

PREVALENCE AND RISK FACTORS OF ASTHMA AMONG WAD MEDANI BASIC SCHOOL CHILDREN, GEZIRA STATE, SUDAN.

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مقدمة: يقال أن تقدير وتشخيص مرض الربو وسط الأطفال أقل في المناطق الحارة ومنها السودان. إلا أن معدلات انتشار مرض الربو لازالت متزايدة عالمياً.

هدف الدراسة: تهدف هذه الدراسة لتحديد معدل انتشار الربو والعوامل المهيجة له وسط أطفال مرحلة مدارس الأساس بدمدني بالسودان.

طريقة الدراسة: أجريت دراسة مقطعية أثناء العام الدراسي وأختيرت فيها مجموعة الدراسة عن طريق أخذ العينة الطبقيّة النسبية العشوائية، حسب العمر والنوع والمحليات وتم جمع المعلومات باستخدام استبيان تم تصميمه واختباره قبل إجراء الدراسة وهو يتعلّق بتاريخ حدوث الربو والعوامل المهيجة له.

نتائج الدراسة: أوضحت النتائج أن المرض الربو هو تاسع مرض في قائمة الأمراض الشائعة وسط تلاميذ مرحلة الأساس بمدينة ودمدني ومعدل انتشاره (9.2%) والعوامل المهيجة للمرض هي الغبار، البرد والوطاويط والتمارين الرياضية والدخان على التوالي.

الاستنتاجات: إن مرض الربو بين تلاميذ مدارس مرحلة الأساس من المشكلات الصحية المعروفة التي يجب أن تؤخذ في الاعتبار عند التخطيط لعمل برامج الصحة المدرسية.

الكلمات المرجعية: الربو الشعبي، تلاميذ المدارس، مدينة ودمدني، السودان.

Objectives: Childhood asthma is said to be under-estimated and under-diagnosed in tropical countries including Sudan. The prevalence of asthma worldwide is increasing. The objective of this study was to determine the prevalence and the trigger factors of asthma among Wad Medani basic school children.

Methods: A cross-sectional study was conducted during school year 2000-2001. The study group was selected by stratified proportional random sampling according to their age, sex and localities. Data was collected utilizing a pre-tested questionnaire addressing the history of asthma and its trigger factors (sample-2, 2002).

Results: The results revealed that asthma is the ninth of the most common diseases among the school children, having a prevalence of 9.2% (sample 1) and 17.9% (sample 2), the main trigger factors of which are dust, cold bats, exercise and smoke respectively.

Conclusion: Asthma among school children is a common problem that should be considered when planning preventive school health programmes.

Key Words: Asthma, Medani, School Children, Sudan.

INTRODUCTION

Asthma is one of the most common non-communicable diseases affecting school children (aged 6-15 years) representing 25.9% of the population in Sudan.¹ From a study by Ageeb² presented in the National School Health Workshop, 1998, asthma did not appear in the list of the common top ten diseases affecting school

children. Childhood asthma has been increasing in Sudan as noted by Ibrahim.³ In the 1980's, two surveys done among Khartoum school children, revealed the prevalence of asthma as 13%-16%.³

Asthma is increasing with urbanization and industrialization⁴ as was noticed in Wad Medani East (Maringan). The prevalence of childhood asthma has been reported to vary between

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1% and 30% in different populations.⁵ It is underestimated and under-diagnosed particularly in tropical countries.^{3,6}

In Gezira state, as in other states in Sudan, school health is meant to be an integral part of the primary health care package. The training of the school teachers as health guides in schools is one of the most important strategies for the promotion of school health. These teachers should be aware of asthma as one of the common emergency diseases among school children and require urgent medical intervention.

The aim of the study is to determine prevalence and risk factors of asthma among basic school children. Specific objectives are to determine the prevalence of asthma among Wad Medani basic school children during the school year 2000 – 2001 and to determine the trigger factors of asthma among the study group.

METHODS

This was a cross-sectional study conducted on 3862 basic school children during the school year 2000- 2001. The study was descriptive and analytic as it described asthma distribution by age, sex and locality. The study groups were selected by stratified proportional random sampling according to their age, sex and the two localities (east and west Wad Medani). A pre-designed pre-tested questionnaire sheet was used to collect the data (a pilot study was done two months before the conduct of the study). During the school year 2001-2002 the study was supplemented by a questionnaire that addressed the history of asthma and its trigger factors.

Study area

Wad Medani ranks as the second biggest city in Sudan. It is the capital of Gezira state. The total number of the basic schools were 85, accommodating about 38620 school children at the time of the study.

Study population

Basic school children both males and females from east and west Wad Medani municipalities including private schools constituted the target group for this study. A review of the Directorates of Education in both municipalities have shown that the total number of basic school children, that is, pupils from the first class to 8th class with an

age range between 6 – 15years was 38620 at the time of the study.

Sampling methods

Three thousand eight hundred sixty two (about 10%) of the basic schools' pupils of Wad Medani were selected by stratified random sampling according to their proportional allocations, as this method is more appropriate in representing the mother population for determining sample size. Two equations to determine sample size for many diseases were utilized.^{7,8} The data was collected utilizing student health history form with asthma as one of the diseases. It was supplemented by a pre-tested designed questionnaire addressing the history of asthma with reference to case definition of asthma and emphasis on age, gender identification and some socio-demographic factors in both Wad Medani east and west localities.

Case definition

In this study, any basic school child in the study group who had been diagnosed clinically or treated for asthma by a doctor or medical assistant was considered a case of asthma. Any case proved to have reported intermittently with a wheezy chest, tightness, an attack of wheezing or cough was considered a case of asthma.⁴

Data collection

The data was collected by five trained health workers. They interviewed the parents of the young children and the older school children in order to complete the questionnaire. In this study, although locally used terminology was considered, any basic school child who had been selected should fulfill the locally adapted scientific definitions of diseases and the case definition provided for the study. The questionnaire forms for each school with a code number for each child were collected in coded envelopes. An observation checklist was used to determine environmental factors associated with some of the health problems. The data for asthma was collected twice (sample 1) using the modified health history form for investigating commoner health problems.⁹ The questionnaire for asthma trigger factors was collected two months later from 2880 pupils (sample 2) of the same population.

Data analysis

Computer utilizing programme from the Statistical Package for the Social Sciences (SPSS) for Microsoft Windows releases 6.0 and 6.1 analyzed the data hypothesis testing, and Chi-square test were used.

Table 1: The top ten diseases affecting Wad Medani basic schools children during school year 2000-2001

Health problem	No. (%)
Malaria	3009 (77.9)
Sore throat repeated	1287 (33.3)
Psycho-social problems affecting the child academically	740 (26.4)
Dental caries	947 (24.5)
Diarrhoea	667 (17.3)
Measles	478 (12.4)
Eye diseases	475 (12.3)
Pneumonia	443 (11.4)
Ashtma (sample 1)	355 (9.2)
Visual defect	342 (8.9)

Table 2: Distribution of asthma among Wad Medani basic school children (sample 3862) by localities during the year 2000-2001

History of asthma	Localities		Total
	East	West	
Yes	550	143	693
No	1570	617	2187
Total	2120	760	2880

Chi 15.554 p<0.0001

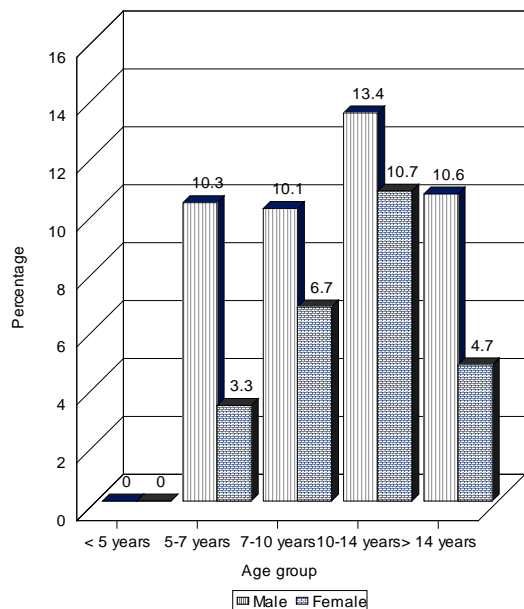


Figure 1: Age and sex distribution of asthma cases among Wad Medani basic school children during 2001-2001

RESULTS

Table 1 showed that asthma ranks number nine of the top ten common diseases affecting basic school children in Wad Medani with a prevalence range between 9.2%.

Table 2 showed that the prevalence of asthma is higher among the pupils of those of Wad Medani east than Wad Medani west with significant difference ($p = <0.0001$).

Figure 1 revealed asthma distribution by age group and sex. It was common among the older school children (10-14 years) and it was more common among males.

Figure 2 showed the variety of asthma triggering factors, the commonest of which were dust, cold air, bats, exercise and smoke respectively.

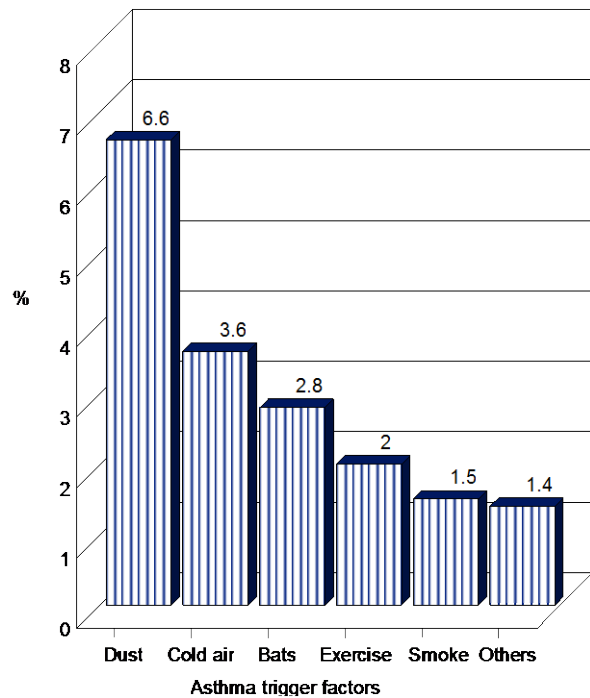


Figure 2: Asthma trigger factors among Wad Medani basic school children 2000-2001

DISCUSSION

In this study, asthma was revealed as a chronic disabling disease affecting 9.2% (sample 1) and 17.9% (sample 2) of Wad Medani basic school children, which is similar to the prevalence in United States (9.2% and 15% in the periods 1983-1985 and 1992-1994 respectively).¹⁰ It is also higher than the prevalence in the rest of Africa. In Nigeria, the prevalence was 2.4%, in Zimbabwe 1.4% and in Barbados 1.1%¹¹ and higher than the

prevalence in Dammam (6.6%). This suggests that asthma is as common as in developed countries. Our study was in the range of the prevalence found by Ibrahim in Khartoum during 1990s (13-16%).³ It was lower than the prevalence of asthma in Riyadh (11.9%), Jeddah (12.6%),¹² and the United Kingdom where the latest figures showed a prevalence of childhood asthma as 18%.¹³

The most common age group of asthma in this study was 10 to 14 years, with a male predominance. These results differ from those reported by the Ahmed et al's¹⁴ hospital-based study in which half of the asthmatic children were under the age of five. It differs also from results of Ibrahim et al, in which the most common age group was 7-10 years. In this study, males were nearly twice the number of females, indicating that the male gender is one of the important risk factors for childhood asthma. This result is similar to those of the study done by Ahmed et al¹⁴ in Wad Medani Paediatrics hospital in 1999. In our study, family history of asthma is an important risk factor being present in two fifths of the parents of asthmatic children. This is also similar to the Ahmed et al study. The commonest trigger factors of asthma in our study are dust, cold air, bats, exercise, smoking respectively which was almost similar to Ahmed et al result.

CONCLUSION

Asthma among school children is a common problem that should be considered in planning preventive school health programmes.

RECOMMENDATIONS

The school health administration should design suitable programmes to educate asthmatics and their families and the school teachers about the

nature of asthma. Control programmes should be planned for schools, families and the different communities.

Asthma control measures should be considered in legislations for designing schools and their construction in order to avoid factors that trigger asthma such as dust, bats, etc, and improve the school's environment.

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