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Study Of Clinical Profile And Outcomes Of Elderly Patients Of Pneumonia Admitted To A Tertiary Care Hospital

Dr Swapnil Murlidhar Hinge, Dr Vaishnavi Jalake, Dr. Neelesh Kumar Kota, Dr Rakesh Thamke

(Department Of Family Medicine, Mahatma Gandhi Mission's Medical College & Hospital, Kamothe, Navi Mumbai, Maharashtra, India)
(Department Of Family Medicine, Mahatma Gandhi Mission's Medical College & Hospital, Kamothe, Navi Mumbai, Maharashtra, India)
(Department Of Geriatrics, Mahatma Gandhi Mission's Medical College & Hospital, Kamothe, Navi Mumbai, Maharashtra, India)
(Department Of Family Medicine, Mahatma Gandhi Mission's Medical College & Hospital, Kamothe, Navi Mumbai, Maharashtra, India)

Abstract:
***Background**: Pneumonia is a major contributor to morbidity and mortality among the elderly worldwide and ranks as the fourth leading cause of death in this age group, as well as the leading cause of death from infectious diseases. Although it can affect all age groups, older adults are particularly vulnerable due to age-related physiological decline, comorbidities, and weakened immunity, especially in developing countries. Epidemiological evidence highlights that community-acquired pneumonia (CAP) remains a significant health burden both globally and in India. Understanding its clinical patterns, causative organisms, and outcomes is essential for improving patient care. This study aims to evaluate the clinical profile and outcomes of elderly patients with pneumonia admitted to a tertiary care hospital, focusing on incidence, microbiological etiology, clinical and radiological features, antimicrobial therapy, and treatment outcomes.*
***Materials and Methods**: This observational study was conducted over a period of two years at MGM Hospital, Kamothe, Navi Mumbai, in the Department of Geriatric Medicine. The study population included patients above 60 years of age with radiologically confirmed pneumonia presenting to the outpatient department and emergency. A total sample size of 110 was calculated. Participants were selected using a simple random sampling method.*
***Results**: The majority of patients were aged 71–75 years (22.73%), with a male predominance (58.18%). Most were housemakers (37.27%) and farmers (33.64%), reflecting a vulnerable rural elderly population. Common presenting symptoms included cough (89.09%), expectoration (68.18%), and breathlessness (43.64%). A high burden of comorbidities was noted, including hypertension (52.73%), diabetes (49.09%), COPD (47.27%), and ASCVD (27.27%). Lifestyle risk factors such as smoking (54.55%), alcohol use (50.91%), and tobacco chewing (52.73%) were prevalent. Vital parameters showed mild abnormalities, with a mean pulse rate of 87.87 bpm and SpO_2 of 92.44%. Inflammatory markers were elevated, including CRP (73.85 mg/L) and ESR (23.06 mm/hr). Chest radiographs commonly showed consolidation (50.91%) and pleural effusion (47.27%). Streptococcus pneumoniae (47.27%) was the most frequent pathogen. Community Acquired Pneumonia was most common (66.36%). Most patients improved clinically, though mortality was 13.64%.*
***Conclusion:** Pneumonia in the elderly is closely linked to advanced age, male gender, comorbidities, and smoking. Streptococcus pneumoniae remains the leading pathogen, with consolidation and pleural effusion common findings. Early diagnosis, timely treatment, and preventive measures are essential to improve outcomes, minimize complications, and reduce mortality in this high-risk population.*
***Key Word:** Elderly pneumonia; Community Acquired Pneumonia [CAP]; Streptococcus pneumonia*

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I. Introduction

Pneumonia, often termed "the old man's friend," is a major global health concern and a leading cause of morbidity and mortality among the elderly, particularly in cases of community-acquired pneumonia (CAP).[1,2] Its incidence increases significantly with age, largely due to age-related physiological changes in the respiratory and immune systems, along with multiple comorbidities.[3] In older adults, pneumonia frequently presents atypically, manifesting as geriatric syndromes such as delirium rather than classic respiratory symptoms, which complicates timely diagnosis and management.[4] While *Streptococcus pneumoniae* remains the most common

etiological agent, Gram-negative organisms are increasingly reported in Asian settings and are associated with higher mortality.[5] Elderly patients often experience severe outcomes, including prolonged recovery, increased ICU admissions, and higher mortality rates, necessitating focused clinical and preventive strategies.[6]

II. Material And Methods

This observational study was conducted over two years at MGM Hospital, Kamothe, Navi Mumbai, in Geriatric Medicine, including 110 radiologically confirmed pneumonia patients above 60 years, selected using simple random sampling.

Study design: This is an observational study.

Study duration: Two years.

Study site: The study was conducted in MGM Hospital Kamothe, Navi Mumbai, Geriatric Medicine.

Study population: Radiological confirmed pneumonia cases above 60 years of age presenting to OPD and emergency.

Sample size: 110

Prevalence of study population (P) = 23% b. Q = 100% - P = 77% Random Normal Variate Z = 1.96 for 95% Of Confidence Interval (CI).
Level of significance L = 8% Sample Size Formula: n= Z 2 PQ/L 2 n= 1.962X23X77/82 n=106.30

Sampling Method: Simple Random Sampling Method.

Inclusion criteria:
1. Patients >60 years of age, both males and females.
2. Patients >60 years of age are willing to give written consent to participate in the study.
3. Patients with radiological evidence of pneumonia were presented to MGM Hospital Navi Mumbai.

Exclusion criteria:
1. Age 60 years of age
2. Patient are not willing to participate in the study.

Procedure methodology

The patient's health was assessed using various laboratory tests, including a Complete Blood Count (CBC), Serum Renal Function Tests (RFT), Liver Function Tests (LFT), serum electrolyte levels, inflammatory markers such as C-reactive protein (CRP) and Erythrocyte Sedimentation Rate (ESR), and glycated haemoglobin (HbA1c) levels. These tests helped determine the patient's overall health, immune response, and the severity of inflammation. Additionally, haemoglobin, hematocrit, and heme levels were measured to assess oxygen-carrying capacity and rule out anaemia, which could worsen respiratory symptoms. Detailed patient histories were collected after obtaining ethical committee clearance and informed consent from patients with clinical features suggesting pneumonia. Patients were evaluated through chest radiographs, chest ultrasonography, and routine blood investigations. The data was collected using a pre-designed, pre validated standard research tool and stored in MS Excel

Statistical analysis

Statistical analysis was conducted using SPSS 24 with a significance level of 0.05 or 0.01. Parametric tests were used for continuous and normally distributed data, and non-parametric tests were used for categorical data.

III. Result

Table no 1 shows: The highest proportion of patients was in the 71-75 age range, accounting for 22.73% of the sample. Patients aged 60-65 years made up 18.18%, and those aged 81-85 years were the least represented, comprising 17.27%.

Table no 1 -Age Distribution

Age Frequency Percentage	Frequency	Percentage
60-65 years	20	18.18%
66-70 years	24	21.82%

71-75 year	25	22.73%
76-80 years	22	20.00%
81-85 years	19	17.27%
Total	110	100.00%

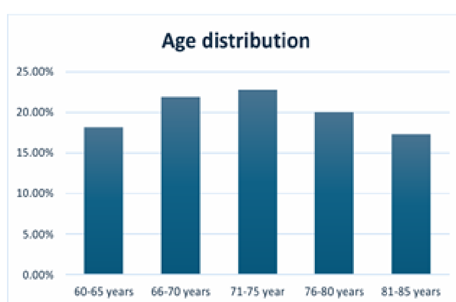


Table no 2 shows: Among the 110 patients, there was a higher proportion of male patients (58.18%) compared to females (41.82%).

Table no 2 - Gender Distribution

Gender	Frequency	Percentage
Male	64	58.18%
Female	46	41.82%

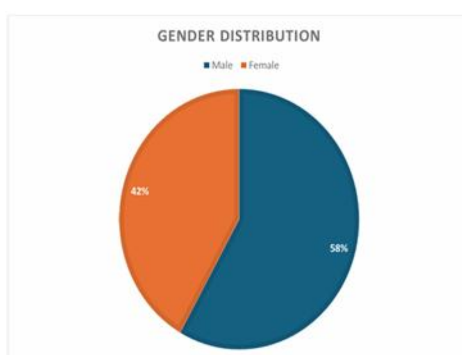


Table no 3 shows: The majority of the patients were either housemakers (37.27%) or farmers (33.64%). A smaller proportion of patients were retired (29.09%).

Table no 3 - Occupation

Occupation	Frequency	Percentage
Housemaker	41	37.27%
Farmer	37	33.64%
Retired	32	29.09%

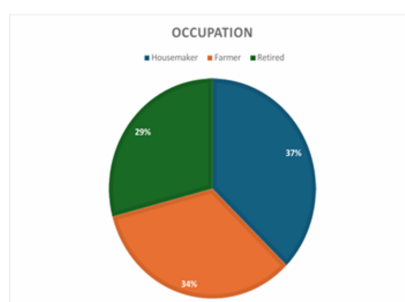


Table no 4 shows: The most common symptom reported by patients was cough (89.09%), followed by expectoration (68.18%) and breathlessness (43.64%). Other symptoms, such as fever (48.18%) and chest pain (22.73%), were also prevalent. Generalized weakness (47.27%) and appetite loss (43.64%) were commonly observed.

Table no 4 - Symptoms

Symptoms	Frequency	Percentages
Cough	98	89.09%
Expectoration	75	68.18%
Breathlessness	48	43.64%
Chest Pain	25	22.73%
Fever	53	48.18%
Chills /rigors	32	29.09%
Wheezing	4	3.64%
Hemoptysis	1	0.91%
Headache	24	21.82%
Sweating	6	5.45%
Myalgia	29	26.36%
Generalized weakness	52	47.27%
Appetite loss	48	43.64%
Confusion	14	12.73%

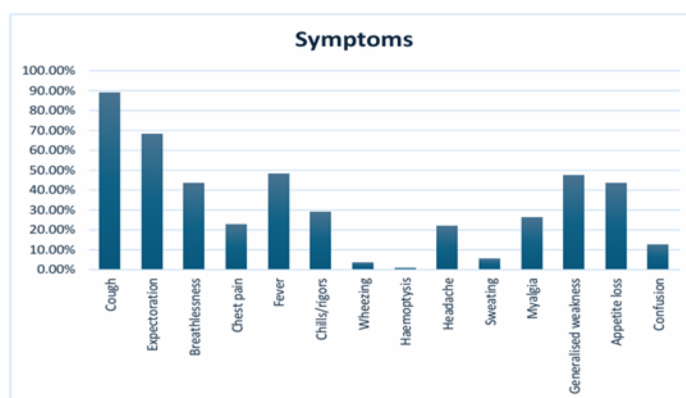


Table no 5 shows: The comorbidities observed were hypertension (52.73%), diabetes mellitus (49.09%), chronic obstructive pulmonary disease (COPD) (47.27%), and atherosclerotic cardiovascular disease (ASCVD) (27.27%).

Table no 5 -Comorbidities

Comorbidities	Frequency	Percentage
Diabetes Mellitus	54	49.09%
Hypertension	58	52.73%
Chronic Obstructive Pulmonary Disease	52	47.27%
Atherosclerotic Cardiovascular Disease	30	27.27%

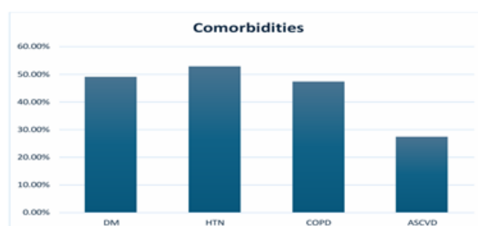


Table no 6 shows: The study found that 54.55% of the patients were smokers, 50.91% consumed alcohol, and 52.73% chewed tobacco.

Table 6 - Habits

Habits	Frequency	Percentage
Smoking	60	54.55%
Alcohol	56	50.91%
Tobacco Chewing	58	52.73%

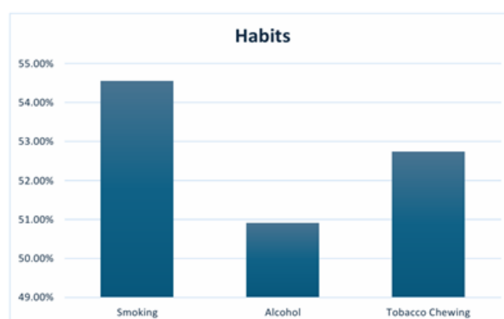


Table no 7 shows: The mean pulse rate was 87.87 ± 9.07 bpm, systolic blood pressure was 127.15 ± 12.56 mmHg, diastolic blood pressure was 76.36 ± 8.28 mmHg, respiratory rate was 21.05 ± 2.75 breaths/min, and SpO2 was 92.44 ± 3.06%.

Table 7 - Vitals

Vitals	Mean	SD
Pulse Rate	87.87	9.07
Systolic BP	127.15	12.56
Diastolic BP	76.36	8.28
Respiratory Rate	21.05	2.75
SpO2	92.44	3.06

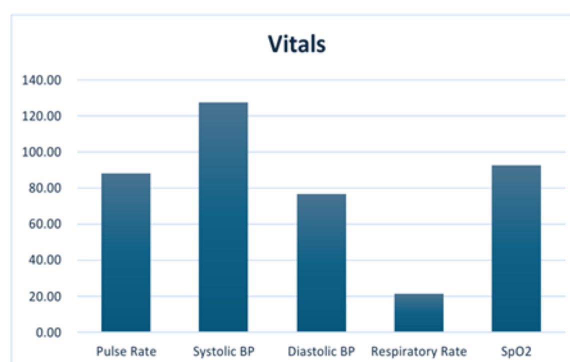


Table no 8 shows: The mean lab parameters were as follows: hemoglobin 12.54 ± 1.43 g/dL, TLC 9919.90 ± 3183.67 /µL, platelets 247594.42 ± 57920.52 /µL, ESR 23.06 ± 8.79 mm/hr, CRP 73.85 ± 25.18 mg/L, blood urea 29.39 ± 11.17 mg/dL, serum creatinine 1.04 ± 0.29 mg/dL, serum sodium 139.83 ± 2.86 mEq/L, serum potassium 4.28 ± 0.43 mEq/L, total bilirubin 0.85 ± 0.40 mg/dL, SGOT 38.85 ± 11.52 IU/L, SGPT 40.65 ± 12.44 IU/L, HbA1c 7.39 ± 1.10%.

Table 8 - Lab parameters

Lab parameters	Mean	SD
Hemoglobin	12.54	1.43
TLC	9919.90	3183.67
Platelets	247594.42	57920.52
ESR	23.06	8.79
CRP	73.85	25.18
Blood Urea	29.39	11.17
Serum creatinine	1.04	0.29
Serum sodium	139.83	2.86
Serum potassium	4.28	0.43
Total bilirubin	0.85	0.40
SGOT	38.85	11.52
SGPT	40.65	12.44
HbA1c	7.39	1.10

Table no 9 shows: Viral marker tests showed that 5.45% were positive for HIV, 10.00% for HBsAg, and 1.82% for HCV.

Table 9 - Viral markers

Viral markers	Frequency	Percentage
HIV	6	5.45%
HbsAG	11	10.00%
HCV	2	1.82%

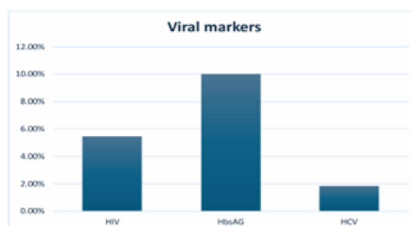


Table no 10 shows: The radiological findings were as follows: consolidation in 50.91%, pleural effusion in 47.27%, patchy changes in 40.91%, infiltrates in 34.55%, lung hyperinflation in 25.45%, atelectasis in 21.82%, and cavitary lesions in 16.36%.

Table 10: X-ray chest findings

X-ray chest	Frequency	Percentage
Consolidation	56	50.91%
Pleural Effusion	52	47.27%
Patchy Changes	45	40.91%
Infiltrates	38	34.55%
Lung Hyperinflation	28	25.45%
Atelectasis	24	21.82%
Cavitary Lesions	18	16.36%

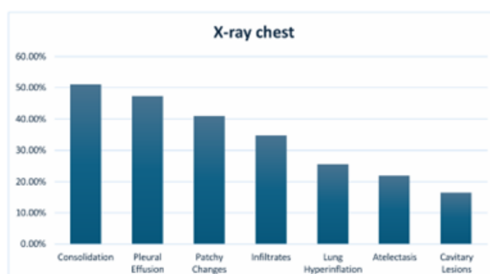


Table no 11 shows: The majority of cases were caused by typical pneumonia pathogens, with 96.36% of patients testing positive for common organisms like Streptococcus pneumoniae and Klebsiella pneumoniae. Only 3.64% of cases were attributed to atypical organisms.

Table 11: Organism species

Organism species	Frequency	Percentage
Typical pneumonia	106	96.36%
Atypical pneumonia	4	3.64%

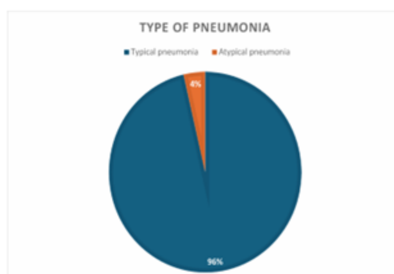


Table no 12 shows: The majority of patients (66.36%) had community-acquired pneumonia (CAP), while a smaller proportion had ventilator-associated pneumonia (22.73%) or hospital-acquired pneumonia (10.91%).

Table 12: Type of pneumonia

Type of pneumonia	Frequency	Percentage
Community acquired	73	66.36%
Ventilator associated	25	22.73%
Hospital acquired	12	10.91%

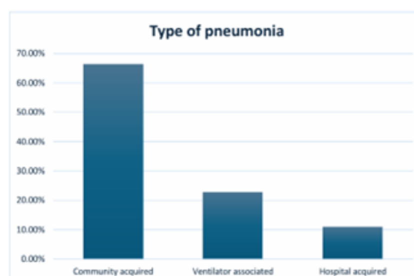


Table no 13 shows: The most commonly prescribed treatment for elderly pneumonia patients included Levofloxacin (24.55%), followed by Amoxycillin + Clavulanic acid (20.00%). Other antibiotics, such as Meropenem (14.55%) and Azithromycin (16.36%), were also used

Table 13: Treatment given

Treatment given	Frequency	Percentage
Amoxycillin + clavulanic acid	22	20%
Azithromycin	18	16.36%
Ceftriaxone	14	12.73%
Meropenem	16	14.55%
Levofloxacin	27	24.55%
Piperacillin + Tazobactam	13	11.82%

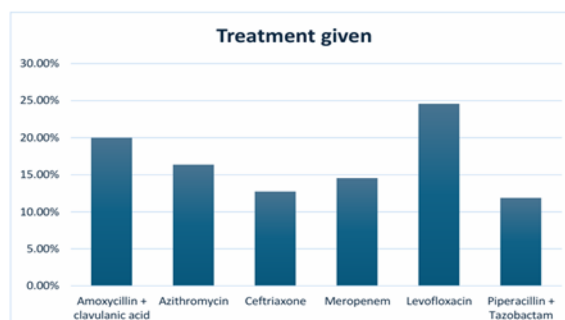


Table no 14 shows -The mean duration of hospital stay was 12.24 ± 5.26 days.

Table 14: Duration of Hospital Stay

Duration of Hospital Stay	Mean	SD
	12.24	5.26

Table no 15 shows: In terms of clinical outcomes, 70.91% of patients showed complete resolution of symptoms, while 7.27% had partial resolution. However, 21.82% of patients did not show resolution of clinical symptoms.

Table 15: Clinical Resolution

Clinical Resolution	Frequency	Percentage
Resolved	78	70.91%
Partially Resolved	8	7.27%
Not Resolved	24	21.82%

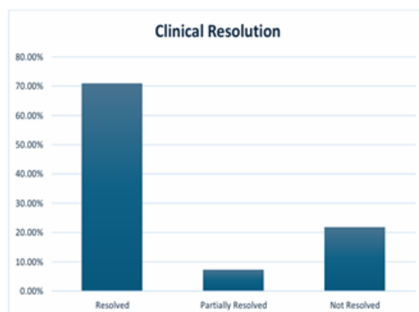


Table no 16 shows: Radiological resolution occurred in 60.91% of patients, while 39.09% showed persistent radiological findings.

Table 16: Radiological Resolution

Radiological Resolution	Frequency	Percentage
Resolved	67	60.91%
Not Resolved	43	39.09%

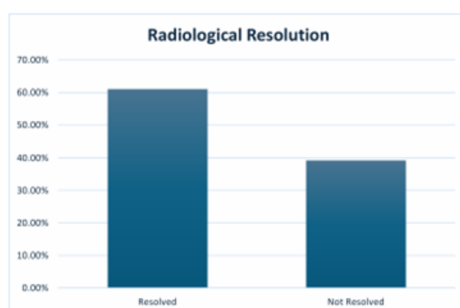


Table no 17 shows: The mortality rate in this cohort was 13.64%, with 86.36% of patients surviving the infection.

Table 17: Mortality

Mortality	Frequency	Percentage
Yes	15	13.64%
No	95	86.36%

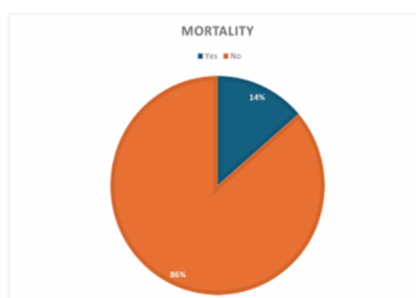


Table no 18 shows: The CURB-65 score, which assesses the severity of pneumonia, revealed that 62.73% of patients were classified as having a score of 1, indicating a moderate risk of mortality. A small proportion of patients had a score of 0 (14.55%), and only a few had scores of 3 or 4, suggesting moderate and high risks.

Table 18: CURB-65 Score

CURB-65 Score	Frequency	Percentage
0	16	14.55%
1	69	62.73%
2	16	14.55%
3	3	2.73%
4	6	5.455

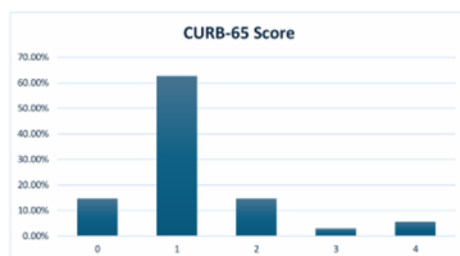
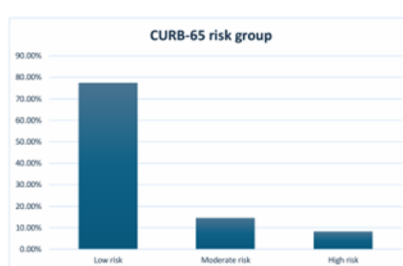


Table no 19 shows: The majority of patients were categorized as low risk (77.27%) according to their CURB-65 score, indicating a favourable prognosis. A smaller proportion was at moderate (14.55%) or high (8.18%) risk.

Table 19: CURB-65 risk group

CURB-65 risk group	Frequency	Percentage
Low Risk	85	77.27%
Moderate Risk	16	14.55%
High Risk	9	8.18%



IV. Discussion

This observational study was conducted over two years in the Department of Geriatric Medicine at MGM Hospital, Kamothe, Navi Mumbai. It included 110 radiologically confirmed pneumonia patients aged above 60 years, selected through simple random sampling. Patient evaluation involved detailed history taking, chest radiography, ultrasonography, and laboratory investigations including CBC, renal and liver function tests, serum electrolytes, CRP, ESR, and HbA1c. Ethical committee clearance and informed consent were obtained. Data were collected using a pre validated research tool, recorded in MS Excel, and analyzed with SPSS version 24, using appropriate parametric or non-parametric tests depending on data distribution. Patients below 60 years or unwilling to participate were excluded.

Demographic Profile: The demographic profile of the present study showed a male predominance (58.18%) compared to females (41.82%), consistent with findings by Pillai A et al., Abdullah BB et al., and Shaikh MS et al., all of whom reported higher male involvement. However, Sureja BR et al. reported female predominance, indicating possible regional differences influenced by lifestyle, occupational exposure, and healthcare-seeking behavior. The highest incidence of pneumonia was observed in the 71–75 years age group (22.73%), aligning with previous studies that highlight increasing age as a major risk factor. Comparable findings were reported by Pillai A et al., Vanjare PH et al., and Shaikh MS et al., with mean ages around 70–73 years. Advancing age and male gender increase susceptibility to pneumonia due to declining immunity, reduced mucosal defense, cumulative environmental exposures, and a higher prevalence of comorbidities. These findings emphasize the need for targeted preventive strategies, including vaccination, early diagnosis, and health education, particularly among elderly male populations to reduce disease burden and complications.

Occupational Background: In the present study, most patients were housemakers (37.27%), followed by farmers (33.64%) and retired individuals (29.09%). This suggests that rural and semi-urban populations are more affected, possibly due to environmental exposure, occupational hazards, and limited access to healthcare. Delayed diagnosis and treatment may worsen outcomes in these groups. Increased exposure to pollutants and pathogens in outdoor occupations may further increase susceptibility to respiratory infections. Targeted public health measures, including awareness programs and early symptom recognition, are essential to improve timely care-seeking and reduce disease burden.

Clinical Symptoms: Cough was the most predominant symptom in the present study (89.09%), followed by expectoration (68.18%), breathlessness (43.64%), and fever (48.18%). Pillai A et al. [48] similarly reported cough in 100% of cases, while Shaikh MS et al. [50] observed cough in 84% and fever in 78%. Abdullah BB et

al. [49] also noted cough in 74% and fever in 56%. However, the relatively lower fever rate (48.18%) in the present study compared to others may be attributed to the blunted febrile response frequently observed in elderly patients, as described by Abdullah BB et al. [49]. Other symptoms like chest pain (22.73%), chills (29.09%), generalized weakness (47.27%), and appetite loss (43.64%) were also significant in the present study, highlighting the importance of systemic symptoms in elderly presentations.

Comorbidities: The present study showed a high burden of comorbidities, including hypertension (52.73%), diabetes mellitus (49.09%), and COPD (47.27%), which is comparable with previous studies reporting diabetes (46–71%), hypertension (50%), and COPD (48%) as common conditions. These diseases increase pneumonia risk through impaired immunity, poor glycemic control, and reduced lung function. Effective management of comorbidities is essential to reduce incidence and improve outcomes in elderly pneumonia patients.

Lifestyle Habits (Smoking, Alcohol, Tobacco Use): Smoking (54.55%), alcohol consumption (50.91%), and tobacco chewing (52.73%) were highly prevalent among the present study cohort. Abdullah BB et al.[49] reported a high smoking prevalence of 74%, while Pillai A et al. [48] documented 46% smokers. These findings reflect the persistent contribution of modifiable lifestyle factors to pneumonia risk in elderly populations. Smoking and alcohol disrupt mucosal defenses, impair macrophage function, and exacerbate existing pulmonary diseases, thus facilitating infection. Smoking cessation programs, along with alcohol de-addiction strategies, should be strongly promoted among elderly patients, especially those with respiratory comorbidities.

Vital Parameters: The mean pulse rate (87.87 bpm), respiratory rate (21.05 breaths/min), and SpO_2 (92.44%) recorded in the present study indicate that many patients presented with only mild abnormalities. In comparison, Shaikh MS et al. [50] reported tachycardia in 84% and tachypnea in 74%. Vital signs in elderly pneumonia patients may not always reflect the severity of underlying infection, especially when compensatory mechanisms are impaired. Careful evaluation of even mild vital sign changes is warranted in elderly patients to prevent missed or delayed diagnosis of severe pneumonia.

Laboratory Parameters: The present study demonstrated elevated inflammatory markers, with CRP levels averaging 73.85 mg/L and ESR averaging 23.06 mm/hr. These findings align with observations made by Vanjare PH et al., [1] where inflammatory markers were elevated in severe cases. High CRP and ESR levels correlate with disease severity and can aid in assessing therapeutic response but should not substitute for clinical assessment. Serial measurement of CRP can be used to monitor clinical progress, and sudden elevations may indicate complications such as empyema or superimposed infections.

Radiological Findings: The most common radiological findings in the present study were consolidation (50.91%) and pleural effusion (47.27%). Shaikh MS et al. [50] reported lobar pneumonia in 72% of cases, while Pipalia et al. also noted frequent consolidations. Consolidative patterns are characteristic of bacterial pneumonia, particularly involving Streptococcus pneumoniae, while pleural effusions may indicate complicated or delayed presentations. Early imaging, preferably within the first 24 hours, is critical for diagnosis and detecting complications like parapneumonic effusions requiring drainage.

Microbiological Profile: Streptococcus pneumoniae (47.27%) and Klebsiella pneumoniae (26.36%) were the most commonly isolated organisms in the present study. Similarly, Pillai A et al. [48] and Shaikh MS et al. [50] found Streptococcus as the leading pathogen. Abdullah BB et al.[49] also noted Streptococcus as the predominant cause. Despite viral epidemics, typical bacterial pathogens continue to dominate the causative spectrum of pneumonia in elderly hospitalized patients. Empirical antibiotic coverage against Streptococcus and Klebsiella remains essential until culture results are available.

Type of Pneumonia (Typical vs Atypical): In the present study, 96.36% of cases were classified as typical pneumonia. Shaikh MS et al. [50] found typical pneumonia in 36%, while 22% had atypical pneumonia, suggesting some variation due to differences in diagnostic capabilities. Typical pneumonia remains the predominant clinical form in elderly populations. Empiric antibiotic therapy should prioritize coverage against common bacterial pathogens unless atypical features are strongly suspected. Protocols for community-acquired pneumonia (CAP) must maintain strong emphasis on covering typical bacteria, particularly in elderly cohorts.

Treatment Patterns: In the present study, the most commonly administered antibiotic was Levofloxacin, prescribed in 24.55% of cases, followed by Amoxicillin Clavulanic acid (20.00%), Azithromycin (16.36%), Meropenem (14.55%), Ceftriaxone (12.73%), and Piperacillin-Tazobactam (11.82%). The selection of these antibiotics reflects adherence to empirical guidelines targeting common pathogens like Streptococcus pneumoniae and Klebsiella pneumoniae, which were predominant in this study cohort. The use of respiratory fluoroquinolones like levofloxacin ensures broad coverage against typical organisms, while beta-lactam/beta lactamase inhibitor combinations offer strong gram-positive and gram negative coverage. The inclusion of meropenem and piperacillin-tazobactam in selected patients indicates an escalation of therapy, likely for those with hospital acquired pneumonia (HAP) or ventilator-associated pneumonia (VAP), where resistant organisms such as Pseudomonas aeruginosa are concerns. Studies like those by Pillai A et al.[48] and Vanjare PH et al. [1] similarly emphasized broad-spectrum empirical antibiotics in moderate to severe pneumonia cases . The treatment

approach seen here reflects a careful balance between prompt empirical therapy and anticipation of possible resistant infections. Clinical implication: The results highlight the importance of early, broad spectrum empirical therapy, followed by antibiotic de-escalation based on culture reports to minimize antimicrobial resistance, improve outcomes, and reduce hospital stays.

Hospital Course and Clinical Outcome: In the present study, the mean duration of hospital stay was 12.24 ± 5.26 days, reflecting the typically prolonged recovery period in elderly pneumonia patients. Regarding clinical outcomes, 70.91% of patients achieved complete resolution of symptoms, while 7.27% had partial resolution, and 21.82% showed no significant clinical improvement. Despite clinical symptom resolution in the majority, radiological clearance was achieved only in 60.91% of cases, with 39.09% showing persistent chest X-ray abnormalities. These findings correlate with patterns observed in previous studies, where radiological recovery lagged behind clinical recovery, especially in older individuals with underlying lung conditions. For instance, Shaikh MS et al. [50] reported that persistent radiological abnormalities were common among elderly patients with comorbidities. Incomplete radiological resolution could be attributed to ongoing inflammatory changes, fibrosis, or pre-existing structural lung disease, particularly in smokers and COPD patients. Elderly pneumonia patients require prolonged clinical monitoring and possibly follow-up imaging after hospital discharge to differentiate between slow healing, post-infectious changes, and conditions like malignancy or unresolved infection.

Severity Assessment (CURB-65 Score): The severity of pneumonia was assessed in the present study using the CURB-65 scoring system. A significant proportion of patients, 77.27%, were classified as low risk, 14.55% as moderate risk, and 8.18% as high risk. The largest subgroup of patients (62.73%) had a CURB-65 score of 1, indicating mild pneumonia. A small fraction exhibited higher scores (3 or 4), correlating with worse clinical outcomes and increased mortality. The CURB-65 score remains a widely accepted, simple, bedside tool that reliably predicts mortality risk and assists in clinical decision-making regarding site of care. Similar findings were reported by Pillai A et al. [48] and Abdullah BB et al.[49], where a higher CURB-65 score was associated with greater ICU admission and mortality risk . In the present study, mortality was 13.64% and was largely seen in patients falling into the moderate and high CURB-65 risk groups. This demonstrates the value of the CURB-65 score not only in triaging patients at presentation but also in forecasting prognosis. The CURB-65 score should be routinely applied in the emergency setting to identify high-risk patients who require early aggressive management and ICU-level care, and to facilitate safe outpatient management for low-risk patients.

Outcome and Mortality: The mortality rate in the present study was 13.64%, comparable to Shaikh MS et al. (10%) but lower than Vanjare PH et al. (38%). Poor outcomes were associated with delirium, mechanical ventilation, prolonged hospitalization, comorbidities, delayed presentation, and respiratory failure. Early ICU admission for high-risk patients with hypoxia, delirium, and multilobar involvement is essential to improve survival. Pneumonia remains a major cause of morbidity and mortality in the elderly, especially in males with comorbidities such as diabetes, hypertension, and COPD. Modifiable risk factors like smoking and alcohol further increase disease severity. Cough and expectoration were common symptoms, while fever was often absent, requiring high clinical suspicion. *Streptococcus pneumoniae* was the predominant pathogen, supporting empirical antibiotic coverage for typical organisms. Radiological findings such as consolidation and pleural effusion indicated severe disease. Overall, early risk stratification, timely ICU care, and aggressive management are crucial. Preventive measures including vaccination, lifestyle modification, and control of chronic diseases are vital to reduce disease burden.

V. Conclusion

Pneumonia in elderly patients was found to be strongly associated with male gender, advanced age, comorbidities, and lifestyle risk factors like smoking. Streptococcus pneumoniae was the predominant pathogen, with consolidation and pleural effusion as major radiological findings. Early diagnosis, appropriate empirical therapy, and preventive measures are crucial to improve outcomes and reduce mortality.

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