

Prevalence of Asthma in Urban School Children in Jaipur, Rajasthan

A cross sectional survey of 3321 school going children (5-15 years) using modified ISAAC questionnaire in Jaipur city showed 7.59% children to have asthma (in last 12 months) and 8.4% wheezing in last 12 months. Only 5.3 % children had "physician diagnosed asthma ever" suggesting under diagnoses.

Key words: *Bronchial asthma, Children, Prevalence.*

Asthma is the most common chronic disease of childhood and it is being increasingly diagnosed [1,2]. Various studies from India have reported prevalence ranging from 3.5 % up to 29.5% [1-6]. However, there is paucity of data from Rajasthan. We observed an increase in the prevalence of childhood asthma over the years our in clinical experience.

We conducted a cross-sectional questionnaire based study of school going children (5-15 years) in Jaipur city during 2008-2009. We adopted International Study of Asthma and Allergy in childhood (ISAAC) with slight modification, printed in Hindi as well as English languages [7]. Questions related to severity of asthma were excluded. The questionnaires were filled by the parents for children <10 years and by the students themselves or parents in >10 years. Those who answered yes to any questions related to asthma were labeled as probable asthmatic and were evaluated further for confirmation of diagnosis including detailed history, physical examination, PEFr before and after bronchodilation in all probable case and spirometry wherever diagnosis was in doubt. Children were labeled to have asthma when they had many of the qualifier symptoms like recurrent cough or wheezing, afebrile episodes, exercise induced symptoms, night symptoms, seasonal variations, personal history of atopy or allergic rhinitis and family history of asthma or atopy.

Response rate was 68.1% (2263 of 3321 questionnaires were returned) and 98.3% (2225/ 2263) were fully filled. Children in 12-15 years age comprised the largest group (39.4%). After analyzing the questionnaires 395 children were labeled probable asthmatics. After detailed evaluation 169 of 2225 (7.59%) children were found to have asthma (in last 12 months). Prevalence of various asthma related features are depicted in **Table I**. Numbers of asthmatic children in different age groups were as follows: 5-8 years 49/604 (8.11%), 9-11 years 57/745 (7.65%) and 12-15 years 63/876 (7.19%).

Male: female ratio in children with asthma was 1.56:1 and 1.44:1 in overall study population. Personal history of atopy or allergic rhinitis was present in 55.7% (94/169) and family history of asthma was present in 76 of 169 (44.97%), allergic disorders (rhinitis, conjunctivitis or skin allergy) were present in 61(36.09%) asthmatic children.

There are many studies on prevalence of childhood asthma in India with majority showing increasing trends [2-4]. The steering committee of ISAAC, in 1998, found 6.0% Current Wheeze and 4.5% ever asthma in India, however, there were wide variations in the prevalence from different regions however there are concerns that prevalence may have been underestimated due to various reasons [7]. Current wheeze in our study was 8.4% which are quite similar to the trends has seen in recent studies from Delhi [6]. Physician diagnosed asthma was 5.3% in our study which is lower than current asthma, reflecting under diagnosis. In a study in school children from rural areas of Ajmer 83 of the 2416 (3.4%) children had asthma which is quite low as compared to our data [5]. Urban rural difference, higher environmental pollution and industrialization seem to be the cause of this difference [1,3].

We suspect that actual prevalence in Jaipur could be even higher as we also had the limitations of questionnaire

TABLE I PREVALENCE OF ASTHMA RELATED SYMPTOMS IN STUDY POPULATION (N=2225)

<i>Asthma related fact</i>	<i>Prevalence n (%)</i>
Recurrent cough	365 (16.4)
Wheezing /whistling sound during breathing ever	271(12.2)
Wheezing /whistling sound during breathing in last 12 months	177(8.4)
Physician diagnosed asthma ever	118(5.3%)
Sleep disturbance in last 12 months	110 (4.9)
Wheezing/whistling sound while playing or during or after exercise in last 12 months	281 (12.6)
Dry cough in night in last 12 months not associated with cold/chest infection	213 (9.6)
Family h/o asthma	242 (10.9)
Family h/o allergy or eczema	7 (3.1)

based surveys including underreporting due social stigma attached with asthma and poor perception of symptoms and also the exercise induced asthma and mild episodic cases where symptoms may not be present and physical examinations, PEFr and spirometry may be normal.

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Changes in Biochemical Contents of Expressed Breast Milk on Refrigerator Storage

To determine the biochemical integrity of refrigerated breast milk for 96 hours at 4°C, a longitudinal observational study done with fresh milk samples. It is found that there were significant changes in pH, serum albumin and lactose concentrations in breast milk though within normal range.

Key words: *Expressed breastmilk, Lactose, Storage, Temperature.*

In this observational study the integrity of human breast milk (HBM) in terms of pH, total proteins, serum albumin, triglycerides and lactose in stored breast milk were determined with the aim of providing guidelines for storage of expressed breast milk in home refrigerators for working mothers as well as in neonatal intensive care unit.

25 mL of aseptically obtained HBM samples were analysed at 0 (reading taken as control), 24, 48, 72, and 96 hours for the said parameters. (**Table I**). A convenience sample of 26 mothers was chosen to detect a difference of 1 SD from the mean for each analysis. To determine changes over time, the data were analyzed by repeated-measures ANOVA. Significant differences were defined as $P < .01$ due to multiple comparisons.

We found that the drop in pH ($6.99 \pm .12$ to $6.13 \pm .17$) ($P < 0.001$) and albumin were significant ($.55 \pm .16$ to $.29 \pm .17$ g/dL) ($P < 0.001$). However, the albumin content even on day four was within the recommended range. Total protein in breast milk also decreased ($1.60 \pm .32$ to $1.41 \pm .44$ g/dL), however not significantly. Triglycerides content decreases with time (2325.52 ± 566.72 to 1896.40 ± 840.30 mg/dL), though the difference was not significant. Lactose content significantly decreased over time. (6077.36 ± 816.82 to 5462.24 ± 771.5 mg/dL) ($P < .01$).

The observed change in pH will not alter the functions of the enzymes of the breast milk [1] and may be due to the lipolysis and release of free fatty acids occurring in the breast milk during storage at temperatures at or above -20°C [2]. The greater fall in pH with increase in duration of storage could be justified by the increased time available for lipolysis to occur. Slutzah, *et al.* found an inverse relationship between free fatty acid concentration and pH on milk storage [3]. The change in free fatty acid and pH may be due to bacterial proliferation as the pasteurised milk sample which remain sterile after 3rd day of storage did not show any change of pH or free fatty acid [3]. We also observed that the lactose concentration in milk in our mothers is less than the international standards, though it is