

Analysis of medical admissions into children's ward of the Ekiti state specialist hospital, Ado- Ekiti, Nigeria, 2000-2001

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ABSTRACT

The study reported was based on the retrospective study of the pattern of illness as recorded for in-patients of the Ekiti State Specialist Hospital, Children's Ward, Ado-Ekiti, Ekiti State, between 2000-2001. The age range of the children was 0-15 years with a total population of 1226 distributed as 537 (2000) and 689 (2001). The results showed the six highest morbidity patients as follows: anaemia, 367 (29.9%); plasmodiasis, 255 (20.8%); gastroenteritis, 102 (8.3%); pneumonia, 92 (7.5%); measles, 68 (5.6%) and enteric fever, 63 (5.1%). It was found that measles was a disease of dry season particularly January – April. The disease categories showed that the infectious diseased patients were 157 (1-68) with a percentage of 12.8 (0.08-5.6); digestive was 1 and 0.08%; respiratory was 103 (11-92) with percentage of 8.4 (0.9-7.5); circulatory was 255 and 20.8% ; infections of the nervous system was 53 (13-40) with a percentage of 4.3 (1.1-3.3). In 20/27 places or 70.1% morbidity in 2000 < 2001; similar in 2/27 or 7.4% places and > 2001 in 5/27 or 18.5% despite the fact that only 11 months data were available in 2001.

Key words: Retrospective study , medical admissions, children's ward.

INTRODUCTION

The word morbidity can be explained as or defined as the state of being diseased¹. The concept of morbidity relates more to illness. Many although not all, major causes of morbidity also cause mortality.

Tropical countries usually have 'young' populations, about half of which are children, among whom there is much ill-health. The incidences of deaths and disease in newborn (first 28 days of life) babies in the tropics are difficult to estimate. Both are certainly frequent, due to general infection (septicaemia) or tetanus of the newborn, to lower birth weight and to congenital abnormalities².

The chief diseases among the preschool – age child (1-4 years) group in the tropics are protein – energy malnutrition (especially

kwashiorkor), diarrhoea, pneumonia, malaria, those due to intestinal worms (especially the hookworm and the roundworm) and whooping cough. Children in this age group are also at risk from accidents. Very frequently, preschool-age children suffer from several of these conditions at once. Although school children (5-15years) do not have the high mortality rate found in younger groups, they do have special problems, as well as opportunities. The main conditions often include moderate malnutrition, infestation with intestinal worms, attacks of malaria and skin diseases². Morbidity measures can be classified as either observed or self- perceived; both have been fully discussed³.

The aim of this report was to collect the patients observed data based on the medical admissions of the children at the first Ekiti State Specialist Hospital, Ado Ekiti, Nigeria, analyse them to see the pattern of disease. Such results would

afford us the opportunity to advise positively on the need to keep a clean and healthy environment, harmful customs, inherited diseases, health service and mother education.

METHODS

The subjects whose data were collected were admitted as in-patients in the State Specialist Hospital, Ado- Ekiti, Ekiti State Nigeria. The data collected were for those who did not leave on voluntary discharge (which is often done by the parents).

The period of survey was 2000 - 2001. In 2001, only the data for 11 months were available (December was unavailable). The population of patients was 1226; while it was 537 in 2000, it was 689 in 2001. The age range for the data collected was 0-15 years. To collect the data, permission was obtained from the Hospital Management and the data were collected strictly based on the confidentiality of the patients.

To analyse the data, various titles were generated:

- (i) Various diseases, serial number, total morbidity, ranking and percentage values.
- (ii) Morbidity distribution according to disease and age group.
- (iii) Trend of morbidity between 2000/2001.
- (iv) Summary of morbidity data of some endemic diseases obtained from the data.
- (v) Incidence of illness into disease category.
- (vi) A figure depicting the children hospital admission (on monthly basis) in the hospital for the 2000/2001.

The diseases identified were 27 in number (Table 1). The disease major categories were : infectious (tuberculosis, urinary tract infection whooping cough, measles and enteric fever); digestive (peptic ulcer disease); respiratory (asthma, pneumonia); circulatory (plasmodiasis); infections of the nervous system (meningitis and tetanus) and others.

The statistical analysis involved were mean, standard deviation and coefficient of variation percent⁴.

RESULTS

1. Various diseases, serial number, total morbidity, ranking and percentage values.

Table 1 contains the above stated information. Five columns are in this Table. Serial number is in column one which were later used in subsequent Tables to identify the diseases they correspond to 27 diseases were identified as causing morbidity. Column two contains the various identified diseases afflicting the children. The diseases were assigned serial numbers according to their level of affliction. Anaemia was number one whereas five diseases shared numbers 22-27 since they were all in rank position 21. Column three depicted the total morbidity patients for each category of disease with population ranking between 367 (anaemia) down to 1 (whooping cough, peptic ulcer, eye care, marasmus, alcohol poison and kernicterus). Column four is the ranking column which depicted the position from first to the last as population decreased. Column five contained the percentage level of each rank with anaemia ranking highest with 29.93% while whooping cough, peptic ulcer, eye care, marasmus, alcohol poison and kernicterus shared the percentage rank of 0.08%.

2. Morbidity distribution according to disease and age group.

Table 2 contains the morbidity distribution according to disease and age group. The disease serial number was 1-27 and the age group range was 0 – 15 years distributed in the ratio of 1 year difference, e.g. 0-1, 2-3, etc. While the population for each disease was outside the bracket for 2000 series, those in bracket were the 2001 series. The following diseases were found in virtually all the ages of the children: anaemia, plasmodiasis, gastroenteritis, pneumonia, enteric fever, septicaemia, sickle cell disease, glucose - 6 – phosphate dehydrogenase, but mostly within 0 – 7 years age group; while measles were mostly within ages 0-11 years, tetanus mostly within 0-5 years, febrile convulsion only within 0-5 years, meningitis was 0 – 9 years, asthma was mostly 0-9 years, jaundice was within 0-3 years, hepatitis took the same pattern; diseases of higher ages were nephrotic syndrome (6 – 13 years), tuberculosis (4 – 9 years) and both eye care and alcohol poison shared 4-5 years range.

Table - 1: Various diseases, serial number, total morbidity, ranking and percentage values

S. No.	Diseases	Total morbidity	Rank	Percentage value
1.	Anaemia	367	1	29.93
2.	Plasmodiasis (malaria)	255	2	20.80
3.	Gastroenteritis	102	3	8.32
4.	Pneumonia	92	4	7.50
5.	Measles	68	5	5.55
6.	Enteric fever (typhoid)	63	6	5.14
7.	Septicamia	43	7	3.51
8.	Tetanus	40	8	3.26
9.	Febrile convulsions	29	9	2.37
10.	Diarrhoea and vomiting (D&V)	24	10	1.96
11.	Urinary tract infection(UTI)	22	11	1.79
12.	Sickle cell disease (SCD)	21	12	1.71
13.	Glucose-6-phosphate dehydrogenase (G6PD)	19	13	1.55
14.	Acute diarrhoea	18	14	1.47
15.	Meningitis	13	15	1.06
16.	Asthma	11	16	0.90
17.	Jaundice	10	17	0.82
18.	Protein energy malnutrition (PEM)	10	17	0.82
19.	Nephrotic syndrome	6	18	0.49
20.	Hepatitis	4	19	0.33
21.	Tuberculosis	3	20	0.24
22.	Whooping cough	1	21	0.08
23.	Peptic ulcer disease (PUD)	1	21	0.08
24.	Eye care	1	21	0.08
25.	Marasmus	1	21	0.08
26.	Alcohol poison	1	21	0.08
27.	Kernicterus	1	21	0.08

3. Trend of morbidity between 2000/2001.

Table 3 depicted the above information. The total patients as a whole and their distribution in 2000/2001 according to diseases were depicted. The diseased population was higher on pairwise basis in 2000 in gastroenteritis, measles, enteric fever, tetanus, asthma, but similar in number with the population in 2001 in diarrhoea and vomiting, hepatitis, while values in 2001 were greater than in 2000 in the diseases not yet mentioned here (Table 3). Stated otherwise 20/27 places or 70.07%

morbidity in 2000 < 2001, similar in 2/27 or 7.41% places and > 2001 in 5/27 or 18.52% despite the fact that only 11 months data were available in 2001. The calculated standard deviations were relatively high in some diseases between 2000/2001 but low in majority of cases. The coefficient of variation percent (CV%) values were higher than 100 in enteric fever and protein energy malnutrition (PEM); 94.3% in nephrotic syndrome and 76.1% in meningitis showing the high disparity for 2000/2001 in the diseased population; values of CV% were

Table - 2: Morbidity distribution according to disease and age group

Disease S. No.	Age group in years*							
	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15
1	78 (110)	25(71)	5(18)	4(12)	6(4)	1(12)	14(4)	2(1)
2	55 (72)	21 (18)	12(22)	1(19)	2(7)	- (8)	2 (9)	1 (6)
3	44 (23)	3 (11)	1 (5)	- (5)	2 (-)	1 (1)	1 (3)	1 (1)
4.	24 (31)	6 (8)	2 (3)	- (3)	1 (3)	- (2)	1 (4)	4 (1)
5	28 (5)	10(3)	9(1)	3 (-)	3(-)	6(-)	—	—
6	12 (3)	1(4)	-2)	15(5)	3(3)	4(4)	1(2)	2 (2)
7	15 (19)	—	1 (-)	- (2)	1 (-)	1 (1)	- (1)	2 (-)
8	18 (15)	-1)	2 (2)	—	—	—	2 (-)	—
9	6 (6)	7 (9)	1 (-)	—	—	—	—	—
10	8 (7)	1 (3)	—	- (1)	1 (-)	—	- (1)	2 (-)
11	9 (8)	- (2)	- (1)	—	1 (-)	- (1)	—	—
12	-2)	3 (2)	1 (1)	1 (-)	- (1)	- (4)	1 (1)	3 (1)
13	2 (2)	3 (3)	2 (4)	1 (-)	- (1)	—	1 (-)	—
14	5 (6)	1 (4)	—	—	—	—	—	2 (-)
15	- (3)	2 (3)	—	- (4)	1 (-)	—	—	—
16	3 (2)	1 (1)	1 (-)	1 (-)	- (1)	—	- (1)	—
17	4 (4)	- (2)	—	—	—	—	—	—
18	1 (7)	—	—	- (1)	—	- (1)	—	—
19	—	—	—	- (2)	—	1 (2)	- (1)	—
20	1 (1)	1 (1)	—	—	—	—	—	—
21	—	—	- (1)	- (1)	- (1)	—	—	—
22	- (1)	—	—	—	—	—	—	—
23	—	—	—	—	- (1)	—	—	—
24	—	—	- (1)	—	—	—	—	—
25	- (1)	—	—	—	—	—	—	—
26	—	—	- (1)	—	—	—	—	—
27	- (1)	—	—	—	—	—	—	—

* Year 2000 (2001) as indicated in the table, dash (-) no data.

much lower in other diseases showing their closeness in 2000/2001.

4. Summary of morbidity data of some endemic diseases among the children.

The endemic diseases as categorised in Table 4 were anaemia > plasmodiasis > gastroenteritis > pneumonia > measles > enteric fever. In 2000, the monthly average (MA) of diseased patients in anaemia was 11.3 in 2000 but 21.1 in 2001 with respective patients of 135 and 232; the least MA in 2000 was pneumonia with a value of 2.8 and population of 37 whereas the least MA in 2001 was measles with a value of 0.8 and population of 9 and all the mean values followed

the same trend. Anaemia in 2001 (232) > 2000 (135), plasmodiasis in 2001 (161) > 2000 (94) and pneumonia in 2001 (55) > 2000 (37); whereas gastroenteritis in 2000 (53) > 2001 (49), measles in 2000 (59) > 2001 (9) and enteric fever in 2000 (38) > 2001 (25). The CV% in three diseases in 2001 were greater than CV% in 2000 and vice versa in three CV% in 2000.

5. Incidence of illness into disease category.

The result is shown in Table 5. Group A here contained the infectious diseases which had tuberculosis, urinary tract infection (UTI), whooping cough, measles and enteric fever (typhoid) in the

Table - 3: Trend of morbidity between 2001 / 2001

Disease number	Total ^a	2000	2001	Grand mean	SD ^b	CV% ^c
1	367	135	232	183.5	68.6	37.4
2	255	94	161	127.5	47.4	37.2
3	102	53	49	51	2.8	5.5
4	92	37	55	44	15.6	35.4
5	68	59	9	34	35.4	104.0
6	63	38	25	31.5	9.2	29.2
7	43	20	23	21.5	2.1	9.9
8	40	22	18	20	2.8	14.1
9	29	14	15	14.5	0.7	4.9
10	24	12	12	12	0.0	—
11	22	10	12	11	1.4	12.9
12	21	9	12	10.5	2.1	20.2
13	19	9	10	9.5	0.7	7.4
14	18	8	10	9	1.4	15.7
15	13	3	10	6.5	4.9	76.1
16	11	6	5	5.5	0.7	12.9
17	10	4	6	5	1.4	28.3
18	10	1	9	5	5.7	113.1
19	6	1	5	3	2.8	94.3
20	4	2	2	2	0.0	—
21	3	—	3	—	—	—
22	1	—	1	—	—	—
23	1	—	1	—	—	—
24	1	—	1	—	—	—
25	1	—	1	—	—	—
26	1	—	1	—	—	—
27	1	—	1	—	—	—
Total	1226	537	689	613	107.5	17.5

^aTotal not used to calculate grand mean, SD, CV%.

^bSD = Standard deviation; ^cCV% = Coefficient of variation percent.

group. The overall population was 157 with overall percentage of 12.81. In this group, measles had the highest population of 68 with overall percentage of 5.55 but a group percentage of 43.31; whooping cough was least with one population, overall percentage of 0.08 and a group percentage of 0.64. Group B contained the digestive disease with only one member, the peptic ulcer disease which had a population of one, overall percentage of 0.08 and group percentage of 100. Group C contained the respiratory diseases with overall population of 103 and overall percentage of 8.40; under here were asthma with 11 patients, 0.90 overall percentage

and group percentage of 10.68 and pneumonia with 92 patients, 7.50 overall percentage and 89.32 group percentage. Group D contained the circulatory disease with a single member, plasmodiasis with 255 patients and overall percentage of 20.80. Group E contained the infections of the nervous system diseases with overall population of 53 and overall percentage of 4.32; members here were meningitis with 13 patients, 1.06 overall percentage and 24.53 group percentage and tetanus with 40 patients, 3.26 overall percentage and 75.47 group percentage.

6. 2000/2001 children admission (on monthly basis).

Our number 6 was depicted in Fig. 1. The figure depicted the relative positioning of the various diseases vis-à-vis the months and the years under review. Only the six most endemic diseases were however shown. The figure showed the hot

spots of the diseases at particular periods of the year. Anaemia was a disease that occurred all the year round showing that it is not a disease of a particular season. The above observation and reasoning could be depicted for plasmodiasis showing that our environment remained a fertile ground for mosquito breeding.

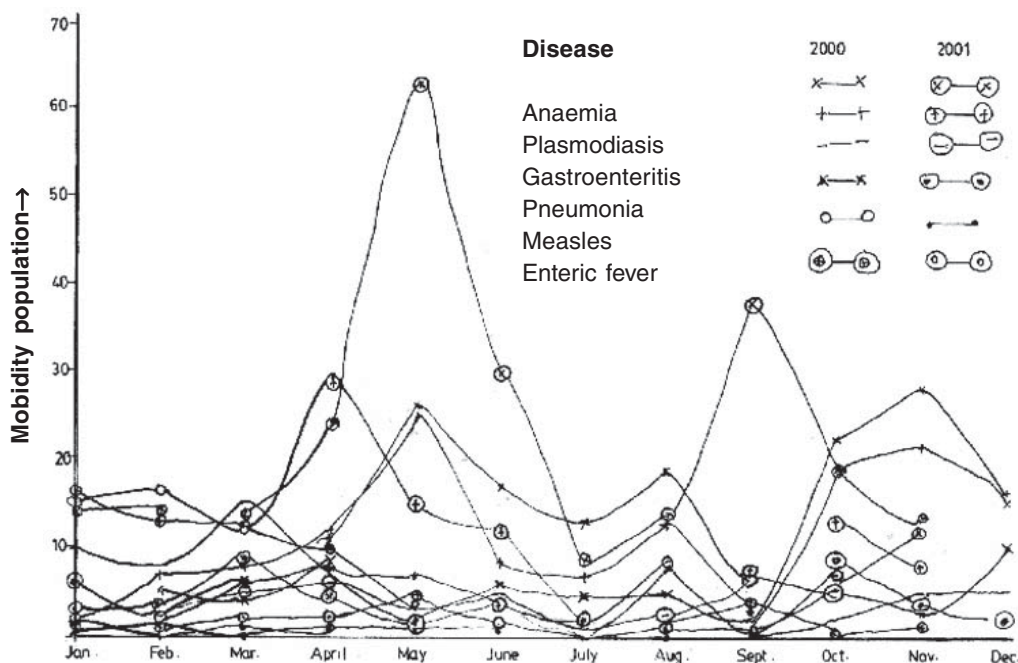


Fig. - 1: 2000/2001 Children admission (on monthly basis) in the Specialist Hospital →

Table -4: Summary of morbidity data of some endemic diseases obtained from State Specialist Hospital Children’s ward in Ado – Ekiti, Nigeria, 2000 – 2001

Disease	Rank	Year 2000 ^a				Year 2001 ^b					
		Mean	SD	CV%	MA ^c	Patients	Mean	SD	CV%	MA	Patients
Anaemia	1	33.8	11.1	32.9	11.3	135	58.0	23.6	40.8	21.1	232
Plasmodiasis	2	23.5	20.4	86.8	7.8	94	40.0	18.0	45.0	14.5	161
Gastroenteritis	3	13.3	8.9	67.0	4.4	53	12.3	1.7	14.0	4.5	49
Bronchitis pneumonia	4	8.3	3.4	41.2	2.8	37	14.0	8.4	60.1	5.1	55
Measles	5	8.4	6.4	75.9	4.9	59	1.3	0.5	37.9	0.8	9
Enteric fever	6	9.5	6.2	65.7	3.2	38	6.0	4.7	78.2	2.2	25

^aYear 2000 : data were available for twelve months.

^bYear 2001 : data were available for only eleven months.

^cMA = monthly average.

Table - 5: Incidence of illness into disease category

Group/members	Number	Overall percentage	Group percentage
A. Infectious	157	12.81	100
Tuberculosis	3	0.24	1.92
Urinary tract infection (UTI)	22	1.79	14.01
Whooping cough	1	0.08	0.64
Measles	68	5.55	43.31
Enteric fever	63	5.14	40.13
B. Digestive			
Peptic ulcer disease (PUD)	1	0.08	100
C. Respiratory	103	8.40	100
Asthma	11	0.90	10.68
Pneumonia	92	7.50	89.32
D. Circulatory			
Plasmodiasis	255	20.80	100
E. Infections of the nervous system	53	4.32	100
Meningitis	13	1.06	24.53
Tetanus	40	3.26	75.47

Gastroenteritis could be considered a disease for all seasons, two months (July and September) in 2000 and one month (July) in 2001 had no patients. The disease could be due to many causes. Pneumonia occurred throughout the year. Measles could be regarded to be a disease of the dry season mostly within January to May; this was particularly depicted in 2000. Enteric fever occurred in many of the months but absent in four months and generally low in the morbidity population.

DISCUSSION

Anaemia is a condition in which there is a decreased amount of haemoglobin in the body². This substance is carried inside red blood cells, so that anaemia will occur if each of the red cells contains too little haemoglobin or if the number of red cells is low. Anaemia is among the top ten causes of death in childhood². The normal full term baby is born with a high haemoglobin of about 18 – 20g per 100 ml [deciliter (dl)], which was necessary for the fetus while in utero. However, after birth, this

level of haemoglobin is no longer necessary, and a large number of red cells are destroyed so that the haemoglobin level falls to about 11g/dl by the time the child is 4 months old. From that age onward, the level slowly rises and, when the child is 7 years old, it will have reached 13 – 14 g/dl.

Oxygen is carried to the tissues by haemoglobin in the red blood cells, and carbon dioxide is carried away. In severe anaemia, tissues may not receive enough oxygen. Muscle performance and work capacity are decreased in anaemia. In young children, especially with iron deficiency, the nervous system may be affected. They do not learn as well as non-anaemic children as they are not able to concentrate. Infections are more common and the body defences against infection may be decreased. The heart has to work harder to pump an increased volume of blood and oxygen to the body. With severe anaemia, heart failure can occur². The most common cause of anaemia is a deficiency of iron, although not necessarily a dietary deficiency of total iron intake.

Deficiencies of folates (or folic acid), vitamin B₁₂ and protein may also cause anaemia. Ascorbic acid, vitamin E, copper and pyridoxine are also needed for production of red blood cells for production of red blood cells (erythrocytes). Vitamin A deficiency is also associated with anaemia⁵. The approach to prevention of anaemia has many aspects. Starting with pregnant women, measures to ensure adequate maternal nutrition in pregnancy (and during breast – feeding) and to prevent low birth weight can promote adequate iron stores in the mother and infant. At the time of delivery, late cord clamping (after cord pulsations cease) and care in ligating the cord to prevent haemorrhage are important. In terms of nutritional anaemia, parents need to be instructed on the advisability of introduction of iron – and protein – containing solids as well as foods rich in folate and vitamin B₁₂ by 4 to 6 months, in addition to breast milk. Malaria prophylaxis in young children will protect against anaemia due to malaria. Control in areas of mosquitoes will aid in prevention of malaria. The prevention of hookworm infection is also important². The anaemia ranked first with a population of 367 or 29.93% among the diseased patients making all the above remedial measures imperative for a normal and successful child development. In our results the various forms of anaemia or in combination with other ailments were: anaemia transfused > glucose – 6 – phosphate dehydrogenase (G6PD) /anaemia transfused > enteric fever/anaemia > anaemia / malaria.

Malaria (plasmodiasis) is common in many parts of the tropics. It occupied the second position in our results having a population of 255 and 20.80%. It is usually due to infection of the red blood cells with *Plasmodium falciparum* (MT malaria). Malaria is spread from man to man by the bite of infected female anopheline mosquitoes. The parasites live in the red blood cells and destroy them, so that anaemia results. Our results showed that the disease was common all the year round showing an evidence of badly kept environment that gave room to mosquito breeding. The disease was most prevalent within age range 0 – 5 years. It has been shown that severe malaria in the 6 – month – to 3 – year – old child in areas where malaria is present most of the year usually results in a weak, anaemic child, with a large spleen and liver, whose

mother often reports frequent attacks of fever, bronchitis and loose stools²; this could have been the case with our results (Table 2). Cerebral malaria may develop, as a result of the blocking of the small blood vessels of the brain by red cells filled with malarial parasites, and is recognized by high fever, convulsions and unconsciousness. Even if treated early with chloroquine or quinine injections, cerebral malaria may still be followed by permanent brain damage, including mental deficiency and paralysis of a limb. In our results various malaria forms or in combination with other ailments were: cerebral malaria (highest population), malaria/urinary tract infection (UTI), chloroquine resistant malaria, malaria/diarrhoea and malaria/convulsion. Very large schemes of malaria prevention were carried out in the 1950s, usually by spraying the inside walls of houses with residual insecticides (such as DDT and others), so that anopheline mosquitoes were killed when they rest on them. Recent preventive programmes have tried to combine the use of appropriate insecticides with older methods such as drainage fish which eat mosquito larvae, etc². Malaria can be prevented in non-immune children by the routine use of drugs to which the local form of the parasites is sensitive. This will usually be the proguanil (Paludrine); ¼ -1 tablet daily (1 tablet = 100 mg); or pyrimethamine (Daraprim) ¼ - 1 tablet weekly (1 tablet = 25 mg).² In the 'danger period' of between 6 months and 3 years, malaria can add a serious additional burden to the child's nutrition.

Gastroenteritis occupied the third position among the diseased patients with a population of 102 and 8.32%. It is an inflammation of the stomach and intestine. Infantile gastroenteritis is an acute condition of diarrhoea and vomiting producing severe dehydration. The cause may be due to : (a) dietetic; (b) infective; (c) parenteral, when the condition is secondary to infection elsewhere in the body; e.g. otitis media or bronchitis⁶.

Pneumonia occupied number four position in our ranking with a population of 92 with 7.50% level (Table 1). The disease was most frequent in 0 – 3 years age range (Table 2). Pneumonia usually results from a spread of infection downward from the nose and throat. The majority of acute pneumonias are viral in origin, and frequently remain undiagnosed as the disease is often subclinical or

mild. The incidence of bacterial pneumonias is about one – third of all acute infections of the lower respiratory tract. These are more serious in nature and are seen most frequently in hospitals². Pneumonias are either bacterial or non-bacterial. Bacterial pneumonia are best classified by the organism responsible rather than by anatomical distribution (e.g. lobar or bronchopneumonia), since the antibiotic therapy to be used depends on an exact (or probable) knowledge of the particular organism responsible. From Fig. 1, pneumonia is a disease for all seasons; the most common type of pneumonia was bronchitis pneumonia, followed by lobar pneumonia and lastly aspiration pneumonia. Pneumonia is generally an inflammation of the lung; aspiration type arises from inhaled material from another infected lesion or, following operation, of vomitus; broncho – pneumonia is a descending infection of the bronchi, widespread and patchy in distribution⁶. Pneumococci are the most common cause of bacterial pneumonia. Various modes of pneumonia treatment have been discussed².

Measles is a highly infectious disease caused by a virus, and spreads by droplet infection from one child to another through coughing, sneezing or talking. Because of overcrowding, infection spreads rapidly among the children. In most developing countries, most children have had measles before the age of 3-4 years. In our current report 68 patients were reported in which 56 or 82.4% were within the age range of 0-5 years while only 12 or 17.6% were in the age range of 6-11 years and none was recorded in ages 12-15 years (Table 2). Also the monthly distribution showed that 62 patients or 91.2% were found in the months of January to May (mostly dry period), this is when the air is dry and droplets easily carried in the air and this with overcrowding work together to spread the disease. Only 6 patients or 8.8% were observed between June and October (Fig 1). This result could have been due to delayed measles immunization since immunity appeared to have been acquired in the ages 6-15 years particularly in the year 2001 (Table 2). The disease is severe in malnourished and young children, and leads to further malnutrition, resulting in marasmus or kwashiorkor. Deaths mainly occur in young malnourished children.² Measles immunization now forms a part of the Expanded Programme of Immunization in

almost all countries. Common complications include conjunctivitis, otitis media, stomatitis, laryngitis, bronchitis, pneumonia and diarrhoea. There may be ulceration of the skin. In malnourished children, particularly those with vitamin A deficiency, conjunctivitis may lead to blindness². For prevention, the most suitable time for immunization is around 9 months.

Enteric fever (typhoid) ranked number 6 in population with 63 patients and 5.14% (Table 1). It is common in countries where standards of personal hygiene and sanitation are poor. It is caused by bacteria (*Salmonella typhi*).

The infected persons excrete the bacilli in the stool and urine. Infection is caused by eating infected food or drinking infected water or milk. Food and water may be contaminated by the hands of the carriers, contaminated or through flies. The small intestines develop ulcers and the bacteria enter the bloodstream. Infectivity lasts as long as the bacteria are present in stool or urine. A few patients continue to excrete bacteria in their stool and are called 'carriers'². Carrier state is said to be uncommon in children. Complications include severe watery diarrhoea, pneumonia, or encephalopathy. Intestinal haemorrhage and perforation are severe complications. There is usually a rapid pulse, abdominal pain and distension, preceding these complications. Later, there is pallor and shock. Following perforation, peritonitis develops, and the abdomen becomes rigid². Improvement of environmental hygiene and sanitation, discouraging fly breeding, and adequate quantities of a safe water supply are essential for prevention of the disease. Latrines should be provided and people should be encouraged to use them for passing both stools and urine. Exposed food from roadside stalls should not be eaten. Typhoid vaccine has been shown to be effective for 3-4 years in majority of cases.

Septicaemia was most prevalent between 0-1 year of age since 34 / 43 or 79.07% was within this age range. Septicaemia is the presence in the blood of bacteria and their toxins. Symptoms include a rapid rise of temperature, which is later intermittent, rigors, sweating, and all signs of acute fever, treatment is by antibiotic drugs⁶.

Tetanus has a population of 40 with rank 8 and 3.26%. Tetanus is a disease of the nervous system caused by a chemical substance (exotoxin) produced by the bacteria, *Clostridium tetani*. This organism is excreted in the faeces of animals and is present in soil and dirt. By producing spores, the organism survives for a long time, and, once it is contaminated, soil remains infective for many years. The organisms usually enter the body through the site of any injury. Infection may enter through the umbilical cord in newborn babies. Once inside the body, the bacteria multiply, producing the toxin which affects the nerves, spinal cord and brain². The most important feature of tetanus is involuntary contractions of muscles (spasms). Our result as shown in Table 2 depicted that neonatal tetanus is common with us because 33/40 or 82.5% were within 0-1 year olds whereas only 7/40 or 17.5% were in 2-5 and 12-13 years range together. Tetanus is a preventable disease, and immunization with tetanus toxoid is the most important preventive measure. Tetanus immunization either primary or booster, is an important part of antenatal care. All children should receive a three – dose course of tetanus oxoid, usually given in combination with diphtheria and whooping cough vaccine as 'triple antigen', at 1 – 2 – month intervals, starting at 2 to 3 months of age. Our high level of neonatal tetanus might be due to cords being cut with dirty instruments such as an old razor blade or a special 'ceremonial'knife or sharpstone. In some areas it is traditional to 'dress' the cord with cow dung. Health education is important here. In older children, careful cleaning and dressing of wounds is most important.

Febrile convulsions occupied the 9th position with 29 patients and 2.37% (Table 1). Febrile convulsions occur in children who have an increased body temperature; they do not usually result in permanent brain damage⁷. Most common between the ages of 6 months and 5 years. Our own results showed that all the patients were in the age range of 0 – 5 years (Table 2).

Diarrhoea and vomiting occupied number 10 with a population of 24 and 1.96%. It can be said that three or more *loose* or *watery* stools a day can be considered diarrhoea². The stools of breast-fed children are often softer and more

frequent than those of bottle – fed children which is *not diarrhoea*. In many countries diarrhoea is a very common illness of infants and young children. Children die mainly of dehydration in acute diarrhoea because they do not replace quickly enough the water and electrolytes (sodium, potassium, etc.) lost in the stools and in vomiting and therefore they go into a state of shock and coma and they die. The main cause of acute diarrhoea is infection of the intestines with viruses or bacteria, complication of measles and other infections outside the gut, e.g. otitis media and pneumonia. Chronic diarrhoea is due sometimes to chronic infection of the gut, but more often to damage to the intestinal (epithelium) from a previous acute infection. Such damage to the epithelium can also occur as a result of kwashiorkor. The oral rehydration therapy is now used as a cure in 95% of cases of acute diarrhoea regardless of the causative micro-organism. In our results the disease was most common in 0-3 years age range.

Urinary tract infection (URI) occupied the 11th position with population of 22 but 1.79%. It is the second most prevalent infection in hospital, but the most common hospital – acquired infection⁷. The most common infecting agent is *Escherichia coli*. Our results showed URI to be most prevalent in the 0-1 year old range.

Sickle cell disease (SCD) ranked number 12 but has a population of 21 and 1.71%. It was almost evenly distributed among the ages (Table 2). The child with sickle – cell disease (SS) may be well until 6 months of age. Later, repeated attacks of fever, jaundice, anaemia and enlargement of the liver and spleen ensue. Also, in the second year of life and thereafter, there may be enlargement of the skull which is very characteristic of sickle-cell disease and other chronic anaemias. This is due to blood formation in the bone marrow of the skull to try to keep up with blood cell destruction². In sickle-cell anaemia, the red cells contain an abnormal form of haemoglobin called haemoglobin S. If a child inherits haemoglobin S from one parent and normal adult haemoglobin A from the other parent, the child has sickle – cell trait, or SA anaemia. These children have no symptoms, and show only a positive sickling cell test. If the child gets haemoglobin S from both parents, he develops

sickle – cell disease, or SS. Sickle cells can also cause blockage of blood vessels, causing a variety of signs and symptoms².

Glucose – 6 – phosphate dehydrogenase (G6PD) ranked number 13 with a population of 19 but 1.55% (Table 1). It is a disease mostly prevalent in the age group 0 – 5 years. G6PD deficiency represents a group of hereditary abnormalities in which the activity of the enzyme G6PD is markedly diminished. Destruction of red blood cells occurs with this type of enzyme deficiency. G6PD is necessary for the normal metabolism of erythrocytes. The deficiency state is a sex – linked trait⁸.

Acute diarrhoea is in number 14 with 18 patients and 1.47%. Table 2 showed that the disease was common in 0-3 years age group. In this disease there is deviation from established bowel rhythm characterized by an increase in frequency and fluidity of the stools. Epidemic diarrhoea of the newborn is a highly contagious infection of maternity hospitals⁷.

Meningitis is inflammation of the meninges, the membranes that cover the brain and spinal cord. It ranked number 15 with a population of 13 patients and just 1.06% (Table 1) were spread in 0-3, 6-9 age groups. Acute bacterial meningitis is the most common type of meningitis present throughout the world. The organisms usually involved in children are *Haemophilus influenzae*, *Streptococcus pneumoniae* (pneumococcus) or *Neisseria meningitidis* (meningococcus). Infection usually enters the body through the respiratory tract and reaches brain through the bloodstream². In prevention, close contacts of patients with meningococcal meningitis should be given a sulphonamide; a meningococcal vaccine is available and may be useful in epidemic control.

Minor diseases recorded included asthma, this is paroxysmal dyspnoea characterized by wheezing and difficulty in expiration because of muscular spasm in the bronchi⁷; jaundice in newborn is a serious condition in the tropics and when severe can cause brain damage or death, the aim of treatment is to prevent brain damage by reducing the amount of jaundice producing pigment

(bilirubin) in the baby's blood²; protein energy malnutrition (PEM) is mainly caused by energy deficiency, PEM is used to describe a broad array of clinical conditions ranging from the mild to the serious, at one end of the spectrum, mild PEM manifests itself mainly as poor physical growth in children, at the other end of the spectrum, kwashiorkor (characterized by the presence of oedema) and nutritional marasmus (characterized by severe wasting) have high case fatality rates⁵; nephrotic syndrome is a clinical syndrome in which there are albuminuria, low plasma protein and gross oedema, due to increased capillary permeability in the glomeruli⁶; hepatitis is an inflammation of the liver in response to toxins or infective agents, it is usually accompanied by fever, gastrointestinal symptoms and an itchy skin⁷; tuberculosis is a common infectious disease in the tropics, this is largely due to overcrowding, poverty, malnutrition and a high prevalence of other infectious diseases, it is caused by the bacteria called *Mycobacterium tuberculosis* usually spread from person to person through inhalation of airborne bacilli in droplet form; whooping cough (pertussis) is a highly infectious disease by bacteria (*Bordetella pertussis*) and rapidly spreads from one child to another by droplet infection²; peptic ulcer disease (PUD) is a non-malignant ulcer in those parts of the digestive tract which are exposed to the gastric secretions, hence usually in the stomach or duodenum but sometimes in the lower oesophagus; eye disease was just one and not a serious case; marasmus has been partly treated under PEM, however the main cause is starvation due to a diet severely lacking both in protein and in calories; accidental poisoning is common in homes where proper care is lacking, this might have led to the alcohol poisoning of one patient; kernicterus is the bile staining of the basal ganglia in the brain which may result in mental deficiency, cerebral palsy, or deafness and it can be prevented by exchange transfusions, it occurs in icterus gravis neonatorum⁶.

From this work, it was observed that many of the diseases were preventable by having a healthy environment, avoiding overcrowding, taking good food and particularly breast feeding, disposing sputum hygienically and having a better health education.

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