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Prevalence of Vitamin-A Deficiency among Children under six years of Age Living in Urban Slums of Lahore

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Aim: To calculate prevalence of Vitamin A Deficiency Disorders (VADD) as well as that of individual stages of Vitamin A deficiency in children less than 6 years of age living in urban slum areas of Lahore city and to draw emphasis on risk factors of VADD.

Introduction: Vitamin A deficiency is common in regions where general diet pattern of population is not rich in vitamins and proteins. It is a major cause of blindness among preschool children in rural areas as well as urban slums in the developing countries. The study was conducted in August-Sept 2012 in urban slum of Shahdara Lahore results are presented in the paper.

Material &Method: A cross sectional study, in which 400 children under 6 years were examined in door to door survey. Eye examination was done with torch and loupe. Post-survey methodology included Data entry, data cleaning, data analysis, data interpretation which was done with the help of statistician.

Results: 95% of children were having normal-to-good health & 88% of mothers were having normal- to-good health. 99% of the study children were having vitamin A rich diet in their routine. 3% were found to have measles & 3% of children were suffering from diarrhea .The study did not find any case clinically related to vitamin A deficiency.

Conclusion: To improve the situation of vitamin A deficiency in these areas more appropriate mix of interventions are needed. More operational research and evaluation are needed to diagnose the problem of vitamin A deficiency.

Key Words: Children, Vitamin A, Blindness, Xerophthalmia, Pakistan.

Introduction:

Vitamin A deficiency is recognized as a major public health problem worldwide. It is one of the most important preventable causes of blindness. The deficiency occurs due to an overall inadequate intake of vitamin A and sometimes due to the loss of vitamin A through chronic diarrhea. Low blood retinol concentrations indicate that levels of vitamin A are low in the body. Iron deficiency can also affect vitamin A metabolism, and iron supplements provided to iron deficient individuals may improve body stores of iron as well as vitamin A[1]. Approximately 127 million preschool aged children and 7 million pregnant women are vitamin A deficient[2].

Xerophthalmia is a term covering a range of ocular manifestations of vitamin A deficiency. This condition often occurs in preschool children affected by malnutrition. Clinical manifestations of the condition have been summarized in the 1974 five- grades WHO classification[3]. At least 5-12 million children develop xerophthalmia every year of whom between quarter and half a million go blind[4].

The relationship between xerophthalmia and measles is complex. Vitamin A deficiency promotes measles which in turn fastens the perforation of cornea, particularly in malnourished children. Vitamin A has a beneficial effect on both xerophthalmia and measles[3].

Aims and Objectives:

The aim and objective of the study was to determine the prevalence of vitamin A deficiency i.e Bitots spots (XIB), corneal scarring (XS) and night blindness in children under 6 years of age in urban slums of Lahore city and to draw emphasis on risk factors of VADD. Furthermore to determine the relationship of VAD with the number of children per household, associated diseases, immunization status, monthly family income and relation of education of mother.

Materials and Methods:

A cross sectional study was conducted among preschool children in the age group 0-6 years. Total sample size was calculated as 400 children. Children living in slums of Lahore at least for the last six months and residents of that area for more than six months were included. Children having corneal opacities due to other causes like trauma, inflammations etc were excluded.

Survey Technique:

We conducted this study to map out the prevalence of vitamin A deficiency in urban slums of Lahore city. We selected the area of Shahdra which comes under the urban slums of Lahore. We selected four union councils of Shahdra which were fulfilling all the criteria of slum area. Our sample size was of four hundred children. We examined hundred children age less than six years from each union council so completed four hundred children in four union councils. The survey was of 12 weeks duration.

Team members were one ophthalmologist and one Assistant. Examination started by noting the study number, date, name, age, gender, weight, address and household number of the subject. Eye examination was done with torch and loupe. Materials used were self designed performas, Snellens Visual Acuity Chart, Pin Hole Opaque Occluder, Pen Torch, Ophthalmoscope Heine, weigh machine, Binomag (loupe).

Data Analysis:

Mean and Standard deviation calculated for quantitative variables, graphs and different tables are drawn by using SPSS 13.00 software.

Results:

Fig. 1: Age Distribution

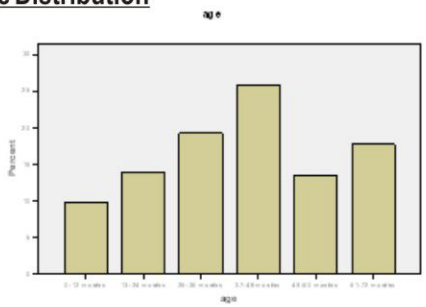

Fig.1 shows the age distribution of the studied children. Forty five percent of the children fall in age group 2 to 4 years. 30% are between ages 4 to 6 years. Children less than 2 year were 24% of the total.

Fig. 2: Gender wise distribution

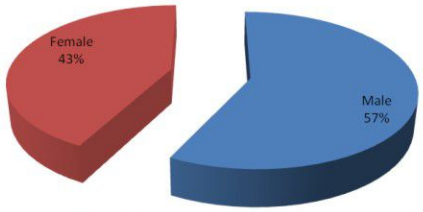

Fig.2: shows that in this study 57.5% were male children and 42.5% were female children.

Table 1: General Health Of Children

Health Status	Frequency	Percent
Poor	22	5.5
Normal	255	63.8
Good	123	30.8
Total	400	100

Factors which are responsible for high prevalence of vitamin A deficiency like poor socioeconomic conditions, increased number of children per household, lack of mother's education, low monthly family income, lack of proper breast-feeding, and inadequate usage of vitamin A rich items, like milk and milk products, liver, fish, eggs and mangoes were mostly lacking in my study areas which were randomly selected, so I have not found any case clinically related to vitamin A deficiency in study population.

A research conducted by department of pathology of Agha Khan University Karachi showed that no xerophthalmia was detected in children living in urban slums of Karachi. In this study the population size was 532 children with age range of 6-60 months. During this survey three methodologies were used: clinical eye examination, dietary vitamin A intake and serum retinol level. Though xerophthalmia was not prevalent but based on serum retinol level and dietary history it was concluded that significant number of children in these communities have low vitamin A levels and thus may constitute a risk group[7].

Another study conducted in China showed that vitamin A deficiency is a moderate public health problem in China. This research survey was performed at low socioeconomic areas of Guizhou. This study included 1236 participants aged under 0-71 months. Serum retinol levels in the blood were determined along with dietary assessment. No xerophthalmia and night blindness was found. The prevalence of sub clinical vitamin A deficiency was 15.7%. The prevalence of suspected sub-clinical vitamin A deficiency was higher in the children with lower consumption frequency of vitamin A rich diet. Vitamin A deficiency is a nutritional problem in China, especially in the remote and poverty-stricken rural areas of China and Children living in poor western area, having a mother with minority ethnicity or a mother with poor education have high risk of Vitamin A Deficiency[8].

In general, status of Vitamin A deficiency in children of Tibet was milder than that at national level. But, moderate sub clinical vitamin A deficiency in some areas, such as farming and semi-farming countries, did exist, so vitamin A supplementation aiming to children, especially those under one year of age, in those areas should be urged[9].

Another study carried out in western Yemen that revealed that Night blindness was in 0.5% of the children, Bitot's spots in 1.7%, corneal ulceration in 0.04% and corneal scars in 0.04% thus Xerophthalmia and vitamin A deficiency are public health problems[10].

In another study conducted at Nepal, clinical Vitamin A deficiency was most prevalent among children who had not received vitamin A during the most recent vitamin A capsule distribution. Indeed, the data shows that vitamin capsule receipt among children conferred a 59% protective effect for night-blindness and a 51% effect for Bitot's spots. These results point to significant progress having been achieved by the National Vitamin A Programme and National Immunization Day capsule activities[11].

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More operational research and evaluation are needed if a fully effective programme to alleviate the problem of vitamin A deficiency is to be developed. Finally, to achieve the goal of virtual elimination of vitamin A deficiency will require an integrated approach which brings together appropriate actions at every level, within and across the many sectors of society[12].

Research indicates that an overall strategy designed to prevent and control vitamin A deficiency, xerophthalmia, and nutritional blindness can be defined in terms of action taken in the short, medium, and long term. A short term, emergency measure includes the administration to vulnerable groups of single large doses of vitamin A on periodic bases. In the medium-term, fortification of dietary vehicle (e.g. sugar) with vitamin A can be initiated. Increased dietary intake of vitamin A through home gardening and nutrition education programmes comprises the long term solution to this problem[13].

Vitamin A deficiency, including mild xerophthalmia appears to effect large numbers of school aged children in South-East Asia. The estimated prevalence of vitamin A deficiency is 23.4% suggesting that there are 83 million vitamin A deficient school-aged children, of whom 10.9% (9 million, at an overall prevalence of 2.6%) have mild xerophthalmia (night blindness or Bitots spots)[14].

Although short to long term programmes for the prevention and control of vitamin A deficiency are working to some extent, to improve the situation of vitamin A deficiency in these areas more appropriate mix of interventions are needed. More operational research and evaluation are needed to diagnose the problem of vitamin A deficiency. To achieve the goal of virtual elimination of vitamin A deficiency will require the appropriate actions at every level within and

across the many sectors of society.

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