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(RESEARCH ARTICLE)



Pattern of paediatric conditions seen in the children emergency room of an urban hospital in South-Eastern Nigeria

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Abstract

Background: Children Emergency Room (CHER) is a vital health care services point in many hospitals and can contribute beneficially in the evaluation of many hospitals including tertiary ones. It enables many paediatric cases to be managed in the hospitals without being admitted into the paediatric wards with good outcomes.

Material and Methods: This was a retrospective study involving review of records of all the children seen in the CHER between January 2012 and June 2012. The objectives were to look at the pattern and outcome of paediatric conditions in CHER with the aim of providing data for further evaluation and improvement. A proforma developed by the authors was used in collecting the relevant information from the patients' records. The data collected was simply analyzed.

Results: The total of 486 paediatric patients who satisfied the inclusion and exclusion criteria were seen in the CHER. Those less than one year of age constituted 58.6% of the patients. Majority (56.8%) of the patients were males. Also 52.9% of the patients lived in the rural areas. There was preponderance (96.7%) of medical conditions. Majority of both the males (78.6%) and females (72.4%) were discharged. Only 6.17% of the patients died while 15.6% were admitted into the wards.

Conclusion: There was a preponderance of varieties of medical conditions in our environment with infections constituting the majority with resultant relative high mortality. Thus improvement in the uptake of the different childhood survival strategies including immunization and breast feeding will help in minimizing these problems.

Keywords: Childhood conditions; morbidity; mortality; outcome.

1. Introduction

The pattern of paediatric conditions seen in the children emergency room (CHER) together with their outcomes when monitored periodically, could provide information and data that give insight into the quality of existing services and help in stimulating provisions of better and effective quality healthcare services [1,2]. The CHER is a key healthcare services area in many Nigerian tertiary hospitals [3]. It contributes in the evaluation of many hospitals. It is used to assess and treat children with a variety of emergency conditions including medical, trauma and non-trauma surgical conditions [4]. This enables many children to be managed in CHER rather than being admitted to the paediatric wards [4]. In Gwagwalada Nigeria, it was observed that infections were the leading causes of admissions in the emergency

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paediatric unit. Also the under 5 years old children were observed to be responsible for 80.1% of all admissions in that unit. Majority of deaths among CHER admissions occur within the first 24 hours of admissions and are associated with clinical conditions such as severe malaria, pneumonia and acute gastroenteritis [5]. Injuries including road traffic accidents, falls, burns, immersions are also involved in the causes of morbidity and mortality in children [3-6]. Children are at higher risk for injuries than adults and are more likely to be seriously affected by the injuries they suffer [7]. The findings of this study will provide more data and information necessary for improvement in the health care services of hospitals in our environment thereby helping to reduce the mortality and morbidity in the CHER. It is against this background that the authors set out to study the pattern of paediatric conditions in the CHER and to stimulate governments at all levels to pay attention to the health needs of children and improve on the existing childhood preventive strategies and integrated management of childhood diseases.

2. Material and methods

This study was carried out in the CHER of the Federal Medical Centre Umuahia, Nigeria. Umuahia which is the capital city of Abia State situated in the southeast geo-political zone of Nigeria. The major tribe in the city is Ibo, although there are other tribes like Yoruba, Hausa/Fulani, Efik/Ibibio and Tiv. Umuahia has many schools, few hotels, fast food restaurants and industries. It has a good network of roads and a railway station. This was a retrospective study involving review of records of all the children seen in the CHER between January 2012 and June 2012. The study population consisted only of all the paediatric patients who attended the CHER within the study period. All those who were brought in dead, refused treatment at presentation and those that were not paediatric patients were excluded from this study. Those living in the Umuahia metropolitan city were regarded as living in the urban area while those living outside the city were regarded as living in the rural areas. A proforma developed by the authors was used in collecting the relevant information from the patients' records. The data collected included their bio-data, type of paediatric condition and outcome of treatment in the CHER. The data collected was simply analyzed in percentages and frequencies. The approval of the hospital ethics committee was obtained.

3. Results

Table 1 Characteristics of the paediatric patients admitted in children emergency room

	Frequency=486	Percentage (%)
Sex		
Male	276	56.8
Female	210	43.2
Age (in years)		
≤ 1	285	58.6
2-5	99	20.4
6-9	36	7.4
≥10	48	9.9
Unspecified	18	3.7
Place of Residence		
Urban	229	47.1
Rural	257	52.9

Table 1 shows some of the characteristics of the admitted paediatric patients in the CHER. The total number of four hundred and eighty six paediatric patients who satisfied the inclusion and exclusion criteria were studied. The ages of the patients ranged from 1 month to 16 years. Those less than 1 year of age constituted 58.6% of the patients seen in CHER. Majority (56.8%) of the patients were males. Also majority (52.9%) of the patients lived in the rural areas.

Table 2 Classification of paediatric conditions.

Class	Frequency	Percentage
Trauma	12	2.5%
Medical Condition	470	96.7%
Non-trauma surgical conditions	4	0.8%
Total	486	100%

Table 2 shows preponderance (96.2%) of medical conditions in CHER with only 2.5% of the paediatric conditions being trauma.

Table 3 Common disease condition seen in CHER

Disease	Frequency n=486	Percentage (%)
Malaria	128	26.3
Acute Gastroenteritis (AGE)	113	23.3
Pneumonia	65	13.4
Sepsis	36	7.4
Upper Respiratory Tract Infection (URTI)	11	2.3
Meningitis	11	2.2
Trauma including road traffic accidents	9	1.9
Febrile Convulsion	9	1.9
Acute Asthma	8	1.6
Bronchiolitis	8	1.6
Gastritis	8	1.6
Tonsillitis	7	1.4
Seizure Disorders	6	1.2
Anaemia	6	1.2
Vascular occlusive conditions	6	1.2
Intestinal Obstruction	4	0.8
Dysentery	4	0.8
Pulmonary Tuberculosis (PTB)	4	0.8
Retroviral Disease (RVD)	3	0.6
Pyrexia of Unknown Origin (PUO)	3	0.6
Protein Energy Malnutrition (PEM)	3	0.6
Congestive Cardiac Failure (CCF)	3	0.6
Measles	2	0.4
Burns	3	0.6
Chemical poisoning	3	0.6
Upper gastrointestinal bleeding	2	0.4
Tetanus	2	0.4
Others	19	3.9

Table 3 illustrates the disease condition seen in CHER with infections (malaria, AGE, pneumonia and sepsis) consisting 70.4%. Malaria and AGE formed 49.6% of the infections.

Table 4 Distribution of patients by outcome and sex.

Outcome	Male N=276 (%)	Female N=210(%)	Total
Discharged	217 (78.6)	152 (72.4)	369 (75.9)
Admitted	38 (13.8)	38 (18.1)	76 (15.6)
Died	16 (5.8)	14 (6.7)	30 (6.17)
Discharged Against Medical Advice (DAMA)	3 (1.1)	3 (1.4)	6 (1.23)
Referred	2 (0.7)	3 (1.4)	5 (1.03)
Total	276 (56.8)	210 (43.2)	286 (100)

Table 4 shows the distribution of patients by outcome and sex. Majority (78.6%) of the male patients were discharged. Also majority (72.4%) of the female patients were discharged.

Table 5 Distribution of patients by outcome and place of residence.

Outcome	Urban N=229 (%)	Rural N=257 (%)
Discharged	190 (82.9)	179 (69.6)
Admitted	24 (10.4)	52 (20.2)
Died	12 (5.2)	18 (7.0)
DAMA	2 (0.9)	4 (1.6)
Referred	1 (0.4)	4 (1.6)

Table 5 shows the distribution of patients by outcome and place of residence. Majority of both the urban (82.9%) and rural (69.9%) were discharged while (5.2%) urban and (7.0%) rural patients died. More rural patients (1.6%) were discharged against medical advice (DAMA) than the urban patients (0.9%).

Table 6 Distribution of patients by disease condition and outcome.

Disease	Admitted n=76 (%)	Discharged n=369 (%)	Died n=30 (%)	DAMA n=6 (%)	Referred n=5 (%)
Malaria	11 (8.6)	112 (87.5)	4 (3.1)	0 (0.0)	1 (0.8)
AGE	9 (8.0)	100 (88.5)	4 (3.5)	0 (0.0)	0 (0.0)
Pneumonia	11 (16.9)	48 (73.8)	4 (6.2)	0 (0.0)	2 (3.1)
Sepsis	16 (44.4)	13 (36.1)	5 (13.9)	1 (2.8)	1 (2.8)
URTI	0 (0.0)	10 (90.9)	0 (0.0)	1 (9.1)	0 (0.0)
Meningitis	5 (45.4)	2 (18.2)	3 (27.3)	1 (9.1)	0 (0.0)
Trauma	3 (33.3)	6 (66.7)	0 (0.0)	0 (0.0)	0 (0.0)
Febrile Convulsion	0 (0.0)	9 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Acute Asthma	1 (12.5)	7 (87.5)	0 (0.0)	0 (0.0)	0 (0.0)
Bronchiolitis	3 (42.9)	4 (57.1)	0 (0.0)	0 (0.0)	0 (0.0)
Tonsillitis	1 (14.3)	5 (71.4)	1 (14.3)	0 (0.0)	0 (0.0)
Anaemia	1 (16.7)	3 (50.0)	1 (16.7)	1 (16.7)	0 (0.0)
Gastritis	0 (0.0)	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
VOC	1 (16.7)	5 (83.3)	0 (0.0)	0 (0.0)	0 (0.0)
Seizure Disorders	0 (0.0)	5 (83.3)	1 (16.7)	0 (0.0)	0 (0.0)
PTB	1 (25.0)	1 (25.0)	1 (25.0)	1 (25.0)	0 (0.0)
Dysentery	0 (0.0)	4 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Burns	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)
CCF	2 (66.7)	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)
Chemical poisoning	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Intestinal Obstruction	3 (75.0)	0 (0.0)	1 (25.0)	0 (0.0)	0 (0.0)
PEM	1 (33.0)	1 (33.3)	1 (33.3)	0 (0.0)	0 (0.0)
PUD	1 (33.0)	2 (66.7)	0 (0.0)	0 (0.0)	0 (0.0)
RVD	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Measles	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Upper GI Bleeding	0 (0.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Tetanus	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Others	2 (10.0)	13 (65.0)	3 (15.0)	1 (5.0)	1 (5.0)

Table 6 shows distribution of patients by disease conditions and outcome. Malaria, AGE, pneumonia and sepsis constituted the highest number of patients admitted (47) into the wards and discharged (273).

4. Discussion

This study was aimed at describing the pattern and outcome of paediatric conditions seen in CHER with the view of providing information that will help in better quality health care services provision. This study showed a preponderance of male patients (56.8%) in the CHER with a male to female ratio of 1.3:1. This is a reflection of the cultural and traditional value parents place on their male children in this environment in which they pay vital attention to their male children health conditions because of family inheritance resulting into more frequent visits to health institutions for care. This finding is in concordance with that established in a retrospective study in Nnewi Nigeria in which there were 1088 male patients and 845 female patients seen in the CHER with a male to female ratio of 1.3:1 [8]. Similarly, a retrospective study which reviewed the attendance register of all children seen at the emergency paediatric unit of a teaching hospital in Benin-City Nigeria found that 56.3% of those admitted were males with a male to female ratio of 1.3:1 [9]. Again, in Enugu Nigeria, a descriptive retrospective study conducted in the CHER revealed a male to female ratio of 1.3:1 [2]. Majority of the patients admitted in CHER were under 5-year patients and formed 79% of the patients in the CHER. This finding could be a reflection of poor development of immunity within the first five years of life. This finding is similar to that in a retrospective study in tertiary hospitals in Azare in the north eastern Nigeria in which 89.1% of the CHER patients were less than 5 years of age [10]. Also in Nnewi Nigeria, the under 5-year patients constituted the majority (78.8%) of the children admitted into the CHER [8]. Similarly, in Asaba Nigeria, a study on morbidity and mortality pattern of childhood illnesses in CHER revealed that more than 70% of the patients were under 5-year of age [11].

Majority of the patients (52.9%) seen in the CHER were from rural areas. This finding could be a reflection of the poor state of the primary health centres in the rural areas prompting parents to bring their children to this hospital which is better equipped and functional with the different specialties available. The commonest paediatric conditions seen in the CHER were medical conditions and this was followed by trauma conditions. This finding could be a reflection of the poor public health interventions, poor socio-economic factors including financial constraints on the part of the parents/families and dysfunctional families. Also the high vulnerability of this class of people to different medical ailments and poor practice of childhood survival strategies that prevent common childhood morbidities and mortalities could be contributory to this finding. Other authors have also observed paediatric medical conditions as being the commonest conditions in the CHER in their studies [1,2,8,9,11]. Malaria (26.3%) was the most common condition seen in CHER. This was followed closely by AGE which constituted 23.3%, pneumonia (13.4%) and sepsis (7.4%) respectively. This finding could be attributed to poor utilization of preventive measures of malaria like mosquito nets, poor personal hygiene, unhygienic environments, ignorance, poverty and poor cultural and traditional practices. This finding is in tandem with that found in Asaba Nigeria in which the common indications for admissions in the CHER were malaria (30.3%), diarrhea (20.4%), RTI (19.0%) and sepsis [11]. Similarly, in a related study in Azare Nigeria in which the patients were retrospectively recruited using the ward register and hospital medical records it was established that majority (44.8%) of the patients had malaria [10]. Also in Enugu, Nigeria, the descriptive retrospective study conducted in the CHER also showed that malaria, AGE, pneumonia and sepsis were the most frequent reasons for admission into the CHER [2]. Again, in Gwagwalada Nigeria, severe anaemia from severe malaria, pneumonia and gastroenteritis were found to be the leading causes of admission in CHER [5]. Majority of the children seen in the CHER were discharged home following recovery. This finding may be attributed to the better commitment of the medical and paramedical staff of the CHER and availability of specialists and CHER equipments in the hospital. These findings are in tandem with that documented in Asaba Nigeria in which majority of the cases were discharged [11]. This finding is in contrast to that found in Enugu Nigeria in which 43.5% of the CHER admissions were discharged home and Benin City where only 30.4% were discharged [2,9]. Few (15.64%) of the patients seen in the CHER were admitted into the paediatric wards. This could be attributed to the availability of experienced paediatricians and nurses at CHER that made sure that only patients that merit ward admissions were transferred to the wards. This finding is not in conformity with the 41.7% of patients transferred to the wards in Enugu Nigeria and could be attributed to the study methodology [2]. There was 6.17% deaths in the CHER during the study comprising 5.8% of the male cases and 6.7% of the female cases. This relatively high mortality could be attributed to late presentation due to financial constraints, ignorance, traditional and cultural practices that favour herbal treatment. This finding is similar to that found in Asaba Nigeria in which the mortality rate of 5.8% was recorded [11]. However, this finding is not in agreement with the 12.6% mortality found in Nnewi Nigeria which could be attributed to the longer duration of the study with large population [8]. Those that their caregivers or parents signed against medical advice and were discharged against medical advice formed 1.23% of the patients seen in CHER. This finding could be a reflection of financial constraints, delay in clinical improvement and lack of health insurance. This finding is in tandem with the 0.9% rate of DAMA found in the emergency paediatric unit of a hospital in Azare northeastern Nigeria [10]. There is an urgent need for the evaluation of factors including family related ones like family dysfunction and financial problems responsible for DAMA with the view of preventing them [12]. DAMA is one of the challenges in clinical practice and can lead to worsening of the disease condition and death especially in children since they cannot perceive the situation and take part in decision making [13]. Reducing the rate of DAMA by

making patients and their caregivers/parents more satisfied and improving the quality of services and providing health insurance coverage is vital in reducing mortality [14]. Only 1.03% of the patients were referred in this study. This could be attributed to the availability of most of the specialties in paediatrics in the hospital thereby drastically reducing the number of cases referred outside the department of paediatrics. The observation in this study is similar to the 1.0% referred rate documented in Nguru Nigeria [15]. This finding is in contrast to the 3.3% referral observed in Azare northeastern Nigeria and 3.0% found in Enugu Nigeria which could be attributed to their study methodologies [2, 10]. Majority of both the urban and rural patients were discharged from the CHER. However, 10.4% of the urban patients and 20.2% of the rural patients were admitted into the paediatric wards from the CHER. This difference between the percentages of rural and urban patients discharged and admitted in this study could be attributed to the presence of the hospital in the urban area thereby making accessibility easier and improving knowledge of parents/caregivers of paediatric specialists in this hospital. However, there is paucity of similar results to compare this finding.

The higher mortality among the rural patients may be a reflection of ignorance on the part of their parents/caregivers and poor accessibility to health facilities resulting to late arrival to the hospital with resultant high mortalities. The higher childhood mortality among rural patients had been documented in Rwanda in a study on childhood mortality in sub-Saharan Africa which showed that children in urban areas were less likely to die than those in rural areas [16]. Rural dwelling has been associated with higher levels of poverty and lack of basic social amenities coupled with unhealthy cultural and traditional practices which pose increase risks to mortality [17]. This study showed that malaria, AGE, pneumonia and sepsis cases put together constituted the highest number of admissions into the wards during the study period. They also formed the highest number of cases discharged from CHER and those that died. This finding showed that infections are the major causes of mortalities and morbidities among children in our environment seen in the CHER. This finding could be attributed to poor implementation of the different childhood survival strategies including immunization and poor immunity in the under 5-year children. Many other studies had also demonstrated that infections are the most common causes of CHER admissions and mortalities in our environments [1,8-11].

5. Conclusion

The preponderance of infectious medical conditions in under 5-year age patients in CHER is an indication for the need to improve and review the childhood survival strategies, national health insurance scheme coverage and public health information and education in order to help reduce this trend. There is the urgent need for the development of malaria vaccine and wide use of mosquito nets since malaria constituted a large percentage of the childhood conditions in CHER. The presence of more deaths and discharges against medical advice among the rural paediatric patients call for improvement in the primary health care centres, more enlightenment campaigns on the bad traditional and cultural practices especially use of herbal medicines and the dangers associated with DAMA including deaths.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

There was no conflict of interest.

Statement of informed consent

Ethical approval was obtained from the hospital Health Research Ethics Committee.

References

- [1] Anyanwu OU, Ezeanosike OB, Ezeonu CT. Pattern and outcome of admissions at the children emergency room at the Federal Teaching Hospital Abakaliki. African Journal Medical and Health Sciences. 2014; 13(1): 6-10.
- [2] Ndu IK, Uleanya ND, Nwokoye IC, Edelu BO, Asinobi IN, Ekwochi U. et al. Pattern of morbidity and mortality at the children emergency unit of Enugu state teaching hospital, Parklane, Enugu. Journal of Experimental Research. 2016; 4(1): 48-54.

- [3] Okechukwu A.A, Nwalozie C. Morbidity and mortality pattern of admissions into the emergency paediatric unit of University of Abuja Teaching Hospital, Gwagwalada Nigerian Journal of Medicine.2011; 20(1): 109-13.
- [4] Levett J, Berry K, Wacogne I. Review of a paediatric emergency department observation unit. Emergency Medicine Journal. 2006; 23(8): 612-3.
- [5] Adebeye MA, Ojuawo A, Ernest S.K, Fadeyi A. Salisu OT. Mortality pattern within twenty-four of emergency paediatric admission in a resource-poor nation health facility. West African Journal of Medicine.2010; 29(4): 249-52.
- [6] Mandt MJ, Faries G. Emergencies and injuries. In: Hay WW, Levin MJ, Sondheimer JM, Daterding (ed). Current diagnosis and treatment: Paediatrics. 19th edition. McGraw Hill New York USA. 2009; 294-312.
- [7] Aehlert B. Mosby's comprehensive paediatric emergency care. 1st edition Elsevier Mosby Missouri USA. 2005; 17-24.
- [8] Ndukwu CI, Onah SK. Pattern and outcome of postneonatalpaediatric emergencies in Nnamdi Azikiwe University Teaching Hospital, Nnewi, South east Nigeria. Nigerian Journal of Clinical Practice. 2015; 18(3): 348-53.
- [9] Abhulimhen-Iyoha BI, Okolo AA. Morbidity and morality of childhood illness at the emergency paediatric unit of the university of Benin teaching hospital, Benin City. Nigerian Journal of Paediatrics. 2012; 39(2): 71-4.
- [10] Sa'ad YM; Hayatu A, Almustapha II, Orahachi YM, Hauwa MU. Morbidity and mortality of childhood illness at the emergency paediatric unit of a teaching hospital North Eastern Nigeria. Sahel Medical Journal. 2015; 18(1): 1-3
- [11] Ezeonwu BU, Chima OU, Oguonu T, Ikefuna AN, Nwafor I. Morbidity and mortality pattern of childhood illnesses seen at the children emergency unit of Federal Medical Centre Asaba, Nigeria. Annals of Medical and Health Science Research. 2014; 4(suppl 3): S239-44.
- [12] Fadare JO, Babatunde OA, Olanrewaju T, Busari O. Discharge against medical advice: experience from a rural Nigerian hospital. Annals of Nigerian Medicine. 2013; 7(2): 60-5.
- [13] Sarari BM, Zadeh ER, Siamian H, Yahghoobian M. Discharge against medical advice in the paediatric wards in Bo-ali Sina Hospital, Sari, Iran 2010. Aota Inform Med. 2013; 21(4): 253-6.
- [14] Ashrafi E, Nobakht S, Keykaleh MS, Kakemam E. Hosanpoor E, Sokhanvar M. Discharge against medical advice (DAMA): causes and predictors. Electron Physician. 2017; 9(6): 4563-70.
- [15] Umar IU, Mohammed LI, Gwarzo DG. Pattern and outcome of admissions at the emergency paediatric unit of Federal Medical Centre NguruYobe state Nigeria. Pyramid Journal of Medicine. 2018; 1: (1).
- [16] Kazembe L, Clarke A, Kandala NB. Childhood mortality in sub-Saharan Africa: cross-sectional insight into small scale geographical inequalities from census data. 2012; BMJ open; 2: e001421.
- [17] Babayara MNK, Addo B. Risk factors for child mortality in the Kassemma Nankana district of Northern Ghana: a cross-sectional study using population-based data. Scientifca Vol 2018, article ID 7692379, 7 pages 2018. <http://doi.org/10.1155/2018/7692379>