



Original Research Article

Estimation of morbidity profile and outcomes of geriatric indoor patients in medicine wards of tertiary care center of Bundelkhand region - A retrospective study

Jyoti Tiwari^{1,*}, Sumit Rawat², Amit Jain³, Diwashish Biswas¹

¹Dept. of Medicine, Bundelkhand Govt. Medical College, Sagar, Madhya Pradesh, India

²Dept. of Microbiology, Bundelkhand Govt. Medical College, Sagar, Madhya Pradesh, India

³Dept. of Anaesthesia, Bundelkhand Govt. Medical College, Sagar, Madhya Pradesh, India



ARTICLE INFO

Article history:

Received 30-12-2020

Accepted 18-01-2021

Available online 25-08-2021

Keywords:

Geriatric

COPD

CAD

Hypertension

Morbidity

Profile

ABSTRACT

Background: The elderly population is increasing rapidly globally, and presently, India has the second largest number of elderly persons in the country. Estimates of health disorders of the elderly in developing countries are required to predict trends in disease burden and to plan better health care facilities for the elderly population in the society.

Aims of the study: To study the profile of medical disorders & outcomes in the elderly patients admitted in the medicine wards of Bundelkhand Govt. Medical College, Sagar, MP. Which is a rural Government medical college of central India.

Materials and Methods: This is a retrospective, observational study design. The study conducted in the indoor patients of Bundelkhand Medical College & Hospital Sagar, MP in the span of 6 months starting from Feb 2019 to July 2019 & total of 970 patients, aged 60- 90yrs were enrolled. The data were obtained from MRD of BMC Sagar & by review of records, data were collected and statistically analysed.

Results: Our study has total (n=970), out of which (n=581, 59.9%) were males & (n=389, 41.1%) were females. Mean age of males- 67.6±7.53, Mean age of females-68.4±7.98. Highest patients were in the age group of 60-69yrs (n=590, 60.8%). Among system involvement, Respiratory system (27%), Cardiovascular system (22.3%), GIT (11.4%), Cerebrovascular (7.7%), Genitourinary (5.7%), Endocrine (5.1%), Infections (4.7%) and cancers (4.1). In our patients 75.1% were discharged, 7.2% cases of DOR, 6.2% patients were LAMA. Death was in 4.6% and 0.6% cases were referred to higher center.

Conclusion: The study shows highest cases of COPD (15.2%) followed by CAD (13.1%), Pulmonary TB (7.6%), Cerebrovascular accidents (6.1%), Hypertension (6.0%), Diabetes mellitus (4.5%), UTI (4.1%) and cancers (4.1%) in the geriatric patients of our study.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction & Background

As the standard of living is improving in developing countries like India, there is a huge burden of elderly people in the society. The elderly population (aged 60 years or above) accounted for 7.4% of total population in 2001. For

males it was at 7.1%, while for females it was 7.8%.¹ The population of the elderly has shown an increase from just 5.6% in 1961 to 7.7% in 2001. By 2050, older people will outnumber children under the age of 14 years in India.^{1,2}

Considering the increasing burden of geriatric health and social problems in India, the World Health Organization (WHO) in collaboration with the Government of India carried out a cross-sectional, community-based study of the

* Corresponding author.

E-mail address: drtiwari2011@gmail.com (J. Tiwari).

elderly population 60 years and above at 10 different sites in different states and union territories of India to evaluate the disease burden.³ So to cater the needs of more elderly people efficiently in the society is the need of the hour. As much of the research work is not done on this population of our region, we are conducting the present study on the admitted geriatric patients of the Medicine wards of Bundelkhand Govt. Medical college Sagar, in the duration of 6 months duration (Feb 2019-July 2019)

2. Aims and objectives of the study

The primary aim of the study is to estimate the morbidity profile of various diseases in geriatric patients admitted in Medicine wards of BMC Sagar, MP. And to access the outcomes of various diseases in terms of number of discharge /DOR/LAMA/Deaths/ Referral to higher centres in the geriatric age group.

Secondary aim of the study is to assist in the planning of better health care facilities for Geriatric patients of Bundelkhand region of Sagar, according to the disease burden of the same in the society, as it is still underprivileged as compared to other states in terms of per capita income and health care facilities.

3. Materials and Methods

This is a retrospective, observational, study design. The study was conducted on the convenience sample taken from Geriatric patients above the age of 60 yrs, who were admitted in the medicine wards of Bundelkhand Medical College Sagar, MP in the duration of 6 months starting from Feb 2019 to July 2019 after taking proper approval from the ethical committee of BMC Sagar, MP to conduct the study.(IEC/BMC/12/2020).

3.1. Inclusion criteria

1. Age should be at or above 60 yrs.
2. Both the sexes were registered
3. Patient should be registered at BMC Sagar.

3.2. Exclusion criteria

1. Patients not registered in IPD of BMC Sagar.
2. Age below 60 yrs.
3. Patients whose data/ files were not complete.

All the registered patients who fulfilled the criteria were included in the study. Both the sexes were included. The data were obtained from the MRD of our hospital, and then data examination of medical records of these patients were done & data obtained according to pre decided study proforma. Which included the socio economic and demographic details of patients, presenting complaints on admission, clinical condition on admission & various available investigations and final diagnosis with outcomes

of the patient on records. Various comorbidities were also included along with the final diagnosis. All the previous medical records pertaining to specific medical disorder were seen thoroughly. The General examination and systemic examination findings were included. (Which is according to the case records available). Relevant investigations like FBS/ PPBS, Lipid profile, LFT, RFT, TFT, HbA1C, ECG, X-Ray Chest were included. Special investigations like TMT, USG Abdomen, CT Scan/ MRI scan were included where ever available on records. Then the master chart were prepared on Microsoft excel sheet and then data were statistically analysed on SPSS Software version 20. P value of < 0.05 is considered significant. Demographic and clinical informations were determined by descriptive variables. The unpaired two tailed ‘t’ test was used in the statistical study.

4. Observations & Results

Table 1 - in our study total 970 patients were included, out of which (n=581, 59.9%) were males and (n=389, 40.1%) were females. The ratio of male and female patients was 1.5:1.

Table 1: Number and percentage of Male and Female patients -

Gender	Frequency (n=970)	Percentage (%)
Male	581	59.9
Female	389	40.1
Total	970	100

M:F Ratio-1.5:1

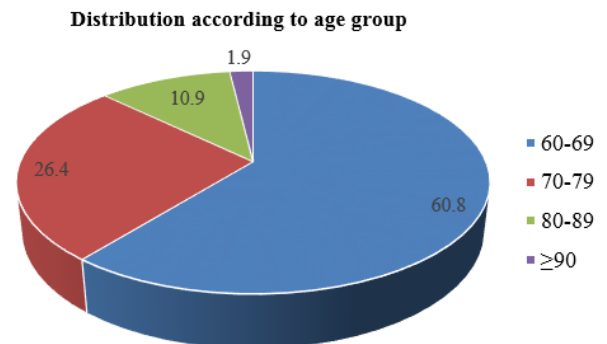


Fig. 1: Distribution of cases according to age

Figure 1 - Above figure shows that majority of patients belonged to 60 to 69 years of age (60.8%), followed by 24.6% and 10.9% patients belonging to 70 to 79 and 80 to 89 years of age respectively. Only 1.9% patients belonged to >90 years of age.

Table 2 - Mean age of males in our study was 67.6±7.53 years whereas that of females was 68.4±7.98 years. About 61.8% males and 59.4% females belonged to 60 to 69 years of age respectively. The present study observed no significant association between age and gender (p>0.05).

Table 2: Sex distribution in study with age group (60-69, 70-79, 80-89, 90yrs and above)

Age group	Male		Female		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
60-69	359	61.8	231	59.4	590	60.8
70-79	157	27	99	25.4	256	26.4
80-89	57	9.8	49	12.6	106	10.9
≥90	8	1.4	10	2.6	18	1.9
Total	581	100	389	100	970	100

P=0.274

Mean age of males- 67.6±7.53

Mean age of females-68.4±7.98

Table 3: Association of Gender with System involvement -

System	Male		Female		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Cardiovascular	112	19.3	104	26.7	216	22.3
Cerebrovascular	43	7.4	32	8.2	75	7.7
Respiratory	200	34.4	62	15.9	262	27
Gastrointestinal	50	8.6	61	15.7	111	11.4
Genitourinary	32	5.5	23	5.9	55	5.7
Endocrine	27	4.6	22	5.7	49	5.1
Eye	8	1.4	3	0.8	11	1.1
Infections	27	4.6	19	4.9	46	4.7
Ear	2	0.3	3	0.8	5	0.5
Hepatobiliary	13	2.2	11	2.8	24	2.5
Nutritional	16	2.8	10	2.6	26	2.7
Bone	2	0.3	3	0.8	5	0.5
Cancer	26	4.5	14	3.6	40	4.1
Skin	1	0.2	0	0	1	0.1
Other	22	3.8	22	5.7	44	4.5
Total	581	100	389	100	970	100

P=0.001

Others included - General debility, Oedema, Anorexia Nervosa.

Table 4: Association of Gender with Diagnosis

Diagnosis	Male		Female		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
COPD	121	20.8	26	6.7	147	15.2
Hypertension	22	3.8	36	9.3	58	6.0
CAD	33	5.7	23	5.9	56	13.1
Diabetes	26	4.5	18	4.6	44	4.5
Pulmonary TB	59	10.2	15	3.9	74	7.6
CVA	32	5.5	27	6.9	59	6.1
Cancer	26	4.5	14	3.6	40	4.1
Other	262	45.1	230	59.1	492	50.7
Total	581	100	389	100	970	100

P=0.001

Table 5: Distribution according to outcome (Discharge / LAMA/ Death / Referral / Other)

Outcome	Frequency	Percentage
Discharge	728	75.1
DOR	60	6.2
LAMA	70	7.2
Refer	6	.6
Abscond	61	6.3
Death	45	4.6
Total	970	100

Table 6: Outcome accordingly to duration of stay

Duration of stay (days)	Discharge		Lama/abs/refer		Death		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
≤7 days	637	80.8	124	90.5	41	91.1	802	82.7
7-21 days	142	18	11	8.0	4	8.9	157	16.2
>21 days	9	1.1	2	1.5	0	0	11	1.1
Total	45	100	788	100	137	100	970	100
P=0.024								

Table 3 - The present study documented that respiratory system was the most commonly involved amongst males (34.4%) whereas cardiovascular system was the most commonly involved amongst females. Test of significance observed statistically highly significant difference between system and gender ($p < 0.01$).

Table 4 - COPD was observed in 20.8% males, whereas in 9.3% females hypertension was the most common diagnosis. The present study documented statistically significant association of diagnosis with gender ($p < 0.01$).

Table 5 - About 75.1% patients were discharged whereas 6.2% patients were discharged on request or LAMA. Death was documented in only 4.6% patients and about 0.6% cases were referred to higher centre.

Table 6 - show Death was observed in 91.1% cases within 7 days of admission whereas about 80.8% cases were discharged within 7 days. The present study documented statistically significant association between duration of stay and outcome ($p < 0.05$).

5. Discussion

People can be considered old because of certain changes in their activities or social roles as the older people have a limited role in the society. Also old people have limited regenerative abilities and are more prone to disease, syndromes, and sickness as compared to young adults. The medical study of the aging process is called Gerontology and the study of diseases that afflict the elderly is Geriatrics. Old age is not a disease in itself, but the elderly are vulnerable to long term diseases of insidious onset such as cardiovascular illness, CVA, cancers, diabetes, musculoskeletal and mental illnesses. They have multiple symptoms due to decline in the functioning of various body systems.⁴ Both perceived health and chronic illness are major elements of health status in elderly and there is growing evidence that older people are at risk for multiple comorbidities.⁵

Geriatric medicine is strongly oriented towards the International Classification of Function and Disability (ICF model) introduced by the World Health Organization (WHO) in 2001.⁶

In our study Mean age for males was 67.6 ± 7.53 and for females 68.4 ± 7.89 . In our study Male: Female ratio is 1.5:1, The present study observed no significant

association between age and gender ($p > 0.05$). Which is slightly different with the study done by Vinay at el where number of males were significantly higher.⁷

In our study highest number of patients were found in 60-69yrs age group in both the sexes, (Male $n=359$, 61.8%) and (Female $n=231$, 59.4%) with total number of ($n=590$, 60.8%). In age group of 70-79yrs Male patients ($n=157$, 27%) and Female patients ($n=99$, 25.4%), In age groups 80-89yrs male ($n=57$, 9.8%) and female ($n=49$, 12.6%) and above 90yrs there is slightly higher number of females ($n=10$, 2.6%) as compared to male ($n=8$, 1.4%). This is similar to the study done by vinay k at el⁷ where they have found out the highest cases in age group of 70-79yrs (40.0%) and study done by Praveen kumar et al⁸ where they found highest patients in 60-69yrs (60%).

In our study various system involvement shows respiratory diseases comprises main cause of morbidity among geriatric patients which is comprised of non infective and infective causes both ($N=262$, 27%), Cardiovascular causes comes on the second place which consist of CAD, Hypertension and Myocardial infarction ($n=216$, 22.3%), after that Gastrointestinal causes which are comprised of abdominal pain, Dyspepsia, and Gastroenteritis ($n=111$, 11.4%), Cerebrovascular accidents both cerebral infarction and haemorrhage ($n=75$, 7.7%), Genitourinary causes ($n=55$, 5.7%), Endocrine causes ($n=49$, 5.1%) and infections comprised of ($n=46$, 4.7%). Our findings are consistent with the findings done by vinay K et al⁷ and in contrast to the study done by Prakash et al⁴ where they found less cases of respiratory diseases (36%).

The present study documented that respiratory system was the most commonly involved amongst males (34.4%) whereas cardiovascular system was the most commonly involved amongst females in cases of Hypertension ($n=36$, 9.3%). Test of significance observed statistically highly significant difference between system and gender ($p < 0.01$).

COPD was observed in 20.8% males whereas in 9.3% females hypertension was the most common diagnosis. The present study documented statistically significant association of diagnosis with gender ($p < 0.01$).

In our study CAD is second most common (13.1%) problem in the elderly population. Hypertension (male $n=22$, 3.8%, Female $n=36$ 9.3%) and among them also it was more common among females. Which is in contrast to other studies done by other authors. Our observation is

different with other studies done in different parts of India and world as Hypertension more common among males 42.5% in Jaipur and 40.5% in Shimla, 53.8% in United States and 48% in Canada.^{8–10} In a study by Chadha et al¹¹ reported a similar finding as of our study, hypertension as 52.2% and 58.4% among males and females respectively.

Our study is in discordance with the study on hypertension which showed higher prevalence of Hypertension 77.3% (male 74.4%, female 79.6%) among older adults (50 years and older) in South Africa.¹²

As hypertension is powerful, independent, and modifiable risk factor for the development of all the major clinical manifestations of atherosclerotic cardiovascular disease (Non communicable diseases),¹³ we should do early diagnosis and treatment of this silent disorder.

In our study majority of the patients were discharged (n=728, 75.1%) after that left against medical advise LAMA (n=70, 7.2%), discharge on request and Absconded (n=60, 6.2%), death rate comprised of (n=45, 4.6%) which is mainly in late age groups 80–89yrs and above 90 yrs.

In our study majority of the patients were discharged in less than 7 days (n=802, 82.7%) and in duration of 7–14 days (n=157, 16.2%) and very less patients are admitted in the medicine wards for more than 21 days (n=11, 1.1%).

6. Conclusions

This highlights the increasing trend of burden of geriatric health problems in India as there are trends of increasing life expectancy. For a substantial impact on this burden, unique preventive health care strategies specific to the elderly people in the early stages of geriatric patients should be clearly formulated and tested to reduce number of multiple comorbidities and disease complications and life is more convenient and independent at later age groups also. It reduces the cost of treatment as well.

For that the elderly should be encouraged to undergo periodic medical checks at a clinic for routine appraisal of their health status, so as to allow early detection and treatment of their morbidities.

7. Limitations of study

Some limitations are noted in this study. As Being a retrospective, observational (record based) study design, extraction of final diagnoses from patient's files with multiple complaints/morbidities could alter the actual prevalence of disease recorded and finally the probability of missing data cannot be excluded.

8. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

9. Source of Funding

None.

References

1. Situation analysis of elderly in India. ; 2011. Available from: http://mospi.nic.in/mospi_new/upload/elderly_in_india.pdf.
2. WHO. World Health Day–toolkit for organizers. [Last cited on 2012]. Available from: <http://www.who.int/world.health.day/2012/toolkit/background/en/index.html>.
3. World Health Organization Collaborative Programme supported by the Government of India. Multicentric study to establish epidemiological data on health problems in elderly. [Last cited on 2007]. ; 2007. Available from: http://www.whoindia.org/LinkFiles/Health_Care_for_the_Elderly_Multicentric_study_healthcareelderly_exe.pdf.
4. Prakash R, Choudhary SK, Singh US. A study of morbidity pattern among geriatric population in an urban area of. *Indian J Commun Med.* 2004;29:35–40.
5. Gijzen R, Hoeymans N, Schellevis FG, Ruwaard D, Satariano WA, Bos GVD, et al. Causes and consequences of comorbidity: A review. *J Clin Epidemiol.* 2001;54(7):661–74. doi:10.1016/s0895-4356(00)00363-2.
6. World Health Organization. International classification of functioning, disability and health: ICF. Geneva: World Health Organization; 2001.
7. Prakash R, Choudhary SK, Singh US. A study of morbidity pattern among geriatric population in an urban area of. *Indian J Commun Med.* 2004;29(1):35–40.
8. Kumar V. Morbidity pattern in elderly patients attending Medicine department of tertiary care centre. *Int J Adv Med.* 2017;4(1):180–3.
9. Sharma D, Mazta SR, Parashar A. Morbidity pattern and health-seeking behavior of aged population residing in Shimla hills of north India: a cross-sectional study. *J Family Med Prim Care.* 2013;2(2):188–93. doi:10.4103/2249-4863.117421.
10. Kaplan MS, Huguet N, Feeny DH, Mcfarland BH. Self-reported hypertension prevalence and income among older adults in Canada and the United States. *Soc Sci Med.* 2010;70(6):844–9. doi:10.1016/j.socscimed.2009.11.019.
11. Chadha SL, Radhakrishna S. Epidemiological study of Coronary heart disease in urban population of Delhi Indian. *J Med Res.* 1990;92:424–30.
12. Kaplan MS, Huguet N, Feeny DH, Mcfarland BH. prevalence and income among older adults in Canada and theUnited States. *Soc Sci Med.* 2010;70:844–9.
13. Reaven GM. Insulin resistance, hyper-insulinaemia and hypertriglyceridaemia in the aetiology, clinical course of hypertension. *Am J Med.* 1991;90(2A):7–12.

Author biography

Jyoti Tiwari, Associate Professor

Sumit Rawat, Associate Professor

Amit Jain, Associate Professor

Divwashish Biswas, Assistant Professor

Cite this article: Tiwari J, Rawat S, Jain A, Biswas D. Estimation of morbidity profile and outcomes of geriatric indoor patients in medicine wards of tertiary care center of Bundelkhand region - A retrospective study. *Panacea J Med Sci* 2021;11(2):284–288.