

ROLE OF BREASTFEEDING IN PROTECTION AGAINST RESPIRATORY TRACT INFECTIONS IN CHILDREN

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ABSTRACT

Objectives: To assess the role of breastfeeding in prevention of respiratory tract infections in children less than 5 years of age.

Materials and Methods: A case control study on a total population of 100, taken through non-probability convenience sampling from Pediatrics ward of KTH, equally divided in 50 cases and 50 control. Cases were the patients suffering from any respiratory tract infection admitted in the pediatric wards of KTH and controls were the patients admitted in same wards due to any disease other than respiratory tract infection. Data collected by questionnaires which were filled by interviewing the cases and control group. Later the data was entered and analyzed by using software SPSS.16.

Results: It was found that 45 out of 50(90%) in controls were breast fed as compared to 35 out of 50 (70%) in cases; OR: 3.8 with CI of 0.8-6.8). children who received supplemental feeds in first 6 months of life were 51 (51%), participants who were vaccinated were 69 (69%), Low socio economic participants were 60(60%), participants who were receiving passive smoking were 32 (32%) , colostrum was given to more no. of children 38 out of 50(76%) as compared to cases 36 out of 50(72%), 57(57%) of the mothers included in the study were illiterate.

Conclusion: It was concluded that risk of respiratory tract infections was less in those children (under 5 years of age) who were breast fed and vaccinated.

Key words: Respiratory tract infections, breastfeeding, supplemental feeds, vaccination, socio-economic status

INTRODUCTION

The respiratory tract infections are one of the most serious problems worldwide and increase the morbidity and mortality rates in children. In respiratory tract infections, pneumonia is the leading cause of death in children, every year; roundabout 1.4 million i.e. 18% of all the deaths in children under 5 years of age¹.

In developing countries acute respiratory tract infections is invasive and persistent public health issue which is a great burden on the health system of the country as well as on the families². It results in 1.9 million deaths of children per year³. According to Liu WK, Liu Quan et al Respiratory tract infections results in the death of estimated 4-5 million children each year in the developing countries. The mother's milk has many antimicrobial and anti-inflammatory components⁴. It includes secretory IgA antibodies which are produced by the lymphocytes and are migrated to the mammary glands from the gut. These secretory IgA antibodies are the defense against the microbes.

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According to the WHO recommendation, the infant must be breast fed exclusively for 6 months of age. The breast feeding has large protective role in the prevention of infections in the developing countries⁵.

The duration of the breast feeding also affects the prevention of respiratory tract infections. Breast-feeding for 4 months of age provides the protection against the gastrointestinal infections but not against the respiratory tract infections⁶. It has been demonstrated that breast feeding for 6 months provides adequate prevention against the respiratory tract infections⁷.

The aim of the present study was to evaluate the role of breastfeeding in the prevention of respiratory tract infections in children. To find the impact of other risk factors as level of education of mother, Socioeconomic status, passive smoking, vaccination status in control of respiratory tract infections.

MATERIALS AND METHODS

It was a case control study. It was conducted in pediatrics wards of Khyber teaching hospital Peshawar. The study was conducted for a period of 4 months i.e., from February 2018 to May 2018. The sample collected through non-probability convenience randomized sampling technique from the pediatric wards of Khyber teaching hospital, Peshawar.

Using open epi calculator for case control studies taking confidence interval 95%, power of study 80%, ratio of control to cases= 1.odd ratio =3.208 The calculated total sample size was 100, i.e. 50 case, 50 controls. Cases were the patients suffering from any respiratory tract infection admitted in the pediatric ward of ATH and controls were the patients admitted in same ward due to any disease other than respiratory tract infection.

All the patients with complaints of respiratory tract infections admitted in ward and were less than 5 years of age were included in the study. Patients attended in emergency department or outpatient department and were greater than 5 years of age were excluded from the study.

A structured questionnaire was used for Data collection. The questionnaire contained 27 questions in total, each with relevant options to make data collection easier. Mothers of the patients were explained about the purpose and objectives of the study and

after obtaining verbal consent the questions were asked to fill the questionnaire. Each questionnaire was analyzed on whole as a single sample.

Data was entered in SPSS v.16. Categorical variables were described as frequency and percentages. Cross tabulation were used to show association between two variables. As it was case control study so Odds Ratio was used for measuring strength of association between independent variables and the outcome variable which was Respiratory Tract Infections, taking 95% confidence interval. Data presented in forms of tables, graphs and figures. Tables include frequency tables and figures include pie graphs and bar graphs.

Breastfeeding: Breastfeeding was defined as exclusive breastfeeding for 6 months of age and addition of supplemental foods thereafter. Any infectious disease of upper or lower respiratory tract ranging from common cold to life threatening condition like pneumonia is called as respiratory tract infection.

RESULT

Out of total (n=100) 100 children 50 children were included in cases and 50 children were in control group. The sample was taken from the children admitted in pediatrics wards of Khyber Teaching Hospital. Mean age of children was 1.64 ± 0.578 . In cases 35 were breast fed and 15 were non breast fed. In control group 45 were breast fed and 5 were non-breast fed.

Table-1 show that illiterate mothers are more 32(64%) in cases as compared to controls 25(50%). According to the Table-2 results low income participants are more in cases 32 (65%) as compared to the controls, i.e. 28(56%).

Regarding the vaccination status of the children, It was found that out of 100, 69 (69%) of the patients were vaccinated and 31(31%) were not vaccinated. In a sample of 50 cases 30 were vaccinated and in controls 21 were vaccinated. Odds ratio is 1.83 and 95% CI ranging between 1.2 -4.8. (Table no.3). It tells that vaccination of children has significant association with decreased risk of developing RTI.

In the Table No.3 the frequencies of smokers in the houses of cases and controls are given. In present study 15 out of 50 cases (15%) and 17 out of 50 controls (17%) have a member smoking in their houses. The odd ratio calculated is 0.832 and CI is

0.359-1.930, which shows no significant relation between any smoker at home and development of RTIs.

Table No.3 reveals that among 50 cases, 29 children were given supplemental feed during initial 6 months after birth while among control group of 50 children; only 22 infants were given supplemental feed. The odds ratio comes out to be 1.75 with CI ranging 0.8-3.8 which indicates insignificant association between introduction of supplemental feeds in first 6 months and development of RTI.

Variable of exclusive breast feeding is explained in Table No. 3 In the present study in cases 35 out of 50 children who had RTI were exclusively breastfed for 6 months while among control group 45 out of 50 children were exclusively breastfed for initial six months. Odds ratio calculated is 3.8 and 95%CI (0.8-6.8) indicating significant association between exclusive breastfeeding for initial 6 months and decrease risk of RTI in children.

Regarding the variable of colostrum given to cases and controls. In the present study out of 50 cases of RTI, 36 children were given colostrum while among control group 38 out of 50 were given colostrum. Table.3. The odds ratio calculated is 1.3 with 95% CI in range from 1.3-3.3 indicating significant association between colostrum beneficial effects on decrease risk of developing RTI.

DISCUSSION

The main objective of the current study was to determine the association between the breast feeding and control of respiratory tract infection in children less than 5 years of age. In this study the total pop-

ulation taken was 100 through non-probability convenience sampling from Pediatrics wards of Khyber teaching hospital Peshawar, including 50 cases which were admitted in pediatrics wards of KTH having

Table-1: Frequency of the Mother’s Education

Count	Mother's education				Total
	Illiterate	Primary	Matric	Higher	
Case	32	8	5	5	50
Control	25	8	13	4	50
Total	57	16	18	9	100

Table-2: Case/Control * Monthly income of the household Cross tabulation

Count	Monthly income of the household			Total
	Below 20,000	20,000 to 60,000	Above 60,000	
Case	32	18	0	50
Control	28	18	4	50
Total	60	36	4	100

Table-3: Frequencies, Risks of the variables of Vaccination Status, smoking status, supplements, Exclusive B. Feeding, Colostrum

Variables	Cases	Controls	Estimated risk	
			Odds Ration	95% CI
Vaccination Status				
Vaccinated	30	21	1.83	1.2-4.8
Non Vaccinated	20	29		
Smoking Status				
Smokers	15	17	0.83	0.35-1.93
Non-Smokers	35	33		
Supplements				
Given in 6 months	29	22	1.78	0.8-3.8
Not given in 6 Months	21	28		
Exclusive B. Feeding				
Given for 6 Months	35	45	3.8	0.8-6.8
Not Given for 6 Months	15	5		
Colostrum				
Given	36	38	1.3	0.7-3.3
Not Given	14	20		
Total	50	50		

Vaccination Status

■ Vaccinated ■ Not Vaccinated

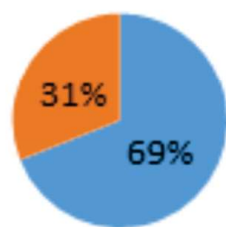


Fig I: Vaccination status

respiratory tract infections and 50 controls which were admitted in Pediatrics ward of KTH due to other diseases than respiratory tract infections. In cases, 35 out of 50 cases were breastfed and 15 were not. Regarding the vaccination status 31 out of 100 were vaccinated and 69 were not.

The present study finds association between breastfeeding and RTI's odd ratio 3.8 and C.I (0.8-6.8). These findings are similar to the findings of the studies of Maria AQ, Caroline JC, Duijts L^{9,10,11} they found association between the breast feeding and RTI's odd ratio=0.65 [95% confidence interval (CI): 0.51-0.83] the contributing factors were population's practices because Duijts study was population based and had a large population size. Another study done by Jingying Wang, Alban Ramette¹² at Leicestershire, UK in 2017, also found a strong association of breast feeding in protection of children in first 2 years of life. The odds ratio (OR) of the study was 0.79, 95% confidence interval (CI) of 0.64–0.9 showing a strong correlation of breastfeeding and RTIs¹²

Sinha A et al found the same findings in their study carried out they found the association between the breast feeding and control of RTIs odds ratio (OR) of exclusive breastfeeding was 0.70 (95% confidence interval [CI]: 0.49-0.99) because this was a cohort study delivering between October 1, 1990, and March 31, 1998 and they used to use modified National Nosocomial Infections Surveillance System criteria¹³

In the current study the EPI vaccinated children were 69% while 31% didn't get any vaccination. The odds ratio calculated comes out to be 1.83 with C.I of (1.2 -4.8) which shows that there is significant association between the vaccination and RTI. A cohort study done by Yan Wijhe M, McDonald SA et al in Netherlands found that there was a significant decrease of RTI in the vaccinated children, especially the vaccine preventable respiratory diseases e.g. measles. That study concluded that vaccination programs decreased the child mortality rate due to RTIs¹⁴

In the current study 60% children belonged to poor socioeconomic background while just 36% children had better socioeconomic status. According to this study, cases were more prevalent in families with poor socioeconomic background. This is supported by prospective study held in Colombia school that

child stunting is associated with poor socioeconomic background and predicts symptoms of respiratory infections^{15,16}. Results of a cross sectional survey in a primary school of Poland also are in favor of our study.^{17,18} Possible factor for this increased rate of RTI is that poor SES community have poor access to health care, low literacy rate and low standard of living.

CONCLUSION

The present study concluded that there was association between breast feeding and control of respiratory tract infections in children. It means that exclusive breastfeeding for 6 months can prevent an infant from getting RTIs because in the breastfeed there are certain factors which can increase the immunity of the infant and can play a protective role against diseases. From this study it is also concluded that RTIs are more prevalent in the children belonging to poor socioeconomic background compared to the children belonging to good socioeconomic backgrounds.

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