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Population Prevalence of Asthma in Ma'an Governorate, Jordan

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Abstract

Background: The prevalence of asthma is increasing in both western and developing countries. Few studies evaluated asthma prevalence in Jordan and especially in south of Jordan.

Objectives: to determine the prevalence of asthma among the population of Ma'an Governorate.

Method: A retrospective analysis of 6883 physician diagnosed asthma persons of different ages and gender who had been referred to Ma'an Tuberculosis and Respiratory Disease Centre for treatment and were subjected to full clinical examination during the last five years, reviewed and the incidence were determined.

Results: The total number of patients in this retrospective study was 6883. Among this number 2862 (41.6 %) adult male and 2881 (41.9 %) adult female, 769 (11.2 %) children male and 371 (5. 4 %) children female. The results showed that the prevalence of asthma is higher in adult male and female than that in both male and female children ($p<0.05$). Also there is no significant difference between adult male and adult female, while there is a significant difference between male children and female children ($p<0.05$). The highest prevalence of asthma was in May and December of each year while the lowest level was in August.

Conclusion: Bronchial asthma is a signifcant health problem among children and adults in Ma'an province.

Keywords: Population prevalence; Asthma; Ma'an governorate; Jordan

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Introduction

Chronic respiratory diseases are diseases of bronchial tree and other parts of the lungs: Bronchial asthma and chronic obstructive pulmonary disease (COPD) are the most common types of chronic respiratory diseases [1]. The prevalence of asthma is increasing and it is estimated that more than 300 million people suffer from bronchial asthma [2].

The disease represents a significant burden at life not only in term of morbidity and reduced quality of life of patients, but also in term of health care cost, especially in developing countries [3,4] Though most of available information regarding the prevalence of asthma indicated that western European has some of the highest prevalence rate of asthma in the world. Never the less other countries in latin America, Asia, Middle east and Arab countries showed also a relatively high prevalence with this disease [4-8].

The aim of the present study is to determine the prevalence of asthma among population of Ma'an Governorate.

Material and Method

A total of 6883 physician's diagnosed asthmatic who had been referred to Ma'an tuberculosis and Respiratory Disease Centre for treatment (Ma'an south of Jordan) and subjected to full clinical examinations during the last five years 2010-2014 was retrospectively reviewed and the prevalence were determined.

The data which were used in the present study were collected from the medical records of the CDC. The centre is for both treatment and diagnosis. Most of the cases were diagnosed and treated by the physicians of the CDC according to the medical examination. Unfortunately the medical records did not stated the age of the patients. They considered less than 12 years as children while above this age as adults.

The results were tested using the Wilcoxon Signed-Rank Test. The Wilcoxon Signed-Rank Test is a non-parametric version of a paired sample t-test, where the value of alpha is 0.05. However, the significance testing helped to make a judgment about a claim (Alternative hypothesis) in order to support it. The alternative hypothesis that this study aimed to support is the prevalence is higher in adult male and female than that in both male &female children ($p<0.05$).

Results

The total number of patients with physician diagnosed asthma and consulting Ma'an TRDC for treatment in the study period 2010-2014 were 6883 of different age and sex. The sample population included 2862 (41.6 %) adult male and (2881) adult female 769 (11.2 %) children male and 371 (5. 4 %) children female **(Table 1 and Figure 1).**

The results presented in **Tables 1-3** showed that the prevalence is higher in adult male and female than that in both male & female children ($p<0.05$). These results also indicated that there is no significant difference between adult male & adult female. While there is a remarkable difference between male children and female children ($p<0.05$).

Furthermore, the results also showed that the total number of subjects admitted to the TRDC started to increased from January of each year to reach a peak during May, and there after the number of patients started to decrease to reach its lowest level during August **(Figure 1)**. Another increase was noticed after August to build up a second peak in December. This trend of seasonality was observed in all groups and years under investigation.

The present results also revealed that the lowest prevalence with physician diagnosed asthma is in female children 371 (5.4 %).

Table 3 shows the statistical analysis obtained by the physician diagnosed asthma and consulting Ma'an TRDC for treatment in the study period 2010-2014 were 6883 of different age and sex. The first column indicates name, columns 2,3,4,5 and six indicate minimum, maximum, sum, mean, and standard deviation.

Discussion

This study provides, for the first time, the prevalence rates of asthma based on clinical diagnosis in ma'an province, and reveal several intersting finding:

Firstly, the present study demonstrates significant higher prevalence rates of asthma in adults than in children. These finding are not in accordance with most studies showing predominance for asthma and wheezing during the first decade of life, which is reserved around the time of puberty [9-11].

The possible explanation for this finding could be related to the parent socio-economic status, who may not have sought medical care for the asthematic child, despite the availability of health care service in Ma,an TRDC.

Secondly, the authors found that the prevalence of physician-diagnosed asthma showed no gender difference among adult male and female, These results are in agreement with results reported by Shohat [4,12]. However, several authors from different countries reported that the severity of symptoms with asthma were more common in female than in male [13]. Recently, it was reported pooling data from 48 ECRHS centers from 22 countries showed no gender difference in the severity of asthma [14].

Thirdly, the prevalence of physician-diagnosed asthma is statistically higher in male children than that of female children ($p<0.05$). This seems to reflect a true gender difference in the prevalence of ashtma, that is consistent with previous studies [8,12,15-17].

Table 1 The prevalence and Percentage of bronchial asthma in different age groups and gender.

Age & sex	Total	Percentage %
Child-Male	769	11.2
Child-Female	371	5.4
Child-Total	1140	16.6
Adult-Male	2862	41.6
Adult-Female	2881	41.9
Adult-Total	5743	83.4

Table 2 Yearly distribution of bronchial asthma.

Year	Child-Male	Child-Female	Child-Total	Adult-Male	Adult-Female	Adult-Total
2010	173	70	243	1180	589	1180
2011	165	89	254	1338	679	1338
2012	137	67	204	1223	596	1223
2013	164	58	222	1047	528	1047
2014	130	87	217	955	489	955

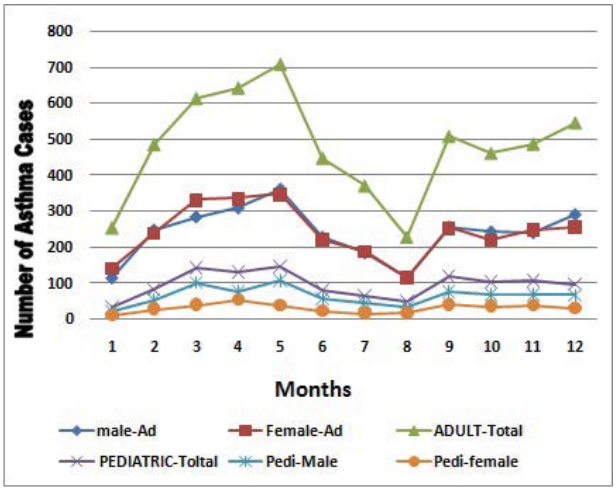

Figure 1 Mean monthly distribution of Bronchial asthma for the year 2010-2014.

Table 3 Statistical analysis on of bronchial asthma in different age groups and gender.

Age & sex	Min	Maxi	Sum	Mean	Std. Deviation
Adult-Female	113.00	361.00	2862.00	238.5000	73.41600
Adult-Male	113.00	347.00	2881.00	240.0833	73.00617
Adult-Total	227.00	708.00	5743.00	478.5833	144.61074
Child-Total	32.00	145.00	1140.00	95.0000	35.76184
Child-Male	21.00	107.00	769.00	64.0833	25.00712
Child-Female	11.00	54.00	371.00	30.9167	12.59479

Though all age groups are subjected to the same triggering factor, which is mainly air pollution, since Ma'an governorate considered to be the main region for mining industry in Jordan (Jordan Phosphate Mines Company, Jordan Cement Factories).

In addition, there are other non specific factors that may precipitate asthma attacks and induced the differences between adults and children, namely cigarette and water pipe smoking (hookah) in adult male and emotional stress in adult female (Medical Records).

However, the difference in prevalence between male and female children in probably due to the traditional customs of this region in Jordan that most of male children over six years are allowed to have free time outdoor which accordingly exposed them to cold air, air pollution, and upper respiratory tract infection that most of them are triggering factors for asthma attack.

Finally, with regard to the seasonal effect on the prevalence of asthma a remarkable seasonal fluctuation was observed –The highest numbers and percentage occurred in December and May, while tha lowest occurrence of physician-diagnosed asthma was evident during August. Surprisingly, the trend of seasonal occurrence in all age group and gender for the five years of investigations was unchanged. Though the triggering factors for asthma attack in the present study were not studied, in However, there are many expected triggering factors could play a role provoking asthmetic attack in ma'an province and need to be studied and examined. Among these risk factors are the high level of pollutants, house dust, physical activity, upper respiratory tract infection cigarette smoke, life style and cold environment.

Conclusion

Bronchial asthma is a significant health problem among children and adults in Ma'an province. To confirm these results a further survey is needed in order to obtain a reliable data on the prevalence of asthma by using standard European Community Respiratory Health Survey (ECRHS) questionnaires and tools.

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