# ASTHMA CONTROL AMONG ASTHMATIC PATIENTS: A SINGLE CENTER STUDY

Javed Iqbal,[1] Munir Azhar,[1] Asim Umar,[1] Ahtesham Iqbal,[1] Muhammad Abid Hassan,[1] Sami Ahmad,[1] Sajida Naseem[1]

## ABSTRACT

**Background:** Asthma, when uncontrolled is a crippling condition and due to increasing allergens, the patients are increasing in number worldwide. **Objective**: To determine the level of asthma control in southern Punjab and impact of education level, habitat and gender on it. **Subjects and Methods:** This cross sectional study was conducted in the outpatient consultant's clinic, Bahawal Victoria Hospital, Bahawalpur, from 1st February to 30th September, 2011. All the patients diagnosed as having asthma by the physicians, were interviewed about the control of asthma. The data was collected on a questionnaire that included questions on the level of control of asthma and other related variables. Data was entered and analyzed by SPSS version 10. **Results** : A total of 768 patients were included in study, out of which 75% were having poorly controlled asthma. There were 224 (29.2%) females and 544 (70.8%) males. Fifty percent patients were of young age group. Middle age and elderly were 37% and 12% each. In the patients of urban area 61.53% were educated while from rural area 38.46% were educated. Among poorly controlled asthma group 320 (55%) were from rural area and 256 (44%) from urban area. In poorly controlled group 32 (5.55%) were on no treatment. Hundred percent of partially controlled and well controlled were having physician prescriptions. In well controlled group 64 (66.66%) were young. In poorly controlled group 288 (50%) were young. In well controlled group 100% were educated while in poorly controlled group 288 (50%) were uneducated. In poorly controlled group 32 (5.55%) were on no treatment while 544 (94.44%) were on some medications with prescription. In fully controlled group 100% patients had prescription. **Conclusion:** Asthma control is mostly poor in rural areas of Southern Punjab and almost half of the patients are uneducated, and young.

**Key Words**: Asthma**,** South Punjab, Well controlled asthma, Poorly controlled asthma, Partially controlled asthma

## INTRODUCTION

Asthma a chronic inflammatory disease of airway, is characterized by bronchoconstriction and increased mucous production on exposure to a variety of stimuli.[1] This allergic problem is crippling in a way that poorly controlled people are hardly able to earn their living, as the airway obstruction becomes irreversible with time.[1] The disease process is further exacerbated by the increasing number of allergens, that are specifically related to agricultural allergens, such as, wheat, cotton, sugarcane dust, in southern Punjab.[2] The situation is further worsened by the hot climate, with dust storms in this desert area. Punjab hosts most allergy patients in Pakistan than other provinces and asthma contributed 19% of total allergic diseases burden towards it.[2] There are number of studies available that indicates how lack of education leads to poor outcome by not adequately understanding the proper dosing and they don't comprehend the physicians' prescription as well.[3] Even the most developed countries are not spared from its ill effects. USA spends about 238 billion USD for just being health illiterate by about 77 million affected citizens.[4]

Asthma is one of the disease that can appropriately be dealt by self medications and to achieve this, we need to make certain health education action plans that guides towards it.[5] There are number of asthma severity assessment tests available that uses simple questions and those questions can be reliably asked on telephonic conversation as well. Moreover, it's also cost effective as it didn't involve any laboratory test.[6,7] No reliable data has ever been published from this area regarding asthma control, and impact of education level on it from this part of Punjab.

The objective of the study was to know the control of asthma and impact of education level, residence and gender of the patients on control of asthma presenting first time to the Consultant in a tertiary care hospital.

1.Department of Chest & TB, Quaid-e-Azam Medical College, Bahawalpur, University of Health Sciences, Lahore.

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**Correspondence:** Dr. Javed Iqbal, Assistant Professor Chest & TB 19/C (old) Medical Colony, Bahawalpur.

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**Phone:** 0321-5845310
**Email:** jiqb@hotmail.com

## SUBJECTS AND METHODS

This cross sectional study, was conducted at outpatient consultant's clinic, Pulmonology department, Bahawal Victoria Hospital, Bahawalpur

from 1st February to 30th September, 2011. This clinic receives patients from south Punjab. The study was approved by hospital ethical committee. After verbal consent patients older than 18 years of age, who were diagnosed as asthma by the primary physicians, visiting the consultant's clinic first time and diagnosis was confirmed by the consultant (in Pulmonology with five years' post graduation experience), were included in the study. Patients having lung diseases other than asthma or patients having asthma along with some other chronic illness like diabetes mellitus, hypertension, heart diseases or smokers were excluded. They were interviewed, in local languages (Urdu, Punjabi, Seraiki) understandable to the patients. They were asked five questions to know the level of control of asthma. The level of asthma control was assessed by scoring from 1 to 5 of responses of patients regarding shortness of breath, symptoms of asthma, use of inhalers during past 4 weeks and self rating of the control of asthma. Categories were made on cumulative score according to patient's reply of the level of control of asthma as following.[6,7]

- Score $\geq$ 20 indicates, well controlled asthma,
- Scores from 16 to 19 indicates, partially controlled asthma.
- Scores < 16 indicates, poorly or uncontrolled asthma.

The patient was labeled as educated if he/she can read and understand the instructions and prescription and medicine labels with provided information in it. The age of all patients was categorized into; young ($\leq$ 45 years), middle aged (>45 and <65 years), old ($\geq$65 years). SPSS software version 10 was used for statistical analysis. Categories of level of asthma control were presented as percentages.

## RESULTS

The total number of patients included in the study were 768, out of which 576 (75%) has poorly controlled asthma, 96 (12.5%) well fully controlled asthma and 96 (12.5%) has partially controlled asthma. Among poorly controlled group 32 (5.55%) were on no treatment while 544 (94.44%) were on some reliever medications and had treatment plan. In well controlled group, 96 (100%) patients had prescription with treatment plan. In partially controlled group 96 (100%)

patients had prescription from some physician for asthma treatment. It was noted that 50% of the patients were below 45 years of age, 37% were between 45 to 65 years. Among the poorly controlled asthma group 50% were below 45 years of age, among partially controlled asthma group 33%, whereas, among well controlled asthma group 66% where in this age group. (Table I).

**Table I: Age group and asthma control**

| Age Group (in years) | Total Patients | Well control Asthma | Partially control Asthma | Poorly Control Asthma |
|---|---|---|---|---|
| < 45 years | 384 (50%) | 64 (66.66%) | 32 (33.33%) | 288 (50%) |
| >45 to < 65 year | 288 (37.5%) | 32 (33.33%) | 64 (66.66%) | 192 (33.33%) |
| $\geq$ 65 year | 96 (12.5%) | 0 | 0 | 96 (16.66%) |
| Total | 768 (100%) | 96 (100%) | 96 (100%) | 576 (100%) |

**Table II: Level of asthma control versus education, gender and residence.**

| | Total Patients | Well controlled Asthma | Partially controlled Asthma | Poorly Controlled Asthma |
|---|---|---|---|---|
| **Education Status** | | | | |
| Educated | 416 (54.16%) | 96 (100%) | 32 (33.33%) | 288 (50%) |
| Uneducated | 352 (45.83%) | 0 | 64 (66.66%) | 288 (50%) |
| Total | 768 (100%) | 96(100%) | 96(100%) | 576(100%) |
| **Gender** | | | | |
| Male | 544 (70.8%) | 96 (100%) | 32 (33.33%) | 416 (72.22%) |
| Female | 224 (29.2%) | 0 | 64 (66.66%) | 160 (27.77%) |
| Total | 768(100%) | 96(100%) | 96(100%) | 576(100%) |
| **Residence** | | | | |
| Urban | 352 (45.8%) | 64(66.66%) | 32(33.3%) | 256 (44.4%) |
| Rural | 416 (54.2%) | 32 (33.3%) | 64 (66.6%) | 320 (55.5%) |
| Total | 768 (100%) | 96 (100%) | 96 (100%) | 576 (100%) |

It was noted that overall 54% were educated, in poorly controlled asthma group 50%, in partially controlled asthma, 33%, in well controlled group (100%) were educated. Overall 70% study subjects were male, in poorly controlled group 72%, in partially controlled group 33% and in well controlled group male (Table II). It was noted that 46% were from urban area, in the poorly controlled group, 44%, in partially controlled group 33% and in well controlled group 66% were from urban area (Table II).

## DISCUSSION

This study has shown that in southern Punjab, 75% of the asthmatic patients has poorly controlled asthma, signifying the importance of planning some strategies to control this crippling condition. It's recognized worldwide that level of education also contributes towards not only poverty but also to health.[3] According to the Population Census of 1998, the overall literacy rate in Pakistan was 45 percent and this survey predicted remote chances of increase in educational level in the future.[8] In present study, this low educational level particularly in rural areas is contributing towards poor control of asthma.

However, such differences in asthma control are not limited to only southern Punjab as discrepancies in control between urban and rural areas do exist worldwide.[9] Our study showed poor control of asthma in 44% of urban population while a survey conducted through 29 countries in North America, Europe, and Asia showed poor control in urban population ranging from 17% in Japan to 68% across Central and Eastern Europe.[9] The control was poor to an extent that it affected the daily working and schooling in these 29 countries.[9] Contrary to certain studies from America that showed poor asthma prevalence more in urban areas, in our study it was seen more in rural areas (54%).[10,11] This poor control of asthma in urban population in such countries is contributed by more air pollution and urbanization of the population.[11,12] But in our rural areas in addition to lower level of education to understand the written material, have limited access to health promotion and disease prevention programs and to curative services as well. They are often subject to greater environmental and occupational exposures and have limited options for education.[3] Such substandard living among those who lived in southern Punjab and since the majority lives in rural areas thus, contributing towards more poor control in comparison to urban population. This is a known fact that females show more hyper reactivity of airway due to unknown etiology and also it is more provocated by smoke.[13] Hormonal changes and exposure to environmental allergens is the key factor for such increased prevalence of asthma among females.[14] However, few studies has also shown that untreated asthma and not taking proper care for its control was also important factor in few of the communities.[13] A more precise review which was based on IgE level, revealed females were having more problems in asthma control.[15] However, in our study we found that only 27% were females in poorly controlled group, whereas, 66% in partially controlled group, were females, whereas, none in the well controlled group was female.

A controlled asthma is less likely to exacerbate and the good control needs appropriate treatment, as underutilization of the treatment modalities not only leads to poor control but also to more hospitalization.[16] Further the treatment significance is also evident from the fact that it also predicts the quality of life in asthmatics,[17] which is contrary to our study in which poor control group was having just 5.55% of those who were on, no medication, while 94% inspite of being on treatment, were among the poorly controlled group. This partly is because non specialized primary health physicians are involved in asthma care in our rural areas that might not be able to deal with difficult to control asthma,[12] in addition to low level of education of asthmatic patients.

In our study, more poor control in the rural area is further contributed by the precondition that generally atopics are allergic to more than one allergen and environmental allergen is the most prevalent cause of asthma in Pakistan.[2] Environmental allergens that contribute towards this allergic disease in Punjab are pollens, dust, wheat threshing, cotton and certain food products.[2] As about two third of population lives in rural area affected by this increased load of allergens thus, contributing towards such habitat discrepancy in asthma control of southern Punjab.

However, this study has raised an important point about deteriorated level of education that needs to be improved at our rural areas. The percentage of total population reaching to secondary level of education in rural areas of this region is just 0.82%. Pharmaceutical companies' information brochures and physician prescription are available with patient to help the intake of drugs and its doses but still it poses a great problem to apprehend just because of poor education. In our study, 94.45 % poorly controlled patients were having prescription for asthma management but owing to this low level of education they ended up non compliant because they themselves can't read it. Level of education does effects the course of chronic disease[18] and so it happened in this study.

## CONCLUSION

In summary more than half of patients had uncontrolled asthma despite most of them was on treatment from primary care physicians, additionally, almost half were uneducated and young in productive age group. These results give a loud call for need of future action plan of asthma control in this area. It's obvious that health education level of the patient has to be improved to make them understand and follow the treatment plan and written material provided by physicians. Although our present study has addressed few matters leading to

poor control, however, further studies are needed to explore other factors as well.

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