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## Research Article

# Pattern and Outcome of Consultations in a Specialist Clinic, South-West Nigeria

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## Abstract

**Background and Objective:** Consultation for medical services outside Government health facilities is prevalent all over the world but reports of the pattern of such consultations are scant. The aim of this study, therefore, was to describe the pattern of clinical consultations in a nascent specialist clinic according to ICD-11 classification over 19 months (January, 2019 to July, 2020).

**Materials and Methods:** A retrospective study of 2,348 patients who received medical attention in the clinic for various health challenges. Patients' data and essential clinical information were extracted from their case notes and analyzed with SPSS, version 22. **Results:** A total of 2,348 consultations, 1,369 females and 979 males (Male: Female = 1:1.4). Consultations for under-5 age group 959(40.8%) were the highest. Their ages ranged from 1 h to 99 years with a mean age of 19.38 years. Diseases of the respiratory system 629(26.8%) were the most common disease managed. There was male predominance in the younger age group while females were more in the older age groups. Seven (0.3%) mortalities were recorded, 6(0.3%) were referred to the tertiary health facility, while 2335 (99.4%) were discharged well. Out of the 7 mortalities, 6 were neonates while one was older, the difference was statistically significant ( $X^2 = 5.88$ ;  $p = 0.015$ ).

**Conclusion:** Children younger than 5 years of age and respiratory tract infection constituted the highest consultation. Mortality is more likely at the extremes of age.

**Key words:** Consultations, ICD-11 classification, private specialist clinics, public-private partnership, under-five children, morbidity, respiratory tract infection, diabetes

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**Competing Interest:** The authors have declared that no competing interest exists.

**Data Availability:** All relevant data are within the paper and its supporting information files.

## INTRODUCTION

Consultation for medical services outside Government-owned health facilities is prevalent all over the world but reports of the pattern of such consultations are scanty. Consultation in private specialist clinics is a great avenue of offering specialist care in different fields of medicine to a growing population of ill people of different age groups in developing countries. This is needed to prevent vulnerable patients from falling prey to charlatans while it also enhances prompt diagnosis, appropriate referral and management by specialists from different fields of medicine<sup>1</sup>. Consultations in private specialist clinics are great means of receiving prompt subspecialty support when managing patients with multifaceted medical challenges. Jordan MR *et al.*<sup>1</sup> reported consultation patterns in a tertiary care setting in Canada over a 2-year study period with more than half of the studied patients receiving at least one consultation from another subspecialty. Consultations in private specialist health facilities bring specialized medical care closer to the people thereby lessening the burden of care on tertiary health centers which are better equipped for high level specialist health care, training of health personnel and research. There is paucity of data from private specialist clinics on the pattern of consultations and sub-specialist collaboration for optimal patients' management. There is therefore, need to investigate and report the pattern of clinical consultations in private specialist clinics to serve as a baseline for further study in this sector in Nigeria and other developing countries. There is a growing need for public-private partnership in the Nigerian health sector to reduce medical tourism to industrialized nations which practice such to their own advantage<sup>2,3</sup>.

Acute respiratory infection remains the most common cause of morbidity and mortality in under 5 children and the elderly and it is the most common reason for medical consultations<sup>4</sup>. Vaccination against common pathogens has continued to play a significant role in protecting susceptible children against acute respiratory infections and some experts have also advocated for vaccination of pregnant women to further protect infants below the age of 6 months<sup>5-7</sup>. Previous studies have shown the effectiveness of influenza vaccination during pregnancy in preventing influenza for at least one season<sup>8,9</sup>. Reduction of ARI through vaccination will ultimately reduce the number and cost of consultation, use and abuse of antibiotics and morbidity and mortality from acute respiratory infections in the under 5 age group and the elderly<sup>10,11</sup>.

The index study aimed to describe the pattern of consultations in a private specialist clinic in a semi-urban city, south-west Nigeria, to highlight different categories of diseases frequently seen in different age-groups and the age groups at greater risk of mortality.

## MATERIALS AND METHODS

**Study area:** This is a descriptive, cross sectional study of the pattern of patients' consultations in a nascent specialist clinic at Ado-Ekiti, South-West Nigeria. The Clinic, headed by a Consultant Pediatrician, was opened for clinical service on the first day of October, 2016 in a rented 3-bedroom apartment and steadily grew till it moved to a purpose-built clinic 3 years after (1st October, 2019).

**Data collection:** The Clinic offers clinical services to all age groups and free routine immunization services to infants in collaboration with the Ekiti State Ministry of Health. Relevant data were extracted from the records of patients who received medical services in the clinics from January 1st, 2019 to July 31st, 2020.

**Statistical analysis:** The data were entered into and analyzed with IBM SPSS Statistics for Windows, version 22 (IBM Corporation, Armonk, New York, USA). Diagnosis made during the consultations were categorized according to the International Classification of Diseases 11th Revision (ICD-11)<sup>12</sup>. The ages of the patients were grouped into 5 age groups: 0-<5, 5-19, 20-45, 46-65 and >65. The frequency and percentage of consultations in each age group were determined and tabulated. The sex distribution in each age group was determined and charted. Also, the frequency of each disease classification per age group was determined and tabulated. The outcome was categorized as alive, referred or dead for different age groups. Categorical variables were compared using the Chi-square ( $\chi^2$ ) test. Statistical significance was set at 'p' value less than 0.05.

## RESULTS

A total of 2,348 consultations were made during the study period. There were 1,369 females and 979 males (Male:Female = 1:1.4). The majority of the consultations were for under 5 age group 959 (40.8%), followed by 20-45 years age group 751 (32.0%) as shown in Table 1. Their ages ranged from 1 hour to 99 years with a mean age of  $19.38 \pm 20.5$  years.

Table 1: Frequency of consultations according to age groups

Age group (years)	Male (n)	Female (n)	Cumulative frequency (N)	Percentage
Under 5	507	452	959	40.8
5-19	200	174	374	15.9
20-45	206	545	751	32.0
46-65	58	117	175	7.5
>65	8	81	89	3.8
Total	979	1369	2348	100.0

Table 2: Pattern of diseases managed at precious life specialist clinics

ICD-11 classification	Frequency	Percentage
Infectious and parasitic diseases	369	15.7
Neoplasm	3	0.1
Diseases of Blood and blood forming organs	161	6.9
Diseases of immune system	26	1.1
Endocrine, nutritional or metabolic diseases	135	5.7
Mental, behavioural or neurodevelopment	24	1.0
Sleep-wake disorder	26	1.1
Disease of nervous system	47	2.0
Diseases of visual system	17	0.7
Diseases of ear or mastoid process	13	0.6
Diseases of circulatory system	108	4.6
Diseases of respiratory system	629	26.8
Diseases of digestive system	165	7.0
Diseases of skin	80	3.4
Diseases of musculoskeletal system or connective tissue	91	3.9
Diseases of genitourinary system	44	1.9
Condition related to sexual health	3	0.1
Pregnancy, childbirth or the puerperal period	193	8.2
Certain conditions originating in the perinatal period	9	0.4
Symptoms, signs or clinical findings, not elsewhere classified	102	4.3
Injury, poisoning or certain other consequences of external causes	72	3.1
Medical tests	31	1.3
Total	2348	100.0

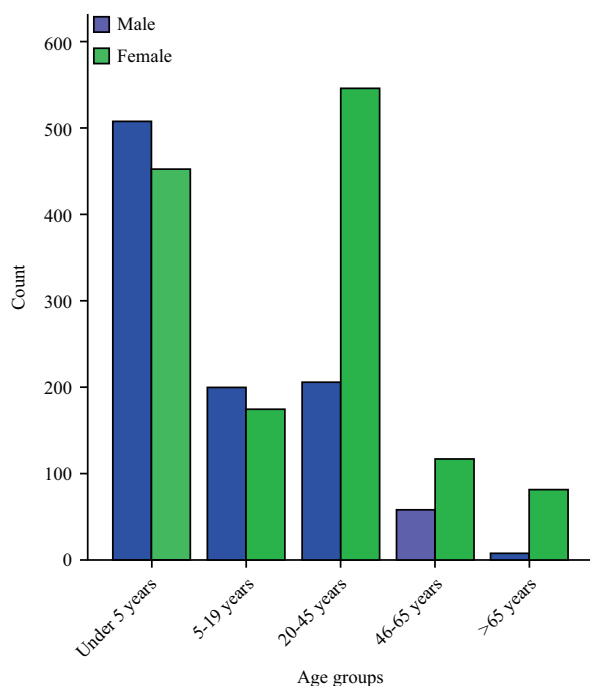


Fig. 1: Sex distribution of patients according to age groups

The 6 most common diseases for which consultations were sought during the index study period were diseases of the respiratory system 629 (26.8%), infectious and parasitic diseases 369 (15.7%), pregnancy, childbirth or the puerperal period 193 (8.2%), diseases of digestive system 165 (7.0%), diseases of blood and blood-forming organs 161 (6.9%) and endocrine, nutritional and metabolic diseases 135 (5.7%) as shown in Table 2. Figure 1 shows that more males than females were brought for consultation in the younger age groups (<5 and 5-19 years) while there was female preponderance in the older age groups (20-45, 46-65 and >65 years).

Table 3 shows disease frequencies according to age groups with the 4 most prevalent diseases per age group being diseases of the respiratory system, which affected 384 (40.0%) of the under 5 years and 132 (35.3%) of the 5-19 years age groups; Diseases of the circulatory system, 46 (26.3%) of the 46-65 years and 24 (27.0%) of the >65 years age groups; Pregnancy, childbirth or puerperal period 193 (25.7%) of the 20-45 year age group; and Infectious and parasitic disease which affected 90 (24.1%), 117 (15.6%) and 116 (12.1%) of the 5-19 years, 20-45 years and under 5 years age groups respectively.

Table 3: Frequency of diseases (ICD-11) according to age group

ICD 11 disease classification	Age groups				
	Under 5 years	5-19 years	20-45 years	46-65 years	>65 years
Infectious and parasitic diseases	116	90	117	32	14
Neoplasm	0	1	2	0	0
Diseases of blood and blood forming organs	105	29	24	3	0
Diseases of immune system	8	8	7	2	1
Endocrine, nutritional or metabolic diseases	26	2	57	35	15
Mental, behavioural or neurodevelopment	9	0	13	1	1
Sleep-wake disorder	0	1	19	6	0
Disease of nervous system	36	4	2	4	1
Diseases of visual system	8	5	2	1	1
Diseases of ear or mastoid process	8	3	1	0	1
Diseases of circulatory system	3	1	34	46	24
Diseases of respiratory system	384	132	83	16	14
Diseases of digestive system	63	31	63	7	1
Diseases of skin	38	22	19	1	0
Diseases of musculoskeletal system or connective tissue	13	13	38	15	12
Diseases of genitourinary system	22	7	13	1	1
Condition related to sexual health	1	0	2	0	0
Pregnancy, childbirth or the puerperal period	0	0	193	0	0
Certain conditions originating in the perinatal period	9	0	0	0	0
Symptoms, signs or clinical findings, not elsewhere classified	92	5	5	0	0
Injury, poisoning or certain other consequences of external causes	17	16	36	3	0
Medical tests	1	4	21	2	3

Table 4: Frequency of consultations per month at precious life specialist clinics

Year/month of consultation	Frequency	Percentage	
2019			
January	61	2.6	
February	58	2.5	
March	47	2.0	
April	56	2.4	
May	75	3.2	
June	112	4.8	
July	143	6.1	
August	121	5.2	
September	105	4.5	
October	136	5.8	
November	175	7.5	
December	163	6.9	
2020			
January	137	5.8	
February	169	7.2	
March	167	7.1	
April	126	5.4	
May	152	6.5	
June	145	6.2	
July	200	8.5	
Total	19	2348	100.0

Table 4 shows steadily increasing frequency of consultations per month during the 19 months study period with the highest consultations 200 (8.5%) reported in July 2020, during COVID-19 pandemic lockdown.

Table 5 shows the outcome of the patients who sought consultation at the private specialist clinics per age group. The majority, 2335 (99.44%) were discharged well and alive, while 6 (0.26%) were referred to the tertiary health facility and 7 (0.30%) died. Half of those referred were in the 20-45 years age group while the majority of those that died were in the under-5 age group.

Table 6 shows the age at presentation, gender and possible causes of death in the 7 mortalities. One of the deaths occurred in a very old woman with congestive cardiac failure while 6 occurred in neonates. Three of the 6 dead neonates were preterm very low birth weight neonates. Neonatal sepsis was a major diagnosis in all the 6 neonatal deaths. Other diagnoses made in three of the dead neonates were severe birth asphyxia (two) and hypoglycemia (one). The ages of the dead neonates ranged from 5 h to 3 days at presentation. There was equal sex distribution in the documented 6 neonatal deaths (3 males and 3 females).

Comparing the age at which the deaths occurred, 6 occurred within neonatal age while one occurred in the very old, the difference was statistically significant ( $\chi^2 = 5.88$ ;  $p = 0.015$ ).

Table 5: Outcome of consultations per age group at precious life specialist clinics

Outcome	Age groups					Total	Percentage
	Under 5 years	5-19 years	20-45 years	46-65 years	>65 years		
Alive	951	374	748	174	88	2335	99.44
Dead	6	0	0	0	1	7	0.30
Referred	2	0	3	1	0	6	0.26
Total	959	374	751	175	89	2348	100.00

Table 6: Age at presentation, gender and causes of death in the seven mortalities

Age at presentation	Sex	Diagnosis
5 hours	Female	Preterm very low birth weight, neonatal sepsis
6 hours	Male	Preterm very low birth weight, neonatal sepsis
1 day	Female	Preterm very low birth weight, severe birth asphyxia, neonatal sepsis
2 days	Male	Neonatal sepsis
2 days	Female	Severe birth asphyxia, neonatal sepsis
3 days	Male	Hypoglycaemia, neonatal sepsis
76 years	Female	Congestive cardiac failure

## DISCUSSION

Patients in developing countries are becoming increasingly aware and requesting for specialist care targeted towards their peculiar medical needs in a friendly, conducive, affordable and accessible health facility that provides prompt optimal private healthcare. The index study was conducted in a specialist clinic coordinated by a consultant Pediatric Endocrinologist and it offers clinical services to patients of all age groups with varied forms of health challenges as shown in Table 3. It is noteworthy that there was an upsurge in consultations between March, 2020 and July, 2020 (Table 4) which coincided with the period of Corona virus infection (COVID-19) pandemic lockdown in Nigeria. There was an unpublished reported decline in patients' turnout in Government hospitals during same period, partly because of restriction of movements and also because of the fear of becoming infected with COVID-19, which was primarily taken care of in Government health care facilities. This observation further buttresses the need for public-private partnership in bringing specialized health care services closer to the people. It will also complement Government effort in quick identification and referral of patients in need of highly specialized medical care. One of the 6 referred patients in the index study was suspected to have COVID 19 and was promptly attended to in a tertiary center. The World Health Organization declared COVID-19 a pandemic in March, 2020 and by the 9th of August, 2020 over 19.4 million people had been infected with more than 722,000 deaths reported globally. The first case of COVID-19 was reported in Lagos, Nigeria on 28th February 2020 and has since spread to all the 36 States of the Country with an overwhelming effect on Government

health facilities necessitating the need to recruiting some private health facilities for testing and management of COVID-19 in Nigeria<sup>13</sup>.

World Health Organization (WHO) top 10 causes of deaths in low-income countries in year 2016 are low respiratory tract infections, diarrhea diseases, ischemic heart disease, HIV/AIDS, stroke, malaria, tuberculosis, preterm birth complications, birth asphyxia and birth trauma and road injury<sup>14</sup>. The findings of the present study is in consonance with WHO documented top 10 causes of death in low-income countries, as 6 (85.7%) of the mortalities occurred in neonates who died as a result of prematurity, birth asphyxia and sepsis while the other occurred in an aged woman with congestive heart failure (Table 6). This shows the need to invest more in the care of neonates and the aged in both public and private health facilities. There is a need to better equip our health facilities and train more specialists in pediatrics and geriatrics. There is also a need for health insurance coverage for the neonates and the aged. The care of sick neonates, especially premature babies, is capital intensive beyond the ability of an average Nigerian who often use out-of-pocket approach to provide for their healthcare<sup>15,16</sup>.

Infection, especially respiratory tract infection is the most common disease in the present study. This also agrees with WHO documentation<sup>14</sup>. It is however, worthy of note that none of those managed for Respiratory Tract Infection (RTI) in the present study died and 61.1% of RTI occurred in under-5 year age group. This could be attributed to the increasing rate of vaccination, the introduction of more vaccines (like pneumococcal conjugate vaccine and pentavalent vaccine) that protect against pathogens causing RTI<sup>5-11,17,18</sup>, early presentations and availability of potent antimicrobials for treatment.

Infectious and parasitic diseases are the second most common disease, 369 (15.7%), for which consultation was sought in the present study. Malaria accounts for over 98% of the parasitic infections managed with 31.4, 24.4 and 31.7% of them belonging to the under-5, 5-19 year and 20-45 years age groups respectively. Prompt diagnosis with rapid test kits greatly helped in making diagnosis and ensuring prompt treatment. Children who had cerebral malaria made remarkable recovery and pregnant women did very well with all of them responding very well to treatment and no adverse effect on their pregnancies. The finding of this study supports the WHO recommendation of the use of preventive measures (like insecticide treated nets, Intermittent Preventive therapy) against malaria especially in children and pregnant women<sup>19</sup>.

Pregnancy, childbirth or the puerperal period is the third most common condition, 193 (8.2%), for which consultation was sought. All (100%) of the pregnant women were in the 20-45 year age group. Collaboration with the obstetricians and registered mid-wives who were readily available with the pediatrician made the effort highly rewarding with 100% survival for the mothers and their babies including premature babies. All the recorded neonatal mortalities occurred among out-born babies who were referred from other private hospitals because of prematurity, perinatal asphyxia, hypoglycemia and sepsis most of who also recovered though six of them died despite treatment. Diagnosis of the recorded mortalities in the index study is in consonance with WHO top 10 causes of mortalities in low-income countries<sup>14</sup>. This can however be improved upon through improved collaboration among health care facilities for early identification of high risk pregnancies and early referral of such mothers to facilities that have adequate equipments to care for preterm babies. The mothers' uterus still remains the best 'transport incubator' for preterm and all high risk fetuses.

Diseases of the digestive system are the fourth most common diseases, 165 (7.0%), in the present study. The majority of those affected were in the under-5 (38.2%) and the 20-45 years age group (38.2%). Diarrhea is one the top 10 causes of death in developing countries<sup>14</sup> and the cause is majorly viral. Early identification and correction of dehydration is very essential for survival and prevention of complication like acute kidney injury. Appropriate fluid for rehydration depending on degree of dehydration and use of Zinc and vitamin A has been shown to reduce morbidity and mortality in acute diarrhea diseases<sup>20,21</sup>.

Diseases of Blood and blood-forming organs are the 5th most common diseases in the index study, 161 (6.9%). The

majority 105 (65.2%) of this occurred in the under-5 age groups. Most of this was presumed sepsis and few of them having sickle cell anemia. The under-5 age group children are highly vulnerable to bacterial infection because of their low immunity<sup>21,22</sup>. Adequate nutrition and optimal growth of under 5 aged children is a great booster of their immunity and ability to resist infection<sup>22,23</sup>. High index of suspicion is essential for early detection, diagnosis and management. Regular handwashing with soap and water has been shown to be very effective in preventing infection and this should be encouraged in all mothers<sup>24</sup>. With COVID-19 pandemic the habit of hand washing and use of hand sanitizer is being enforced globally and it should be continued post COVID-19 pandemic. Another common route of infection from parents to their children in Nigeria is indiscriminate kissing of babies and mouth suctioning of babies' blocked nostrils which should be discouraged. Haemoglobinopathy is preventable but it is surprising that we still have children with HbSS with recurrent infections draining the financial resources of the family<sup>16</sup>. There is need for premarital counseling and testing to be enforced in all religious organizations coordinating marriages and if possible, laws forbidding intending couples with sickle cell traits from marrying each other should be enacted.

Endocrine disorder is the 6th most common disease in the present study with 20.7, 53.3 and 46.7% of them occurring in children, young adult and middle-aged/elderly respectively. Non-communicable diseases are becoming a major cause of morbidity and mortality among children and adult in developing countries and there is a need to make specialized medical services available to people for early detection and management. There is also need for more advocacies for neonatal screening for congenital hypothyroidism in all newborn and routine screening for diabetes among school age children, adolescents and adults. Middle-aged adults need be encouraged to do a regular medical checkup in nearby health facilities for early identification, treatment and prevention of complications of common non-communicable diseases like diabetes and hypertension. Almost one-third of the consultations in those aged 46-65 year and >65 year age group were for hypertension while 20 and 16.9% of consultations in the same age groups respectively were for the endocrine disorder (mostly Type 2 Diabetes Mellitus). Over the years more attention, emphasis and resources have been given to communicable diseases meanwhile, non-communicable diseases such as endocrine disorders also constitute significant causes of morbidity and mortality<sup>25-27</sup>.

## CONCLUSION

Children younger than 5 years of age and respiratory tract infection constituted the highest consultations in private specialist clinics. Mortality is more likely at the extremes of age: the premature babies and the elderly. Other common diseases are malaria, sepsis, diarrhea and diabetes mellitus. Pregnancy and delivery related health challenges are a major concern. There is a need to strengthen private specialist clinics and encourage healthy collaboration among health facilities to bring specialized medical services closer to the people.

## SIGNIFICANCE STATEMENT

This study discovered that provision for the care of premature babies at affordable prices is grossly inadequate in most private and public health facilities. A review of the pattern of consultations could help in optimizing health care services to different age groups in the population. This may also help policymakers to focus on filling this gap in addition to bringing comprehensive health care services nearer the people.

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