CORRELATION BETWEEN DEMOGRAPHIC CHARACTERISTICS AND DEGREE OF ILLNESS AMONG ASTHMATIC PATIENTS IN THE PANCHKULA REGION

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Abstract

Objective - To investigate the correlation between some demographic factors and the levels of severity or occurrence of diseases among asthmatic patients using statistical analysis.

Background - One of the main causes of illness and mortality in India is bronchial asthma. Knowing the epidemiology of these people is crucial for the planning and delivery of asthma care since asthma places a significant load on health economic resources.

Materials and methods -A prospective, observational study on the outpatient clinics at the J.N. Shory hospital in Panchkula, and other locations was carried out from July 2021 to June 2022. Demographic assessment was evaluated using the WHO's prescription indicators. The statistical package for the social sciences (SPSS) descriptive analysis studies were used to analyse the data.

Results - Age, gender, social habits, causes and severity of diseases affect the assessment of quality of life in patients with asthma. Significant result was obtained i.e. (p=0.00) when gender, age and the social habits were compared with the causes and when gender, age were compared with the occurrences the results was non significant i.e., (p=0.108), On the other hand result of social habits with occurrence was found to be significant (p=0.00).

Conclusion and Recommendations - This study showed that asthma attacks are becoming more common and sever in both male (42%) and female (58%), particularly, those at age 40-49yrs (55%) affected from asthma. According to the literature, comparing demographic information with clinical state can help predict the severity of asthma and perhaps even the outcome. This calls for greater caution in the treatment of this particular group of asthmatics than any other.

Keywords- Demographical studies, Age, Gender, Social habits, Causes, Prescription, Asthma, Statistical analysis.

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INTRODUCTION

Asthma is a diverse disease characterized by recurrent episodes of wheezing, shortness of breath, chest tightness, and coughing that differ in duration and intensity and are associated with variable expiratory flow limitation. [1] There are 360 million sufferers globally, and experts estimate that up to 25% of adult-onset asthma cases may be tied to the workplace. The emergence of asthma, the variability of phenotyping, and the susceptibility to steroids are also influenced by environmental factors, genetic polymorphisms, and epigenetic factors. [2] Less exposure to the environmental changes can lessen asthma attacks and exacerbations. If asthma exacerbated by exposure to substances at work is referred to as occupational asthma. [2-3]

There are three ways that these chemicals may trigger asthma

- Allergic response (like people with allergies who develop allergic asthma)
- An unpleasant response (like a person that reacts to smoking with asthma)
- An event that causes an accumulation of naturally occurring substances like histamines in the lungs.

There are numerous asthma causes in the workplace. In the workplace, there are over 300 chemicals that are known to exacerbate or cause asthma. The worsening of asthma can be avoided by avoiding triggers. [4-5]

Currently, environmental factors (allergens, infections, air pollution, climate change, and social practises) as well as individual risks (genetic predisposition, age), affect asthma episodes. Prior research has mostly concentrated on describing putative effect modifiers of the exposure-response relationships or on calculating the relative hazards of severe temperatures. For instance, several exposure pathways, some of which are temperature-related, such as concentration variations, lead to asthma episodes. Inconsistencies have been discovered in the epidemiologic data for relationships that vary by study variables (such as demographics and geographic locations). Additionally, experimental data suggests that social behaviours (such as drinking, smoking, and using oral tobacco) and environmental factors (such as air, water, weather, soil, natural vegetation, and landforms), working with dust, having pets (such as a cow, cat, or dog), breathing gas smoke, exercising regularly, and other factors that affect asthma also have an impact on asthmatic patients. [5]

STUDY DESIGN

Demographical studies can be conducted using a wide variety of study designs [2]. The present studies have taken into consideration those (physician-diagnosed asthma patients) participants who gave their consent to be volunteer. Different designs have benefits and drawbacks, so researchers should pick the best approach to address the issues they want to look into. The approach chosen will vary depending on the study topics as well as practical factors like the amount of data available, the budget, and the expertise of the researchers. Fieldwork is done as part of observational studies, and the researcher is only allowed to interpret the information gleaned from the observations. In contrast, in an experimental setup, the researcher is watching the effects of the factors being investigated. Observational studies can be either analytical or descriptive. Descriptive research identifies comparison group-based tendencies in demographic assessment. They frequently stand for the earliest investigations done in a field of science. These studies can be used to calculate prescription costs, the prevalence of a condition, or the accuracy of the demographic analysis of asthmatic patients. Comparatively, analytical studies aim to draw conclusions about links that are suggested to be correlative. [6]

Study Site: The study has been carried out at Kalka nursing home and J.N. Shory hospital.

Study Duration: The study duration is of 1 year.

Sample size: - Include 250 prescriptions.

Study Criteria:

➢ ***Inclusion Criteria*** **is based upon the following components**

- All OPD patients visited to hospital and clinics diagnosed with asthma
- Patients of all age group
- Both genders
- Causes
- Social Habits
- Severity of diseases

➢ ***Exclusion Criteria***

- Patients admitted on IPD basis
- Patients who did not give consent to participate in the study
- Patients with any concurrent conditions, such as hypertension, diabetes, or any other systemic diseases or disorders, such as allergic rhinitis, atherosclerotic cardiac disease and the circulatory disorder,

pneumonia and bronchopneumonia, connective tissue diseases, dermatologic conditions (eczema), esophageal reflux disease (ERD) and other gastrointestinal diseases, immunologic and hematologic diseases, metabolic disorders, and neurologic disorders.

METHODOLOGY

To ascertain the degree of asthma control among patients, we performed a cross-sectional study. This prospective, cross-sectional, observational study was carried out in the public sector hospital's outpatient division of J.N Shory hospital and other clinics of panchkula. Before enrolling in this study, the patients' verbal agreement was sought along with approval from the institutional ethics committee. Once their consultation with the physician was over, the prescriptions were collected and necessary details were noted on the data collection format. Age, gender, occupation, social habits, signs and symptoms, causes, and occurrence for the patient were all recorded. The prescription medications' specifics were recorded. [5-7]

After obtaining informed verbal and written consent, all subjects who met the eligibility criteria were enrolled. The primary investigator interacted with the patients in an outpatient setting at a public hospital. Ten to twenty minutes were spent on each interview. Data were collected on a performa and included basic demographic information such as age, gender, social habits, causes (Environmental factors, working with dust, pets/dog/cow, gas smoke, regular exercised) were noted by outpatient interviewed and occurrence i.e., severity of diseases (acute, chronic, mild, moderate severe and very severe asthma) were noted from the prescription. The data were entered and analyzed by using IBM SPSS Statistics for Windows, Version 20.0. The mean and standard deviation was calculated for age, social hobbits, causes, and severity of diseases. The frequency and percentage were calculated for age, gender, social habits, causes and the severity of asthma. With a 95% confidence interval (CI), the Pearson Chi-square tests for the analysis were reported. A P-value of 0.05 or less was regarded as significant. To determine the impact of these variables on overall quality of life, the Pearson Chi-square test was used. [8-10]

ANALYSIS OF DATA

Two hundred fifty (250) patients who co-operated were interviewed and information was filled in case record form for a period of 1 year (July 2021 to June 2022). After noting down all information was put in excel sheet. The following data in **Table1-3** was compiled in software and classified into different independent variables i.e. Age gender and Social habits. The data was tabulated and the percentage was calculated on the computer using Microsoft Excel 2013 and after that using SPSS software for the descriptive studies and analysis. SPSS was used for the statistical analysis, and the data were also evaluated using MS Excel. SPSS was used for the statistical analysis, and the data were also evaluated using MS Excel. Demographic data were subjected to descriptive data analysis, which revealed differences in proportions (p-value 0.05) according to asthma control level. [11-13] We assessed and compared various demographical factors and causes, severity of diseases with asthmatic patient.

General objective

The proposed objective of the study include

Table 1: Gender wise distribution of asthmatic patients involving causes and occurrences characterization

			Causes						Occurrence						Total
			Environmental factors	Working With Dust	Pets/ Dog/ Cat	Gas smoke	Regular exercised	Others/ No	Acute	Chronic	Mild	Moderate	Severe	Very Severe	
Gender	Female	Count	31	5	20	61	19	9	17	23	36	36	24	9	145
		Expected Count	27.3	15.7	33.1	40.6	18.0	10.4	22.6	22.6	29.6	36.0	22.0	12.2	145.0
		% within gender	21.4	3.4	13.8	42.1	13.1	6.2	11.7	15.9	24.8	24.8	16.6	6.2	100.0
		% within causes and occurrence	66.0	18.5	35.1	87.1	61.3	50.0	43.6	59.0	70.6	58.1	63.2	42.9	58.0
	Male	Count	16	22	37	9	12	9	22	16	15	26	14	12	105
		Expected Count	19.7	11.3	23.9	29.4	13.0	7.6	16.4	16.4	21.4	26.0	16.0	8.8	105.0
		% within gender	15.2	21.0	35.2	8.6	11.4	8.6	21.0	15.2	14.3	24.8	13.3	11.4	100.0
		% within causes and occurrence	34.0	81.5	64.9	12.9	38.7	50.0	56.4	41.0	29.4	41.9	36.8	57.1	42.0
Total		Count	47	27	57	70	31	18	39	39	51	62	38	21	250
		Expected Count	47.0	27.0	57.0	70.0	31.0	18.0	39.0	39.0	51.0	62.0	38.0	21.0	250.0
		% within gender	18.8	10.8	22.8	28.0	12.4	7.2	15.6	15.6	20.4	24.8	15.2	8.4%	100.0
		% within causes and occurrence	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 2:- Age wise distribution of asthmatic patients involving causes and occurrences characterization

			Causes						Occurrence						Total
			Environmental factors	Working With Dust	Pets/dog/ cat	Gas Smoke	Regular Exercised	Other s/No	Acute	Chronic	Mild	Moderate	Severe	Very Severe	
Age in years	15-19	Count	1	0	0	0	0	4	2	1	1	1	0	0	5
		Expected Count	.9	.5	1.1	1.4	.6	.4	.8	.8	1.0	1.2	.8	.4	5.0
		% within age	20.0	0.0	0.0	0.0	0.0	80.0	40.0	20.0	20.0	20.0	0.0	0.0	100.0
		% within causes and occurrence	2.1	0.0	0.0	0.0	0.0	22.2	5.1	2.6	2.0	1.6	0.0	0.0	2.0
	20-29	Count	3	0	5	1	2	0	4	1	5	1	0	0	11
		Expected Count	2.1	1.2	2.5	3.1	1.4	.8	1.7	1.7	2.2	2.7	1.7	.9	11.0
		% within age	27.3	0.0	45.5	9.1	18.2	0.0	36.4	9.1	45.5	9.1	0.0	0.0	100.0
		% within causes and occurrence	6.4	0.0	8.8	1.4	6.5	0.0	10.3	2.6	9.8	1.6	0.0	0.0	4.4
	30-39	Count	5	2	5	4	5	1	2	3	6	7	3	1	22
		Expected Count	4.1	2.4	5.0	6.2	2.7	1.6	3.4	3.4	4.5	5.5	3.3	1.8	22.0
		% within age	22.7	9.1	22.7	18.2	22.7	4.5	9.1	13.6	27.3	31.8	13.6	4.5	100.0
		% within causes and occurrence	10.6	7.4	8.8	5.7	16.1	5.6	5.1	7.7	11.8	11.3	7.9	4.8	8.8
	40-49	Count	14	7	8	8	17	1	5	9	14	17	6	4	55
		Expected Count	10.3	5.9	12.5	15.4	6.8	4.0	8.6	8.6	11.2	13.6	8.4	4.6	55.0
		% within age	25.5	12.7	14.5	14.5	30.9	1.8	9.1	16.4	25.5	30.9	10.9	7.3	100.0
		% within causes and occurrence	29.8	25.9	14.0	11.4	54.8	5.6	12.8	23.1	27.5	27.4	15.8	19.0	22.0
	50-59	Count	3	2	14	22	6	2	12	3	12	13	7	2	49
		Expected Count	9.2	5.3	11.2	13.7	6.1	3.5	7.6	7.6	10.0	12.2	7.4	4.1	49.0
		% within age	6.1	4.1	28.6	44.9	12.2	4.1	24.5	6.1	24.5	26.5	14.3	4.1	100.0
		% within causes and occurrence	6.4	7.4	24.6	31.4	19.4	11.1	30.8	7.7	23.5	21.0	18.4	9.5	19.6
	60-69	Count	7	4	12	25	1	6	7	8	9	15	9	7	55
		Expected Count	10.3	5.9	12.5	15.4	6.8	4.0	8.6	8.6	11.2	13.6	8.4	4.6	55.0
		% within age	12.7	7.3	21.8	45.5	1.8	10.9	12.7	14.5	16.4	27.3	16.4	12.7	100.0
		% within causes and occurrence	14.9	14.8	21.1	35.7	3.2	33.3	17.9	20.5	17.6	24.2	23.7	33.3	22.0
	70-79	Count	10	9	10	7	0	3	6	10	2	5	10	6	39
		Expected Count	7.3	4.2	8.9	10.9	4.8	2.8	6.1	6.1	8.0	9.7	5.9	3.3	39.0
		% within age	25.6	23.1	25.6	17.9	0.0	7.7	15.4	25.6	5.1	12.8	25.6	15.4	100.0
		% within causes and occurrence	21.3	33.3	17.5	10.0	0.0	16.7	15.4	25.6	3.9	8.1	26.3	28.6	15.6
	<80	Count	4	3	3	3	0	1	1	4	2	3	3	1	14
		Expected Count	2.6	1.5	3.2	3.9	1.7	1.0	2.2	2.2	2.9	3.5	2.1	1.2	14.0
		% within age	28.6	21.4	21.4	21.4	0.0	7.1	7.1	28.6	14.3	21.4	21.4	7.1	100.0
		% within causes and occurrence	8.5	11.1	5.3	4.3	0.0	5.6	2.6	10.3	3.9	4.8	7.9	4.8	5.6
Total	Count		47	27	57	70	31	18	39	39	51	62	38	21	250
	Expected Count		47.0	27.0	57.0	70.0	31.0	18.0	39.0	39.0	51.0	62.0	38.0	21.0	250.0
	% within age		18.8	10.8	22.8	28.0	12.4	7.2	15.6	15.6	20.4	24.8	15.2	8.4	100.0
	% within causes and occurrence		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 3:- Social habits distribution of asthmatic patients involving causes and occurrences characterization

			Causes						Occurrence						Total
			Environmental factors	Working With Dust	Pets/ dog/ cat	Gas Smoke	Regular Exercised	Other s/No	Acute	Chronic	Mild	Moderate	Severe	Very severe	
Social Habits	Alcoholic	Count	11	4	13	1	9	4	4	4	8	16	6	4	42
		Expected Count	7.9	4.5	9.6	11.8	5.2	3.0	6.6	6.6	8.6	10.4	6.4	3.5	42.0
		% within SH	26.2	9.5	31.0	2.4	21.4	9.5	9.5	9.5	19.0	38.1	14.3	9.5	100.0
		% within causes and occurrence	23.4	14.8	22.8	1.4	29.0	22.2	10.3	10.3	15.7	25.8	15.8	19.0	16.8
	Smoking	Count	9	11	12	9	6	1	4	8	8	11	9	8	48
		Expected Count	9.0	5.2	10.9	13.4	6.0	3.5	7.5	7.5	9.8	11.9	7.3	4.0	48.0
		% within SH	18.8	22.9	25.0	18.8	12.5	2.1	8.3	16.7	16.7	22.9	18.8	16.7	100.0
		% within causes and occurrence	19.1	40.7	21.1	12.9	19.4	5.6	10.3	20.5	15.7	17.7	23.7	38.1	19.2
	Oral Tobacco	Count	6	7	9	13	1	4	8	7	0	7	12	6	40
		Expected Count	7.5	4.3	9.1	11.2	5.0	2.9	6.2	6.2	8.2	9.9	6.1	3.4	40.0
		% within SH	15.0	17.5	22.5	32.5	2.5	10.0	20.0	17.5	0.0	17.5	30.0	15.0	100.0
		% within causes and occurrence	12.8	25.9	15.8	18.6	3.2	22.2	20.5	17.9	0.0	11.3	31.6	28.6	16.0
	Others	Count	21	5	23	47	15	9	23	20	35	28	11	3	120
		Expected Count	22.6	13.0	27.4	33.6	14.9	8.6	18.7	18.7	24.5	29.8	18.2	10.1	120.0
		% within SH	17.5	4.2	19.2	39.2	12.5	7.5	19.2	16.7	29.2	23.3	9.2	2.5	100.0
		% within causes and occurrence	44.7	18.5	40.4	67.1	48.4	50.0	59.0	51.3	68.6	45.2	28.9	14.3	48.0
Total		Count	47	27	57	70	31	18	39	39	51	62	38	21	250
		Expected Count	47.0	27.0	57.0	70.0	31.0	18.0	39.0	39.0	51.0	62.0	38.0	21.0	250.0
		% within SH	18.8	10.8	22.8	28.0	12.4	7.2	15.6	15.6	20.4	24.8	15.2	8.4	100.0
		% within causes and occurrence	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

RESULT – From the **table no 1,** it has been observed that 42% of male and 58% of females were found to be affected by asthma. Gas smoke was found to be the cause of asthma in 42.1% of female and 24.8 % of them were affected from mild to moderate asthma. In case of male members, pets/cow/dogs were found to be the causative agents of asthma in 35.2 % of males, 21% of them patient were diagnosed with acute asthma while 24.8% were with moderate asthma when Pearson Chi square test was applied involving i.e. gender and causes on total 250 patient, the results revealed that significant differences between gender and causes (p=0.00) was observed. So it was concluded

that both males and females were found to be effected from asthma via their causes i.e. environmental factors (Air, water, weather, soil, natural vegetation and landforms), working with dust, pets/cow/cat/dog, gas smoke, regular exercise and others which influence the asthma. When gender (male, female) was compared with the occurrence of diseases (i.e., Acute, Chronic, Mild, Moderate, Severe, Very severe) with Pearson Chi square test, the results found were non significant (p=0.108). So it was concluded that from its comparison parameter that both male and female genders were equally affected with these (Moderate =24.8%) occurrence parameter. [14-20]

In the table 2, people of age 20-29 yrs. 45.5 % of these were found to be affected by pets/cow/cat/dog while 27.3% of these are affected by environmental condition. On the other hand, people of age 30-39 yrs, 22.7% of those were found to be equally affected by environmental condition, pets/cow/cat/dog, 30.9% of people with age 40-49 yrs were affected by regular exercise and 49.9% of people with age 50-59 yrs were found to be affected by gas smoke , mostly in females . Females of age 60-69 yrs were also found to be affected by gas smoke for development of asthma. People of age 70-79 yrs, 25.6 % of those were found to be affected by environment condition, pets/cow/cat/dog. People having age more than 80 yrs were found to be 28.6% affected environment and equally affected by working with dust/gas smoke. When Pearson Chi square test was applied for age wise distribution of asthmatic patients (N=250) involving different causes i.e., environmental condition, working with dust, pets/cow/cat/dog, gas smoke, regular exercised and others the results were found to be significant (P=0.00). And age parameter was compared with occurrence of diseases i.e., acute, chronic, mild, moderate, severe, very severe on comparison it was found that the results were found to be non significant (p=0.108) so it was concluded that the patient with all age groups were equally affected with the occurrence parameters which has been already mentioned in **table 2.** [21-28] When the social habits (alcohol, smoking, oral Tobacco and others i.e. uses of drugs) were compared with various causative agents like environmental condition, working with dust, pets/cow/cat/dog, gas smoke , regular exercised by applying Pearson Chi Square test, percentage of the person with various social habits has been displayed in **the table 3**. The result found to be significant (P Value= 0.000). So it was concluded that social habits influence the causes of asthma. When social habit were compared with the occurrence of diseases by applying Pearson Chi Square test it was found that the result were found to be significant (p value=0.00).so it was concluded that the social habits parameters also affect the occurrence of asthma. [29-35]

Bronchial asthma has been reported to be the most prevalent chronic inflammatory illness affecting the respiratory system in both most developed and some developing nations. However, if the severity of the symptoms is recognised, the right therapy can be started, and with the right education, aggravating factors can be avoided, this disease can be effectively controlled by clinicians. In the current study, we looked for a relationship between the various asthma severity levels and the patients' age, gender, and social habits. In other words, it aimed to find out which types of asthmatics were more likely to have acute, chronic, mild, moderate, or other levels of severity. This study revealed female predominance in all ages except in the age group of male. The second important finding in this study was that age group 40-49yrs (55%) and 50-59yrs (49%) were found to be more affected from asthma in both male and female. But in age group of 20-29yrs, 45.5% were mildest and 36.4% were reported as acute. But in age group 40-49yrs (30.9%) moderest, or in 50-59yrs (26.5%), 60-69yrs (27.3%) 70-79yrs 25.6 % level of severity were reported. In summary, the frequency of asthma has increased, being more severe among 70-79yrs of age. The effect of social habits i.e., alcoholic with moderest severity (38.1%), smoking (22.9%), oral tobacco (30%) also correlated to the moderest severity of asthma. [36-41]

CONCLUSION: Age, gender, social habits, causes and severity of diseases affect the assessment of quality of life in patients with asthma. The analysis of demographic variables will aid in not only the treatment of this widespread ailment but also in the diagnosis and prediction of its final course [36–41]. According to the literature, comparing demographic information with clinical status can aid in predicting how severe an asthma attack would be and possibly how it will turn out. This necessitates extra attention for this particular group of asthmatics than for any other.

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