

Profiles of community acquired pneumonia cases admitted to a Tertiary Care Hospital

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ABSTRACT

Objective: To assess the demographic profiles of community-acquired pneumonia.

Methodology: A cross sectional study was carried out for one year, recruiting 160 hospitalized community-acquired pneumonia (CAP) patients, selected by non-probability convenience sampling method. Demographic variables such as age, gender, education, marital status, residential and socio-economic status were inquired into along with Haemoglobin estimation, Diabetes, Hypertension and Ischaemic heart disease by Pre-designed Questionnaire Performa. Data collected was analyzed by SPSS-14.

Results: Out of 160 patients, majority respondents 88 (55%) were males ($P < 0.05$), while 90 (56.25%) had rural residents predominance ($P < 0.05$). It revealed 140 (87.5%) respondents were married ($P < 0.05$), while 18 (11.25%) were < 20 years, 68 (42.5%) were between 20-40 years, 58 (36.25%) from 41-60 years and 16 (10%) were > 60 years of age. There were 110 (68.75%) illiterates from lower socio-economic class. Haemoglobin level was 8-10 gm/dl among majority 80 (50%), and 34 (21.75%) were Diabetics.

Conclusion: CAP is frequent among males, rural residents, illiterate, anaemic, diabetics and lower socio-economic married patients from 20-40 years of age.

KEY WORDS: Community, Pneumonia, Illiterate, Anaemia, Diabetics, Socio-economic.

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INTRODUCTION

Community acquired pneumonia (CAP) is the 6th leading cause of death in the United States and accounts for more than six hundred thousand admissions annually. People at the extremes of age are at

the greatest risk and have the worst outcomes. In elderly adults, the incidence of CAP as well as related hospitalization and mortality increases steadily with their age.¹ Estimated total annual cost of health care for CAP in USA is 8.4 billion US dollars.²

The condition is defined as pneumonia not acquired in a hospital or a long term care facility. Despite availability of potent new antimicrobials and effective vaccine, an estimated 5.6 million cases of CAP occur annually in the United States.²

Patients with CAP often present with cough, fever, chills, fatigue, dyspnea, rigors and pleuritic chest pain. When a patient presents with suspected CAP, physicians should first assess his need for hospitalization using mortality prediction tools such as the pneumonia severity index combined with clinical judgment.²

In Thailand, the death rate from severe CAP has increased steadily over the past decade. To optimize the outcome, the rapid start of appropriate

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antibiotics and supportive care are the mainstay of their management.³ The low risk patients who are admitted with community acquired pneumonia, stay in hospital for more than 5 days and majority of them (48.4%) are females.⁴ CAP is a frequent cause of admission and death among elderly patients but there is little information on age and sex specific incidence, pattern of care (intensive care unit admission and mechanical ventilation) resources use (length of stay and hospital costs) and outcome (mortality)⁵

Severe CAP is a major cause of mortality and morbidity worldwide, with estimated mortality rates ranging from 30% to 50%. Early initiation of appropriate antibiotic therapy is of paramount importance due to the high mortality of this illness.⁶ The objective of this study was to assess demographic profiles of hospitalized community acquired pneumonia cases.

METHODOLGY

A cross sectional study was carried out at Tuberculosis and Chest Diseases Unit, Bahawal Victoria Hospital Bahawalpur (a tertiary care teaching hospital) for one year from March 18, 2010 to March 18, 2011. Total of 160 hospitalized patients diagnosed as community acquired pneumonia (CAP) were selected by non-probability convenience sample method after approval from ethical committee.

All hospitalized patients including both genders from <20 years to >65 years, clinically examined, investigated, diagnosed and receiving treatments were included. Patients at 65 years or above age who were admitted by conscious level, urea, respiratory rate and breathlessness (CURB-65) index were included.

Those who were referred to the intensive care unit, in a coma and unstable were excluded. Demographic variables such as age (divided in 4 groups), gender, residential, educational, marital and socio-economic status as shown in Annexure-I, were inquired from the patients or attendants after informed consent. Translation bias was minimized with the help of trilingual local medical staff of the unit. Their haemoglobin estimation on admission day, diabetes mellitus, hypertension, ischaemic

heart disease was also noted from hospital records. All other co-morbidity problems such as senile osteoporosis and arthritis, prostate enlargement sequelae, peptic ulcers, depressive illnesses, pulmonary mycosis, constipation or diarrhea and menopause syndrome were labeled as "other diseases". All widows and widowers were also included as married. The residential area was divided as urban and rural within and out side boundary of local Municipal Corporation/ Cantonment respectively. Socio-economic class was labeled according to monthly income status of patients or that family upon which the patients were dependent.

The study received no funding support. All the research work was done on self-finance basis. Face to face interviews were conducted with Pre-designed Questionnaire Performa as shown in Annexure-I. The null hypothesis was that there is no difference of demographic proportions distribution of CAP. The data was collected, condensed and analyzed by SPSS-14. An appropriate test of significance, standard error of proportion at 95% confidence level was applied where necessary.

RESULTS

A total of 160 patients were studied. It was found that there were 88 (55%) males and 72 (45%) females with males being significantly more frequent ($P < 0.05$; $2SE = 7.86$), 70 (43.75%) patients were urban but maximum 90 (56.25%) were rural residents ($P < 0.05$; $2SE = 7.84$), 140 (87.5%) were married and 20 (12.5%) unmarried. The married were significantly higher ($P < 0.05$; $2SE = 5.22$) as shown in Table-I. According to the age distribution, there were 18 (11.25%) from <20 years, 68 (42.5%) from 20 to 40 years, 58 (36.25%) from 41 to 60 years while 16 (10%) from >60 years as shown in Table-II. Patients from 20-40 years of age were more frequent as compared to others.

The educational status was also studied. There were 110 (68.75%) illiterate patients, 42 (26.25%) primary, 6 (3.75%) secondary and 2 (1.25%) with higher education as depicted in Table-II. According to the socioeconomic status, there were 110 (68.75%) patients from lower class, 36 (22.5%) middle and 14 (8.75%) from higher socioeconomic class.

Table-I: Gender, Marital and Residential Status Profiles.

Sr. No.	A-Gender	No. of Patients	B-Marital Status	No. of Patients	C-Residential Status	No. of Patients
1	Male*	88 (55%)	Married**	140 (87.5%)	Rural***	90 (56.25%)
2	Female	72 (45%)	Unmarried	20 (12.5%)	Urban	70 (43.75%)
Total =		160		= 160		= 160

* $P < 0.05$; ($2SE = 7.86$) ** $P < 0.05$; ($2SE = 5.22$) *** $P < 0.05$; ($2SE = 7.84$)

Table-II: Age, Education, Haemoglobin (Hb) estimation and other diseases Profiles.

Sr. No	A-Age	No. of Patients	B-Education	No. of Patients	C-Hb	No. of Patients	D- Diseases	No. of Patients
1	<20 Years	18(11.25%)	Illiterate	110(68.75%)	<8 gm/dl	32(20%)	Diabetes Mellitus	34(21.25%)
2	20- 40 Years	68(42.5%)	Primary	42(26.25%)	8-10 gm/dl	80(50%)	Hyper-tension	16(10%)
3	41- 60Years	58(36.25%)	Secondary	6(3.75%)	10.1-12 gm/dl	46(28.75%)	Ischaemic Heart Disease	4 (2.5%)
4	>60 Years	16(10%)	Higher	2(1.25%)	>12 gm/dl	2(1.25%)	Other Diseases	106 (66.25%)
	Total	= 160		= 160		= 160		= 160

The illiterate and lower class patients represented the majority of CAP frequency load.

Haemoglobin (Hb) estimations on admission day were also noted. There were 32 (20%) patients with Hb <8 gm/dl, 80 (50%) from 8-10 gm/dl, 46 (28.75%) from 10.1-12 gm/dl and 2 (1.12%) from >12 gm/dl as shown in Table-II. Half of the patients were having moderate anaemia on admission.

The other associated diseases were also studied. It was found that there were 34 (21.75%) patients with Diabetes Mellitus, 16 (10%) Hypertension, 4 (2.5%) Ischaemic Heart Diseases and 106 (66.25%) with other co- morbid diseases as shown in Table-II. Diabetes Mellitus presented the most common associated disease among CAP patients.

DISCUSSION

Community acquired pneumonia (CAP) is a serious disease of respiratory system occurring both in developed and developing countries. Its severity and frequency varies with different human demographic features.

It was noted that the frequency of CAP was inversely proportional to the socio-economic class. The lower class revealed the highest frequency (68.75%) of CAP patients. It is consistent with a previous study as mentioned by Loeb MB¹ who described the highest frequency of CAP among the lowest socio-economic class of patients. It is probably attributed to the non-affordability of costly treatment at an early stage due to extensive poverty prevailing in our region; which predisposes high mortality and severity of CAP.

It was found that Diabetes Mellitus (21.25%) co-existed with CAP in our study; having the highest ratio as compared to Hypertension and Ischaemic Heart Disease. It is concordant with earlier findings by Reechaipichitkul W and Pisprasert V³ who mentioned Diabetes Mellitus to be common among CAP patients.

It has been noted in our study that there were 55% male patients dominating than that of females. High frequency of CAP among male gender as depicted in our study has been further supported by the other medical scientists³ who mentioned the

same findings. Another two studies⁶⁻⁷ have also quoted the same male predominance (59.15%) which is concordant and close to our findings. It may be attributed to more chance of exposure to cross-infections outside in the community for male gender. However it has also been mentioned in the past literature⁸ that there is no difference between male and female patients as far as their mortality pattern with CAP is concerned.

In patients hospitalized with CAP, anaemia is common and is associated with increased length of hospital stay and mortality. There were 50% patients with haemoglobin 8-10 gm/dl only in our study findings. It shows half of the CAP patients admitted were attributed to moderate anaemia. It is the same as discussed by the previous medical investigators⁹ in their past research work. Anaemia with CAP is associated with poor outcome.

We have found the highest frequency (42.5%) of CAP among the 20-40 years age group. It is a relatively younger age group when compared to another study by Jordan HT¹⁰ et al. They quoted the highest frequency of CAP among <5 years and >65 years age group. This difference may be due to poverty, malnutrition and family negligence with work over load in the 20-60 years age population in our region. However it is inconsistent with the other research literature¹¹ which indicated that CAP has no association with poverty and income status.

Our study revealed that there were 56.25% patients from rural area. It is however, contrary to the past findings by Lave JR and Fine MJ¹² who mentioned that rural residents have fewer complications, less cost of treatment and are more rapidly discharged as compared to urban patients. This difference is due to their own explanation that rural patients were treated by qualified family physicians in their study. In our cases, the rural CAP patients are treated by local quacks, dispensers and indigenous drug healers at early stage due to wide spread illiteracy (68.75%) among them as quoted in our study findings. When these CAP patients become very serious and develop complications then these are brought to our teaching hospital in this region. Our study has revealed that there is a relationship of

Annexure-1

Profiles of community acquired pneumonia cases admitted to a Tertiary Care Hospital

Serial No _____

- | | | | | |
|---|--|---|---|---|
| 1. Age: | (a) < 20 years <input type="checkbox"/> | (b) 20 to 40 years <input type="checkbox"/> | (c) 41 to 60 years <input type="checkbox"/> | (d) >60 years. <input type="checkbox"/> |
| 2. Gender: | (a) Male <input type="checkbox"/> | (b) Female <input type="checkbox"/> | | |
| 3. Marital Status: | (a) Married <input type="checkbox"/> | (b) Unmarried <input type="checkbox"/> | | |
| 4. Residential Area: | (a) Urban <input type="checkbox"/> | (b) Rural <input type="checkbox"/> | | |
| 5. Socio-economic Status: | (a) Low (Rs.< 10,000) <input type="checkbox"/> | (b) Middle (Rs.10,000 to 20,000) <input type="checkbox"/> | (c) High (Rs.> 20,000) <input type="checkbox"/> | |
| 6. Educational Status: | (a) Illiterate <input type="checkbox"/> | (b) Primary <input type="checkbox"/> | (c) Secondary <input type="checkbox"/> | (d) Higher <input type="checkbox"/> |
| 7. Haemoglobin Level on hospital admission: | (a). < 8 gm/dl% <input type="checkbox"/> | | | |
| | (b) 8 to 10 gm/dl% <input type="checkbox"/> | | | |
| | (c) 10.1 to 12 %gm/dl <input type="checkbox"/> | | | |
| | (d). > 12 gm/dl% <input type="checkbox"/> | | | |
| 8. Other associated diseases: | (a) Diabetes Mellitus <input type="checkbox"/> | (b) Hypertension <input type="checkbox"/> | | |
| | (c) Ischaemic Heart Disease <input type="checkbox"/> | (d) Other diseases <input type="checkbox"/> | | |

demographic factors with frequency of CAP which makes null hypothesis to be false. It is essential to reduce mortality and morbidity due to CAP by giving proper attention to different demographic factors which influence upon these patients.

Recommendations

1. Health education is necessary for rural patients, specifically adult males to raise awareness for urgent treatment of CAP.
2. Poverty alleviation is essential to raise affordability level for early prompt diagnosis and treatment of CAP to reduce its morbidity and mortality.
3. Control of co-morbid diseases like diabetes mellitus is necessary to avoid CAP complications.
4. Anaemia is a common reason of CAP severity in this region. Proper nutritional health education at a mass level is essential. Intestinal helminthes treatment along with iron supplementation is recommended for CAP patients to get early recovery.

Limitations of the study: There are certain limitations in our study such as:

1. Nutritional status of patients has not been addressed.
2. Death rates of CAP patients could not be included.
3. Hospital resources profile affects on CAP patients outcome has not been mentioned.
4. These shortcomings and limitations require that further studies should be conducted with a much larger sample size.

CONCLUSION

Community-acquired pneumonia (CAP) is more prevalent among males, rural area residents, low socio-economic class and relatively younger age

from 20-40 years. It is more frequent among married people with anaemia and illiteracy. Diabetes Mellitus is common among CAP patients.

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