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RESEARCH ARTICLE

PREVALENCE OF BRONCHIAL ASTHMA AMONG CHILDREN IN TAMILNADU

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Abstract

Background: Bronchial asthma is one of the most prevalent chronic respiratory disorders in children worldwide. Characterized by recurrent episodes of wheezing, breathlessnessand coughing, asthma significantly affects the quality of life of children and poses a considerable burden on families and healthcare systems.Aims & Objectives:To assess the prevalence of bronchial asthma among children in Tamil Nadu.

Methodology: A quantitative research approach was adopted. The researcher adopted a descriptive cross-sectional study.Selected urban and rural districts of Tamil Nadu. Children aged6-11 years who were fulfilling the inclusion criteria were the sample for the quantitative study. 1200 children with bronchial asthma residing in rural and urban areas who were fulfilling the inclusion criteria were included for this study. Multi-stage random sampling technique was adopted.Written informed consent was obtained from the parent and assent obtained from children with bronchial asthma.Results:The level of severity of asthma score among children that majority of 67 % had moderate level of asthma and 33 % of them are had mild level of asthma in rural areas. In urbanareas, 72 % had moderate level of asthma and 28 % of them are had mild level of asthma. There is a significant difference between urban and rural areas.

Conclusion: Bronchial asthma among children in Tamil Nadu remains a significant concern, especially in urban regions. Environmental exposures and genetic predisposition contribute notably to the disease burdenStrengtheningcommunity-based screening and parental education should be vital in controlling the rise of childhood asthma.

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Introduction:-

Bronchial asthma is a major public health concern globally, especially among children. It is a chronic inflammatory condition of the airways that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing. In India, the prevalence of asthma among children has shown a rising trend, with variations seen across states and regions. Tamil Nadu, being a diverse state with urban, semi-urban, and rural populations, presents a unique epidemiological profile. Identifying the prevalence and risk factors in this region is essential for effective planning and intervention strategies.

The Asian statistics data regarding pediatric asthma prevalence, using cluster sampling method in 16410 children, aged 6-7yrs revealed highest prevalence of 15.5%. The International Study of Asthma and Allergies in Childhood (ISAAC) showed that the total prevalence of asthma was 10.9% which was significantly higher among 13- to 14-year old compared to a 6-7 years younger age group of 9.4%.[3]

National Current Asthma Prevalence (2024) is about 8.4% in adults, 5.7% in childrenaged <18 yearsand8.3% among 5-11 years (School Age). Overall, childhood asthma among children 13 – 14 years of age was lower than the younger children (6 – 7 years of age). Urban and male predominance with wide inter-regional variation in prevalence was observedAsthma, a serious chronic lung disease affecting 26.8 million adults and 4.5 million children, causes inflamed airways during episodes, leading to millions of hospitalizations and healthcare costs annually[4]

Current asthma prevalence male children had higher asthma rates as report by CDC (Centers for disease control and prevention), National Health Interview Survey (NHIS) 2022 data, analysis by the American Lung Association Epidemiology and Statistics Unit among children, current asthma is more common for male children (7.0%) than female children (5.4%). However, among adults, females (10.8%) are more common than male (6.5%) to still have asthma[5].

In 2021 Tamil Nadureported an estimated prevalence rate for bronchial asthma of about 2.04 million cases due to rapid industrialization of cities. The results were suggestive of asthma being present in 18% of children under 12 years of age. Though the prevalence of diagnosed childhood asthma was about 5% in both urban and rural areas, the prevalence of 'breathing difficulty' and nocturnal cough was significantly higher among urban children in the age group of 6-12 years [6].

Statement of the problem.

Adescriptive cross-sectional studyon Prevalence of bronchial asthma among children in Tamilnadu.

The objectives of the study were

1. To estimate the prevalence of bronchial asthma among children aged 5 to 14 years in selected districts of Tamil Nadu.
2. To identify demographic and environmental factors associated with bronchial asthma.
3. To evaluate the common clinical symptoms among children with bronchial asthma.
4. To provide recommendations for early detection and prevention strategies in the region.

Materials and Methods

A quantitative research approach was adopted. The researcher adopted a descriptive cross-sectional study.Selected urban and rural districts of Tamil Nadu. Children aged6-11 years who were fulfilling the inclusion criteria were the sample for the quantitative study. 1200 children with bronchial asthma residing in rural and urban areas who were fulfilling the inclusion criteria were included for this study. Multi-stage random sampling technique was adopted.

The inclusion criteria were children aged 6-11 years, both male and female children diagnosed with bronchial asthma and have asthma symptoms for more than 6 months and available at the time of data collection.The exclusion criteria werechildren with other diagnosed chronic respiratory conditions.

Researcher used modified paediatric asthma severity score(M-PASS) tool for screening severity level of asthma among 6-11 years of children.The tool consists of 4parameters of respiratory rate, oxygen requirements, auscultation, retraction.Researcher collected socio-demographic data and clinical data related to bronchial asthma among children.

Ethical Consideration.

Ethical permission was obtained from The Institutional Ethics Review Board from Omayal Achi College of Nursing. Permission was obtained from the Dean, chengalpattu government medical college and commissioner in chengalpattu district.Informed consent was obtained and detailed explanation about the study was given to parents and assent obtained from children with bronchial asthma. Confidentiality and privacy were maintained throughout

the study. The participants were given a full freedom of continuing (or) withdraw from the study at any time. Parents and their children convenient timing and day was chosen to conduct the study.

Statistical Analysis

Statistical analysis was performed using the Statistical package for Social Sciences Programme (SPSS) version 17.0.Descriptive statistics for prevalenceand demographic variables.Chi-square and logistic regression for identifying associated factors.

Results and Discussion.

The level of severity of asthma score among children that majority of 67 % had moderate level of asthma and 33 % of them are had mild level of asthma in rural areas. In urbanareas, 72 % had moderate level of asthma and 28 % of them are had mild level of asthma.

Table 1: Distribution of demographic variables of children with bronchial asthma.

p>0.05 non -significant NS=non-significant

A. Demographic variables		Group				Chi square test
		Rural		Urban		
		n	%	n	%	
Age	6-7 years	21	21	19	19	$\chi 2=0.73$ p=0.69(NS)
	8-9 years	38	38	34	34	
	10-11 years	41	41	47	47	
Gender	Male	84	84	86	86	$\chi 2=0.16$ p=0.69(NS)
	Female	16	16	14	14	
Religion	Hindu	70	70	76	76	$\chi 2=1.02$ p=0.60(NS)
	Christian	20	20	17	17	
	Muslim	10	10	7	7	
	Others	0	0	0	0	
Residency	Urban	64	64	56	56	$\chi 2=0.36$ p=0.55(NS)
	Semi Urban	36	36	44	44	
	Rural	0	0	0	0	
	Others	0	0	0	0	
Education of the child	1^{st} to 3^{rd}standard	35	35	35	35	$\chi 2=0.04$ p=0.98(NS)
	4^{th} to 5^{th} standard	46	46	47	47	
	6^{th} to 7^{th} standard	19	19	18	18	
Birth order of the child	First	51	51	40	40	$\chi 2=2.68$ p=0.26(NS)
	Second	41	41	48	48	
	Third	8	8	12	12	
	Three and above	0	0	0	0	
Number of siblings	None	28	28	37	37	$\chi 2=3.26$ p=0.20(NS)
	One	52	52	51	51	
	Two	20	20	12	12	
	Three or more	0	0	0	0	
Type of Family	Nuclear family	68	68	58	58	$\chi 2=2.14$ p=0.14(NS)
	Joint family	32	32	42	42	
	Extended family	0	0	0	0	
	Single parents' family	0	0	0	0	
	Others	0	0	0	0	

Table 2: Frequency and percentage of selected demographic variables among child's Home Environment.

demographic variables		Group				Chi square test
		Urban		Rural		
		n	%	n	%	
Types of house	Pucca house	10	10	8	8	$\chi2$=0.47 p=0.79(NS)
	Hut	54	54	52	52	
	Tiles	36	36	40	40	
Ventilation	Natural Ventilation	34	34	41	41	$\chi2$=2.40 p=0.49(NS)
	Chimney ventilation	3	3	1	1	
	Fan Ventilation	59	59	56	56	
	a & b	4	4	2	2	
Number of windows in sleeping room	One	75	75	77	77	$\chi2$=0.38 p=0.83(NS)
	Two	23	23	22	22	
	Three	2	2	1	1	
Types of kitchen	Hall with kitchen	40	40	48	48	$\chi2$=4.74 p=0.19(NS)
	No separate kitchen	38	38	25	25	
	Separate kitchen	11	11	17	17	
	Open kitchen	11	11	10	10	
Fuel utilization for cooking	LPG gas	70	70	72	72	$\chi2$=3.61 p=0.16(NS)
	kerosene stoves	13	13	19	19	
	Wood	17	17	9	9	
	Cow dung	0	0	0	0	
Smoke outlet in kitchen	Exhaust	1	1	1	1	$\chi2$=6.88 p=0.06(NS)
	Chimney	9	9	1	1	
	Windows	48	48	55	55	
	No smoke outlet	42	42	43	43	
Immunization	Yes	100	100	100	100	$\chi2$=0.00p=1.00(NS)
	No	0	0	0	0	
Have your child attained milestones appropriate to the age?	Yes	100	100	100	100	$\chi2$=0.00 p=1.00(NS)
	No	0	0	0	0	

p>0.05 non -significant NS=non-significant

Table 3: Frequency and percentage of selected demographic variables life style variablesamong children with bronchial asthma.

Life Style Variables		Group				Chi square test
		Urban		Rural		
		n	%	n	%	
Diet pattern	Vegetarian	11	11	14	14	$\chi2$=0.41 p=0.52(NS)
	Nonvegetarian	89	89	86	86	
Food Habits	Three times a day	4	4	6	6	$\chi2$=0.42 p=0.52(NS)
	Two times a day	96	96	94	94	
	4 times a day	35	35	27	27	
	≥ 4 times a day	65	65	73	73	
Pet animals	Yes	13	13	10	10	$\chi2$=1.50 p=0.12(NS)
	No	16	16	30	30	
History of allergy	Food, Drug, Dust, Weather	9	9	10	10	$\chi2$=5.43 p=0.14(NS)
	Food, Drug, Weather	20	20	37	37	
	Drug, Dust, Weather	12	12	17	17	
	Drug, Weather	59	59	43	43	

p>0.05 non -significant NS=non-significant

The data presented from the above table, children were residing in rural areas, living in hut house with pet animals, minimum one number of windows in their sleeping room were moderate severity level of asthma.
The review findings were consistent with studies conducted by Gorelick et al., conducted a prospective cohort study of children treated for acute asthma at two urban paediatric emergency departments (EDs). A total of 852 children were enrolled. Peak expiratory flow rate (PEFR) (for children aged 6 years and older) and pulse oximetry were also measured. The Paediatric Asthma Severity Score (PASS) is a useful tool to assess acute asthma severity for clinical and research purposes.

Conclusion:

Bronchial asthma among children in Tamil Nadu remains a significant concern, especially in urban regions. Environmental exposures and genetic predisposition contribute notably to the disease burden. There is a pressing need for community awareness programs, early diagnosis, and proper management protocols to reduce the impact of asthma in children. Strengthening school-based screening and parental education should be vital in controlling the rise of childhood asthma.

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