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Morbidity pattern of paediatric out-patients in rural/suburban areas as seen in Irrua Specialist Teaching Hospital: a pilot study.

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Abstract

Background: In the absence of community-based information, hospital data can be a valuable tool for assessing the epidemiology of diseases within populations. There is paucity of information on the morbidity pattern of children in rural and suburban areas of Nigeria. Objective: To determine the morbidity pattern among Paediatric Outpatients in a malaria endemic area. Materials and Methods: A retrospective analysis of the records of the Paediatric Outpatient seen at Irrua Specialist Teaching Hospital, Irrua. Results: A total of 3,812 patients were assessed in 9,122 visits over 12 months period giving an average of 2.4 visits per child per year. Acute respiratory tract infection1,414 (37%) and malaria 891(23.3 %)were the two commonest diagnoses. Conclusion: Infectious diseases constitute the most common illness among Paediatric Outpatients in rural and suburban areas.

Keywords: *Morbidity, Pattern, Paediatric Outpatients, Rural/Suburban Area*

Introduction

The advent of the Sustainable Development Goals (SDGs) further underscores the need for assessment of the epidemiology of diseases within populations. This is required to enable the placement of cost effective measures to improve the quality of life of persons in the population and to meet the SDGs.[1]Knowledge of the morbidity pattern could guide policymakers, healthcare planners and managers in making informed decisions on the allocation of resources to the different aspects of healthcare.[2]

In the absence of community-based data, general outpatient data in healthcare facilities provides perhaps the next best estimates of the burden and pattern of diseases in the population[2] The results from such appraisals whether retrospective or prospective, can also be used to improve services.[3]

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Although reports on the morbidity pattern of childhood illnesses are available, these are mostly from emergency paediatric units in large urban settings and very few have emphasized the pattern seen in Paediatric Outpatients (POPs).[1,3-7] Most of the studies also concentrated on specific age groups.[2,4,7] Also the few studies available are from large urban hospitals.[1,7] Aside from these issues, the morbidity pattern in populations varies with location and time.[1,7]

ISTH is a unique tertiary institution being one of the few, if not the only one located in rural areas. It thus serves as a first point for initial patient visits and follow-up management as well as a referral centre. The location and services of the hospital thus provide a unique opportunity for investigation of the pattern of illnesses in children in rural areas in sub-Saharan Africa. This retrospective pilot study aims to describe the morbidity pattern of children seen in the Paediatric Outpatients Department (POPD) of ISTH as a prelude to a comprehensive prospective review of the morbidity pattern in POPD and the community.

Methodology and Methods

Irrua Specialist Teaching Hospital was commissioned 31years ago and serves Edo State and the neighboring states of Delta, Kogi and Ondo. Patients are mainly self-referred, fee-paying and dependents of staff and others on the National Health Insurance Scheme. The patients therefore represent the various strata of the socio-economic classes, religions and ethnic groups in the region. The POPD register and case notes of all the children who visited the clinic from 1st September, 2011to 31st August, 2012 were retrospectively reviewed and the relevant information extracted. The children who visited the Paediatric Consultant Outpatient Patient Department (COPD) clinic were excluded from the study. This is because they takes care already diagnosed special cases who may require regular check-ups or monitoring. They may not necessarily be ill.

Data analysis was done using SPSS version 10. Information obtained from the case notes and registers included date of visit, age, sex and main diagnosis. The principal diagnosis was determined through history, physical examination and preliminary investigation by the Paediatric Registrar under the supervision of a senior registrar or consultant. The Paediatric Outpatient clinic attendance registers were examined to obtain data on total number of children seen at the hospital for one year. The seasons were defined as the wet season (May to October) and the dry season (November to April) as seen in a typical rainforest area in which Irrua is located. Statistical analysis included calculation of percentages, ratios and test of significance as required with the level of significance of differences set at $p < 0.05$. Permission to conduct this study was sought and obtained from the ISTH Research and Ethics Committee.

Results

During the one year period, a total of 9,122 visits were made to the POP by 3,812 children aged one day to 18 years, thus an average of 175 visits was made per week and 2.4 visits per patient per annum. There were 1,914 (50.2%) males and 1,898 (49.8%) females giving a male to female ratio of 1.01:1. One thousand and fifty-nine (27.8%) were < 1 year old, 2,112 (55.4%) were aged 1-5 years, while 446 (11.7%) and 195 (5.1%) were aged 6-10 years and 11-18 years respectively. Figure I is a graphic representation of the age group distribution of the study population.

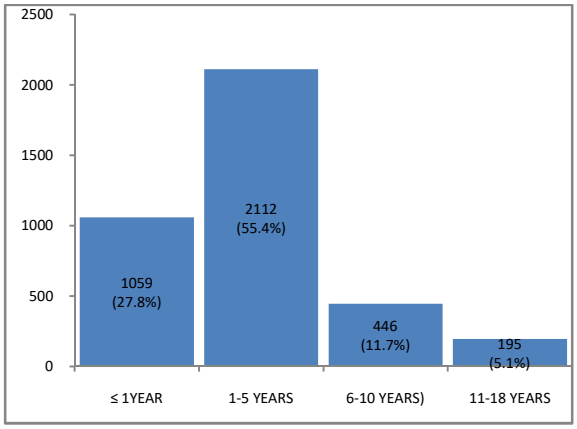

Fig 1: Bar chart showing ages of children seen in the POPD

Of the 9,122 visits made, 4,652 (51%) were during the wet season, while the remaining 4,470 (49%) were during the dry season. The monthly visits expressed as a percentage of the total visits are shown in Figure 2. The highest frequency of visits was in March, followed by October and July respectively; and the lowest frequency of visits was made in May followed by January.

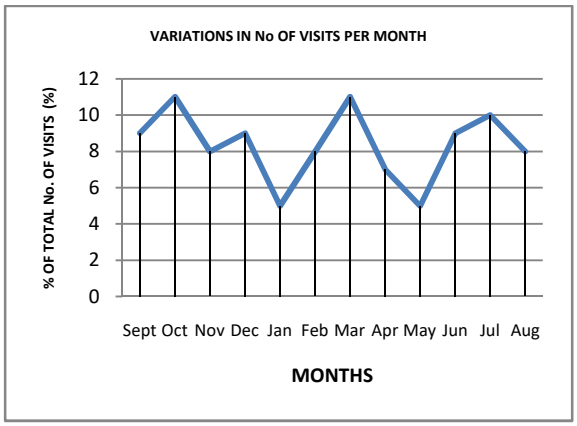

Figure 2: The monthly visits expressed as a percentage of the total visit per month

Table 1 shows the distribution and percentages of POPD visits made diagnoses grouped into infectious and non-infectious diseases. Across all age groups, infectious diseases accounted for most of the visits and this was statistically significant ($\chi^2 = 222.71$, $p = 0.00001$). Figure 3 is a graphic representation of the same information.

Table 1: The distribution and percentages of diseases organized into disease origin of outpatient POPD

Age in groups	Infectious origin (%)	Non-infectious origin (%)	Others (%)	Total (%)
<1year	956 (90.3%)	93 (8.8%)	10 (0.9%)	1059 (100)
1-5 years	1697 (80.3%)	209 (9.9%)	206 (9.8%)	2112 (100)
6-10 years	378 (84.8%)	59 (13.2%)	9 (2.0%)	446 (100)
11-18 years	125 (64.1%)	65 (33.3%)	5 (2.6%)	195 (100)

(χ^2=222.71, p = 0.00001).

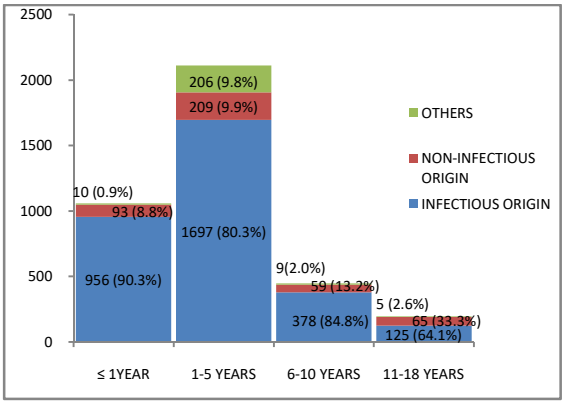

Fig 3: Bar chart showing diseases organized into disease origin of outpatient POPD.

The distribution and percentages of the diagnoses made during POPD visits, classified according to the International Classification of Diseases 10 by age group as shown in Table 2. This revealed that diseases of the respiratory system, infectious, parasitic diseases and conditions originating from the perinatal periods accounted for most of the POPD visits.

Classification of diseases based ICD 10[8]

Infectious and parasitic diseases: malaria, conjunctivitis, diarrhoea, HIV infection, chicken pox, viral exanthema, PTB and mump

Diseases of musculoskeletal: septic arthritis and chronic osteomyelitis.

Conditions originating in the perinatal periods: Neonatal sepsis. Neonatal jaundice, congenital disorders and prematurity

Diseases of respiratory system: ARTI, asthma and bronchiolitis

Diseases of genitourinary system: UTI, neprotic syndrome

Nervous system: Cerebral palsy, seizures and migraine

Digestive system: Peptic ulcer disease and abdominal pain

Diseases of blood: Hemagioma, SCD

Neoplasm: Hemangioma

Endocrine, nutrition: Diabetes mellitus

Mental and behavioural diseases: Schizophrenia

Table 2: Diagnoses using the International Classification of Disease 10 (ICD 10)[8]

ICD classification of diseases	≤ 1year (%)	1-6years (%)	6-10years (%)	11-18years (%)	Total (%)
Diseases of the respiratory system	554(35.4)	814 (52.0)	151 (9.6)	46 (3.0)	1565 (100)
Infectious and parasitic diseases	378 (24.9)	849 (56.0)	214 (14.1)	76 (5)	1517 (100)
Conditions originating in the perinatal period	88 (87.1)	13 (12.9)	0 (0)	0 (0)	101 (100)
Diseases of the genitourinary system	0 (0)	59 (66.2)	15 (16.9)	15 (16.9)	89 (100)
Surgical cases	10 (13)	53 (68.8)	4 (5.2)	10 (13)	77 (100)
Diseases of the blood or blood-forming organs	2 (2.9)	52 (75.4)	7 (10.1)	8 (11.6)	69 (100)
Diseases of the skin	13(25.0)	23(44.2)	11(21.2)	5(9.6)	52(100)
Diseases of the digestive system	0 (0)	7 (18)	11 (28.2)	21 (53.8)	39 (100)
Diseases of the nervous system	1 (3.0)	22 (64.7)	8 (23.5)	3(8.8)	34 (100)
Neoplasms	1 (3.1)	14 (43.8)	14 (43.8)	3(9.3)	32 (100)
Diseases of the musculoskeletal	2 (66.7)	0 (0)	1 (33.3)	0 (0)	3 (100)
Endocrine, nutrition	0 (0)	0 (0)	0 (0)	2 (100)	2 (100)
Mental and behavioural diseases	0 (0)	0 (0)	0 (0)	1(100)	1 (100)
Others	10 (4.3)	206 (89.2)	10 (4.3)	5 (2.2)	231 (100)

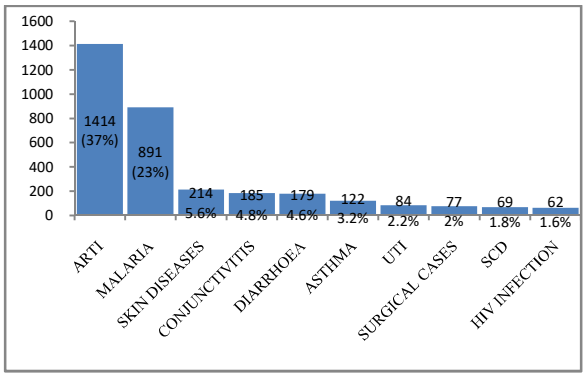

Fig 4: Commonest diseases seen at the outpatient clinic

Figure 4 is a graphic representation of the distribution and percentages of POPD visits by diagnoses. The most common diagnosis was acute respiratory tract infection (37%) followed by malaria (23%) and skin diseases (5.6%) respectively. Table 3 is a frequency and percentage distribution table of the diagnoses made in POPD during the period of study.

Table 3: Frequency distribution table of the diagnoses made in POPD during the period of study.

Diagnosis/Age group	<1	1 - 5	6-10	11-18	Total
Acute respiratory infections	543	698	145	28	1,414
Malaria	203	503	141	44	891
Skin diseases	59	71	22	10	162
Allergic skin diseases	13	23	11	5	52
Conjunctivitis	44	94	31	16	185
Diarrhoea	66	106	4	3	179
Asthma	0	98	6	18	122
Urinary tract infections	0	59	14	11	84
Surgical illnesses	10	53	4	10	77
Sickle cell anaemia	2	52	7	8	69
HIV infection	6	53	3	0	62
Malignancies	0	13	14	3	30
Bronchiolitis	11	18	0	0	29
Congenital conditions	15	13	0	0	28
Neonatal jaundice	27	0	0	0	27
Prematurity	24	0	0	0	24
Seizure disorder	0	15	6	3	24
Neonatal sepsis	22	0	0	0	22
Peptic ulcer disease	0	0	7	14	21
Viral exanthema	0	18	0	0	18
Dental illnesses	0	7	4	6	17
Chicken pox	0	0	10	1	11
Cerebral palsy	1	7	0	0	8
Nephrotic syndrome	0	0	1	4	5
Pulmonary tuberculosis	0	0	3	2	5
Mumps	0	4	0	0	4
Heamangioma	1	1	0	0	2
Diabetes mellitus type I	0	0	0	2	2
Migraine	0	0	2	0	2
Septic arthritis	2	0	0	0	2
Recurrent abdominal pain	0	0	0	1	1
Chronic osteomyelitis	0	0	1	0	1
Schizophrenia	0	0	0	1	1
Sexual assault	0	0	1	0	1
Others	10	206	9	5	230
TOTAL	1,059	2,112	446	195	3,812

Discussion

About four of every five children attending the POP is an under-five in this study. This is consistent with previous reports which affirm high susceptibility of this age group to morbidity (and mortality) in childhood.[1-3] The male to female ratio of approximately 1:1 computed in this study was similarly reported from a POPD study in Abuja.[1]This does not agree with the usual supposition of cultural parental preference for male children typically reflected in studies in eastern Nigeria where higher ratios were reported.[3,7] The reason for the change is unclear and further studies are required to confirm this. Still, it is a possible development that could amount to the attainment of the SDGs of which gender equality is a component.[9] The frequency of hospital visits was slightly higher during the wet season as in Abuja report[1]. However, this study showed a drop in the frequencies of clinic visits in January and May, perhaps occasioned by trade union disputes and industrial actions. This may have affected the pattern of seasonal variations.

The commonest morbidities were ARI, malaria and dermatological diseases. Infectious diseases remain common causes of childhood morbidity.[1,5,10,11] Acute respiratory infections were the foremost diagnosis in this study. This is different from the findings in the Children Emergency Room, Benin City which is closest to Irrua that reported malaria as the commonest cause of morbidity.[5] Apart from the difference in time and location, most patients who have malaria will likely be treated in the Children Emergency Room; while most acute respiratory infections may more likely be treated in the POPD. Also, there is no documented report on the morbidity from the CHER, Irrua. This finding may be partly attributable to the high proportion of under five children who are the at increased risk age group of ARI.[12] This finding also underscores the need for pneumococcal vaccines in children.

Malaria was the second highest commonest diagnosis. A high prevalence of malaria is ordinarily expected as Nigeria is holoendemic for malaria. The reduced prevalence may be due to measures put in place for the control of malaria in the sub region.[13] The prevalence of dermatological diseases is lower than that reported from Abakaliki probably because

the latter study population was on adolescents.[14] A higher prevalence was also reported in Abuja.[1] Hormonal changes in puberty and self- awareness can be plausible reason skin diseases amongst this age group. Being the third rank prevalence is an indication of the need for public enlightenment on skin diseases.

Although diarrhoeal diseases are a major cause of childhood morbidity, cases usually present to the CHER and are subsequently managed in the Diarrhoea Treatment and Training Unit (DTTU).There is no report of Lassa fever in this study even though the hospital is situated in a Lassa fever endemic area. This is because they are usually acutely ill patients and so they present to CHER and are subsequently transferred to the Lassa ward for expert care.

Conclusion

The pattern of morbidity in children remains similar with preventable infections leading the list of morbidities. Children under five years old are still the most vulnerable group. There is a need to improve strategies to reduce the prevalence of infectious diseases in children.

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