ORIGINAL ARTICLE

PATTERN OF ADULT ASTHMA IN DISTRICT DERA ISMAIL KHAN

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ABSTRACT

Background: Asthma is a chronic allergic respiratory disease. The frequency and severity of asthma is rising in the developing countries. Severe asthma causes great morbidity and mortality affecting the quality of life of patients and their families. The objective of this study was to find the risk factors of asthma and their frequency and distribution in adults in District Dera Ismail Khan.

Material & Methods: This cross-sectional study was conducted in Department of Community Medicine, Gomal Medical College, D. I. Khan, Pakistan from March 16, 2015 to August 15, 2015. A sample of 200 subjects was selected by consecutive non probability technique.

Results: Among 200 patients 123(61%) were males and 67 (39%) were females. Total number of asthmatics in age group of 20-29 years were 94 (47%), 30-39years were 40(20%), 40-49 years were 20(10%), 50-59 years were 23(11%), 60-69 years were 11(6%), 70-80 years were 12(6%)asthmatic. Further regarding residence 114(57%) were from urban areas and 86(43%) were from rural areas.

Conclusions: As it is clear from our results that asthma is mainly found in the age group of 20-29 years. Most of our respondents are students. Males are more vulnerable to get asthma than female. So health care planners should focus on adult asthma patients generally and this vulnerable group especially.

KEY WORDS: Asthma; Urbanization; Smoking; Stress.

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INTRODUCTION

Asthma is a chronic disease characterized by recurrent attacks of breathlessness and wheezing which vary in severity from person to person.[1] Symptoms of asthma are cough, wheeze and shortness of breath often worse at night. Severity of disease depends on type of allergen and immune response of an individual. In early reaction air flow limitation begins within minutes, reaches its maximum in 15-20 minutes and subsides in 1 hour while in sustained reaction there is more prolonged and sustained attack of airflow limitation that responds less well to bronchodilators like salbutamol. A study carried out in UK by Murray describes a mechanism that direct infection of virus causes inflammatory response, increases the bronchial spasm and up regulation of intercellular adhesion molecule-1 expression in the bronchial epithelium which often act as triggering agent for increase in these symptoms.[2-4]

The severity and frequency of asthma is rising in the developing countries and there is much data support available to this claim.[5-8] Severe asthma causes great morbidity and mortality in the globe affecting quality and span of life of the patients.[9-11] Rising costs of treatment coupled with poor compliance emanates to increased number of emergency visits, hospital admissions and loss of productivity as well as absence from work place or school.[12-13] A global figure of approximately 334 million people suffering from asthma is reported, with prediction for prevalence of asthma increasing worldwide by 50% every decade.[14] Asian prevalence of asthma varies from 0.7% to 11.9%, whereas the highest prevalence rates of asthma are found in the United Kingdom (>15%) and New Zealand (15.1%).[14] Currently in Pakistan, 15 million children and 7.5 million adults are the victims of asthma.[3] Karachi, the largest city of Pakistan constitutes about 8-10% population, which suffers from chronic asthma and every 250th death in the city is due to severe asthma exacerbations.[15]

Asthma exacerbation is influenced by many factors, however the environmental factors have

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more influence in causing asthma exacerbations as compared to the genetic factors and various authors have reported variation in the emergency visits, indoor admissions and mortality during certain periods of the year.[16-18] Seasonal episodes of these exacerbations happening constantly can give an indication to find the specific etiologies responsible for these exacerbations; however further identification of this seasonal occurrence of the disease provides understanding of its dynamics in populations and basis for researching other etiological factors guiding towards the development of preventive strategies.[19]

The health service utilization researchers studied the impact of respiratory viruses on hospital admissions. Other factors influencing the asthma exacerbation include dust mites, urbanization, smoking, in and out door air pollution, emotional expression, obesity, professions, genetic factors, family history and climatic events. There are many pathways leading to the development of asthma and wheezing illness. Interactions among a range of genetic and environmental risk factors are thought to play an important role.[20-22]

Limited studies have reported data in this geographical region of Pakistan, regarding variations in asthma exacerbations with respect to seasons. While understanding of asthma has increased in recent years, the morbidity and mortality associated with this chronic condition continue to comprise a major health dilemma.

The objective of this study was to find the risk factors of asthma and their frequency and distribution in adults in District Dera Ismail Khan.

MATERIAL AND METHODS

This cross-sectional study was conducted in Department of Community Medicine, Gomal Medical College, D.I.Khan, Pakistan from March 16, 2015 to August 15, 2015. A sample of 200 subjects was selected by consecutive non probability technique. All indoor asthmatic patients in Medical Unit, D.H.Q Teaching Hospital, D.I.Khan were included in the study. Refusal was the main exclusion criteria. All these patients under went complete general physical and systematic examination. Routine investigations like blood complete with ESR, urinalysis and x-ray chest were carried out. Study instrument was a structured proforma. Consent was taken from the respondents for the study, and confidentiality of the data was ensured.

Our study variables were; sex, age groups, residence, employment status, asthma awareness, pets at home, smoking, night awakening, exercise effect on symptoms frequency, stress effect on symptoms frequency and season effect on symptoms frequency. Data was analyzed by descriptive analysis plan. All data being categorical was analysed by frequency, relative frequency, and cumulative frequency through IBM SPSS version 20 (IBM SPSS Corp., Armonk, New York).

RESULTS

Among 200 patients 123 (61%) were males and 67 (39%) were females. Total number of asthmatics in age group of 20-29 years were 94 (47%), 30-39 years were 40 (20%), 40-49 years were 20 (10%), 50-59 years were 23 (11%), 60-69 years were 11 (6%), 70-80 years were 12 (6%) asthmatic. (Fig. 1)

Further regarding residence 114 (57%) were from urban areas and 86 (43%) were from rural areas. Sixty-three (31%) of respondents were not aware about their problem that they have asthma while 137 (69%) were well aware of about their problem. Among respondents 34 (19%) had govt. job, 6 (3%) had private job, 17 (9%) had own business, 3 (1%) were laborer, 23 (11%) were farmer, 65 (33%) student and 52 (26%) housewives.

115 (57%) had pets in their home and 85 (43%) had not. 126 (63%) were nonsmokers while 74 (37%) were smokers. During exercise the shortness of breath was experienced by 151 (76%) while 49 (24%) had not experienced this. During stress symptoms worsened in 94 (47%) and 106 (53%) had not expe-

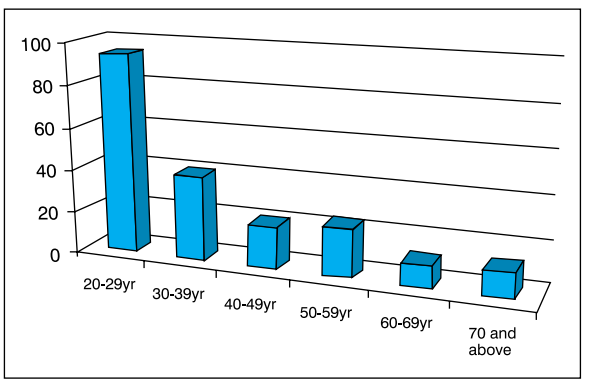

Figure 1: Age distribution of adult asthma patients in D.I.Khan.

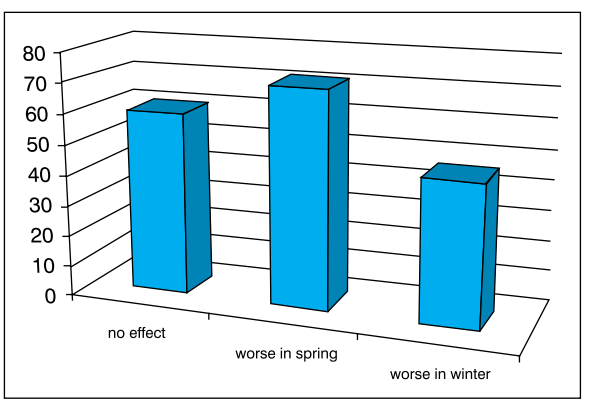

Figure 2: Effect of season on symptoms of adult asthma.

Table 1: Pattern of adult asthma in district D.I.Khan

Variable	Attributes	Frequency	Relative Frequency
Gender	Male	123	61.4%
	Female	67	38.6%
Age groups	20-29 Years	94	47.1%
	30-39 years	40	20.0 %
	40-49 years	20	10.0%
	50-59 years	23	11.4%
	60-69 years	11	5.7%
	70 and above	12	5.7%
Place of living	Rural	86	42.9%
	Urban	114	57.1%
Smoking status	Smoker	74	37.1%
	Non-smokers	126	62.9%
Pets at home	Yes	115	57.1%
	No	85	42.9%
Exercise causes shortness of breath	Yes	151	75.7%
	No	49	24.3%
Seasonal variation	No effects	60	30%
	Worsen during spring	71	35.7%
	Worsen during winter	46	22.9%
Effects of stress on symptoms	Yes	94	47%
	No	106	53%
Symptoms in last 4 weeks	Never	8	4.3%
	Twice a week	77	38.6%
	More than twice a week but not Daily	52	25.7%
	Daily	49	24.3%
	Continuous symptoms	14	7.1%

rienced any effect of stress on symptoms.

We asked our respondents about the frequency of their symptoms in last 4 weeks and their answers were; 8 (3%) had no symptoms in last 4 weeks, 77 (39%) encountered these symptoms twice a week, 52 (26%)of them had more than twice a week but less than daily attack of asthma, 49 (24%) had daily attacks of asthma and 14 (7%) had continued symptoms. Thirty-two (16%) of respondents had not awakened at night because of cough and difficulty of breathing, 74 (37%) awakened twice a month, 46 (23%) awakened once a week, and 48 (22%) awakened three or more times a week.

In our responders change of season affects the symptoms which also varies in different responders as; 60 (30%) of our responders were not affected by change of weather, symptoms worsen in spring in 71 (36%) of responders, symptoms worsen in winter in 46 (23%) of responders, symptoms worsen in autumn in 20 (10%) of patients and in summer symptoms worsen in 3 (1%) of patients. (Fig. 2)

DISCUSSION

Age group frequency show that mostly affected age group is 20-29 years in our area i.e. District D.I.Khan while in Karachi the 35 year was the most affected age. Asthma was more common in males in our study.[23] The results also revealed a higher rate of hospital admissions of males patients as compared to females which is quite consistent with the results of other studies. Though the mechanism for the interrelationship amongst age, sex and asthma are unknown, however size of the airways in comparison to lung size and gender specific responses to environmental risk factors can explain some of these differences in asthma hospitalization rates.

Higher overall rates amongst females hospital visitors have been attributed to sex differences in lung characteristics. Interestingly the hospitalization due to acute exacerbation of asthma with respect to age showed primarily a higher number of visits in the age group of above 55 years. This can be attributed to increased vulnerability of respiratory air passages to the environmental triggering agents which can be explained by the decreased immunological defense system of the body in this particular age group.

Presence of pets at home was associated with increased occurrence of asthma in our study as in other studies.[20,21]

Most of the people were aware of their disease as it was in the research of Karachi.[23] In our research most of the responders experienced worsening of symptoms in spring season and in winter as were in Karachi (Pakistan),[23] in Ontario (Canada)[24] and in New York (US)[25] and similarly less cases in summer. The large number of admissions to the hospital in the cold season and onset of spring is perhaps due to the influence of various factors like viral infections in the atmosphere. The same pattern can be attributed to pollen load, fog and pollution index.

Reasons of asthma may be exposure to different agents like dust, smoke, pollution and many other factors. Difficulty in breathing and night awakening is about 37.1% (twice a month) in our study while it was 26% in the study conducted in Karachi.[23] In our study mostly asthmatics were nonsmokers as compared to the study conducted in Karachi. In our study symptoms of asthma worsened during exercise and stress. Frequency of symptoms like cough, chest tightness, difficulty in breathing was 38.6% (twice a week) in our study while in the research of Karachi it was 57%.[23]

Comparing our study with the study in Karachi there are some similar and some different results which show difference in the distribution of asthma and its frequency of symptom which may be because of difference in environment and risk factors.

CONCLUSION

As it is clear from our results that asthma is mainly found in the age group of 20-29 years and most of our responders are students. Males are more vulnerable to get asthma than females. So health care planners should focus on adult asthma patients generally and this vulnerable group especially, for finding the practical solutions in reducing the number of patients and their improved life style even in the presence of disease.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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None declared.

AUTHORS' CONTRIBUTION

Conception and Design:	NN, IA, MM
Data collection, analysis & interpretation:	NN, IA, MM, TZ
Manuscript writing:	NN, IA, MM, TZ