



Research Article

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Disease patterns at the sick child clinic of Moi teaching and referral hospital, Kenya

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Abstract

Background: Moi Teaching and Referral Hospital (MTRH) serves a large population across the western part of Kenya, and has a sick child clinic which receives children 14 years and below. The study analyzed all cases that presented in 2014. **Objective:** To find out conditions presenting in the sick child clinic in MTRH. **Methods:** A retrospective study encompassing quantitative studies was used. All children 14 years and below presenting at the Sick child clinic in MTRH. The necessary information was recorded from the patients' medical records seen in the hospital throughout 2014 using a structured questionnaire. The collected data was cleaned and analyzed using STATA version 11. **Results:** A total of 29,307 children were seen at the clinic in 2014 and of those, 54.2% were male and 45.8% were female. Children aged five and below formed 67.7%. On average, about 2400 patients were seen monthly. There was an increase in patients admitted in March (9.9%) and July (9.5%). Of the conditions presenting, 'All other conditions' (which included Febrile illness, Myalgia, Malnutrition) had the highest percentage at 41.1%. Other diseases of the respiratory system at 28.9% excluding pneumonia and tuberculosis. Among individual diseases, pneumonia was leading with 3.5% followed by diarrhea at 2.3%. Referrals formed about 14% of patients seen. About 20% were tested for HIV, of these only 1% were positive. **Conclusion:** Pneumonia was the single most prevalent disease followed by diarrhea.

Keywords: Community Based Education and Service, Pneumonia, Moi Teaching and Referral Hospital, Kenya.

INTRODUCTION

The United Nations Convention on the Rights of the Child describes a child as any human being below the age of 18 years [1]. The said group includes a particularly vulnerable cohort of children under the age of 5 years. These children are predisposed to effects of malnutrition and infection, the latter, supported by the fact that they have comparatively low immunity. Those above five years are prone to injuries due to their significant physical activity, poor judgement, inadequate care, as well as being victims of a number of social ills such as rape or molestation. Recognition of these and other child health needs has led to increased global awareness and interventions through the set up of a vast number of governmental and non-governmental organizations to zero-in on child health and in turn reduce both morbidity and mortality rates. Child morbidity and mortality is however still a major set back in the Sub-Saharan Africa. UNICEF rates the child mortality in Kenya at 74 per every 1000 children, with the major causes of death being upper respiratory tract infections (URTI), diarrhoea and malaria [2].

There are various pediatric wings in major public hospitals such as the Shoe for Africa wing at the Moi Teaching and Referral Hospital (MTRH), Obama pediatric wing in Jaramogi Oginga Odinga Teaching and Referral Hospital in Kisumu as well as pediatric wards in health facilities throughout the country. However, these pediatric facilities do not meet the needs of various patients being attended to and thus the need for more facilities. This research was based in the sick child clinic of MTRH that attends to patients aged 14 years and below. It is a department strategically situated near the main entrance of the hospital and functions as a twenty-four-hour service provider. The staff at the department include several pediatricians, medical officers, clinical officers, nurses and the latest involvement being a counselor who handles the HIV positive patients and their parents since PITC is a mandatory procedure for all patients seen in the department. On average, 100 patients are attended to daily within the clinic with about 20-30 admissions.

This study was done to find out the disease patterns presenting in the sick child clinic in MTRH, their demographics and what proportion was admitted.

Due to the lowered immunity, the young ones are vulnerable especially those under the age of 5 years can suffer from ailments. Some diseases are associated with distinguishable factors such as poverty, malnutrition, geographical location, culture, weather effects, genetical predetermination amongst many others.

Globally, the most common causes of death in children under the age of 5 years are pneumonia and diarrhoeal diseases accounting for approximately 40% of all child deaths. Each year, an estimated 2.5 billion cases of diarrhea occur among children of this critical age group. Most of these cases are reported in Africa and South Asia². Nearly 1 in 5 child deaths is caused by diarrhea. It kills more young children than HIV/AIDS, malaria and measles combined. This can be attributed to poverty that leads to malnutrition. Diarrhoea and malnutrition have a bi-directional relationship with one causing the other [3]. Over 7.5 million children die each year from malnutrition and preventable diseases [4].

According to a study carried out in Nigeria, upper respiratory tract illnesses represent the most common acute illness evaluated at the outpatient setting. Acute respiratory tract infections constitute the major causes of morbidity and mortality in the children under 5 years of age [5]. Over 45% of Kenyans live in abject poverty [6]. Poverty is associated with some of the diseases affecting children and its association with malnutrition that correlates with diarrhoeal diseases. Children under 15 years make up about 43% of Kenya's population [7]. They constitute 19.15 million out of 38.3 million people in this Nation. Mortality rate amongst under 5's as per UNICEF between 2009 and 2013 is 74 per 1000 live births [8]. Kenya Demographic and Health Survey indicated in 2008 that 59 out of 1000 live births among children under 5 years died in Rift Valley Province-where MTRH is situated [9]. According to a research paper written on paediatric morbidity and mortality in Eldoret District Hospital (also in the then Rift Valley Province) in 1995, malaria was the leading cause of admissions accruing 33%. There were four diseases causing about 3 out of 4 admissions. These were; malaria, pneumonia, gastroenteritis and measles [10]. This forms a background for this study to be able to obtain the current statistics in disease patterns for this region taking into consideration that various measures have been put in place to curb the diseases.

MATERIALS AND METHODS

This was a retrospective study done at Sick Child clinic in Moi Teaching and Referral Hospital (MTRH). The hospital is located along Nandi road within Eldoret municipality, Uasin Gishu County in Kenya. It is about 300km North-West of Nairobi, the capital city of Kenya. Children aged 14 years and below seen between 1st January to 31st December 2014 were recruited.

All children aged 14 years and below seen at the sick child clinic within 2014 were included in this study. Those who do not meet these criteria were excluded.

The independent variables included gender of the child; age of the child which is divided into two clusters i.e ≤ 5 , > 5 years, the diagnosis, referrals, admissions and the HIV status of the child.

The dependent variables included the number of children attended to with various conditions.

Data was collected using a standard checklist in our questionnaire, the necessary information was recorded from patients medical records seen at the sick child clinic in 2014. It included demographic information, the various diagnosis made, the number of each of the patients per diagnosis, the number of patients testing positive for HIV, and the number of referrals and admissions.

The data was stored in an Access database (Microsoft access 2007/2010) and statistics generated using STATA version 11. The data obtained was used to draw measures of central tendency, spread, and frequency. The data was presented in form of text and tables.

Ethical considerations

Permission was sought from our Regulatory Board known as the Institutional Research and Ethics Committee (IREC). We also requested and were granted permission from the MTRH chief executive officer before carrying out the research.

RESULTS

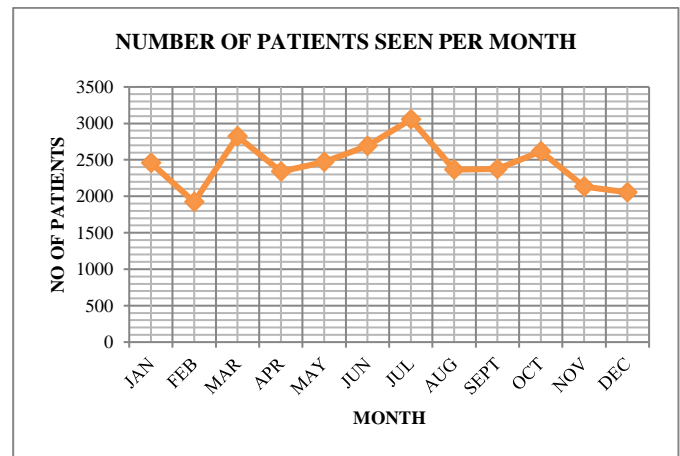


Figure 1: Total number of patients seen per month

A total of 29,307 patients were seen at the sick child clinic (SCC) of MTRH in 2014. The highest number of patients seen at the sick child clinic was in July with a total of 3055 followed by March with a total of 2822. February received the lowest number of patients with a total of 1921.

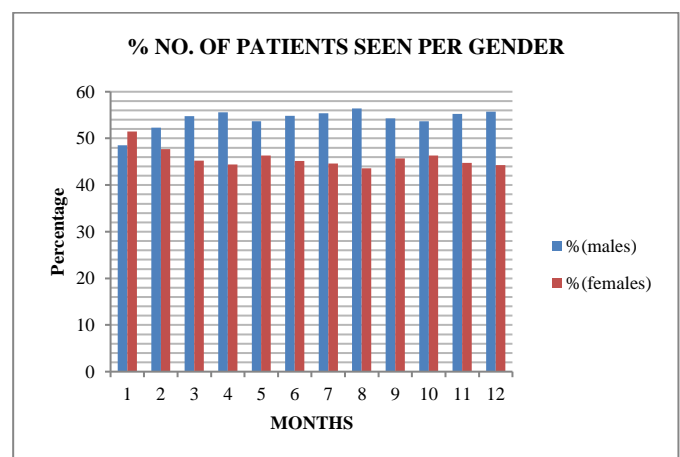


Figure 2: Percentage number of patients seen per gender

Of all patients seen at the sick child clinic, males were predominant all the year with an average of 54.2% while females were 45.8%. The males took the lead in the number of cases seen in the sick child clinic all the year round except in January whereby the females led with 51.46% while 48.54% of those managed were males. The largest disparity between males and females attended to in the sick child clinic was in the month of August whereby males were leading with 56.43% whereas females represented 43.57%.

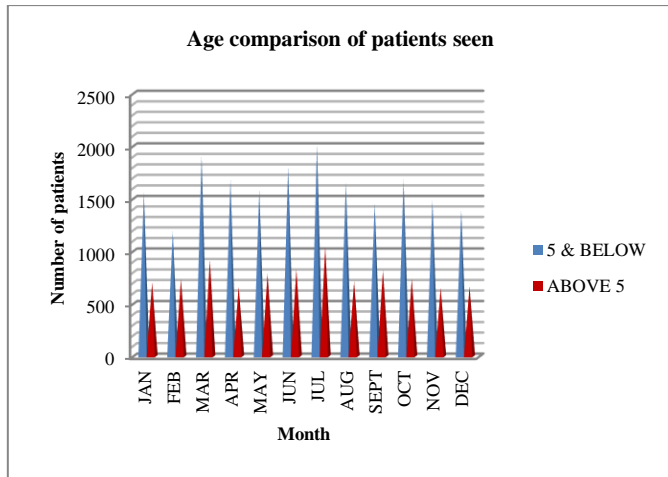


Figure 3: Age comparison of patients seen monthly

The children who were 5 years and below dominated over those above 5 years in a ratio of 2:1. In both age groups July witnessed the highest number of those getting health services from SCC.

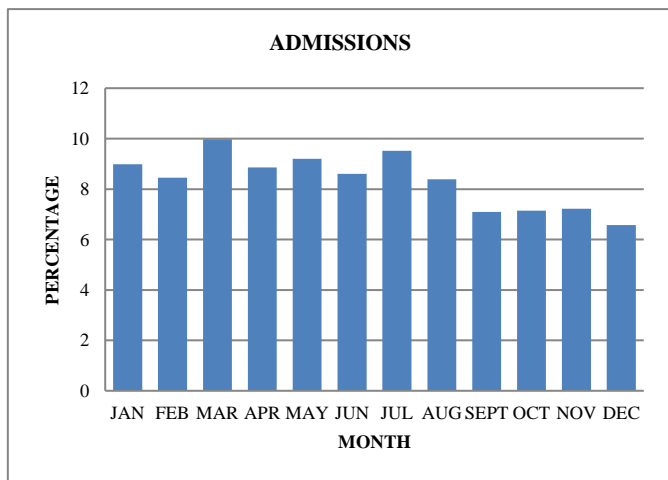


Figure 4: percentage of patients admitted per month

The month of March had the highest percentage of patients admitted with 9.98% followed by July with 9.51%. December received the lowest no. of patients admitted at 6.57%.

All throughout the year, admissions were more than referrals in all the months. The month of March had the highest number of admissions at 9.98% of all admissions in the year followed by July with 9.51% whereas December had the lowest number of admissions at 6.57% compared to other months.

The month of June and July had the highest number of referral cases with 9.58% whereas October had the lowest number of patients referred at 6.75% of all referral cases throughout the year.

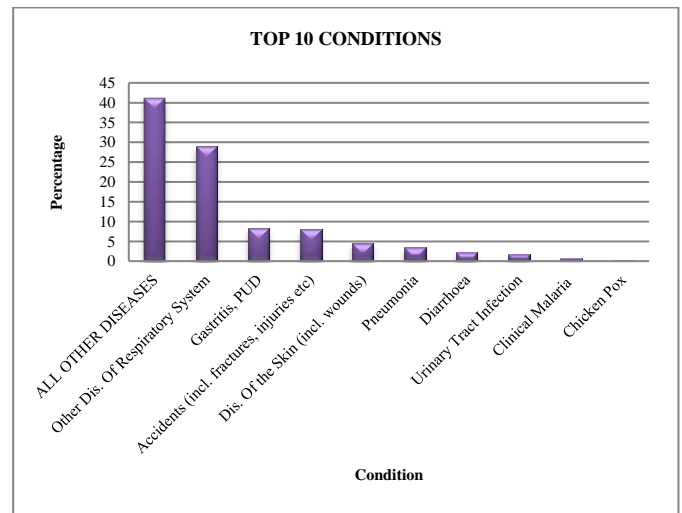


Figure 5: Top ten conditions

Among the top ten conditions seen, All other diseases were heaped together to lead with 41.1%. These included conditions like febrile illness, myalgia and malnutrition. They were followed by Other diseases of the respiratory system at 28.9%. These excluded pneumonia and tuberculosis. Among individual diseases, pneumonia was leading with 3.5% followed by diarrhea at 2.3%.

There was no direct correlation between the number of patients tested and those who tested positive. For example, October which had the least fraction of patients tested (13.8%) had the highest percentage of positive patients (2.43%).

Based on the data collected for the year 2014, April had the highest number of children who tested HIV positive; 12, which was 2.4% of the patients who were tested. It was followed by September; 11 (1.18% of those tested), October with 9 patients (2.49%) and June with 7 patients (1.43%). The other months generally had at most 5 patients diagnosed HIV positive, with November having no patient at all.

DISCUSSION

Averagely, about 2400 children were managed every month. As per the latest census, children under 15 years make up about 43% of Kenya's population⁷. The number of patients seen is quite small compared to the population of the children in the country since most children are seen at the health centers and county referral hospitals with only critical cases referred to MTRH. The hospital serves at least 220,000 residents of Eldoret town (Darlene *et al*, 2010) not even considering the western part of Kenya and neighboring countries deriving health services from MTRH. This is a substantial number served by MTRH as others are seen at the MTRH private wings. Since referrals accounted for about 14% of the patients seen there is high probability that a majority of the patients accounting for the remaining 86% were from the surrounding region.

The total number of males attended to in Sick child clinic represented 54.2% as compared to females' 45.81%. According to the 2009 census, the ratio of males to female on average in the whole country is 1.09:1 which closely correlates to the higher ratio of males to females presenting at the sick child clinic (1.18:1)^[7]. The children 5 years and below seen at the sick child clinic dominated over those above 5 years in a ratio of 2:1 on average all year round. This could be explained by a lower immunity of children aged 5 years and below and thus they are

prone to more infections and consequently more patients presented to the clinic. Considering that the single most leading causes of morbidity are pneumonia and diarrhea it is probable that the younger children are more affected as they are more exposed to risk factors such as malnutrition and weather whose effect on them is of higher magnitude due to their immunity.

The month of March had the highest number of admissions at 9.98% followed by July at 9.51%. This could be attributed to the fact that more children are prone to URTI due to the long rains and cold weather experienced in March and July. The long rains could also predispose the environment of Eldoret to diarrhea outbreak due to flooding and overflowing of water and sewerage system hence more admissions due to diarrheal cases in March and July.

The hospital, being a referral hospital, is bound to receive and attend to critical patients, either as referrals or primary patients. Such patients would require specialized in-patient care and in turn contribute to the high admission cases.

In comparison, there were more admissions than referrals. Generally, there was a common trend with both of them increasing in the months of March and July and decreasing in February. Both plateaued between April and May. This could be an indication of the contribution of referrals to patients being admitted as most of those referred were in critical states demanding they be admitted.

As outlined in the findings, a combination of a number of conditions whose individual contributions were negligible consisted of the highest number of patients seen at the Sick Child Clinic (about 40%) categorized as All other diseases. Of these, febrile illness was predominant probably due to a large number of differentials of fever in children that could not be specified without further investigations.

In totality, diseases of the respiratory system accounted for about 32.5% of the conditions. Of these, pneumonia contributed 3.5% whereas Other diseases of respiratory system accounted for 29%. The high numbers could be attributed to the cold weather in Eldoret and its environment as most patients arise from the surrounding region. As per a study done in Nigeria, acute respiratory tract infections constitute the major causes of morbidity and mortality in the children under 5 years of age [5]. With the top two causes of death among children under the age of 5 years as per UNICEF (2008) being Acute respiratory infections, mainly pneumonia (17%) and diarrheal diseases (17%) which relates to the high number of patients seen at the sick child clinic with respiratory tract diseases as well as diarrhea.

Pneumonia was the leading cause of morbidity single handedly of the cases seen at SCC. About 1 in 31 children seen presented with pneumonia accounting for about 3.5% of all cases seen. There was a monthly fluctuation in the cases seen with June being the month with the highest number. March and July also witnessed a substantial number corresponding with the surge in admissions in these months and the fact that they were rainy season months. The percentage of children with pneumonia seen at SCC warrants a look into it to decrease its mortality.

Diarrhea also emerged as vital component of causes of morbidity and mortality amongst children in MTRH SCC. It was second to pneumonia as the leading individual diseases handled in this centre. It accounted for approximately 2% of the patients seen majority of whom were 5 years and below. Probably, it was one of the major reasons for admission in the first half and last quarter of the year. The high number of cases with

diarrhea could be associated with malnutrition especially for children 5 years and below as illustrated by a study showing that diarrhea and malnutrition have a bi-directional relationship [3]. Road traffic accidents (RTA) and other forms of injuries were reported for 1 out of every 13 children seen. Most of these were witnessed in children above 5 years forming about 14% of their population as compared to those 5 years and below where only 3%. This could be due to increased activity amongst older children as compared to the younger ones exposing them to RTA and other injuries arising from their playfulness. This could also be attributed to the bad state of roads and carelessness amongst road users especially drivers and motorists of the communicable diseases chicken pox stood out as the predominant. It affected 0.2% of the children. The relatively low number as compared to the other cases could be due to the decreased incidence of re-occurrence unlike the other conditions e.g. the respiratory tract diseases where by patients would be seen more than once a year.

A study done in 2013 showed malaria as one of the major diseases amongst children (UNICEF, 2013). However, in this study malaria did not feature significantly. This could be attributed to the fact that the vigorous anti-malaria campaign by the Kenya government is yielding fruits. This region is also not a malaria endemic zone. The cases reported were possibly those referred from endemic regions.

According to a research paper written on paediatric morbidity and mortality in Eldoret District Hospital (also in the then Rift Valley Province) in 1995, malaria was the leading cause of admissions accruing 33% [10]. The decrease in its prevalence could be due to several measures taken by the government such as distribution of mosquito nets, destruction of breeding areas, early detection and treatment

In HIV testing, some of the factors that influenced lack of 100% testing of all patients seen at the sick child clinic are:

- a) There is only one room for HIV counseling and testing, which is insufficient for counseling and testing services for the large number of patients who are seen at the sick child clinic.
- b) Some patients came to the clinic with their status already known thus they didn't undergo testing. This is especially for patients who were on follow up from Academic Model for Providing Access To Healthcare (AMPATH).
- c) There are a limited number of staff who does HIV counseling and testing at the sick child clinic.

The percentage of those affected by HIV/AIDS was thus very low due to the above mentioned factors.

CONCLUSION

A total of 29,307 patients were seen. Of these males were predominant. The ratio of children 5 years and below to those above 5 years was 2:1. There was a surge in the number of admissions and referrals in March and July. A collection of diseases occurring in negligible numbers were categorized as all other diseases and this group formed the majority of cases attended to in the clinic. Pneumonia was the single most prevalent disease followed by diarrhea. RTA and other forms of injuries were reported in 1 in every 13 children seen. Chicken pox was the most predominant of the communicable diseases. Most children at the sick child clinic were not tested for HIV.

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