prevalence of visual impairment was 18% whereas hearing impairment and depression was 74.1% and 76.5% respectively. 89% patients agreed that CGA was supportive for their health condition and Quality of Life[11].

In 2012, A cross sectional study was conducted on about the Multidimensional Prognostic Index (MPI) Score during institutionalization among 65 years aged Patients in various cities of Italy showed that MPI score of 60% of the patients at admission & discharge time was different. MPI score was determined by using the CGA score by examination of all patients. At the time of discharge 38.1% of the low group had a worse MPI score compared with 29.3% and 17.7% in the intermediate and high MPI groups respectively. High MPI score patients like heart failure, renal failure, pneumonia, COPD and dementia compared with the low MPI groups. During hospital stay among MPI low group, only 14.2% improved the MPI whereas among the intermediate and high groups 36.8% and 40.4% had a better MPI score at the time of discharge. Worse MPI score at discharge among low group, intermediate and high MPI groups 38%, 29.3% and 17.7% respectively. >80% of the patients of the low and high groups were in the same group at hospital discharge[14].

A cross sectional study was done among 408 elderly people about mountain heights and aging insights: A Comprehensive Geriatric Assessment and Its Correlates in Shimla a Mesmerizing Hilly City of Northern India. Socio demographic details were collected by predesigned questionnaire & CGA assessment done among all participants. That study showed

that Functional impairment for ADL was 16-32% and IADL was 28-42%. Prevalence of cognitive impairment was 32%. Mental assessment showed that depression in 36% participants and anxiety in 27% of participants. Among 408 participants 29% were malnourished and 34% were at high risk of malnutrition according to the Malnutrition Universal Screening Tool (MUST). 42% participants were having Musculoskeletal disorders & sensory impairments were observed in 28%. 36%participants were having risk of falls. 82 participants were having multimorbidity[15].

A cross sectional study was conducted on Change in the MPI Score among 960 geriatric Patients between admission and discharge. According to validated cutoffs of MPI patients were divided into three groups of MPI score, low risk (MPI-1 value <0.33), moderate risk (MPI-2 value 0.34–0.66), and severe risk of mortality (MPI3 value >0.67). Prevalence of MPI-1 score, MPI-2 score, and MPI-3 score among patients 23%, 33%, 43% respectively at the time of admission., MPI score was changed at the time of discharge among 60% of the participants. Those who have MPI scores in high and intermediate range improved at the time of discharge. MPI score denotes length of stay [16].

Randomized controlled Trial

In 2011, A RCT in single-centre conducted about CGA in outpatient about effects on frailty and mortality in old people with multimorbidity and high health care utilization in Norrköping, a municipality in southern Sweden. Frailty was assessed by Cardiovascular Health Study (CHS). Prevalence of frailty among participants 90%. After 2 years, proportion of pre-frail patients in the intervention group was higher. 18% mortality occurred in the intervention group and it was 26% in controls[17].

A RCT was done about inpatient and outpatient geriatric evaluation and management. Inpatients were randomly assigned to an special geriatric care or usual care. The interventions involved teams that provided geriatric assessment and management according to

guidelines. Special geriatric group showed better score of SF-36 subscales & ADL than control group[18].

A cohort study was done on development and validation of a MPI for one-year mortality from CGA in hospitalized older patients. MPI was calculated among 2 different cohort of inpatients. The low-risk group of two cohorts were 53.3 and 54.9% respectively; The severe risk group of 2 cohorts 15.4% and 14.2% respectively. Association of age & mortality with high MPI score in both cohorts[19].

Visual impairment

In 2011, A descriptive study was conducted about vision impairment and cognitive impairment association in India. They have taken the 'Building a Knowledge Base on Population Ageing in India' survey data. 59% participants were having visi impairment. Prevalence of cognitive impairment was 60%. Vision impaired participants were having 11% more risk of cognitive impairment. Association of cognitive impairment with low psychological health, low ADL, poor health and chronic problems was significant among older adults[20].

Hearing impairment

A multi-cluster study was done among rural and urban population of Lucknow from July 2003 to August 2004 to know the prevalence and causes of hearing impairment in the community. For all participants, audiological profile and basic ear examination was done. Hearing impairment was seen in 15.14% of rural & 5.9% of urban population. Elderly people were having higher prevalence of Disabling Hearing Impairment (DHI) and higher prevalence of deafness in 0-10 years age group was seen. The prevalence of sensorineural deafness necessitating hearing aids was 20% & 50% in rural & urban areas respectively[21].

Cognitive impairment

A descriptive study was done about extent, spectrum, and predictors of cognitive impairment in urban geriatric population in a district of north India was done in Varanasi city among 616 geriatric participants. Sociodemographic details of participants were collected & MMSE tool was used for cognition assessment. Prevalence of Cognitive impairment among geriatric participants was 22.4%. Cognitive impairment was very common among ≥80 years (59%). Adjusted Odds Ratio among illiterate and just literate participants was 13.71% & homemakers was 17% as comparing with literate & workers respectively. Cognitive impairment prevalence was 9 out of 40 geriatric participants[22].

In 2017, A cross-sectional study was conducted about prevalence of cognitive dysfunction, psychological morbidity and abuse among elderly population in India in East Delhi, comprising 5 blocks and 12 subblocks with a total population of 65,000. They used the self-reported questionnaires to detect cognitive dysfunction, psychological morbidity, social support and pattern of abuse. 56.9% of the subjects had psychological morbidity by using the Goldberg General Health Questionnaire-12. 33% of subjects were screened positive which was assessed by Dementia Assessment by Rapid Test. The pattern of abuse detected by Domestic Violence Questionnaire which was classified into emotional abuse (16.9%), physical abuse (7.5%), sexual abuse (1.9%) and social neglect (18.1%)[23].

Functional ability Impairment

In 2020, A descriptive study was done about assessment of dependency in ADL and its predictors in a Sub-Himalayan Union Territory of India, Jammu. They used the Barthel Scale Index to assess the functional impairment. 46.3% of the subjects were having ADL

dependency. Association of age, stress in the family, personal problems, and multimorbidity with ADL dependence was significant[24].

In 2011, A cross sectional study was conducted about functional disability among elderly persons in a rural area of Haryana by randomly selected six clusters. Prevalence of hypertension, diabetes, COPD was 20.6%, 4.5% 13.6% respectively. Functional disability prevalence was 37.4%. Bilateral hearing impairment was highly associated with functional impairment. The association of functional disability with high age, was more common among widow or widower& diabetic and COPD patients[25].

Depression

In October 2022, A cross-sectional study was done about geriatric depression and associated factors: a community-based study in a rural area of Central Kerala among 200 elder people in Tholur village panchayat area of Thrissur District in Kerala. A predesigned & pretested questionnaire was used to get the sociodemographic characteristics, comorbid illness & depression assessment. In this study, the study population's mean age of was 70.59 ± 7.89 years. The prevalence of depression was 37.8 % among the elderly. Among 200 participants 16.5% had mild depression, 10% had moderate depression and 11% had severe depression. They recommended early diagnosis and prompt treatment needed to incidence of depression[26].

Multimorbidity

A community based cross-sectional study was conducted about prevalence of Non-Communicable Disease(NCD) in geriatrics population of in rural areas of Kalaburagi district, Karnataka. Sociodemographic details, risk factor and morbidity status of study participants were collected by Pre-designed, pre-tested questionnaire. 41.45% participants were having hypertension problem & diabetes prevalence was 24.35% and other disease

1.62%. This study showed that significant associations of alcohol and chewing tobacco with the most of the Non communicable diseases in the elderly population. Also water supply, latrine, socio-economic class were having significant association with the NCDs in the elderly population[27].

Falls Risk

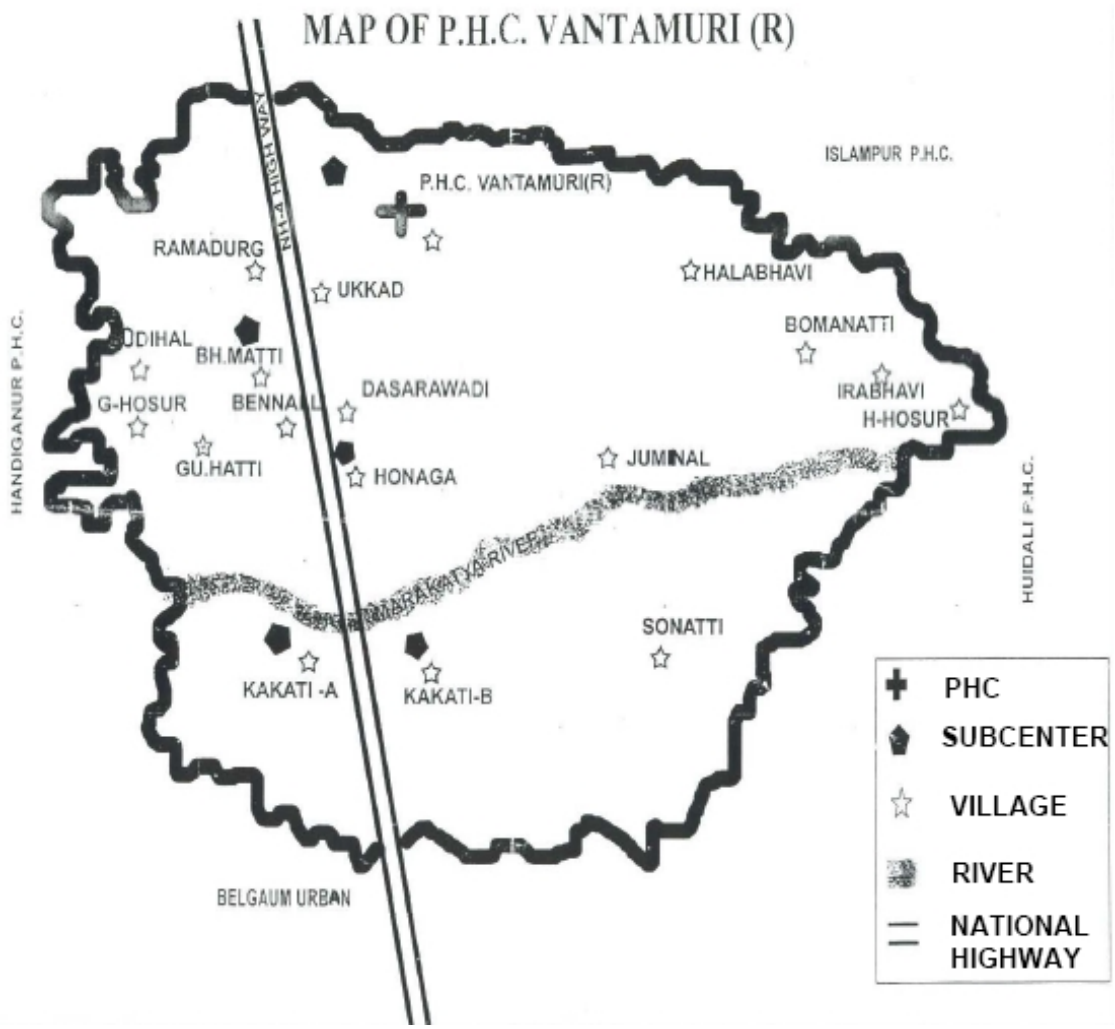
A study was conducted about prevalence, risk factors, circumstances for falls and level of functional independence among 2049 geriatric population Mumbai, Thane and Raigad of Maharashtra. Fall Efficacy Scale was used for Fear of Fall assessment. The prevalence of falls in this study was 24.98%. 71.86 ± 7.49 years was mean age for falls. Advancing age associated with falls significantly. 49.41% participants were having sustained falls within the 12months. Common causes for falls were slip, imbalance which were 56.45%, 10.74% respectively. Injuries occurred among 60.55% after the fall. 30.86% fallers were using assistive equipment but less in nonfallers[8].

A study was conducted about falls among 456 elderly in Haryana. The prevalence of falls in last year was 36.6% among 456 participants. Falls occurred among women & Men were 40.6% & 31.5% respectively. Association of low SES, knee pain, visual impairment, functional impairment and depression was significant. Falls risk was common among participants those who having higher age, female gender, being a widow/widower[28].

METHODOLOGY

Topography

Karnataka, India's southernmost state, is located at the Western and Eastern Ghats confluence. It is India's 8th biggest state, with 5.8% of its total land area. It has 30 districts and is India's 9th most populated state in terms of population.



Belagavi is situated in the upper part of Karnataka. It is the the administrative centre of the Belagavi district, it has total area of 13,415 km² (5,180 sq mi) Karnataka.

Belagavi is surrounded by Kolhapur (west), Sangli (north) East (Bagalkot), south(Dharwad). The city of Belagavi stands as the district headquarters in this region of north Karnataka. A famous sweet is Kunda. According to the 2011 Census, it has a population of 4,779,661, of which 24.03% live in urban areas, making it the second-most populous district in Karnataka".

Study Design: Community based Cross-sectional study

Study place: Present study will be conducted in five subcentres of Primary Health Centre (PHC), Vantamuri which is a rural field Practice area of department of Community Medicine, Jawaharlal Nehru Medical college, KAHER, Belagavi. The participants will be selected from Vantamuri, Bhutramanahatti, Honega, Kakati A, Kakati B sub-centres systematically randomized for the attainment of sample size.

Study Period: 1st October 2022 – 30th September 2023

Sample Size: Sample size was calculated by taking prevalence of falls risk was 45.8% (Taken from study conducted in Vorlberg, Austria[11])

Taking 95% confidence interval and allowable error 10%.

Where p = 45.8≈ 46

q = 100-p = 54

d =5(10% allowable error)

Hence $n = 4pq /d^2$

= 469≈ **470**

Study population: Elder population

Sampling technique: List of all geriatric population in Vantamuri is prepared by ASHA (Accredited Social Health Activist) and Junior Health Assistant male will be used as master list. Among them the participants are selected through population proportionate sampling. Participants will be selected from each sub-centre by systematically randomized sampling. Total geriatric population in Vantamuri PHC – 4400. Every 10^{th} person is approached to participate in study

Name of the subcenter	Total geriatric population	Proportionate sampling	samples
Vantamuri	684	684/4400*470	73
Bhutramnahatti	634	634/4400*470	67
Honega	1423	1423/4400*470	152
Kakati A	800	800/4400*470	85
Kakati B	878	878/4400*470	93
Total	4400		470

Inclusion Criteria:

Elderly people who lives in Vantamuri at-least for 5years.

Exclusion Criteria:

Elderly people who are hospitalized,

Elderly people who are bedridden,

Elderly people who have speech difficult

Questionnaire

A questionnaire was prepared to get information about socio-demography, Health status & falls risk.

Method of data collection:

Using a pre-designed and pre-tested questionnaire, information regarding socio-demographic, Health status & falls risk details were collected. I have collected the data from all participants by house visit in all subcentre areas of Vantamuri PHC. Pilot test was done to validate the questionnaire.

Ethical clearance: was obtained from the Institutional Ethics Committee for Human Subject's Research of the Medical College dated 27/09/2022 vide under letter MDC/JNMCIEC/75 (ANNEXURE –I). Written informed consent was obtained from all the study participants before the data collection (ANNEXURE – III).

Informed consent – Written informed consent was taken from each participant prior to the study. Participants were informed in detail about the purpose of the study and their rights, possible benefits and risks.

Statistical analysis:

The data collected was entered into the Microsoft Excel sheet and master chart was prepared. Coding was done to encrypt the data for each option in the questionnaire. Data was analyzed using SPSS software (Trial version 23). Frequency and percentage were used for describing categorical variables. Chi square test was used to find the association between two categorical variables and P value of < 0.05 was considered as statistically significant.

Study tools

Socio-demographic Variables:

Age: Age of the participant in years as completed on his/her last birthday.

Address: Study participant's place of present stay was collected. Subcenter wise place name mentioned like Kakati A & Kakati B

Religion: An organized system of beliefs, ceremonies, and rules used to worship a God or groups or Gods. For examples Hindu, Muslims and Christian.

Education: Every study participant was asked about his/her educational qualification. It was classified as follows:

1. **Illiterate –** A person who cannot read and write any language.
2. **Primary school –** Participant who had attended schooling between first and fifth standard.
3. **Pre Under Graduate College(PUC) –** Participant had studied up to PUC (between 11^{th} and 12^{th}) or Diploma.
4. **Graduate –** A person who had completed any graduation degree course or any under-graduation course
5. **Post Graduate -** person who had completed any post-graduation course.

Occupation:

Each participant's occupation details were collected. It is the principal activity in daily routine for earn money. The source of their income, as self-reported by the beneficiaries, who would earn his or her living by means of it.

Government employee[29] – "Any person appointed by Government to any civil service or post in connection with the affairs of the Union and includes a civilian in a Defence Service"

Private employee[30]**-** "A private sector job is a position in a company or organization owned and operated by individuals or groups to generate profits for themselves and their stakeholders. Private sector jobs are typically in finance, manufacturing, retail, health care and technology industries"

Agricultural[31]**-** "A farmer is engaged in the practice of agriculture, which involves cultivating land, raising crops, and/or raising livestock for food, fibre, fuel, or other agricultural products. Farmers play a fundamental role in food production and supply chains, providing essential resources for human consumption and economic development. Their work encompasses a wide range of activities, including planting and harvesting crops, tending to livestock, managing soil health, irrigation, pest control, and maintaining agricultural infrastructure such as barns, fences, and equipment".

Labor[32]**- "**A labourer may be a part-time, full-time or seasonal employee who companies and individuals may hire for a range of manual work activities. They generally work in the construction, manufacturing, agriculture and maintenance fields. Depending on their type of employment, they may earn daily, weekly or monthly wages. It may be essential to be over 18 years of age to do manual labour work in many industries"

Own Business[33]**- "**Business refers to any organisation or individual engaged in the exchange of goods or services in order to generate profits. Whether it's a small-scale enterprise or a global conglomerate, businesses operate with the aim of meeting customers' needs and maximising financial returns".

Home maker[34]**-**" A homemaker is an individual, typically a woman, who manages a household and takes care of the domestic needs of the family. This includes tasks such as cooking, cleaning, laundry, and childcare. The term "homemaker" emphasizes the idea that managing a

household is a full-time job that requires a range of skills and is essential to the functioning of a family".

Total family income – "Combined income of all earning members of the family".

Family size – "Total number of members in the family".

Socio Economic Status (SES) Class

Information regarding per capita income (in INR/ month) was collected and SES was classified using Modified B.G. Prasad's classification for the study period (2021).

The B.G. Prasad's scale was introduced in 1961 considering the base of

Consumer Price Index (CPI) for 1960 as 100.

Consumer Price Index for January 2021 was 120

Multiplication factor = Current index value (120) = 1.2

Base index value in 2016 is 100

The new income value is calculated using the following equation:

$$= \text{multiplication factor} \times \text{old income value} \times 4.63 \times 4.93 \times 2.88$$

Here 4.63, 4.93, 2.88 are the linking factors given by the Labour Bureau of India. So, after substituting the values, the new scale is

Modified BG Prasad Socio-economic Classification, Updated – 2021[35]

Socio-Economic class	B. G. Prasad's classification of 1961 (monthly income in rupees)	Revised B. G. Prasad's classification for 2021 (Monthly income in rupees)
I	100 and above	7888 and above
II	50-99	3944-7888
III	30-49	2366-3943
IV	15-29	1183-2366
V	Below 15	<1183

Marital Status: Data regarding marital status was obtained and categorized as married, widow, widower.

Married[36]- "Contract between man & woman united together to support each other in shared household"

Widow[37]-" A woman who has lost her spouse or partner by death and usually has not remarried"

Widower[38]- "A man who has lost her spouse or partner by death and usually has not remarried"

Type of family[39]

Nuclear family: "Married couples, along with their dependent children living in the same house".

Joint family: "Many married couples and their children who are living in the same household. All males in the family are blood relatives and all females of the family are related to them either by marriage or blood relation".

Three generation family: "Married couple with married children and their kids (three generations) related to each other by direct descent and living together".

Dependency[39]- "Elder people who are depends upon others for money & other economic requirements mentioned as Dependent such as the elderly person above 65 years & home maker".

Tobacco use: "For the assessment of history of use of tobacco in any form (smoking/smokeless) period of recall was considered for the past one year".

Smoking tobacco:

Smokers[40]: "An adult who has smoked 100 cigarettes in his or her lifetime and who currently smokes cigarettes".

Non-Smokers: "An adult who has never smoked, or who has smoked less than 100 cigarettes in his or her lifetime".

Smokeless tobacco use:

Smokeless tobacco user[41]: "Subjects who had used a variety of tobacco products that are either sniffed, sucked, or chewed at present were considered as smokeless tobacco user".

Non user of smokeless tobacco: "Subjects who had never used smokeless tobacco in any form were considered as non-users".

Alcohol Consumption: "For the assessment of history of alcohol consumption period of recall was considered for the past one year".

Alcoholic[42]: "A person who has been taking alcohol at least 355 ml of regular beer or 44 ml of hard liquor or distilled spirits per day within 1 year period preceding the survey".

Non-Alcoholic: "Subject who had never consumed alcohol were considered and kept in the category of Non-Alcoholic".

Body Mass Index (BMI) – "BMI is a measure of body fat based on height and weight. It can help assess the risk of overweight and **obesity"**.

According to the guidelines recommended by ICMR[43],

Body Mass Index was calculated as

$$BMI = \frac{\text{Weight in kgs}}{(\text{Height in Meter})^2}$$

Classification	**BMI**
Underweight	<18.50
Normal weight	18.50- 22.9
Pre-obese	23.00-24.99
Obese	≥25.00

Height measurement – "The subject stood straight without footwear, with heels, buttocks and back touching the wall and arms hanging by side. The height was measured from head to heal. The coinciding reading was measured to the nearest 0.1 cm using a Ofixo measuring tape".

Weight measurement – "Body weight was measured without any foot wear and minimal clothing to the nearest 0.1 kilogram using a standard Omron HN289 portable weighing

machine, which was standardized periodically during the study. The scale was adjusted to zero before each session and weight was recorded in kilogram. We have calibrated the machine every time we used it for data collection by physical weight".

Waist size measurement- "Wrapping the Ofixo tape measure around the narrowest part of abdomen, near or just above your belly button in standing position and the measurement was taken".

Hip size measurement- "Wrapping the Ofixo tape measure around the widest part of hips and buttocks in standing position and the measurement was taken".

Waist Hip Ratio(WHR): "The ratio of waist circumference to the hip circumference less than 0.85 in females and less than 0.90 in male was considered normal[44]".

Pulse Rate(PR) measurement- "Pulse rate was measured by BPL pulse oximeter with the sitting position".

Blood pressure(BP) measurement- " BP was measured by Sitting position on a chair with back straight & well-supported with the feet are flat on the ground. Placing the arm on a flat, sturdy surface, like a table with the upper arm is at the heart's level. Wearing the cuff snuggly on bare arm without too tight, or too loose & the bottom of the cuff should be about 1 inch above the elbow bend then measurement taken by the fully automatic Omron HM7120 BP apparatus."

CGA screening tool:

Visual impairment:

For assessment of the visual component, we have used modified visual activity questionnaire.

1. Do you have any visual problems like blurred vision or double vision while seeing objects far from you (e.g., reading the bus number board)?

3 points- I can read clearly (no visual impairment in normal daily activities)

2 points- I am having difficulty in reading (mild visual impairment in daily activities).

1 point-I cannot read at all (very difficult to do daily activities with visual impairment).

2. Do you have any visual problems like blurred vision or double vision while seeing objects nearer to you (e.g., reading the newspaper)?

3 points- I can read the newspaper clearly (no visual impairment in normal daily activities).

2 points- I am having difficulty in reading (mild visual impairment in daily activities).

1 point-I cannot read at all (very difficult to do daily activities with visual impairment).

3. Do you have any visual impairment in reduced light like evening or artificial light?

3 points-clear night vison

2 points– blurred vision

1 point– no vison at all

4.Do you have any difficulty in distinguishing colour?

3 points-no

2 points-sometimes

1 point-always

5. Do you have any trouble in finding specific items in crowded market?

3 points- no

2 points- sometimes

1 point- always

13- 15 points – Normal

10- 12 points –Mild visual impairment

5- 9 points – Moderate visual impairment

< 5points – Severe visual impairment

Hearing impairment

For assessment of hearing component we have used the "Modified Hearing Handicap Inventory for the Elderly"

1. Do you have hearing impairment while others speaking?

    4 points- I can hear clearly

    2 points- I am having mild difficulty of hearing in daily activities but it won't affect personal and social life.

    0 point- I can't hear at all & it affects my personal & social life

2. Do you noticed hearing impairment while watching tv/listening radio?

    4 points– I can hear clearly in normal volume

    2 points-I have to increase the volume above normal

    0 point-I can't hear clearly in high volume also

3. Does a hearing problem cause you to have arguments with family members?

    4 points-no

    2 points-sometimes

    0 point-yes

4. Do you attend religious services less because of hearing problem?

    4 points-No

    2 points-sometimes

    0 point-yes

5. Do you to feel embarrassed while talking to new people because of hearing problem?

    4 points- No

    2 points- sometimes

    0 point- yes

6. Do you have hearing difficulty when someone speaks in whisper?

4 point-No

2 points-sometimes

0 points-yes

7. Do you feel impaired by a hearing problem?

4 points-No

2 points-sometimes

0 point-yes

8. Does a hearing problem cause you feel frustrated when talking to others?

4 points-No

2 points-sometimes

0 point-yes

9. Does a hearing problem cause you difficulty when visiting friends, relatives or neighbours?

4 points-No

2 points-sometimes

0 point-yes

10. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?

4 points-No

2 points-sometimes

0 point-yes

40- 32 points – Normal

24- 31points – mild hearing impairment

16- 23 points – moderate hearing impairment

< 16 points – severe hearing impairment

Activities Of Daily Living

Modified Katz ADL index used for assessing the Activities of Daily Living

1.Bathing

3 points- Independent: Bathes self completely

2 point- needs help only in single part of the body

1 point- Dependent: needs help with bathing more than one part of the body, getting in or out the bathtub & shower.

2.Dressing

3 points-independent-complete dressing without help

2 points-may need help tying shoes

1 point-dependent-needs help with dressing self or needs to be completely dressed

3.Toileting

3 points-without help

2 point-with help to transferring

1 point- uses bedpan or commode

4.Transferring things

3 points-moves in & out of bed

2 point- chair unassisted

1 point-needs help for moving

5. Urinary continence

3 points-totally self-control

2 point-partially control

1 point-not self-control totally

6.Faecal continence

3 points-totally self-control

2 point-partially control

1 point-not self-control totally

7. Feeding

3points-gets food from plate into mouth without help

2points – with help of others

1point- parenteral feeding

16- 21points – Normal

11- 15points – Mild function loss

5- 10points – Moderate functional loss

<5points – Severe functional loss

Instrumental Activities of Daily Living

Modified Lawton and Brody's IADL index was used for IADL function.

S.NO.,	**Question**	**Very uncomfortable**	**Uncomfortable**	**Neutral**	**Comfortable**	**Very comfortable**
1	Can you use the mobile?	☐ (never)	☐ (sometimes)	☐ (May or may not be)	☐ (most of the time)	☐ (Always)
2	Can you go shopping for groceries?	☐ (never)	☐ (Sometimes)	☐ (May or may not be)	☐ (most of the time)	☐ (always)

3	Can you make your own food?	☐ (never)	☐ (Sometimes make tea)	☐ (may or may not be)	☐ (most of the time)	☐ (always)
4	Do you take your own medication?	☐ (never)	☐ (rarely)	☐ (sometimes)	☐ (Most of the time)	☐ (always)
5	Can you manage your own money?	☐ (never)	☐ (sometimes)	☐ (not sure)	☐ (most of the time)	☐ (always)
6	Can you do household repair without help (changing light)?	☐ (never)	☐ (sometimes)	☐ (May or may not be)	☐ (Most of the time)	☐ (always)

7	Can you do your laundry without support?	☐ (never)	☐ (sometimes)	☐ (may or may not be)	☐ (most of the time)	☐ (always)
8	Can you go alone to places some far distance?	☐ (never)	☐ (Auto, cab)	☐ (May or may not be)	☐ (most of the time)	☐ (always)

31- 40points – Normal

21- 30 points – Mild functional loss

11- 20 points – Moderate functional loss

≤10 points – Severe functional loss

Cognitive Assessment

Modified Short Portable Mental Status Questionnaire (SPMSQ) used for assessing cognitive function

S.NO	**QUESTION**	**RESPONSE**	**POINTS** (1point-correct answer)
1	What is the date today?		

2	What day of week is it?		
3	What is the name of this place?		
4	How old are you?		
5	When were you born?		
6	What is your address?		
7	What is your grandfather's name?		
8	Who is Chief Minister (CM) of Karnataka?		
9	Who is CM of Karnataka before him?		
10	Subtract 3 from 20 and keep subtracting each new number		

8-10 points - Normal

6- 7 points – Mild cognitive impairment

3- 5 points – Moderate cognitive impairment

≤ 2points- Severe cognitive impairment

Mental Health:

Geriatric Depression Scale (GDS) – 4 used for assessment of Mental health

S.NO	Question	yes	No	point
1	Are you basically satisfied with your life?			

2	Are you afraid that something bad is going to happen to you?			
3	Do you feel your life is empty?			
4	Do you feel unhappy most of the time?			

>1point – Depression

Sleeping difficulty

Modified insomnia severity score was used to assess the sleeping difficulty

6points – maximum

≤4points – Insomnia positive

Falls risk assessment

Falls Risk Assessment Test(FRAT) used for Assessment of falls risk among participants.

1.How many falls have you had in last year?

1 point->4 falls per year

2 points-<4falls per year

2.Associated symptoms like palpitation, blacked out?

1 point-Yes I had

2 points-no

3. Are you unsteady when you are walking?

1 point-most of the time

2 points-no I don’t feel like unsteady

4. Do you rely on furniture for support when walking inside the home?

1 point-most the time

2 points-no

6. Do you need to use your hands to help you stand up?

1 point-most of the time

2 points-sometimes

7. Do you find it challenging to step onto a higher platform?

1 point- yes, I have difficulty

2 points-no

8. Do you feel loss of sensation in your feet?

1 point – Yes

2 points - No

8.Did you have any injury while fall?

1-yes I had

2-no injury

14- 16 points – Normal

≤13 points – Risk of falls positive

Osteoporosis risk assessment Instrument (ORAI)

Parameter	Finding	points
Age in years	>75	15
	65-74	9

	55-64	5
	45-54	0
Weight in kg	<60	9
	60-69	3
	>70	0
Current oestrogen usage	no	2
	yes	0

If above >9points – Bone densitometry should be done

Tooth Examination

I – Lost up to 12 back teeth.

II- Lost up to 12 teeth, including front teeth.

III- Lost more than 12 teeth.

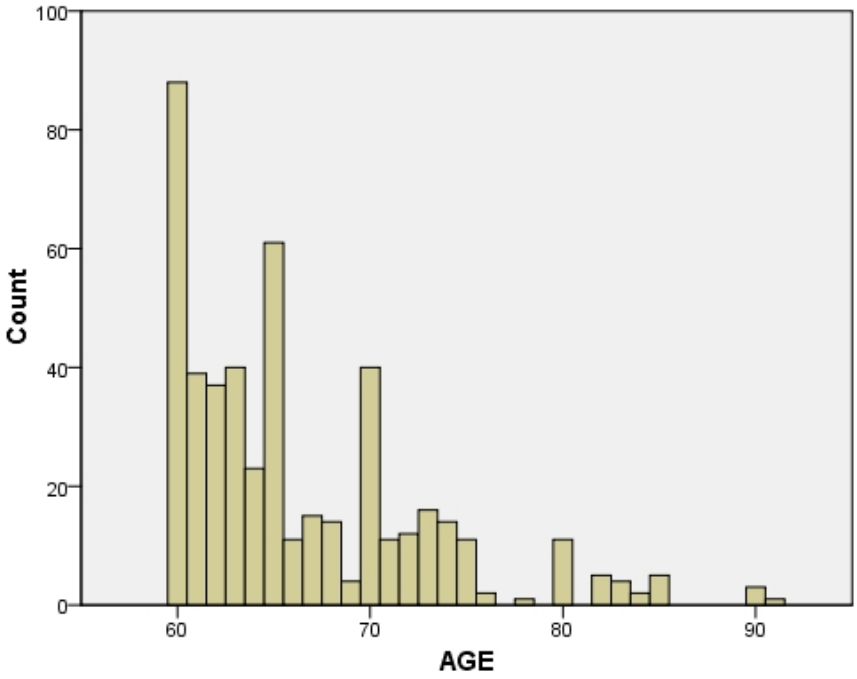
Results

Study participants total were 470 elder persons. Among them 241(51%) males & 229(49%) females. Mean age of study participant is 66 ± 6yrears.

Table 1: Distribution of study participants based on age (N=470)

Age group (in years)	No. of participants	Percentage
60-65	**288**	**61.3%**
66-70	**84**	**17.9%**
71-75	**64**	**13.6%**
>75	**34**	**7.2%**
Total	**470**	**100.0%**

Graph 1: Distribution of study participants based on age (N=470)



61.3% of the total participants are comes under age group 60-65years. No. of participants are keep on decreasing in age group when age of participant was increased.

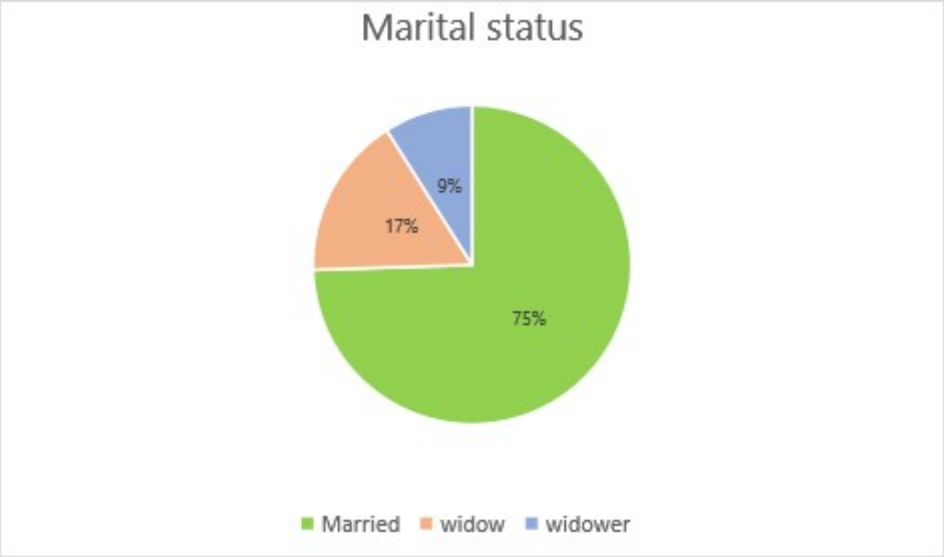
Table 2: Distribution of participants based on education qualification status (N=470)

SI. No	Education	No. of Participants	percentage
1	Illiterate	293	62%
2	Primary school	100	21%
3	PUC	60	13%
4	Graduate	17	4%
5	Total	470	100%

Most of the study participants were illiterate(62%) as we have done the study in rural area.

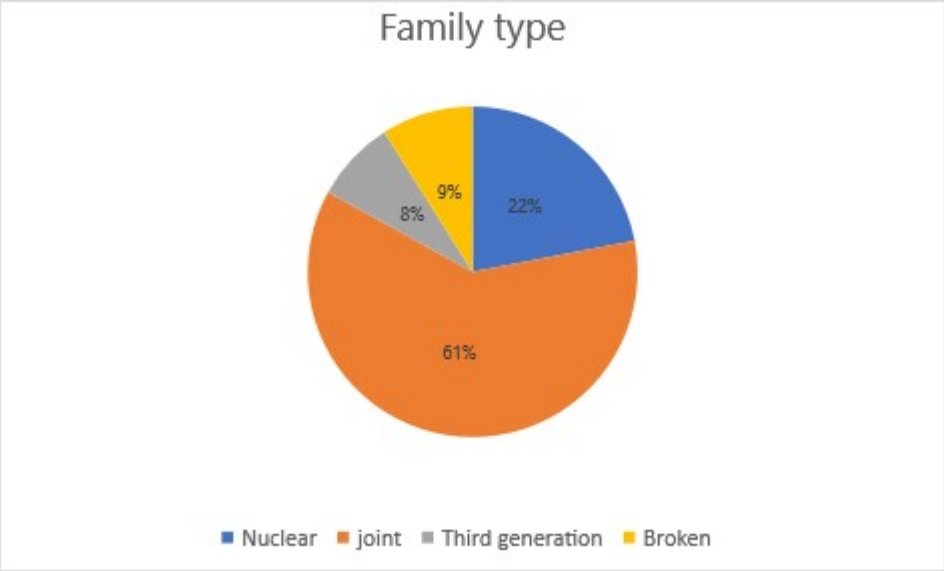
No. participants were keep on decreasing when increasing the education qualification.

Graph 2: Distribution of participants based on marital status (N=470)



Most of the participants (74.5%) were married and living with their partner in same house.

Graph 3: Distribution of participants based on the type of family (N=470)



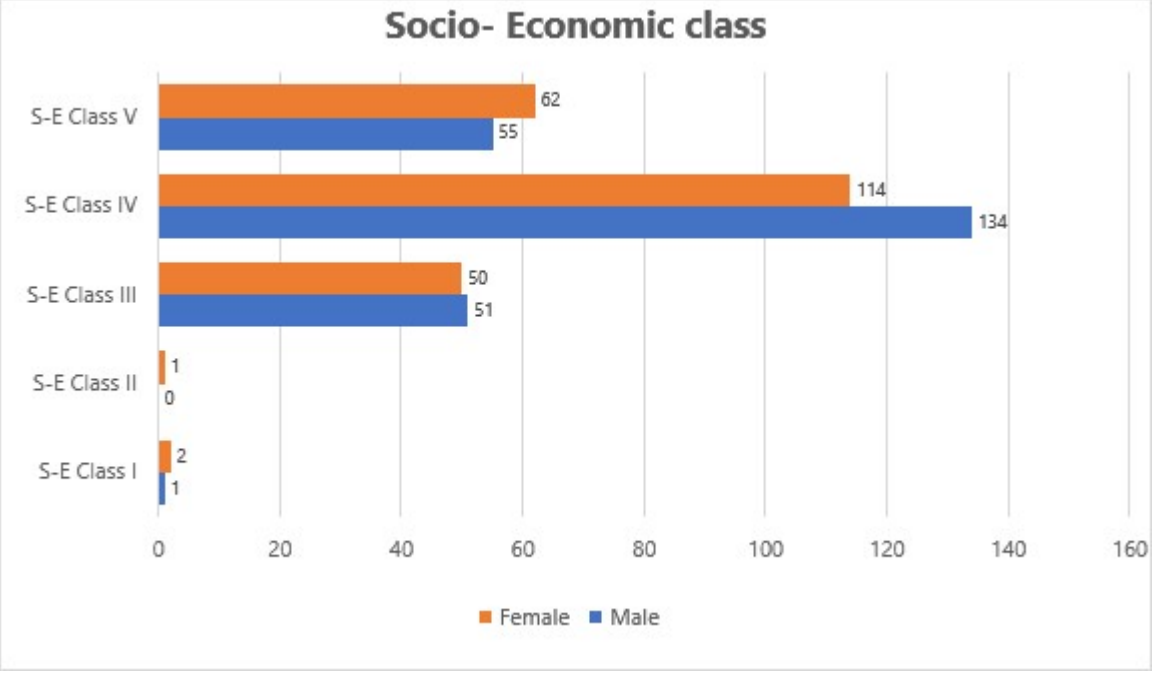
Most of the participants (61%) were living in joint family. Those who living in third generation family only 8% of total participants.

Table 3: Distribution of participants based on occupation (N=470)

SI. NO	Occupation	No. of participants	Percentage
1	Govt. Employee	22	4.7%
2	Private Employee	19	4.0%
3	Own business	29	6.2%
4	Agriculture	109	23.2%
5	Labor	68	14.5%
6	Home maker	223	47.4%
7	Total	470	100.0%

Most of the participants were home makers or farmers as we have done the study in rural area. Only 24.5% participants were doing other jobs like Government or private sector employee.

Graph 4: Bar diagram showing the socioeconomic status of participants (N=470)



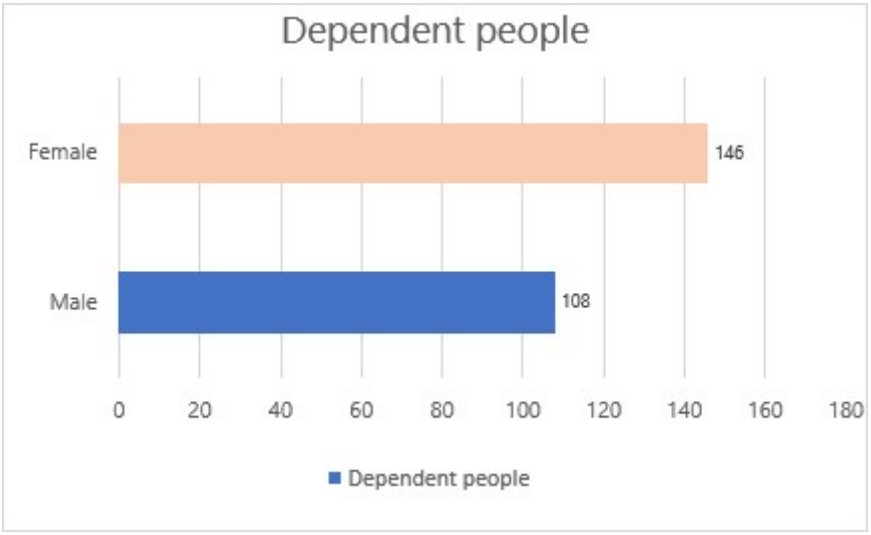
53% of total participants were belongs to the Socio- Economic class IV. Only one person belongs to Socio- Economic class II & 3 person belongs to Socio- Economic class I.

Table 4: Distribution of participants based on religion(N=470)

S. No.	Religion	No. of participants	Percentage
1	Hindu	415	88.3%
2	Muslim	51	10.8%
3	Christian	3	0.6%
4	Sikh	1	0.3%
5	Total	470	100%

Most of the participants (88%) were belongs to Hindu religion. Least most religion was Sikh(0.3%) followed by participants.

Graph 5: Bar diagram showing the sex distribution of dependent people among participants(N=254).



Among 470 participants 54% were dependent & 46% were independent.

Visual impairment

Among >60 years old people visual impairment is more common. Half of the participants were Visually impaired.

Table 5: Distribution of participants based on visual impairment status (N=470)

SI. NO	Vision	No. of participants	Percentage
1	Normal	235	50%
2	Mild impaired	162	34.5%
3	Moderately impaired	63	13.5%
4	Severely impaired	10	2%
	Total	470	100%

65% visually impaired participants wearing visual aids for clear vision. In these 82% participants using visual aid for correcting both myopic & hypermetropic problems. 18% patients using visual Aid for correcting myopic problem.

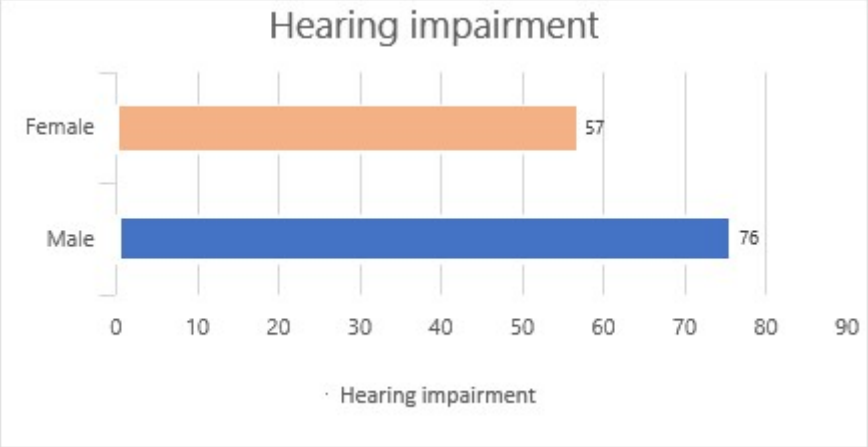
Hearing impairment

Prevalence of hearing impairment was 28%. 76 male & 57 female participants were having hearing impairment. Normal routine life activities are not affected by hearing impairment problem for many participants. So only 5 people were using the hearing aids for the problem.

Table 6: Distribution of participants based on Hearing impairment status (N=470)

SI. NO	Hearing function	No. of Participants	Percentage
1	Normal	337	72%
2	Mild impaired	43	9%
3	Moderately impaired	66	14%
4	Severely impaired	24	5%
	Total	470	100%

Graph 6: Bar diagram showing the sex distribution of Hearing impairment among participants(N=133).



Functional Impairment

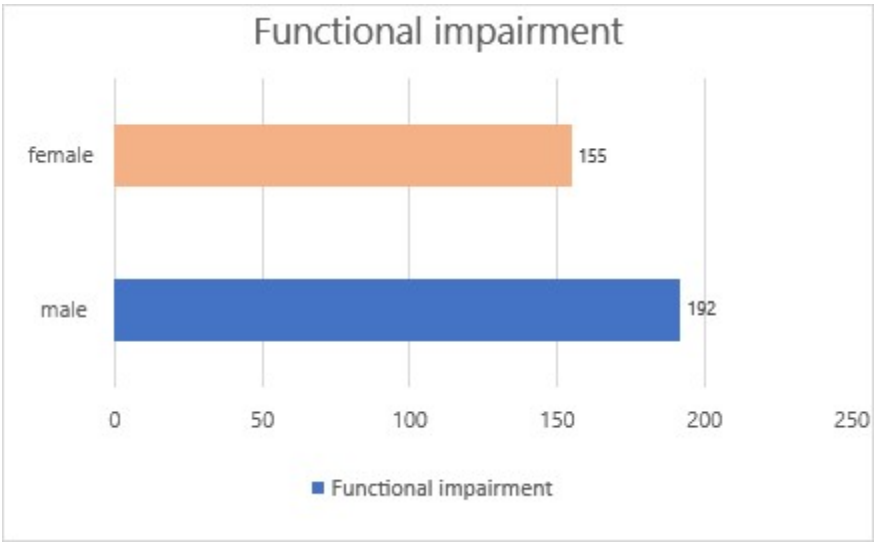
Functional impairment most common problem among participants. Lawton IADL score was less among home makers & farmers. Functional impairment more common among Socio-Economic class IV & V. 40% people were not using the mobile the mobile phones. 48% people were unable to wash the clothes. 43% participants were not doing household handyman works.

46% participants were not aware of long travels alone. But Katz ADL score was good for 99.5% participants.

Table 7: Distribution of participants based on Functional impairment status (N=470)

SI. NO	Functional	No. of Participants	Percentage
1	Normal	123	26%
2	Mild impaired	197	42%
3	Moderately impaired	136	29%
4	Severely impaired	14	3%
	Total	470	100%

Graph 7: Bar diagram showing the sex distribution of Functional impairment among participants(N=347).



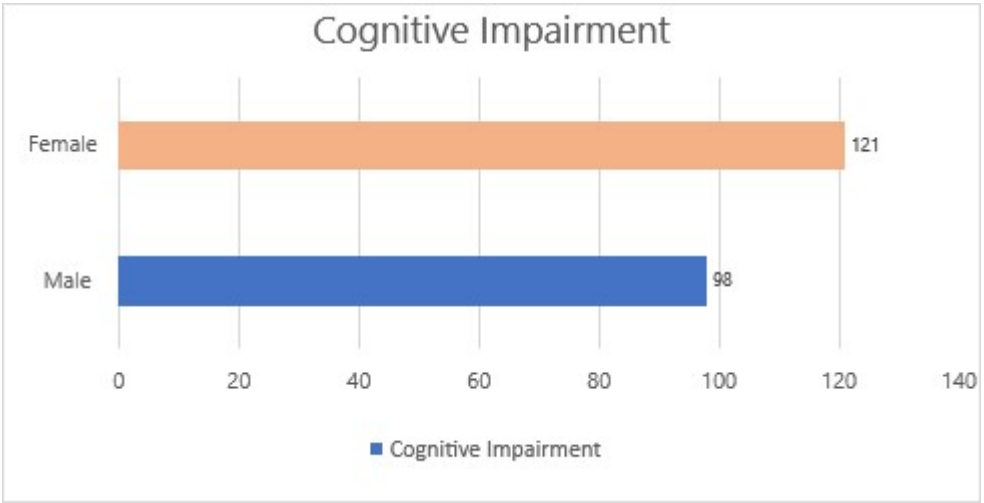
Cognitive Impairment

Cognitive impairment more common among females than males. Cognitive impairment indirectly proportional to education qualification of the participants. Illiterate people got low SPMMS score comparing with graduate people. Most of the Illiterate people did not know their birth date & CM names. And also they failed to calculate simple calculation.

Table 8: Distribution of participants based on cognitive impairment status (N=470)

SI. NO	Cognitive Function	No. of Participants	Percentage
1	Normal	252	53.5%
2	Mild impaired	134	28.5%
3	Moderately impaired	82	17.5%
4	Severely impaired	2	0.5%
	Total	470	100%

Graph 8: Bar diagram showing the sex distribution of Cognitive impairment among participants(N=219).



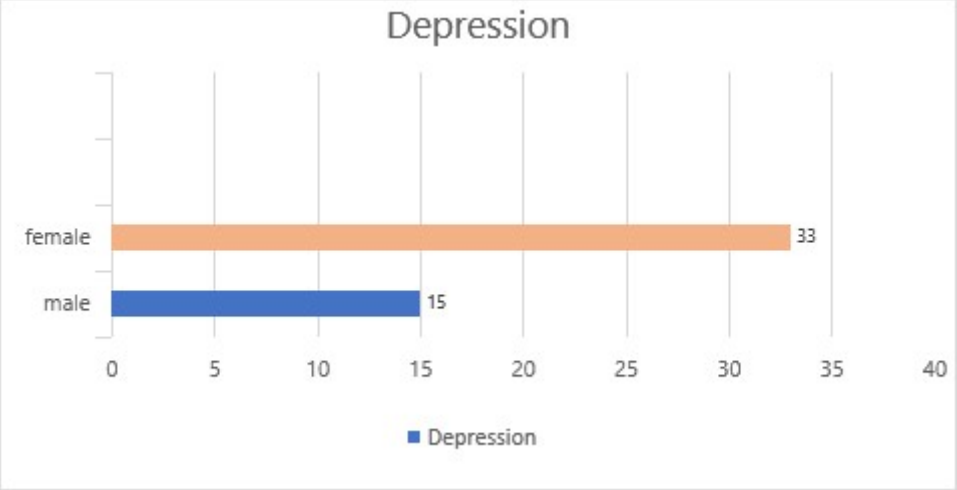
Depression

Those people who living in a broken families got a high chance of depressive problem. Joint family & third generation family are protective factor for elder people.

Table 9: Distribution of participants based on depression status (N=470)

SI. NO	Mental function	No. of Participants	Percentage
1	Normal	422	90%
2	Depressed	48	10%
	Total	470	100%

Graph 9: Bar diagram showing the sex distribution of depression among participants(N=48).



Sleeping difficulty

No significant difference between both sexes. Insomnia is more common among widows (p value-0.001).

Table 10: Distribution of participants based on insomnia status (N=470)

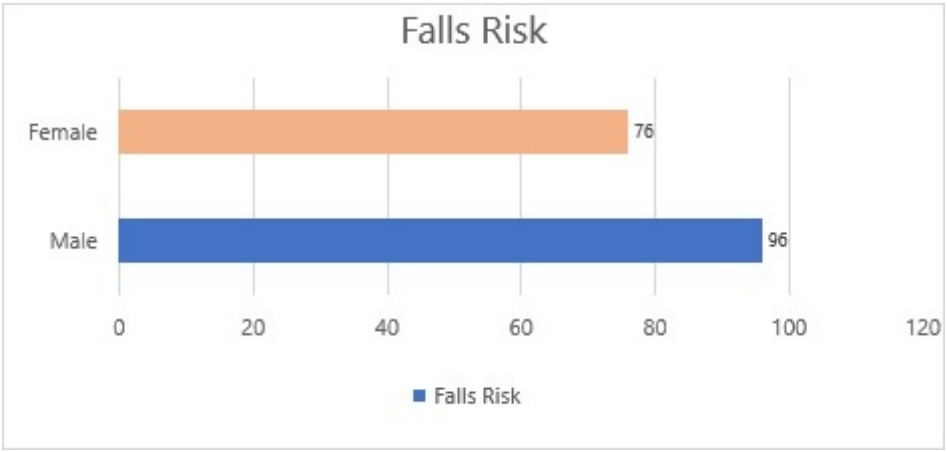
SI. NO	Sleep function	No. of Participants	Percentage
1	Normal	397	84.5%
2	Insomnia	73	15.5%
	Total	470	100%

Falls risk

Table 11: Distribution of participants based on falls risk status (N=470)

SI. NO	Falls risk	No. of Participants	Percentage
1	Normal	298	63.5%
2	positive	172	36.5%
	Total	470	100%

Graph 10: Bar diagram showing the sex distribution of falls risk among participants(N=172).



Osteoporosis Risk Assessment

Table 12: Distribution of participants based on ORAI status (N=470)

SI. NO	ORAI	No. of Participants	Percentage
1	Normal	51	11%
2	positive	419	89%
	Total	470	100%

Risk factors Assessment

Smokeless tobacco usage among elderly people was 32.5%. 82 males & 71 female were using smokeless tobacco. 30.5% were having chewing tobacco addiction. 29.5% participants were using smokeless tobacco daily. 4% were smokers. Beedi smoking only common among smokers. Widowers having more drinking habit comparing with the married couple(p- 0.001) Those people living in broken families having more tobacco addiction than other families(p-0.003).

Table 13: Sex distribution of participants based on tobacco habit status (N=174)

SI. NO	Risk factor	Sex	No. of Participants	Percentage
1	Tobacco	Male	103	21.5%
		Female	71	15%
		Total	174	36.5%

Table 14: Sex distribution of participants based on alcohol habit status (N=37)

SI. NO	Risk factor	Sex	No. of Participants	Percentage
1	Alcohol	Male	37	8%
		Female	0	0%
		Total	37	8%

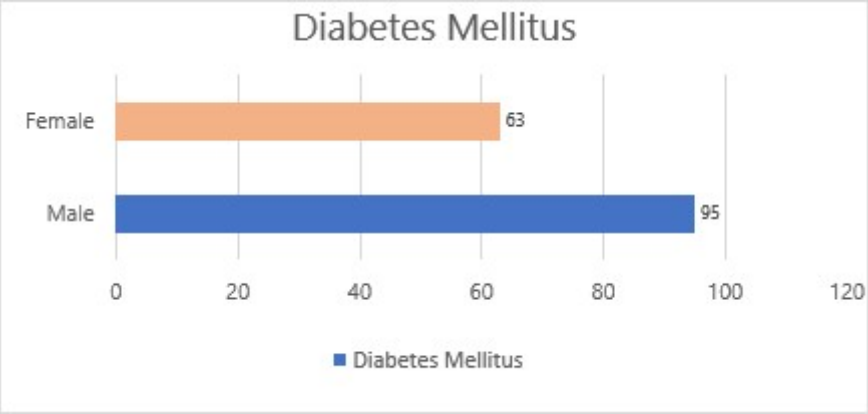
Brandi is the most commonly used beverage among elderly. 4.5% participants were drinking alcohol daily. Among farmers & labourers both tobacco & alcohol usage more than other occupation (p- 0.001).

Diabetes & Hypertension

Table 15: Distribution of participants based on NCD status (N=470)

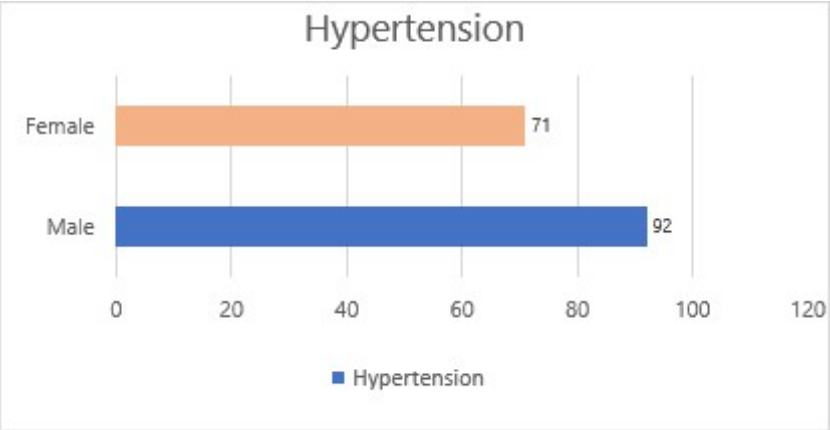
SI. NO	NCD	No. of Participants	Percentage
1	Diabetes Mellitus	158	34%
2	Hypertension	163	35%

Graph 11: Bar diagram showing the sex distribution of Diabetes Mellitus (DM) among participants(N=158).



Diabetes problem was more common among who living in Socio-Economic class I(66.7%) & Socio-Economic class III(47.5%) compared with Socio-Economic class V(24.8%). It is indicating that Socio-Economic class association with DM significantly (p value- 0.004).

Graph 12: Bar diagram showing the sex distribution of hypertension among participants(N=163).



Those who working in private sector(68.4%) were having hypertension problem more commonly compared with farmers(22%), indicating that association of occupation with hypertension significantly(p value- 0.001).

Table 16: Distribution of participants based on BP status status(N=470)

SI. NO	Stages	No. of Participants	Percentage
1	Normal	240	51%
2	Elevated	150	32%
3	Stage I	70	15%
4	Stage II	10	2%
	Total	470	100%

Dentition Loss

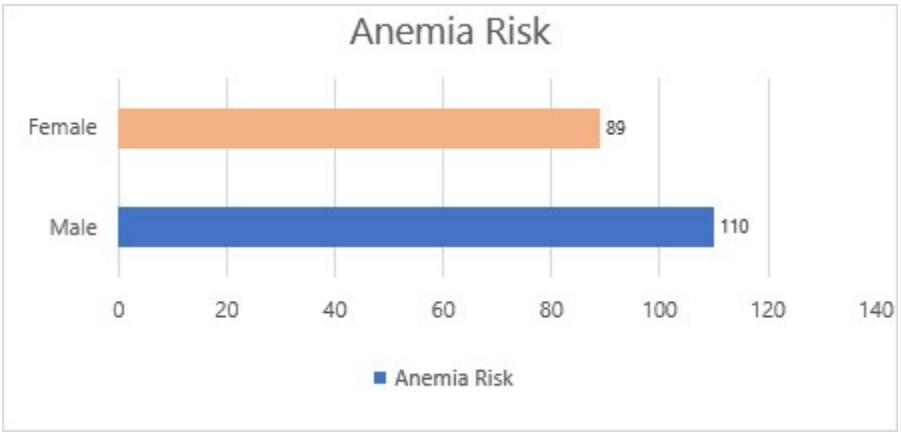
Table 17: Distribution of participants based on Dentition status (N=470)

SI. NO	Stages	No. of Participants	Percentage
1	I	349	74%
2	II	49	11%
3	III	72	15%
	Total	470	100%

Table 18: Distribution of participants based on anaemia risk status (N=470)

SI. NO	Pallor	No. of Participants	Percentage
1	Positive	199	42%
2	Negative	271	58%
	Total	470	100%

Graph 13: Bar diagram showing the sex distribution of anaemia risk among participants(N=199).

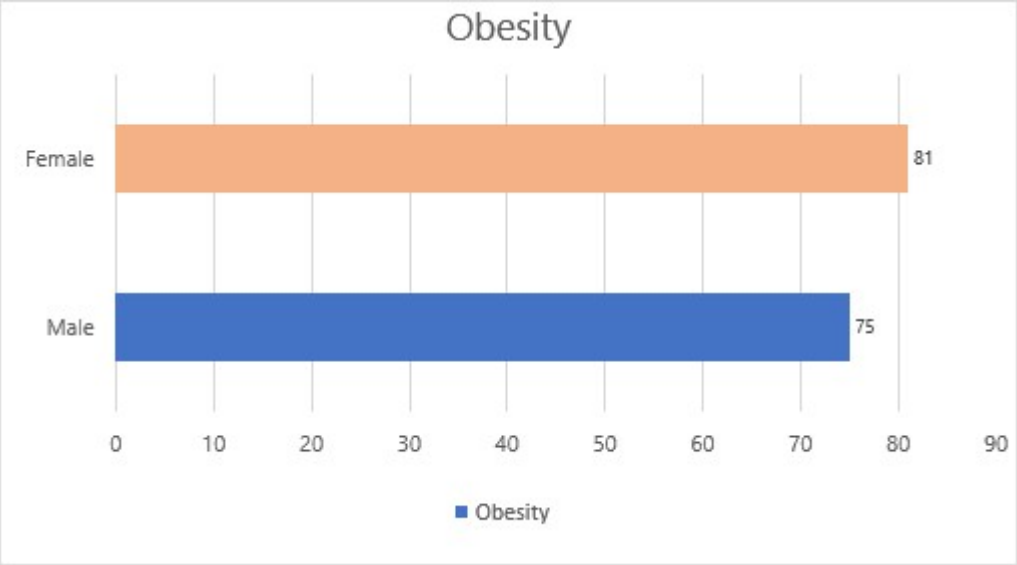


Obesity

Table 19: Distribution of participants based on weight(N=470)

SI. NO	BMI	No. of Participants	Percentage
1	<18.5	51	11%
2	18.5 – 22.9	222	48%
3	23 - 25	41	9%
4	>25	156	33%
	Total	470	100%

Graph 14: Bar diagram showing the sex distribution of obesity among participants(N=156).



Multimorbidity

57% participants were having at least 3 problems out of 7 problems. More common problems are Functional impairment, visual impairment, cognitive impairment. 50.7% participants were

having problems Functional impairment, visual impairment, cognitive impairment combinedly.

Table 20: Association of socio-demographic data with Visual impairment(N=470)

Sociodemographic factors	groups	Visual impairment	Normal	X^2 value	P value
Age	60-65	134	154	15.6	0.001
	66-70	41	43		
	71-75	32	32		
	>75	28	6		
Sex	Male	121	120	0.009	0.92
	Female	114	115		
Occupation	Govt. Employee	10	12	12.19	0.001
	Private. Employee	5	14		
	Own business	6	23		
	Agriculture	65	44		
	Laborer	28	40		
	Home maker	121	102		
Marital status	Married	161	188	9.16	0.001
	Widow	45	33		
	Widower	29	14		
Family type	Nuclear	44	16	12.21	0.007
	Joint	140	146		

	Three generation family	**20**	**18**		
	Broken family	**31**	**11**		
Socio-economic status	**I**	**0**	**3**	**11.46**	**0.02**
	II	**0**	**1**		
	III	**61**	**40**		
	IV	**125**	**123**		
	V	**49**	**68**		

The prevalence of visual impairment in age group >75years was 82.4 %. But was found to be comparatively low in 60-65,66-70 & 71-75 which was 46.5 %, 48.8 %, 50.0% respectively, indicating significant association between age and visual impairment with p-value = 0.001**

The prevalence of visual impairment among farmers was very high with 59.6%. But was found to be very low among private and own business which was 26.3% and 20.7 % respectively, indicating significant association between occupation and visual impairment with p-value <0.001***

The prevalence of visual impairment in widowers was very high with 67.4%. But was found to be very less in married person 46.1%, indicating significant association between marital status and visual impairment with p-value <0.001***

The prevalence of visual impairment in broken family was very high with 73.8%. But was found to be very less in nuclear family with 42.3 %, indicating significant association between type of family and hearing impairment with p-value =0.007**

The prevalence of visual impairment in Socio- Economic class III was high with 60.4%. But was found to be very less in class Socio- Economic I & Socio- Economic II with 0% and Socio-Economic class IV with 41.9% indicating significant association between Socio-Economic class and visual impairment with p-value =0.006**

The prevalence of visual impairment in people with DM was 61.4%. But was found to be very less in without DM with 38.6% indicating significant association between DM & visual impairment with p-value < 0.001***

Table21: Association of socio-demographic data with Hearing impairment(N=470)

Sociodemographic factors	groups	Hearing impairment	Normal	X^2 value	P value
Age	60-65	60	228	22.83	0.001
	66-70	29	55		
	71-75	29	35		
	>75	15	19		
Sex	Male	76	165	2.55	0.10
	Female	57	172		
Occupation	Govt. Employee	2	20	29.5	0.001
	Private. Employee	2	17		
	Own business	3	26		
	Agriculture	37	72		
	Laborer	8	60		
	Home maker	81	142		
Marital status	Married	82	267	21.5	0.001

	Widow	**27**	**51**		
	Widower	**24**	**19**		
Family type	**Nuclear**	**16**	**88**	**28.82**	**0.001**
	Joint	**82**	**204**		
	Three generation family	**10**	**28**		
		25	**17**		
Socio-economic status	**I**	**2**	**1**	**7.36**	**0.11**
	II	**1**	**0**		
	III	**25**	**76**		
	IV	**77**	**171**		
	V	**28**	**89**		

The prevalence of hearing impairment in age group 71-75 & >75years is 45.3% and 44.1% respectively compared to 20.8% in age group 66-70years, indicating significant association between age and hearing impairment with p-value <0.001***

The prevalence of hearing impairment in home makers was very high with 36.3%. But was found to be very low government, own business and laborer which was 9.1 %, 10.3 %, 11.8% respectively, indicating significant association between occupation and hearing impairment with p-value <0.001***

The prevalence of hearing impairment in widowers was very high with 55.8%. But was found to be very less in married person 23.5%, indicating significant association between marital status and hearing impairment with p-value <0.001***

The prevalence of hearing impairment in broken family was very high with 59.5%. But was found to be very less in nuclear family with 15.4 %, indicating significant association between type of family and hearing impairment with p-value <0.001***

Table 22: Association of socio-demographic data with Functional impairment(N=470)

Sociodemographic factors	groups	Functional impairment	Normal	X^2 value	P value
Age	60-65	187	101	32.89	0.001
	66-70	74	10		
	71-75	53	11		
	>75	33	1		
Sex	Male	192	49	8.72	0.003
	Female	155	74		
Occupation	Govt. Employee	14	8	17.25	0.004
	Private. Employee	14	5		
	Own business	18	11		
	Agriculture	86	23		
	Laborer	39	29		
	Home maker	176	47		
Marital status	Married	246	103	11	0.004
	Widow	61	17		
	Widower	40	3		
Family type	Nuclear	69	35	5.26	0.155

	Joint	**240**	**72**		
	Three generation family	**29**	**9**		
	Broken family	**35**	**7**		

The prevalence of functional impairment in age group 71-75 & >75years is 82.8% and 97% respectively compared to 64.9% in age group 60-65years, indicating significant association between age and functional impairment with p-value <0.001***

The prevalence of functional impairment among males (79.7%) higher than females (67.7%) indicating significant association of sex with functional impairment (p-value <0.001)

The prevalence of functional impairment among home makers & farmers was high with 79.6%, 78.9% but was found to be low own business and laborer which was 62 %, 57.4% respectively, indicating significant association between occupation and functional impairment with p-value <0.001***

The prevalence of functional impairment in widowers was very high with 93%. But was found to be very less in married person 70.5%, indicating significant association between marital status and functional impairment with p-value <0.004**

The prevalence of functional impairment in people with DM was 80%. But was found to be very less in without DM with 71% indicating significant association between DM & functional impairment with p-value < 0.03*

Table 23: Association of socio-demographic data with Cognitive impairment(N=470)

Sociodemographic factors	groups	Cognitive impairment	Normal	X^2 value	P value
Age	60-65	125	163	6.29	0.09
	66-70	39	45		
	71-75	33	31		
	>75	22	12		
Sex	Male	98	143	6.99	0.008
	Female	121	108		
Education	Illiterate	181	111	85.24	0.001
	Primary school	32	69		
	PUC	6	54		
	UG/PG/Ph.D.	0	17		
Occupation	Govt. Employee	0	22	58.8	0.001
	Private. Employee	3	16		
	Own business	4	25		
	Agriculture	69	40		
	Laborer	24	44		
	Home maker	119	105		
Marital status	Married	149	200	8.4	0.014
	Widow	44	34		
	Widower	26	17		
Family type	Nuclear	47	57	5.5	0.13
	Joint	132	154		

	Three generation family	**14**	**24**		
		26	**16**		
Socio-economic status	**I**	**0**	**3**	**25.44**	**0.001**
	II	**0**	**1**		
	III	**27**	**74**		
	IV	**127**	**121**		
	V	**65**	**54**		

The prevalence of cognitive impairment among females (52.8%) higher than males (40.7%) indicating significant association of sex with cognitive impairment (p-value - 0.008 ***)

The prevalence of cognitive impairment among illiterate was very high with 63.1% respectively. But was found to be very low among UG & PG degree holders which were 1.3%, 0% respectively indicating significant association between education and cognitive impairment with p-value <0.001***

The prevalence of cognitive impairment among farmers & home makers was very high with 63.3% & 54.3% respectively. But was found to be very low in private employee, own business which was 15.8% & 13.8% respectively, indicating significant association between occupation and cognitive impairment with p-value <0.001***

The prevalence of cognitive impairment in widowers was high with 60.7% . But was found to be very less in married women 42.7%, indicating significant association between marital status and cognitive impairment with p-value - 0.01***

The prevalence of cognitive impairment Socio- Economic class V was high with 55.6% . But was found to be very less in class I & II with 0% and Socio- Economic class III with 26.5%, indicating significant association between Socio- Economic Class and cognitive impairment with p-value <0.001***

Cognitive impairment was more common among tobacco users(58%) and also significantly associated (p-value- 0.001***)

Table 24: Association of socio-demographic data with Depression(N=470)

Sociodemographic factors	groups	Depression	Normal	X^2 value	P value
Age	60-65	25	263	5.155	0.161
	66-70	7	77		
	71-75	10	54		
	>75	6	28		
Sex	Male	16	225	6.88	0.009
	Female	32	197		
Occupation	Govt. Employee	1	21	14.75	0.10

	Private. Employee	**1**	**18**		
	Own business	**0**	**29**		
	Agriculture	**10**	**99**		
	Laborer	**2**	**66**		
	Home maker	**34**	**189**		
Marital status	**Married**	**25**	**324**	**28.74**	**0.001**
	Widow	**21**	**57**		
	Widower	**2**	**41**		
Family type	**Nuclear**	**11**	**93**	**42.5**	**0.001**
	Joint	**21**	**265**		
	Three generation family	**0**	**38**		
	Broken family	**16**	**42**		
Socio-economic status	**I**	**0**	**3**	**18.8**	**0.001**
	II	**0**	**1**		
	III	**5**	**96**		
	IV	**19**	**229**		
	V	**24**	**93**		

Depression was more common among females (p value- 0. 009).

Depression was more common among widows(28%) compared to married persons(6%) was less (p value- 0.001***)

Depression was more common among home makers (p value- 0.01).

Depression is more common among those who living in broken families (p-value 0.001) and Socio- Economic class V (p value- 0.001***)

Depression was more common among those who having sleeping difficulty(28%) and also significantly associated(p-value- 0.001)

Depression was more common among hypertensive patients(14%) and also significantly associated(p-value- 0.041)

Table25: Association of socio-demographic data with Falls risk(N=470)

Sociodemographic factors	**groups**	**Falls risk**	**Normal**	**X^2 value**	**P value**
Age	**60-65**	**88**	**200**	**12.07**	**0.007**
	66-70	**39**	**45**		
	71-75	**28**	**36**		
	>75	**17**	**17**		
Sex	**Male**	**96**	**145**	**2.25**	**0.35**
	Female	**76**	**153**		
Occupation	**Govt. Employee**	**4**	**18**	**6.22**	**0.285**
	Private. Employee	**4**	**15**		
	Own business	**12**	**17**		
	Agriculture	**44**	**65**		
	Laborer	**26**	**42**		
	Home maker	**82**	**141**		

Marital status	**Married**	**108**	**241**	**21.46**	**0.001**
	Widow	**37**	**41**		
	Widower	**27**	**16**		
Family type	**Nuclear**	**30**	**74**	**32.04**	**0.001**
	Joint	**97**	**189**		
	Three generation family	**13**	**25**		
	Broken family	**32**	**10**		
Socio-economic status	**I**	**0**	**3**	**2.85**	**0.85**
	II	**0**	**1**		
	III	**40**	**61**		
	IV	**91**	**157**		
	V	**41**	**76**		

Falls risk among widowers was high with 62.7%. But was found to be very less in married person 30.9%, indicating significant association between marital status and falls risk with p-value - 0.01***

Falls risk is more among those who living in broken family(76.2%) than nuclear(28.2%) and joint family(33.9%). Association of type of family with falls risk was statically significant(p-0.001***).

Table25: Associated factors with Falls risk(N=470)

Variable	**Group**	**Falls risk**	**Falls risk**	**X^2 value**	**P value**

		positive	negative		
Visual impairment	**Yes**	**116**	**119**	**33**	**0.001**
	No	**56**	**179**		
Hearing impairment	**Yes**	**75**	**58**	**31.32**	**0.001**
	No	**97**	**240**		
Functional impairment	**Yes**	**157**	**209**	**28.29**	**0.001**
	No	**15**	**89**		
Cognitive impairment	**Yes**	**96**	**123**	**9.26**	**0.002**
	No	**76**	**175**		
Depression	**Yes**	**30**	**18**	**15.46**	**0.001**
	No	**142**	**280**		
Insomnia	**Yes**	**44**	**29**	**20.88**	**0.001**
	No	**128**	**269**		
DM	**Yes**	**99**	**213**	**9.467**	**0.002**
	No	**73**	**85**		

There is high risk of falls among those who having visual impairment, functional impairment, cognitive impairment, depression and insomnia.

Falls risk was high with those who having visual impairment (49.4%) but without visual impairment which was 23.8%, indicating significant association between visual impairment and falls risk with p-value <0.001***.

Falls risk was high with those who having functional impairment (43.4%) but without functional impairment which was 17%, indicating significant association between functional impairment and falls risk with p-value <0.001***.

Falls risk was high with those who having cognitive impairment (43.8%) but without cognitive impairment which was 30.3%, indicating significant association between visual impairment and falls risk with p-value <0.001***.

Falls risk was high with those who having depression (63.4%) but without depression which was 33%, indicating significant association between depression and falls risk with p-value <0.001***.

Falls risk was high with those who having insomnia (60.4%) but without insomnia which was 32.3%, indicating significant association between insomnia and falls risk with p-value <0.001***.

Falls risk was high among people with DM was 46%. But was found to be less in without DM with 31.7% indicating significant association between DM & functional impairment with p-value < 0.002*

Falls risk was high among tobacco users (46.5%) and also significantly associated (p-value-0.<001***)

Discussion

CGA plays a vital role in both preventive & curative care of the geriatric population. This study was conducted among 470 geriatric people in five subcentres of Primary Health Centre (PHC), Vantamuri which is a rural field Practice area of department of Community Medicine, Jawaharlal Nehru Medical college, KAHER, Belagavi from 1st October 2023 to 31st September.

Sociodemographic factors (Tables 1-4)

In our study 241(51%) males & 229(49%) females among 470 participants. Mean age of study participant is 66 ± 6yrears. Most of them are in 60-70 years age group (79%). Study was done in Bangalore & Jammu also showed that similar findings[2,24]. Most of the study participants were illiterate (62%) &home makers (47.4%). Most of the participants were belongs to Joint family (61%) & the Socio- Economic class IV (53%). Married Persons were 74.5%. They were living with their partner in same house. A Haryana study showed similar results with our study like more of married persons, illiterate, home makers among participants[45]. A south Ethiopia study showed that more of 60-70 age group, married persons, illiterate similar to our study[46]. Rajiv et al. study was similar with our study results of marital status & educational qualification of the participants[47]. A Jammu study also showed that more illiterate among participants[24]. A Mumbai study also showed that married participants more in number[13]

Visual impairment (Table 5)

Visual impairment prevalence was 50% in our study & also 17.5% people were not using the visual aids for correcting refractive errors. This study shows 2% people were having severe visual impairment. >70years old people were having more risk of visual impairment. Studies done by Salagre et al, Muhammad et al showed similar visual impairment prevalence

among participants[13,20]. A Haryana study & A Hyderabad study concluded that old age is a risk factor for visual impairment & also severe visual impairment prevalence concordant with our study[45]. Comparing with these studies visual impairment prevalence comes in between 40-60% in India. We can prevent that problem among elder people with using of visual aids.

Hearing impairment (Table 6)

In our study hearing impairment prevalence was 28% & most of them not aware of usage of hearing aids. Only 5 people were using the hearing aids. This study shows that males were having more risk of hearing impairment. A Bangalore study & A Mumbai study showed similar results of hearing impairment prevalence[2,13]. A Delhi study shows that hearing impairment common in males than females. Hearing aids were used in most No. of patients in developed country that was clearly mentioned in studies by Santhop et al, Fraklin et al[48,49]. Because of economic burden most of the rural people in our country were not using hearing aids for impairment.

Functional impairment (Table 7)

In our study functional impairment prevalence was 76%. In our study Lawton's IADL score showing impairment of functional ability. Our study results of IADL impairment concordant with Patel et al study[50]. But all over the country functional disability prevalence was vary around 40- 52% that was shown in Pengpit et al, Sharma et al studies[51,52].

Cognitive impairment (Table 8)

In our study cognitive impairment prevalence was 46.5%. Most of the illiterate population were having low scores. A Shimla study showed that similar prevalence but they have used Montreal Cognitive Assessment (MoCA) [15]. Bhatia MS et al, Keshari et al studies showed that prevalence of cognitive impairment was less compared with our study as they did the study in urban areas[23]. A Gujrat study resembles with our study results like prevalence was more common among females & rural area people[53].

Mental function (Table 9)

In our study depression was 10% prevalence among elderly. Depression was more common among females in our results. Our study results concordant with study done by Barua et al[54]. Depression prevalence was varying in India. Sashidhar study, Sachdeva study& Chinky studies showed that depression among elder people higher than our study[2,15,26]. Pilania et al concluded that depression was more common among women[55]. Loss of companion was most common cause of depression among elderly people. So, family members should take care old age people and should give emotional support.

Insomnia (Table 10)

In our study Insomnia prevalence was 15.5%. This study shows insomnia problem was more common among widows (31%). A Kerala study concordant with our study result[56].

Falls risk (Table 11)

In our study falls risk prevalence among 470 participants was 36.5%. This study shows Falls risk was more common among men. Falls risk prevalence varies around India, which was reflected in various studies such as Sashidhar et al study, Salagre et al Sachdeva et al[2,13,15]. Our study results were found to be concordant with Sirohi et al was done in Haryana[28].

Multimorbidity

In our study, 57% participants were having at least 3 problems. More common problems are Functional impairment, visual impairment, cognitive impairment. 50.7% participants were having functional impairment, visual impairment, cognitive impairment combinedly. Our study results concordant with the study done Patel et al[57].

Risk factors (Table 12- 14)

In our study 36.5% participants were tobacco users & 8% were alcohol drinkers. Men were commonly using tobacco & alcohol than females. A Tamil Nadu study showed the similar results of our study[58]. Prevalence of alcohol consumption was varying 10%-60% in India by Jagadeesan et al, our study results came near to this value[59].

Non-Communicable Disease (Table 15-16)

This study shows hypertension and diabetes mellitus was common among elderly people. Prevalence of hypertension and DM were 35% & 34% respectively. A Punjab study concordant with our result of hypertensive prevalence[60].

Tooth Loss (Table 17)

In our study severe tooth loss was 15% among elderly people. Severe tooth loss was more common among women.

Anemia Risk (Table 18)

Anemia risk was among the elder people 42% in our study. This study shows that anemia risk was more common among men then women. Tayib et al & Ambiga et al studies were concordant with our study results[61,62]. Anemia was more common among men which was mentioned in Tayib et al study[61].

Obesity (Table 19)

Obesity prevalence among elderly persons were 33% in our study. Obesity prevalence were more among women in our study. A shivmoga study results are similar with obesity prevalence of our study. Punjab study & Shivmoga study proved that obesity was more common among women[60,63].

Association of sociodemographic factors with various impairments (Table 20-25)

This study showed that association of sociodemographic factors like age, occupation, marital status, family type, socioeconomic class with visual impairment were significant. A Haryana study & A south Ethiopia study concordant with our results that association of age, marital status & S-E class of participants[45,46]. Malhothra et al, Marmula et al, Srivatsatva et al showed that old age association with visual impairment[45,64,65].

Association of sociodemographic factors like age, occupation, marital status, family type with hearing impairment were significant. Studies were done by Santhop et al, Fraklin et al, Garg et al concordant with our results which proves that age association with hearing impairment [48,50,66].

Association of sociodemographic factors like age, sex, occupation, marital status with functional impairment was significant. Almost all studies proved that old age is association factor for functional impairment [48,50,51]. Functional impairment was more common among male sex & widows in Patel et al, Pengpid et al that was concordant with our study result[48,50].

Association of sociodemographic factors like sex, education, occupation, marital status, socioeconomic status with cognitive impairment was significant. Prevalence of cognitive impairment was very common among illiterates, widow that was clearly concluded in many studies[22,53,67]

Association of sociodemographic factors like sex, marital status, family type, socioeconomic status with depression was significant. Our study shows that among widows & women depression was more common. Studies like Barua et al, Pilania et al, Panda et al clearly concluded that widows were having depression commonly than married person[54,55,68].

Association of sociodemographic factors like age, marital status, family type with falls risk was significant. Association of visual impairment, hearing impairment, functional impairment, cognitive impairment, insomnia, diabetes mellitus with falls risk was significant. Rajiv et al study concordant with our study that falls risk was high in visual impaired people[47]. Sirohi et al, Susilowati et al, Ha et al, Ashari et al studies showed that resemblance our results like association of falls risk with age & various impairment like visual impairment, functional impairment, cognitive impairment & depression. So improvement of socioeconomic factors among elders can reduce physical burden[28,69,70,71].

Conclusion

Multimorbidity is very common among elder people so, CGA based screening tool used for the diagnosing many morbidities condition at a time. Many people are unaware of their condition & also not taking proper treatment. CGA will help to physician should take decision on starting of treatment.

This will improve the elderly people's quality of life & also CGA will help family members to understand the elder people health needs and make them happy for many ways.

So, CGA can be used as promotive, preventive & curative care purpose for elderly people.

This study concludes that we can know about the health status & falls risk of the elderly people in a better way by using CGA based tools. We can aware the people about many undiagnosed problems.

This study can provide reference point for future research and multicentric research involving a larger sample size can be planned.

Strengths

- This is the first study about the Comprehensive Geriatric Assessment based care which was done in community in our country. Very less No. of studies only were done about CGA in India & also they have done it in hospitals.
- Sample size is much better than other studies since it will reflect whole community health status of geriatric population.
- In our study we have mentioned the association of the sociodemographic factors with impairments. But other studies were mentioned only prevalence not association of that problems. This study was done in rural area but most of the other studies were done in urban areas.

Limitation

- Since, this study was done only in rural area, so it is not generalizable for all population of country. Education qualification, socioeconomic status & awareness of their health status will be A huge difference between urban & rural population. It will change many outcome variables like cognitive function.
- This CGA tool is mostly subjective type, so we have to add objective tools with this.
- CGA is not a diagnostic tool to confirm the disease as we can use it as assessment tool only.
- In our study, we did not mention the exact reason for the untreated problems.

Recommendation

- More studies need to be done in community on CGA based care to strengthen this study results. CGA based care should be provided in PHCs & CHCs for better health among elderly people to prevent complications of the undiagnosed diseases.
- >60years old people should periodically assessed by CGA tools. If any person has severe impairment, that person should be referred to the higher Centre.
- Many people are ready to use visual & hearing aids to correct the impairment so, Government should implement the programs for needy people who are economically weaker section.

Summary

This study was conducted among 470 elder people in five subcentres of Primary Health Centre (PHC), Vantamuri which is a rural field Practice area of department of Community Medicine, Jawaharlal Nehru Medical college, KAHER, Belagavi.

Among them 241(51%) males & 229(49%) females. Mean age of study participant is 66 ± 6yrears. Illiterate was 62% & most of the participants were home makers (47.4%) or farmers (23.2%). 74% were married. 53% of total participants were belongs to the Socio-Economic class IV. Among 470 participants prevalence of visual impairment, hearing impairment & cognitive impairment were 50%, 28%, 46.5% respectively. Prevalence of functional impairment was 76%. Depression & insomnia prevalence were 10% & 15.5% respectively. 36.5% of total participants were having falls risk.

57% participants were having at least 3 problems out of 7 problems. More common problems are Functional impairment, visual impairment, cognitive impairment. Association of sociodemographic factors like age, occupation, marital status, family type, socioeconomic class with visual impairment were significant.

Association of sociodemographic factors like age, occupation, marital status, family type with hearing impairment were significant. Association of sociodemographic factors like age, sex, occupation, marital status with functional impairment was significant.

Association of sociodemographic factors like sex, education, occupation, marital status, socioeconomic status with cognitive impairment was significant. Association of sociodemographic factors like sex, marital status, family type, socioeconomic status with depression was significant.

Association of sociodemographic factors like age, marital status, family type with falls risk was significant. Association of visual impairment, hearing impairment, functional impairment, cognitive impairment, insomnia, diabetes mellitus with falls risk was significant. This study recommended CGA based care should be provided in PHCs & CHCs for improvement of health among elderly people to prevent many complications of the undiagnosed diseases.

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ANNEXURES

ANNEXURE I

Dept. of Community Medicine

KAHERs JNMC, BELAGAVI

INFORMED CONSENT FORM

"COMPREHENSIVE GERIATRIC ASSESSMENT AMONG ELDERLY PEOPLE RESIDING IN RURAL AREA OF BELAGAVI DISTRICT: A CROSS-SECTIONAL STUDY"

Name of Student/Principal Investigator:
Name of Guide/Co Investigators:

Objective: 1. To assess the health status of the geriatric population
2. To assess the risk of falls, balance & gait assessment in geriatric population

Introduction: This study will be conducted to find out the health status of geriatric population in multidimensional way by assessing physical, mental, cognitive, functional, gait and balance with help of questionnaire.

Explanation of procedure: Participants will be assessed by pre-validated questionnaire format. participants will be examined by investigator for physical well-being.

Withdrawal from participation in the study: Participation in this study is voluntary. You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation, you are free to do so. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study: You will/will not have nor get any benefits by participating in this study. The data gathered will help the population at large.

Possible risks from participating in the study: There are no risks involved in participating in this study.

Privacy and confidentiality: The information collected from you will be coded, to prevent any person from identifying you. Your identity will never be revealed. The data collected from you will be kept confidential and only processed or aggregated data will be used for publication.

Financial incentives: You will not receive any payment for participating in this study.

Authorization for publication of aggregated data: Results obtained after processing of the aggregated data will be published for scientific purposes and or presented to scientific groups. However, your identity will never be revealed.

Questions: In case of any questions with regard to this study, you are free to contact:

If you have any question or complaints with regard to your right as study participant you may contact Dr.Harsha Hegde $_{Msc.phD}$, Chairperson, Ethical committee of JNMC, 0831-2473777 Extension 4052.

Legal rights: By signing this consent form, we are not waiving off any of your legal rights.

CONSENT STATEMENT

"I am making a voluntary decision to participate in the study **"COMPREHENSIVE GERIATRIC ASSESSMENT AMONG ELDERLY PEOPLE RESIDING IN RURAL AREA OF BELAGAVI DISTRICT: A CROSS- SECTIONAL STUDY"**. My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction".

Name of the participant:

Signature or left thumb impression of the participant:

Name of the witness:

Signature or left thumb impression of the witness:

Name of the investigator:

Signature of the investigator:

Date:

Place

ANNEXURE II

Questionnaire

"COMPREHENSIVE GERIATRIC ASSESSMENT AMONG ELDERLY PEOPLE RESIDING IN RURAL AREA: A CROSS - SECTIONAL STUDY"

SOCIODEMOGRAPHIC DETAILS:

SI.NO:
Name:
Age: -----years
Sex: Male/Female
Occupation: Govt.employee/ Pvt.employee/Own business/Agricultural/Laborer/Home maker
Religion: Hindu/Muslim/Christian/Sikh/Jain/Others
Education: Illiterate/Primary School/PUC/Graduate/Post Graduate or Ph. D
Marital Status: Married/Widow/Widower/Separated
Type Of Family: Nuclear/Joint/Third Generation/Broken
Socio-Economic Status: Class I/II/III/IV/V (Modified BG Prasad classification)
Source of Income: Dependent /Independent
Address:

COMPREHENSIVE GERIATRIC ASSESSMENT COMPONENTS

A. Visual impairment

1. Do you have any visual problems like blurred vision or double vision while seeing objects far from you (e.g., reading the bus number board)?
   3 points- I can read clearly (no visual impairment in normal daily activities)
   2 points- I am having difficulty in reading (mild visual impairment in daily activities).
   1 point-I cannot read at all (very difficult to do daily activities with visual impairment).
2. Do you have any visual problems like blurred vision or double vision while seeing objects nearer to you (e.g., reading the newspaper)?
   3 points- I can read the newspaper clearly (no visual impairment in normal daily activities).
   2 points- I am having difficulty in reading (mild visual impairment in daily activities).
   1 point-I cannot read at all (very difficult to do daily activities with visual impairment).
3. Do you have any visual impairment in reduced light like evening or artificial light?
   3 points-clear night vison
   2 points– blurred vision
   1 point– no vison at all
4. Do you have any difficulty in distinguishing colour?

3 points-no
2 points-sometimes
1 point-always

5. Do you have any trouble in finding specific items in crowded market?
3 points- no
2 points- sometimes
1 point- always

Are you using visual aid?
1. Yes 2. No; If Yes
a. For the near vision?
1.Yes 2. No
b. For far vision?
1.Yes 2. No

B. Hearing impairment

1. Do you have hearing impairment while others speaking?
4 points- I can hear clearly
2 points- I am having mild difficulty of hearing in daily activities but it won't affect personal and social life.
0 point- I can't hear at all & it affects my personal & social life

2. Do you noticed hearing impairment while watching tv/listening radio?
4 points– I can hear clearly in normal volume
2 points-I have to increase the volume above normal
0 point-I can't hear clearly in high volume also

3. Does a hearing problem cause you to have arguments with family members?
4 points-no
2 points-sometimes
0 point-yes

4. Does a hearing problem cause you to attend religious services less often than you would like?
4 points-No
2 points-sometimes
0 point-yes

5. Does a hearing problem cause you to feel embarrassed when you talking to new people?
4 points- No
2 points- sometimes
0 point- yes

6. Do you have hearing difficulty when someone speaks in whisper?
4 point-No
2 points-sometimes
0 points-yes

7. Do you feel impaired by a hearing problem?
4 points-No
2 points-sometimes

0 point-yes

8. Does a hearing problem cause you feel frustrated when talking to others?
   4 points-No
   2 points-sometimes
   0 point-yes

9. Does a hearing problem cause you difficulty when visiting friends, relatives or neighbours?
   4 points-No
   2 points-sometimes
   0 point-yes

10. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?
   4 points-No
   2 points-sometimes
   0 point-yes

Are you using hearing aid?
   1.Yes 2. No

C. Functional ability

Activities of daily living

1.Bathing
   3 points- Independent: Bathes self completely
   2 point- needs help only in single part of the body
   1 point- Dependent: needs help with bathing more than one part of the body, getting in or out the bathtub & shower.

2.Dressing
   3 points-independent-complete dressing without help
   2 points-may need help tying shoes
   1 point-dependent-needs help with dressing self or needs to be completely dressed

3.Toileting
   3 points-without help
   2 point-with help to transferring
   1 point- uses bedpan or commode

4.Transferring things
   3 points-moves in & out of bed
   2 point- chair unassisted
   1 point-needs help for moving

5. Urinary continence
   3 points-totally self-control
   2 point-partially control
   1 point-not self-control totally

6.Faecal continence

3 points-totally self-control

2 point-partially control

1 point-not self-control totally

7. Feeding

3points-gets food from plate into mouth without help

2points – with help of others

1point- parenteral feeding

D. Instrumental activities of daily living

S.NO.,	Question	Very uncomfortable	Uncomfortable	Neutral	Comfortable	Very comfortable
1	Can you use the mobile?	☐ (never)	☐ (sometimes)	☐ (May or may not be)	☐ (most of the time)	☐ (Always)
2	Can you go shopping for groceries?	☐ (never)	☐ (Sometimes)	☐ (May or may not be)	☐ (most of the time)	☐ (always)
3	Can you make your own food?	☐ (never)	☐ (Sometimes make tea)	☐ (may or may not be)	☐ (most of the time)	☐ (always)
4	Do you take your own medication?	☐ (never)	☐ (rarely)	☐ (sometimes)	☐ (Most of the time)	☐ (always)
5	Can you manage your own money?	☐ (never)	☐ (sometimes)	☐ (not sure)	☐ (most of the time)	☐ (always)
6	Can you do your handyman work without help(changing light)?	☐ (never)	☐ (sometimes)	☐ (May or may not be)	☐ (Most of the time)	☐ (always)

7	Can you do your laundry without support?	☐ (never)	☐ (sometimes)	☐ (may or may not be)	☐ (most of the time)	☐ (always)
8	Can you get to the places out of the walking distance?	☐ (never)	☐ (Auto, cab)	☐ (May or may not be)	☐ (most of the time)	☐ (always)

E. Cognitive assessment

S.NO	**QUESTION**	**RESPONSE**	**POINTS** (1point-correct answer)
1	What is the date today?		
2	What day of week is it?		
3	What is the name of this place?		
4	How old are you?		
5	When were you born?		
6	What is your address?		
7	What is your grandfather's name?		
8	Who is CM of Karnataka?		
9	Who is CM of Karnataka before him?		
10	Subtract 3 from 20 and keep subtracting each new number		

F. Mental health

S.NO	Question	yes	No	point
1	Are you basically satisfied with your life?			
2	Are you afraid that something bad is going to happen to you?			
3	Do you feel your life is empty?			
4	Do you feel unhappy most of the time?			

G. Sleeping difficulty

Insomnia - Initial	Insomnia - Middle	Insomnia - Delayed

Difficulty in falling asleep	Complaints of being restless and disturbed during the night	Waking early and unable to sleep again
2-absent 1-occassional 0-Frequently	2-absent 1-occassional 0-Frequently	2-absent 1-occassional 0-Frequently

H. GAIT & BALANCE ASSESSMENT

1.How many falls have you had in last year?

1 point->4 falls per year

2 points-<4falls per year

2.Associated symptoms like palpitation, blacked out?

1 point-Yes I had

2 points-no

3. Are you unsteady when you are walking?

1 point-most of the time

2 points-no I don't feel like unsteady

4.Are you steady yourself by holding onto furniture when walking at home?

1 point-most the time

2 points-no

5.Do you need to push with your hands to stand up from chair?

1 point-most of the time

2 points-sometimes

6.Do you have any difficulty to stepping onto a higher platform?

1 point- yes, I have difficulty

2 points-no

7.Have lost some feeling in your feet?

1 point – Yes

2 points - No

8.Did you have any injury while fall?

1-yes I had

2-no injury

I. Risk factor assessment

1.Tobacco - Yes/No If Yes smokeless tobacco -Yes/No

If Yes 1. Which form – Gutka/Chewing tobacco/Other form

2.Since how Long -

3.Frequency – daily/once in a week/occasionally

Smoking tobacco – Yes/No

If Yes 1. Which form- beedi/cigarette/cigar

2.Since how Long -

3.Frequency- Daily/Once in a week/occasionally

2.Alcohol - Yes/No If Yes

1.Which form-Beer/Whiskey/Vodka/Brandi/Rum/Others

2.Since how long-

3.Frequency-Daily/once in a week/occasionally

3.Other addictive substance-Yes/No

EXAMINATION:

1. HEIGHT:
2. WEIGHT:
3. BMI:
4. HIP CIRCUMFERENCE:
5. WAIST CIRCUMFERENCE:
6. PULSE RATE:
7. BLOOD PRESSURE:
8. GENERAL APPEARANCE:

i. Pallor

ii. Icterus

iii. Oedema

iv. Lymphadenopathy

9. DENTAL EXAMINATION:
10. DIAGNOSED CHRONIC ILLNESS

i. Diabetes mellitus

ii. Hypertension
iii. Cardiac diseases
iv. respiratory diseases
v. Liver diseases
vi. Gastro intestinal diseases
vii. renal diseases
viii. other Genito - urinary diseases
ix. Musculo skeletal diseases
x. Neurological diseases
xi. Osteoporosis risk assessment Instrument (ORAI)

Parameter	Finding	points
Age in years	>75	15
	65-74	9
	55-64	5
	45-54	0
Weight in kg	<60	9
	60-69	3
	>70	0
Current oestrogen usage	no	2
	yes	0

If above >9points – Bone densitometry should be done

If diagnosed illness Yes – complete the form 2

Form:

1.Disease diagnosis:
2.When was diagnosed?
3.Are you on medication – Yes/No If Yes
3a. Are you taking regularly/occasionally/No
4.Are you consulting doctor Yes/No If Yes
4a. Regularly/occasionally

Annexures III

Master Chart

Sex	
Male	**1**
Female	**2**
Occupation	
Government job	**1**
Private job	**2**
Own business	**3**
Agricultural	**4**
Laborer	**5**
Home maker	**6**
Religion	**1**
Hindu	**2**
Muslim	**3**
Christian	**4**
Sikh	**5**
Education	
Illiterate	**1**
Primary school	**2**
PUC	**3**
Under Graduate	**4**
Post Graduate	**5**
Marital Status	
Married	**1**
Widow	**2**
Widower	**3**
Family Type	
Nuclear Family	**1**
Joint Family	**2**
Three generation Family	**3**
Broken Family	**4**
Socio economic Status	
Class I	**1**
Class II	**2**
Class III	**3**
Class IV	**4**

Class V	**5**
Source of Income	
Dependent	**1**
Independent	**2**
Smokeless tobacco	
Gutka	**1**
Chewing tobacco	**2**
Other forms	**3**
Alcohol	
Beer	**1**
Whiskey	**2**
Brandi	**3**
Vodka	**4**
Rum	**5**
Others	**6**
Frequency	
Daily	**1**
Once in a week	**2**
Occasionally	**3**