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## Cases of Asthma Among Under-Five in Two Selected Hospitals in South-Southern Nigeria

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### Abstract

**Background:** Asthma in under-fives has been recognized as a major public health problem. **Objective:** This aim of study is to estimate the prevalence case of asthma among under-fives in two major hospitals in South-South, Nigeria. **Materials and Methods:** The study method was a retrospective study survey of hospital medical records of the two major hospitals in two different Local Government Areas in River to explore the similarities and differences between hospitals in record of asthma cases. **Results:** Out of 248 medical records examined on childhood asthma in Braitewaite Memorial Specialist Hospital (BMSH) and University of Port-Harcourt Teaching Hospital; where the age of 1.6-3.5 years for male children had 25 cases while 16 cases were recorded for female in BMSH. In University of Port-Harcourt Teaching Hospital, 26 cases of children asthma were found among age of 1.6-3.5 years for males while females recorded 23 cases. In 2011, male had 17(70.8%) cases of asthma which was higher than female's case of 7(29.2%) at BMSH. At UPTH, 12(63.2%) cases of children asthma were higher in male than female 7(36.8%). **Conclusion:** The findings showed the prevalence cases of asthma among under-five and more affected in male than female. All ages less than five years were affected from 2005 to 2012. In other to reduce morbidity and mortality rate of asthma in under fives, early diagnosis of the disease is important, also, asthma management strategies is also important which to include adequate patient education.

### 1. Introduction

Asthma in children serves as a source of constant worry to parents and caregivers in any hospital when diagnosed positively. It could be due to the unpredictability conditions leading to a hampering of physical and mental development in children. Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation causes an associated increase in airway hyper responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning. The airflow obstruction can frequently be reversed either spontaneously or with treatment (O'Byrne, 2004).

Moorman et al (2007), defined it as a common chronic disorder of the airways

characterized by periods of reversible airflow. Airflow is obstructed by factors which narrow airways in the lungs, including inflammation and airway hyper reactivity (contraction of the small muscles surrounding the airways), in reaction to certain exposures. Exposures may include physical exercise; airway infections; airborne allergens (e.g., pollen, mold, animal dander, dust mite, and cockroach allergens); occupational exposures (e.g. sensitizing chemicals or dusts); and airborne irritants (e.g., particulate matter and environmental tobacco smoke). Cultural practices include breastfeeding practices, use of breast milk substitutes. Food allergy is often the first manifestation of allergy in childhood: it occurs in 6% to 8% of the paediatric population younger than 3 years and 2% to 3% of the general paediatric population (Bock. 1987).

In young children, foods responsible for the vast majority of reactions are milk, egg, peanut, tree nuts, fish and shellfish. Allergic reactions after ingestion of raw vegetables and fruits are also common, and may provoke both mild (such as 'oral allergy syndrome') than more severe reactions. Early childhood allergies to milk, egg, soy and wheat usually resolve by school age (80% of cases); peanut, tree nut and seafood allergy are usually considered permanent (Sicherer et al, 2006).

Epidemiological evidence suggests that there is a link between asthma and food allergy. The statistical association between these two allergic diseases may be due to their common atopic basis or may reflect a close inter-relationship in their pathogenesis (Roberts et al, 2003). Asthma is considered the most frequent pulmonary disease in infancy (Rancé et al, 2002) and is a significant cause of morbidity and mortality in the paediatric population, especially in the developing society (Masoli et al, 2004). Asthma is a common disease in children that forms a major co-morbidity illness.

Symptoms during an asthma attack may include wheezing, coughing, shortness of breath, and chest tightness or pain. The most common signs and symptoms of asthma in children include cough, which may be worse at night or may occur following exposure to allergens. Wheezing, which is a sound heard as the child breathes through a constricted airway. Other features are breathlessness, sputum production, and inability to complete a sentence. In reference to the work done on school children in Enugu, South-Eastern, Nigeria showed that children with asthma had a poorer quality of life when compared to those without asthma. The study tried to compare physical function and psychosocial health between infected ones and not infected with asthma (Oguonu et al, 2013).

Childhood asthma is a known contributor to morbidity and mortality in children. Childhood Asthma varies widely from country to country. At the age of six to seven years, the prevalence ranges from 4 to 32%. In a hospital based study, acute asthma was responsible for 1.7% of cases seen at the children emergency wards (George & Tabansi, 2010) and accounted for 24% of cases with respiratory illness that required admissions at the paediatric ward of another teaching hospital (Oguonu, Ayuk, Edelu & Ndu, 2014). The true

prevalence of asthma in the population may be difficult to determine, as most studies on the subject are hospital based. It has also increased the number of preventable hospital emergency visits and admissions. Apart from being the leading cause of hospitalization for children, it is one of the most important chronic conditions causing elementary school absenteeism (Reid et al, 2000). On the same note, the increase in asthma mortality, morbidity (as measured by hospital admissions) results to increase in symptom prevalence among children (Mitchellet al, 2012). Under-diagnosis of childhood asthma represented one of the pitfalls in the asthma management.

The primary aim of this study is to determine the level of asthma cases among under-five. The significance of this study is that it will enhance a common know knowledge to people on the rate of childhood asthma in the society.

In addition, the common knowledge and better understanding of the risk factors leading to increase in childhood asthma and it will also help to educate the prospective/target victims on how they could control the situation with the preventive measures. This study will serve as a resource material in creating the necessary awareness of the existence and nature of the risk factors of childhood asthma which if handled very effectively will ultimately help in reducing the rate of asthma in children and adults.

## 2. Materials and Methods

The study was conducted in River State, South-South Nigeria, on two selected hospitals from January to December, 2014. The study method was a retrospective study survey of hospital medical records of the two major hospitals in two different Local Government Areas in River State. The study aimed to determine the level of asthma cases among under-five in the study area. The confirmed cases were solely based on medical records of the hospitals between 2005-2012 with the observed symptoms such as cough, catarrh, fast breathing and wheezing. The total number of confirmed cases from both hospitals was 248. Those who did not meet the criteria was excluded; therefore, 248 asthmatic children were used in the study. The study population includes only children below the age of six (6) years that were diagnosed in the used hospitals. The study involved both outpatient and in-patients. The criteria for inclusion in the study include: the patient must have been properly diagnosed as asthmatic patient. Data were collected from the delivery register and specific information were transcribed onto the data collection form and categorized into demographic data (age, sex, name of hospital and year). The results of the confirmed cases were sorted out and analyzed using Statistical Package for Social Science (SPSS). Also, the findings were presented in frequency tables and percentages.

## 3. Results

Out of 248 medical records examined on childhood asthma

in Braitewaite Memorial Specialist Hospital (BMSH) and University of Port-Harcourt Teaching Hospital, the results show that male children at age group 0-1.5 years had 38 cases of asthma while female children had 20 cases. At the age group of 1.6-3.5 years, male children had 25 cases while female children had 16 cases. 15 cases of asthma were recorded for females between the age of 3.6-5 years while male children had 17 cases of asthma. In University of Port-Harcourt Teaching Hospital, 26 cases of childhood asthma were found higher among the age group of 1.6-3.5 years for males than females with 23 cases. In the same hospital, male children had 21 cases while female recorded 19 cases. Among those between the age of 3.6-5 years, 16 cases were recorded for male while 12 cases were for female as table 1 depicted.

In the year 2005, the results show that male children had 10(62.5%) cases while female was 6(38.5%) in Braitewaite Memorial Specialist Hospital (BMSH). In the same year, at University of Port-Harcourt Teaching Hospital, 6(60%) cases were for male while 4(40%) was for female children. In 2006, 8(61.5%) cases of asthma among male was higher than female 5(39.5%) at BMSH. At UPTH, 6(60%) cases of childhood asthma among females were higher than males 4(40%). In 2007, male had 6(54.5%) cases compared to female 5(45.5%) at BMSH. At UPTH, 8(61.7%) cases of childhood asthma was higher among female than male 5(38.5%). In 2008, male had 11(64.7%) cases while female had 6(35.3%) in BMSH. In the same year, male had 5(38.5%) cases while female had 8(61.7%) in UPTH. In 2009, 11(64.7%) cases of childhood asthma was higher in male than female 6(35.3%) at BMSH. At UPTH, cases of asthma among females were 7(58.3%) while males recorded 5(41.8%). In 2010 at BMSH, male had 10(58.8%) cases while female was 7(41.2%). At UPTH, 11(61.1%) cases of childhood asthma were higher in male than female 7(38.9%). In 2011, 17(70.8%) cases of the asthma was higher in male than female 7(29.2%) at BMSH. In UPTH, 12(63.2%) cases of childhood asthma were higher in male cases than female 7(36.8%). In 2012, male had 13(68.4%) cases of childhood asthma while female was 6(31.6%) at BMSH. At UPTH, male recorded 12(63.2%) of childhood asthma compared to female 7(36.8%) as shown in table 2.

In table 3, the results showed that the age of children between 0-1.5 years had the highest cases (7) of asthma,

followed by 3.6-5.0 years with 6 cases. The least case (3) was on those between 1.6-3.5 years in Braitewaite Memorial Specialist Hospital (BMSH). In the same year, at University of Port-Harcourt Teaching Hospital, those between 0-1.5 years and 1.6-3.5 years had the same frequency of 5 cases of childhood asthma while 3.6-5.0 years had no case. In 2006, age of the children between 0-1.5 years had the highest (7) cases of asthma; those between 1.6-3.5 years had 1 case while 3.6-5.0 years had 5 cases at BMSH. At UPTH, 1.6-3.5 years of the children had the highest (5) cases of asthma followed by 4 cases for 3.6-5 years while 0-1.5 years had 3 cases. In 2007, children between 0-1.5 years had the highest (7) cases of asthma, followed by 3.6-5.0 years with 4 cases while 1.6-3.5 years had no case. In the same year, at University of Port-Harcourt Teaching Hospital, between 0-1.5 years, 1.6-3.5 years and 3.6-5.0 years had the same 4 cases. In 2008, children between 3.6-5 years had the highest (6) cases of asthma, while 1.6-3.5 years and 3.6-5.0 years had the same 5 cases. In the same year, at University of Port-Harcourt Teaching Hospital, all the age group had the same 4 cases of asthma. In 2009, children between 3.6-5 years had the highest (6) cases of asthma followed by 1.6-3.5 years with 4 cases while 0-1.5 years had 1 case. In the same year, at University of Port-Harcourt Teaching Hospital, 0-1.5 years and 1.6-3.5 years the same 6 cases of asthma while 3.6-5.0 years had 5 cases of asthma. In 2010, children between 0-1.5 years had the highest (9) cases of asthma followed by 1.6-3.5 years with 7 cases while 3.6-5 years had only 3 cases of asthma. At University of Port-Harcourt Teaching Hospital, those between 0-1.5 years and 3.6-5.0 years the same 6 cases of asthma while 1.6-3.5 years had 3 cases of asthma. In 2011, children between 0-1.5 years had the highest 10 cases of asthma followed by 1.6-3.5 years that had 9 cases while 3.6-5.0 years had only 5 cases of asthma. At University of Port-Harcourt Teaching Hospital, 1.6-3.5 years had the highest (8) cases of asthma followed by 0-1.5 years that has 6 cases while 3.6-5.0 years had 5 cases of asthma. In 2012, the studied age group of children between 0-1.5 years had the highest (12) cases of asthma followed by 1.6-3.5 years that has 6 cases while 3.6-5.0 years had 3 cases of asthma. At University of Port-Harcourt Teaching Hospital, 1.6-3.5 years had the highest (8) cases of asthma followed by 0-1.5 years that has 6 cases while 3.6-5.0 years had 5 cases of asthma.

*Table 1. Shows the cases of childhood asthma in relation to age and sex according to hospital.*

Sex	BMSH				UPTH			
	Age groups			Total	Age groups			Total
	0-1.5yrs	1.6-3.5yrs	3.6-5yrs		0-1.5 yrs	1.6-3.5 yrs	3.6-5 yrs	
Male	38	25	17	75	21	26	16	57
Female	20	16	15	51	19	23	12	54
Total	58	41	32	131	40	49	28	117

**Table 2.** Show the cases of childhood asthma in relation to sex and year according to hospital.

BMSH			UPTH			
Years	Male	Female	Total	Male	Female	Total
2005	10(62.5%)	6(38.5%)	16(11.9%)	6(60%)	4(40%)	10(87.7%)
2006	8(61.5%)	5(39.5%)	13(9.7%)	4(40%)	6(60%)	10(87.7%)
2007	5(45.5%)	6(54.5%)	11(8.2%)	5(38.5%)	8(61.7%)	13(11.4%)
2008	11(64.7%)	6(35.3%)	17(12.7%)	5(38.5%)	8(61.7%)	13(11.4%)
2009	11(64.7%)	6(35.3%)	17(12.7%)	7(58.3%)	5(41.8%)	12(10.5%)
2010	10(58.8%)	7(41.2%)	17(12.7%)	11(61.1%)	7(38.9%)	18(15.8%)
2011	17(70.8%)	7(29.2%)	24(17.9%)	12(63.2%)	7(36.8%)	19(16.7%)
2012	13(68.4%)	6(31.6%)	19(14.2%)	12(63.2%)	7(36.8%)	19(16.7%)
Total	85(63.4%)	49(36.6%)	134(100%)	62(54.4%)	52(%)	114(100%)

**Table 3.** Show the cases of childhood asthma in relation to year and age according to hospital

Years	BMSH			UPTH		
	Age groups			Age groups		
	0-1.5 yrs	1.6-3.5 yrs	3.6-5.0 yrs	0-1.5 yrs	1.6-3.5 yrs	3.6-5 yrs
2005	7	3	6	5	5	0
2006	7	1	5	3	5	4
2007	7	0	4	4	4	4
2008	5	5	6	4	4	4
2009	1	5	6	6	6	5
2010	9	7	3	6	3	6
2011	10	9	5	6	8	5
2012	12	6	3	6	8	5
Total	58	36	38	40	43	33

## 4. Discussion

Two hundred and forty eight of children were identified in the studied area as have had asthma within the study period at the University of Port-Harcourt Teaching Hospital and the Braithwaite Memorial Specialist Hospital. More children were affected in the BMSH compared to the UPTH. The findings were not similar to the work done by George and Tabansi, (2010) which found low incidence of children asthma.

The findings indicated that age group of 0-1.5 years had the highest case of asthma in BMSH and 1.6-3.5 years had the highest at UPTH when compared with the other age groups. The affected ages in BMSH could be due to low-level of health education among women of childbearing age as compared to UPTH. Some studies conducted on asthma, males were affected than females, which was in line with the work done by Marco et al, (2002).

In this study, male children were much more affected with asthma than female ones in BMSH, which could be due to lack proper health care to male children than female on the risk factors and preventive measures. In same vein, male ones are more affected in UPTH than females. In the year 2011, the highest case of childhood asthma was recorded among the studied children in both BMSH and UPTH compared to other years. This could be as a result of reduction in health care among children at interval basis.

All the children across the age groups of under-five were affected in this study and it agrees with the findings of Marco et al, (2002) and Global initiative for Asthma (GINA, 2011). The reason may be that the hospitals hardly use Spirometry on children or give instructions to them due to their young age

when they became or considered very ill at the time of their presentation. For children who could obey commands, the use Spirometry on children should be done when they attended their follow up visits at their stable time. This was similar to opinion of Swanney et al, (2011) which explains the difficulty with the use of spirometry in children.

## 5. Conclusion

Asthma in under-fives has been recognized as a major public health problem. The findings showed the prevalence case of asthma among under-five, in which males are more affected than females. All ages of under-five years were affected from the year 2005 to 2012. This prevalence has brought about increased in under fives hospitalization and school absenteeism among the affected children in south southern, Nigeria.

## Recommendations

However, in order to reduce morbidity and mortality rate of asthma in under fives, early diagnosis of the disease is important, also, asthma management strategies is also important which include adequate patient education.

They should increase in consistent use of preventive medication and control of environmental factors that affect asthma (home-based, multi-trigger, multi-component interventions).

These strategies will enhance the effectiveness in improving the health of individuals affected by asthma and reducing the impact of asthma in any country.

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