ORIGINAL ARTICLE

Prevalence of Acute Respiratory Infections in under five years age children, living near the brick kilns

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ABSTRACT

Aim: To define and compare the prevalence of acute respiratory tract infections under five children living near kiln industry at Taluka Sobhodero, Distt; Khairpur Mirs, Sindh.
Study Design: Comparative Cross Sectional.
Place and duration of study: Taluka Sobhodero, District Khairpur Mirs, Sindh, 20th April to 3rd July 2017.
Methods: This was a comparative cross sectional study conducted on 188 children of two villages at Taluka Sobhodero, Distt; Khairpur Mirs.
Results: This study revealed that acute respiratory tract infections manifestation in village Khokhar (located near kilns) was 24.5% compared to 12.8% in village Memon located away from kilns. The children of 5 years. However, this study revealed that prevalence of acute respiratory infection was higher in children living near kiln industry as compared to those living away from kilns, chi square test of significant was applied and results were significant at *p* value <.03.
Conclusions: Acute respiratory tract infection cases were more in under-5 children sharing their bed room with 3 or more compared to those sharing with 1 or 2 people; *p* value <.011.
Keywords: Acute Respiratory Tract Infections, Brick kiln, Children <5 years age.

INTRODUCTION

Children under 5 years constitute about 9.4% of the total global population[2]. Acute respiratory infections are currently one of the leading causes of death in children below 5 years of age in the world[1]. Globally air pollution is an important factor responsible their ill health[3]. The majority of ill health are ascertained due to respiratory tract infections. Studies conducted in Europe report that the incidence of acute respiratory infections is up to 50% higher in children living in the most polluted areas than in those in the least polluted areas[4]. Acute respiratory infections annually kill estimated two million children under the age of five. As much as 60 percent of acute respiratory infections worldwide are related to environmental conditions[5]. Acute respiratory tract infections are globally have wide spread intensity among children, that shows differing impacts between developing and developed nations. In both developing and developed countries, most children under five years of age have four to six episodes of acute respiratory tract infections yearly[6]. About 4.2 million acute lower respiratory tract infection deaths are estimated to occur among all age groups; 1.8 million are estimated to occur among children 1-59 months of age[7]. The majority of deaths are preventable and treatable through simple, affordable interventions[8]. Most cases occur in India (43 million), China (21million), Pakistan (10 million), Bangladesh, Indonesia and Nigeria (56 million each)[9]. Acute respiratory tract infections frequency in children under 5 years of age in Pakistan is 14%. It provides data considering age, sex, cooking fuel and income, but does not mention out door pollution as the risk factor[10].

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METHODOLOGY

The study design of this research was a comparative cross sectional study. In which study population was children <5 years age of Tehsil Sobhodero, district Khairpur Mirs, and by a convenient sampling technique of non probability technique sample size was drawn 194/2 = 97 from each village near kilns and far away from kilns. The inclusion criteria includes as, children aged <5 years of both gender with exclusion criteria were as children having irrespective known illness like tuberculosis, asthma, mental disability, malnourished children.

RESULTS

This study was carried out at two villages namely village Khokhar (located near brick kilns) and village Memon (located far away from brick kilns) at Taluka Sobhodero, Distt: Khairpur Mirs. A questionnaire and field guide was used for data collection. Interviews were taken from the mothers having children under the age of 5 years. 6 children were excluded due to malnutrition and the remaining 188 children were studied with male to female ratio was 1.3:1.

Children of <5 years age from two villages (Village "Khokhar" near brick kilns and village "Memon" far away from brick kilns) were compared on the basis of acute respiratory tract infection in last two weeks. 1 tailed chi square; a test of significance was applied for the results. Acute respiratory infection was higher in children under the age of five living near brick kilns compared to those living away from the kilns (24.5% v/s 12.8%, p value <.030).

DISCUSSION

Children under the age of 5 years from two villages namely, village Khokhar, located near to brick kilns and village Memon located far away from kiln industry were studied for the prevalence of acute respiratory tract infection and compared to observe the difference. Cases of acute respiratory tract infections were higher in village Khokhar (located near kilns) compared to village Memon located away from kilns (24.5% v/s 12.8%, *p* value <.030). The children under the age of 5 years involved in the study were from similar socio economic back grounds. The distance between two villages is just about 5 kilometers, there were not too much socio economic and cultural variations. There was much similarity between the mothers of two villages regarding socio cultural norms and religious beliefs. Children were categorized on the basis of age into three groups. The age of more than 60% of the children from both villages was between 12-59 months. The literacy rate in mothers was very low, almost 90% of the mothers were illiterate and only 2% of the mothers from both villages attained the highest level of matriculation. Majority, 97% of the mothers were house wives. Agriculture is the main earning source on which villagers depend for most of their income. Fathers education was also low, 56% were reported as illiterate. Only 9% of the fathers were government employees. About three fourths of the families were joint family system. Although living near kilns, 41.5%. Per capita income of 71% families lies between 1000 - 2000 Pakistani rupees. In 88% families single room was shared by 3-8 persons. Almost all families were using wood as a fuel for cooking in their houses and none of them reported to have air conditioner or humidifier or air filter in their homes. Acute respiratory tract infection in children of both villages was compared along with the history of passive smoking in their family (57% v/s 43%, *p* value .040). Immunization status of the children and vitamin A supplement were similar in two villages. Immunization coverage of both village combine was about 88.3%. Acute respiratory tract infection cases were more in under-5 children sharing their bed room with 3 or more compared to those sharing with 1 or 2 people (80% v/s 20%, *p* value .011). Also cases were reported more in children of illiterate mothers as compared to literate (94.3% v/s 5.7%, *p* value <.033). Acute respiratory tract infection was more prevalent in children of joint families than nuclear families (80% v/s 20%, *p* value .019) and also in families using wood as cooking fuel than other household fuels like LPG (100% v/s 0%, *p* value <.025)

Most of the respondents (mothers) were aware that smoke is the major cause of Acute Respiratory infection in their under 5 children. Only small percentage of the respondents was of the opinion that cold, low birth weight and malnutrition can also cause acute respiratory infections in their children.

Mothers responded as, Majority of the health care providers say that acute respiratory tract infections are mainly due to cold, infectious agents, and low birth weight. Only 10% of the health care providers told them that air pollution due to brick kilns is one of the main risks to their children particularly under the age of 5 years. The majority of the respondents were well aware of ill impacts of kilns and said that polluted air due to brick kilns can cause respiratory diseases like acute respiratory tract infection and asthma with few of the responded that smoky air can cause allergies in their children[11].

In a longitudinal study on acute respiratory tract infections among rural under five years children the overall incidence density rate of acute respiratory tract infection episodes was 19.57 (C.I- 15.60-24.57) /100 person months at risk. Incidence was highest in infants (23.9/100 person-months), Risk ratios for smoking and per capita monthly income (<1000) was 2.15 and 3.19 respectively with significant *p* value <.05[13].

CONCLUSION

Our study revealed that, overall 24.5% under-5 children from the village near to kiln industry and 12.8% under-5 children from village far away from kiln industry developed acute respiratory infections. More than 65% of the children from both are aged between 12-59 months. Almost 90% of the mothers and 56% of fathers of the children from two villages were illiterate. There is a combine family system in about three fourth households. Immunization status and vitamin A coverage was about 88.3%. Wood was used as household fuel for cooking in 99% houses. None of the family was using the air conditioner or the air filter in their houses. Results from the present study may be useful as base line information for further research to be carried out on this topic and for the safety of children living near kiln industry.

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