ISSN: 2476-8642 (Print)
ISSN: 2536-6149 (Online)
www.annalsofhealthresearch.com
African Index Medicus, Crossref, African Journals Online, Scopus, C.O.P.E & Directory of Open Access Journals

Annals of HEALTH RESEARCH

(The Journal of the Medical and Dental Consultants' Association of Nigeria, OOUTH, Sagamu, Nigeria)

Volume 10 | No. 2 | April - June, 2024

IN THIS ISSUE

PUBLISHED BY THE MEDICAL
AND DENTAL CONSULTANTS ASSOCIATION
OF NIGERIA, OOUTH, SAGAMU, NIGERIA.
www.mdcan.oouth.org.ng

Annals of Health Research
(The Journal of the Medical and Dental Consultants Association of Nigeria, OOUTH, Sagamu, Nigeria)

Volume 10, Issue 2: 111-121
June 2024
doi:10.30442/ahr.1002-03-231

ORIGINAL RESEARCH

Utilisation of Children's Emergency Services in a Semi-urban Nigerian Tertiary Health Facility

Akodu SO*, Adekanmbi AF, Oba-Daini OO, Kuponiyi OT, Ariyibi SO
Department of Paediatrics, Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun, Nigeria

***Correspondence: Dr SO Akodu, Department of Paediatrics, Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun, Nigeria; E-mail: femiakodu@hotmail.com ;**
ORCID – https://orcid.org/0000-0001-8501-5647.

Abstract

Background: Children's emergency services are still evolving in Nigeria. The description of the attributes of children attending Children Emergency Services in Nigeria is yet to be extensively studied in recent times. This can guide resource allocation and help develop health policies that advance children's emergency care.
Objective: To review the profile of children patronising children's emergency services in a tertiary health institution in a semi-urban setting in Nigeria.
Methods: The study was a descriptive, cross-sectional survey among seventy-five caregiver-child pairs attending the children's emergency room of Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria.
Results: The mean age of the parents was 39.76±9.21 years and 33.47±8.11 years for the fathers and mothers, respectively. About two-thirds (65.4%) of the children were aged five years and below with male preponderance (69.3%). The highest educational level reported was secondary among 53.3% of the fathers and 42.7% of the mothers. Sixty-eight per cent (68%) of the children came on self-referral. Fever was the most common presenting complaint (72.0%) and paracetamol was the most commonly used medication as home remedy (21.3%).
Conclusion: Most children utilising emergency services arrived at the facility on self-referral. There is a need for increased advocacy to ensure that the referral systems effectively function in referring patients to tertiary facilities from either primary health or secondary facilities.

Keywords: Children, Childhood Mortality, Emergency Paediatric Care, Pattern of Utilization, Nigeria.

Introduction

Children's emergency room is a crucial service area in a tertiary hospital. The children's emergency room is an entry point for the majority of the sudden unplanned visits to the hospital. Children's emergency conditions are attended to at the children's emergency room. This part of paediatric care services, in certain instances, attend to non-emergency conditions, and this has been documented in the literature to occur even in developed countries like the United States. [1] It is also an anecdotal finding in our setting. Children's emergency services are still evolving in Nigeria.

Poor child health indices such as infant mortality rate, under-five mortality rate, and nutritional status are major public health concerns in Nigeria. Unfortunately, the causes of this disturbing reality are illnesses that can be prevented through the provision and appropriate utilisation of the children's emergency room, but certain factors have constituted a stumbling block. Delayed medical care is associated with an increased risk of unfavourable outcomes. [2] For patients with infectious diseases, delay in seeking care may also increase the community's transmission risk.

Access to healthcare services is a multidimensional process involving the quality of care, geographical accessibility, availability of the correct type of care for those in need, financial accessibility, and acceptability of service. [3] The utilisation of healthcare services is related to the availability, quality and cost of services, as well as the users' socioeconomic status and personal characteristics. [3 - 5] In developing countries, the under-utilisation of health services in the public sector has been a universal phenomenon. [6] Nigeria still has one of the worst health indices in the world and sadly accounts for ten per cent of the world's child deaths.[7] The National Health Management Information System needs to be stronger, with an integrated disease surveillance, prevention and management system.[8]

When people (adults and children) fall ill, they utilise several treatment options. The options are partly shaped by anticipated treatments or health outcomes, cognition, experience, and perceived thoughtfulness.[9] Preferences may contribute to effective or ineffective treatment and impact treatment outcomes. Preferences and utilisation of health services are associated with the availability and accessibility of health facilities and the effectiveness and efficiency of the services provided. Parents play a crucial role in determining the child's choices of care, which are related to personal characteristics, accessibility to health facilities, health system conditions and the quality of services. The need for care determines healthcare utilisation, whether people know they need care, whether they want to obtain it, and whether care can be accessed. Individual beliefs and attitudes influence an individual's healthcare-seeking behaviour.[10] Healthcare-seeking behaviour includes the timing and types of healthcare service utilisation, which may affect population health outcomes.[11]

Although there is a tidy amount of published literature on children's emergency room admissions in Nigeria, [12–16] little is known about the profile of children attending children's emergency rooms in our setting. The study aimed to describe the profile of children patronising emergency services in a tertiary health institution in a semi-urban setting in Nigeria. Hopefully, the study will assist with child healthcare planning and management in Nigeria and provide information on how policymakers can implement transitive and people-oriented health policies.

Methods

This cross-sectional study was conducted at the Children's Emergency Room (CHER) of the Olabisi Onabanjo University Teaching Hospital, Sagamu, which is a tertiary facility in Sagamu, Ogun State, southwest Nigeria, between 01 August and 30 October 2019. The CHER is a twelve-bed unit. The hospital is a referral centre for health facilities in the contiguous parts of the neighbouring Lagos, Ondo and Edo States. The CHER renders 24-hour emergency paediatric healthcare services to children as the first port of call for emergency cases. The non-emergency cases are seen at the general and specialist children outpatient clinics, which are open between 8:00am and 4:00pm on Mondays to Fridays except during public holidays.

Study population

All children and adolescents who presented to the children's emergency room whose parents/caregivers consented to the study from 1 August 2019 to 30 October 2019 were recruited.

Inclusion and exclusion criteria: All caregivers of children and adolescents who presented to CHER and consented to participate in the study, were recruited. Those who presented to the general and specialist children outpatient clinics were excluded.

Study design

This was a descriptive, cross-sectional survey of parents/caregivers of children and adolescents attending CHER.

Sample size determination

The Fischer's formula [17] was used to determine the sample size: $n = (z^2pq)/d^2]$ where,

n = minimum sample size, z = standard normal deviate set at 1.645, corresponding to the 90% confidence interval, p = 38.1% (0.381) proportion of respondents with the perception of severe illness obtained from a study conducted by Ogunlesi *et al.* [18] to determine health-care-seeking behaviour for childhood illnesses at CHER of OOUTH, q = 1 - p (1 - 0.381) = 0.619, d = degree of accuracy desired = 0.1. Substituting these figures into the formula, the calculated sample size was 65, an additional 15% of the calculated sample size adjusting for non-response (10 subjects) added to bring the calculated minimum study sample size to 75.

Subject selection

About five to ten children and their parents/caregivers attended the children's emergency room each day. The studied sample size was seventy-five caregiver-child pairs. Therefore, all eligible caregiver-child pairs were conveniently recruited, except those who did not give consent.

Research tool (Questionnaire)

Information was obtained from consenting respondents using an unambiguous, pretested, semi-structured interviewer-administered questionnaire. The questionnaire was administered to the accompanying parent/caregiver. Three respondents were used for the pre-test of the study questionnaire, and these respondents were subsequently excluded from the actual study. All data were kept anonymous throughout the study. The questionnaire had three sections: a) the sociodemographic characteristics, including the biodata of the child and parent/s, their educational attainments, position of the child in the family, b) history and physical findings, including the main complaint(s) with duration, past CHER visits, type with venue of care before presentation at CHER, duration of illness before presentation at CHER, and physical signs at presentation, c) patient's outcomes: discharged home from CHER, transferred to the medical ward for further care, discharged against medical advice, or died, for a patient who died (dead on arrival, died within 24hours of admission, died between 24 - 48hours of admission, died between 48 - 72hours of admission, and died after 72hours of admission).

Ethical approval

The Department of Paediatrics, with the Research Ethics Committee of Olabisi Onabanjo University Teaching Hospital Sagamu, granted approval for the study. Written informed consent was obtained from each parent/caregiver prior to their selection for the study and subsequent administration of the protocol.

Data analysis

Data obtained was recorded and analysed using the Statistical Package for Social Sciences (SPSS) version 22.0 (IBM Corp. Armonk, NY, USA). Descriptive statistics were presented as frequency, charts and percentages for categorical variables. Mean and standard

deviation (SD) were derived for continuous variables with normal distribution, while the median and interquartile ranges were used for those without normal distribution. The level of statistical significance was set at $p < 0.05$.

Results

Sociodemographic characteristics of study subjects

Table I shows the sociodemographic characteristics of the respondents. A total of 75 caregiver-child pairs were surveyed. Most caregivers were parents (67/75; 89.3%), with a mean age of 39.76 (±9.21) years and 33.47 (±8.11) years for fathers and mothers, respectively.

Table I: Table 1: Socio-demographics of children and their caregivers

Variables		*Frequency*	*Percentages*
Age group (years)	0-5	49	65.4
	>5-10	13	17.3
	>10	13	17.3
Sex	Male	52	69.3
	Female	32	30.7
Caregiver's relationship	Parent	67	89.3
	Grandparent	6	5.0
	Aunt	2	2.7
Source of referral	Self-referral	51	68.0
	Private Hospital	11	14.7
	PHC	7	9.3
	General Hospital	5	6.7
	NHIS Clinic	1	1.3
Father's education	None	4	5.3
	Primary	2	2.7
	Secondary	40	53.3
	Tertiary	29	38.7
Mother's education	None	4	5.3
	Primary	13	17.3
	Secondary	32	42.7
	Tertiary	26	34.7

PHC – Primary Health Centre; NHIS – National Health Insurance Scheme

The median age of the children was 24.00 (Inter Quartile Range 0.03 – 168.00) months. About two-thirds (65.4%) of the children were aged five years and below, with a male preponderance (69.3%). The highest parental educational level was secondary school education: 53.3% and 42.7% for fathers and mothers, respectively. The vast majority of the children arrived by self-referral (68%).

Characteristics of Presenting Complaints

The most common presenting complaints were fever (72.0%), cough (30.7%), vomiting (28.0%), breathing difficulties (21.3%), and diarrhoea (16.0%). Other presentations include delayed milestones, body aches, generalized weakness, catarrh, loss of consciousness, poor cry at birth, and poor feeding. The median duration of illness

prior to presentation at the children's emergency room was 4.00 (±29.00) days.

Pre-Hospital care

About half of the children received medications or other remedies at home before presentation at the CHER. The most commonly used pre-hospital care medication included paracetamol (21.3%), amoxicillin (8.0%), and artemisinin combination therapy (6.7%). Two of the twelve children with diarrhoea took Oral Rehydration Solution (ORS) at home before presentation at CHER. Other medications comprised ampiclox, artesunate injection, menthol balms, cefuroxime, cephalexin, chloramphenicol, cocodamol®, hydrocortisone, intravenous fluids, loratidine, maxolone®, maxiquine®, palm oil, piriton, septrin®, and ventolin® inhaler. The subjects had visited other places before coming to OOUTH, as shown in Table III.

Pattern of prior visit to CHER

Fifty-two of the children (69.3%) have never visited the CHER. Table IV shows the summary of prior visits to the CHER among twenty-three children (30.7%) of the subjects with such records. About half of the children visited the emergency room once before the study period (52.2%). Most of those with a history of prior visits presented after five days of the onset of the present illness with a fewer number, while subjects with a history of prior visits presenting between 2 – 3 days of present illness were less frequent. The proportion of subjects without a history of prior visits was higher than those with a history of prior visits, irrespective of the duration of the present illness prior to the OOUTH presentation category. The difference in these observations were not statistically significant (p = 0.233).

Table II: Characteristics of presenting complaints among children accessing care

Variables		*Frequency*	*Percentages*
Symptoms (n = 75)	Fever	54	72.0
	Cough	23	30.7
	Vomiting	21	28.0
	Breathing difficulties	16	21.3
	Convulsion	7	9.3
	Abdominal pain	7	9.3
	Skin rash	5	6.7
	Pallor	5	6.7
	Body swelling	4	5.3
	Headache	4	5.3
	Others	29	38.7

Pattern of the CHER visits (Table V)

Presentation time was 12:00 – 17:59 hours for more than half of the children. The median length of stay in the children's emergency room was 3.0±6.87 days. The majority of the children stayed more than two days on admission at the CHER. All the children received at the CHER were admitted there. In terms of outcome of the CHER management, most cases were transferred to the paediatric medical ward (82.7%) while 16.0% and 1.3% were discharged home or died respectively.

Resuscitation measures used in CHER

Table VI shows that about one-quarter of the children who visited the CHER received intranasal oxygen therapy. One of five children who visited the CHER (20.0%) also received immediate blood transfusion.

Table III: Pattern of care received before presentation at OOUTH

Variable		*Frequency*	*Percentage*
Home remedy use	Yes	38	50.7
	No	37	49.3
Types of home remedy	Paracetamol	16	21.3
	Antibiotics	8	10.7
	ACT	5	6.7
	Cough syrup	4	5.3
	Bonababe®	4	5.3
	Ibuprofen	3	4.0
	Vitamin C syrup	2	2.7
	ORS	2	2.7
	Herbal mixtures	2	2.7
	Others	18	24.0
Other places previously visited for care	Pharmacy Shops	11	45.6
	PHC	7	29.2
	Private Hospital	4	16.6
	School Clinics	1	4.2
	Herbal homes	1	4.2

ACT- Artemisinin-based Combination Therapy; PHC – Primary Health Centre; ORS – Oral Rehydration Solution

Table IV: Pattern of prior visits to Children's Emergency Room

Characteristics		*History of a prior visit*	*No history of a previous visit*	*p-value*
Duration of present illness before presentation at OOUTH (days)	1	5 (33.3)	10 (66.7)	0.233
	2 – 3	3 (16.7)	15 (83.3)	
	4 – 5	5 (25.0)	15 (75.0)	
	>5	10 (45.5)	12 (54.5)	
		23 (30.7)	52 (69.3)	
Total Number of prior visits to OOUTH	1	12 (52.2)		
	2	6 (26.1)		
	3	4 (17.4)		
	4	1 (4.3)		
		23		
Total				

Numbers in parenthesis are percentages of the total in each category

Table V: Pattern of visits to the Children's Emergency Room

		Frequency	*Percentages*
Time of presentation at Children's Emergency Room (hours)	0:00 – 5:59	4	5.3
	6:00 – 11:59	18	24.0
	12:00 – 17:59	41	54.7
	18:00 – 23:59	12	16.0
Length of stay in Children's emergency room (days)	≤1	16	21.3
	>1 – 2	11	14.7
	>2 - 3	22	29.3
	>3 - 4	14	18.7
	>4	12	16.0
Outcome of Children's Emergency Room visits	Home Discharge	12	16.0
	Transferred to General ward	62	82.7
	Died	1	1.3

Table VI: Resuscitation measures on arrival at the Children's Emergency Room

	Frequency	**Percentages**
Oxygen Therapy	19	25.3
Blood Transfusion	15	20.0
Anti-Shock Therapy	3	4.0
Nebulisation	2	2.7
No resuscitative measures	36	48.0

Discussion

In this study, children aged five years and below constituted the majority of the age group patronising the CHER. The child's age has been identified as one of the predictors of children's health service utilisation. [19, 20] Under-five children are a vulnerable group in childhood as shown by morbidity and mortality records of Nigeria; they are more likely to present with emergency illnesses. [21] Similar findings of under-fives as predominant patrons of children emergency services were reported by previous authors in Nigeria [12, 13] and elsewhere. [22]

In the present study, more male children were seen in the CHER. The explanation for male predominance observed in this study and others may be attributed to gender-related health-seeking behaviour as well as cultural attitudes of our population that encouraged males to have better care compared to females. [23] Similar observations of male preponderance among children who visit children's emergency rooms have been reported by Lockwood *et al.* [1] in an urban community hospital in Santiago, Dominican Republic and Njoku *et al.* [12] in Southeast Nigeria.

The present study revealed that most caregivers of children accessing our children's emergency room are the parents of the child. This corroborated the finding of a previous study by

Lockwood *et al.* [1] in an urban community hospital in Santiago, Dominican Republic. In addition, the majority of the fathers and mothers of children accessing the CHER in Sagamu had a secondary level of education. This is also in keeping with the finding of Lockwood *et al.* [1]

The current study observed that about two-thirds of the children who visited the CHER arrived on self-referral. This finding is an aberration because our setting is a tertiary health facility. There are three levels of health care in the Nigerian Health Systems – primary, secondary and tertiary health care levels. [24] Health problems that cannot be managed within the primary health facilities are supposed to be referred to the secondary level, and thereafter, the tertiary facilities. These various levels interact through a referral system. [24] Previous studies have documented that only a few individuals knew that primary healthcare centres are supposed to be the first point of call when ill and that referral hospitals have the right to reject patients without a referral. [24] Still, rejection is not feasible when the patient presents in an emergency condition without a referral. The finding in the present study is comparable to the study by Enyuma *et al.*· [13] among 2,023 seen at the CHER of the University of Calabar Teaching Hospital, who reported a self-referral rate of 79.2%.

From the present study, the more frequent complaints for which the caregivers sought treatment for their children included fever, cough, vomiting, breathing problems and diarrhoea. This finding corroborates that of Ndu *et al*. [25] who found that fever was the most common complaint in children presenting to the CHER of the Enugu State University Teaching Hospital (ESUTH) in Enugu, southeast Nigeria. Fever was also the most frequent presenting complaint in a survey of children in the emergency room department at Hospital Especializado Juan XXIII in Santiago, Dominican Republic. [1] However, there was little difference in the five most common complaints between studies. The five most common complaints reported by Lockwood *et al*. [1] were fever, vomiting, diarrhoea, breathing problems, and sore throat. Although it is challenging to make an appropriate reason for the difference in the components of the top five complaints between the two studies, considering the variation in sample size and environment of studies, the current study surveyed 75 children in Nigeria, which is ranked the fifth environmentally polluted nation, [26] whereas Lockwood *et al.* [1] recruited 117 children in a Caribbean Dominican Republic which was ranked 32nd environmentally polluted nation. [26] This lays the template for higher incidence of respiratory tract infectious diseases as higher exposure to air pollution have been reported to be associated with respiratory tract infections. [27]

Pre-hospital care by the parents of children who visit the emergency room when their children are ill includes seeking health help from available sources. The current study revealed that more than half of the caregivers sought health help from available sources prior to presentation at the CHER. One in five (21.3%) of the mothers administered paracetamol to their sick children. The finding in the current study that paracetamol was the most commonly used home remedy for sick children further corroborated the earlier report by Ogunlesi *et al.* [18] in a cross-sectional survey of mothers who brought their children to the same centre.

Interestingly, only two of the twelve children (16.7%) with diarrhoea took ORS medications at home before presentation at the CHER. This low home usage of ORS reinforces the importance of creating awareness of diarrhoea home treatment in our setting. On the contrary, Ogunlesi *et al.* [27] had reported that 51.4% of mothers of children aged 2 to 59 months with diarrhoea studied at the State Hospital, Ijaye, Abeokuta and State Hospital, Ijebu-Ode, actually administered ORS

at home. This observed disparity between the studies may be due to variations in the health awareness of ORS use in the treatment of diarrhoea, which cannot be compared across both studies. The rate of reported ORS usage in the present study was higher than the documented rate of 4.9% by Ogunlesi *et al.* [18] four years ago in a cross-sectional survey of mothers who brought their children to the CHER of OOUTH. It is not obvious to the authors how much health awareness of ORS use in treating diarrhoea programs has been organised within the community in the interval between the two studies.

Conclusion

The present study has revealed that children who visited the CHER presented with a wide range of complaints, with fever, cough, vomiting, breathing problems, and diarrhoea being the five most frequent complaints. Pre-hospital ORS use appears to have improved compared to a previous report from the same centre but generally remains low. There is a need to increase awareness of home care with ORS for children with diarrhoea.

Acknowledgement: The authors acknowledge all healthcare providers in the Children's Emergency Room of the Department of Paediatrics and the Health Information Unit, Olabisi Onabanjo University Teaching Hospital, Sagamu, for their support with data collation.
Authors' Contributions: All authors conceived and designed the study. ASO analysed and interpreted the data and wrote the initial draft of the manuscript. All authors revised the draft for sound intellectual content and approved the final version of the manuscript.
Conflicts of Interest: None.
Funding: Self-funded.
Publication History: Submitted 15 February 2024**; Accepted** 27 April 2024**.**

References

1. Lockwood A, Dandekar A, Arias M, Ovalles M, Bantley S. Factors Associated with Pediatric Emergency Room Utilization in an Urban Community Hospital in Santiago, Dominican Republic. Ann Glob Health 2019;85:77. https://doi.org/10.5334/aogh.2327

2. Prentice JC, Pizer SD. Delayed access to health care and mortality. Health Serv Res 2007;42:644–662. https://doi.org/10.1111/j.1475-6773.2006.00626.x

3. Chakraborty N, Islam MA, Chowdhury RI, Bari WW, Akhter HH. Determinants of the use of maternal health services in rural Bangladesh. Health Prom Int 2003;18:327–337. https://doi.org/10.1093/heapro/dag414

4. Manzoor I, Hashmi NR, Mukhtar F. Determinants and pattern of health care services utilisation in postgraduate students. J Ayub Med Coll Abbottabad 2009;21:100-105.

5. Onah HE, Ikeako LC, Iloabachie GC. Factors associated with the use of maternity services in Enugu, southeastern Nigeria. Soc Sci Med 2006;63:1870-1878. https://doi.org/10.1016/j.socscimed.2006.04.019

6. Zwi AB. Private health care in developing countries. Br Med J 2001;323:464–466. https://doi.org/10.1136/bmj.323.7311.463

7. World Health Organization. WHO country cooperation strategy at a glance: Nigeria. World Health Organization 2018. https://iris.who.int/handle/10665/136785

8. Nnebue CC, Onwasigwe CN, Ibeh CC, Adogu POU. Effectiveness of data collection and information transmission process for disease notification in Anambra State,

Nigeria. Niger J Clin Pract 2013;16:483–489. https://doi.org/10.4103/1119-3077.116894

9. Zaki A, Guirguis W. Measuring inequalities in health in Egypt. Eastern Mediterr Health J 2001;7:287–290. https://doi.org/10.26719/2001.7.1-2.287

10. Jaja PT. Health-seeking behaviour of Port Harcourt city residents: A comparison between the upper and lower socioeconomic classes. J Public Health Afr 2013;4:44–48. https://doi.org/10.4081/jphia.2013.e9

11. Poortaghi S, Raiesifar A, Bozorgzad P, Golzari SE, Parvizy S, Rafii F. Evolutionary concept analysis of health seeking behaviour in nursing: a systematic review. BMC Health Serv Res. 2015;15:1–8. https://doi.org/10.1186/s12913-015-1181-9

12. Njoku PU, Iloh GU, Dienye PO, Korie FC, Ahaiwe VC. Pattern of paediatric conditions seen in the children emergency room of an urban hospital in Southeastern Nigeria. GSC Biol Pharm Sci 2020;13:174–180. https://doi.org/10.30574/gscbps.2020.13.3.0246

13. Enyuma COA, Anah MU, Pousson A, Olorunfemi G, Ibisomi L, Abang BE, *et al*. Patterns of paediatric emergency admissions and predictors of prolonged hospital stay at the Children Emergency Room, University of Calabar Teaching Hospital, Calabar, Nigeria. Afri Health Sci 2019;19:1910-1923. https://dx.doi.org/10.4314/ahs.v19i2.14

14. Agbesanwa TA, Babatola AO, Fatunla OA, Ibrahim A, Aina FO, Ogundare EO, *et al*. Pattern of admissions and outcome in the children emergency department of a tertiary health institution in Southwestern Nigeria: A four-year review. Afr J Emerg Med 2023;13:45–51. https://doi.org/10.1016/j.afjem.2023.02.001

15. Onubogu, UC, West, BA. Pattern and Outcome of Diseases among Children Presenting in the Emergency Room of a Tertiary Hospital in Port Harcourt, Nigeria. Open J Pediatr 2022;12:538-553. https://doi.org/10.4236/ojped.2022.123057

16. Abhulimhen-Iyoha BI, Okolo AA. Morbidity and mortality of childhood illnesses at the emergency paediatric unit of the University of Benin Teaching Hospital, Benin City. Niger J Paediatr 2012;39:71–74. http://dx.doi.org/10.4314/njp.v39i2.7

17. Araoye MO. Research Methodology with Statistics for Health and Social Science. 1st Ed. Ilorin: Nathadex (Publ); 2003.

18. Ogunlesi T, Runsewe-Abiodun I, Olanrewaju D. Health-care-seeking behaviour for childhood illnesses in a resource-poor setting. J Paediatr Child Health 2010:46:238–242. https://doi.org/10.1111/j.1440-1754.2009.01677.x

19. Thind A. Diarrhea in the Dominican Republic: Determinants of the utilisation of children's health services. J Trop Pediatr 2003;49:93–98. https://doi.org/10.1093/tropej/49.2.93

20. Thind A, Andersen R. Respiratory illness in the Dominican Republic: What are the predictors for health services utilisation of young children? Soc Sci Med 2003;56:1173–1182. https://doi.org/10.1016/s0277-9536(02)00116-8

21. Dasgupta RR, Mao W, Ogbuoji O. Addressing child health inequity through case management of under-five malaria in Nigeria: an extended cost-effectiveness analysis. Malar J 2022;21:1–15. https://doi.org/10.1186/s12936-022-04113-w

22. Kwak YH, Kim DK, Jang HY. Utilisation of Emergency Department by Children in Korea. J Korean Med Sci 2012;27:1222–1228. http://dx.doi.org/10.3346/jkms.2012.27.10.1222

23. Wammanda RD, Onalo R, Adama SJ. Pattern of Neurological Disorder Presenting at a Paediatric Neurology Clinic in Nigeria. Ann Afr Med 2007;6:73–75. https://doi.org/10.4103/1596-3519.55712

24. Dunmade AD, Afolabi OA, Eletta AP. Challenges of Otolaryngologic Referral in a Nigerian Tertiary Hospital: An Audit. East Cent Afr J Surg 2010; 15: 87–92.

25. Ndu IK, Osuorah CD, Amadi OF, Ekwochi U, Ekeh BC, Nduagubam OC, *et al*. Evaluation of wait time in the children's emergency and outpatient units of a tertiary hospital in Southeast Nigeria. J Emerg Trauma Shock 2020;13:78–83. https://doi.org/10.4103/JETS.JETS_139_18.

26. Choo ELW, Janhavi A, Koo JR, Yim SHL, Dickens BL, Lim JT. Association between ambient air pollutants and upper respiratory tract infection and pneumonia disease burden in Thailand from 2000 to 2022: a high-frequency ecological analysis. BMC Infect Dis 2023;23:1–13. https://doi.org/10.1186/s12879-023-08185-0

27. Ogunlesi TA, Olowonyo MT, Runsewe-Abiodun TI. Pre-hospital Use of Oral Rehydration Therapy and Zinc and the Risk of Dehydration in Childhood Diarrhoea. Br J Med Med Res 2017;21:1–8. https://doi.org/10.9734/BJMMR/2017/33648