

**Pattern of Medical Admissions in a North- Western Nigerian Tertiary Hospital – a Three Year Review.**

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**ABSTRACT**

**Background:** The pattern of medical admissions varies amongst different regions of the world and reflects the relative pattern and trend of diseases burden in the region. This study determined the pattern of medical admissions in Murtala Muhammad Specialist Hospital (MMSH), a tertiary health institution in North- Western Nigeria.

**Methods:** It was a retrospective, descriptive study. The admission and discharge registers of the medical wards from January 2013 to December 2015 were reviewed and relevant data extracted and analyzed using Statistical Package for Social Sciences (SPSS) version 19 software.

**Results:** A total of 4834 patients admitted in to the medical wards within the study period were analyzed. There were 2526 (52.3%) males and 2308(47.7%) females. The non- communicable diseases (NCDs) accounted for 76.4% of the total admissions. Stroke, congestive cardiac failure and diabetes mellitus were the most prevalent non –communicable diseases, while sepsis, malaria and tuberculosis were the most prevalent communicable diseases (CDs).

**Conclusion:** There was higher proportion of males than females. NCDs notably stroke, heart failure and DM were the most common causes of admission. There should be good planning to accommodate health problems with emphasis at primary health care and prevention.

**Keywords:** Medical admissions, tertiary hospital, north western Nigeria

## **INTRODUCTION**

The pattern of medical admissions varies among different regions of the world, and reflects on the pattern and trend of disease burden in the region. The prevailing health conditions in an environment are presumed to be determined by the trend in hospital admissions. Although the precise prevalence may not be determined, it serves as a reflection of the pattern and trend of diseases in the community.<sup>1</sup>This insight is thus important for planning, policy making and eventually the allocation of resources for health services, research and training.<sup>2</sup>

The drift towards NCDs as the leading cause for medical admissions in developing countries, including Nigeria, has been documented in previous reports.<sup>3,5,6</sup>This was attributable to epidemiological transition with westernization and modification of lifestyle patterns.<sup>3</sup>

Previous studies on the pattern and of medical admissions in hospitals in Nigeria have been documented.<sup>4,5,6,7,8,9,10,11</sup> There is however, paucity of such data from the North – western part of the country, in particular, Kano State. This study therefore, described the pattern of medical admissions at MMSH, a tertiary health center in Kano, North – western Nigeria.

## **MATERIALS AND METHODS**

This is a retrospective descriptive study was conducted in MMSH, Kano, Nigeria between January 2013 to December 2015. MMSH is a tertiary health institution established in 1928 and the largest Government owned hospital in Northern Nigeria. It is located within Kano metropolis, and is highly accessible to patients as no fees are charged for consultation and admission. It does not only serve the people of Kano State, but also neighbouring states.

Admission and discharge records of the stated period were retrieved and relevant information extracted. This includes age, sex, diagnosis, duration of hospital stay and outcome (discharged, death, referred or discharge against medical advice). Ethical approval was obtained from the institutions health research ethics committee. The data was analyzed using Data was analyzed using Statistical Package for Social Science (SPSS version 21.0). Continuous variables were presented as means  $\pm$  standard deviation. Qualitative variables were expressed as proportions and percentages. Comparisons of categorical variables were performed using chi – square test. A P value of  $<0.05$  was considered as statistically significant.

## RESULTS

A total 4834 patients were admitted in to the medical wards within the study period. There were 2526(52.3%) males and 2308(47.7%) females with ratio of 1.1:1. The age range of the patients was 14 to 105 years with the mean age of (Male = 48.33±17.75 years, Female = 44.49±18.35 years).The age and sex distribution of the patients is shown in table 1.

The non-communicable diseases accounted for up to 3694(76.4%), while the communicable diseases accounted for 1140(23.6%). Among the non-communicable diseases, stroke, congestive cardiac failure (CCF) and diabetes mellitus (DM) were the most prevalent accounting for 24.5%, 11.9% and 9.6% respectively while sepsis (9.7%), Malaria (4.6%) and Tuberculosis (3.5%) were the most prevalent among the communicable diseases. When the diseases were grouped into medical specialties, the most prevalent were neurology (24.5%), infectious diseases (21.6) and cardiovascular 19.2%. The details are as shown in table 2 and table 3.

## DISCUSSION

The study described the pattern and outcome of medical admissions in MMSH, a tertiary health care facility in Kano, North- Western Nigeria. The male preponderance reported in this study is comparable to most similar studies in Nigeria and in Ethiopia.<sup>6,7,8,10,12</sup> This could suggest a real higher male disease burden in view of higher disease risk factors in males.<sup>13</sup> In addition, males being the main earners would likely have more resources to cater for their health needs and would not want to stay out of job for too long hence, they would attend hospitals earlier than their female counterparts.<sup>14,15</sup>

The highest proportion of patients admitted were elderly ( $\geq 60$  years) compared with young adults and middle aged. The increased risk for cardiovascular diseases, with ageing may account for more elderly admissions than other age groups. In addition, the relatively reduced body immunity with ageing increases the susceptibility of the elderly to infections. This similar observation has been previously documented.<sup>6, 16</sup> Other studies however showed higher proportion of middle aged and younger adults than the elderly.<sup>4,8,17</sup>

Contrary to what was observed in previous studies, where communicable diseases were more prevalent in Nigeria, It was observed in this study that non communicable diseases were the major reasons for hospital admissions. This finding is in agreement with recent studies in Nigeria and elsewhere.<sup>4,10,11,18,19,20</sup> This could be explained by epidemiologic transition in our population, with increasing adoption of westernized lifestyle, urbanization, reduced physical activity and increasing obesity.<sup>3</sup> Stroke was the most common cause of admission in our study, responsible

for 24.4% of medical admissions. This is higher than what was reported in previous studies, where it accounted for 13.6%, 8.7%, 7.3% and 4.5% respectively.<sup>4,11,18, 19</sup> This may be explained by the rising prevalence of the risk factors for stroke like hypertension and diabetes in developing countries.<sup>10,20</sup> Most of the patients are aged and had hypertension as the etiological factor for stroke, heart failure and chronic kidney disease (CKD). The small proportion of CKD in this study is probably because these patients are referred to other specialist hospitals where there are facilities for renal replacement therapy.

Unlike other studies where tuberculosis, malaria or HIV/AIDS rank first among the admissions sepsis had the highest percentage (9.7%) in our study. This was followed by malaria, tuberculosis and HIV/AIDS. The decline in the number of admissions due to HIV/AIDS may be related to the readily available screening kits and sensitization programs, early detection and treatment, with decline in complications warranting admissions. Generally speaking, the female patients had statistically significant higher predilection for infectious diseases than the male counterparts. On the other hand, the male patients had statistically significant predilection for non - communicable diseases, which is similar to other hospital based study.<sup>5,21</sup> Male sex is a major risk factor for hypertension, stroke and CKD.<sup>22,23</sup>

### **Limitations**

This study has some limitations. As record keeping is done manually, data collection was time consuming. There were also missing and incomplete data. Changes made in the diagnosis in the course of hospital stay may not have been captured. There is also the possibility of misdiagnosis in those patients without gold standard instrument of diagnosis.

### **CONCLUSION**

This study reports that there was higher proportion of males admitted in to the medical wards than females. The proportion of patients admitted increased with increasing age group, in which elderly patients formed the highest proportion. NCDs, notably stroke, heart failure and DM were the most common causes of admissions. There should be good planning to accommodate these health problems, with emphasis at primary prevention.

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**Table 1: Age and Sex distribution of the patients**

	<b>Male</b>	<b>Female</b>	<b>Total</b>
<b>Age (years)</b>	<b>n = 2526 (%)</b>	<b>n = 2308 (%)</b>	<b>N = 4834 (%)</b>
Mean ± SD	48.33 ± 17.75	44.49 ± 18.36	46.50 ± 18.14
<b>Age group (years)</b>			
< 20	155 (6.1)	200 (8.7)	355 (7.3)
20 – 29	262 (20.4)	387 (16.8)	649 (13.4)
30 – 39	287 (11.4)	305 (13.2)	592 (12.2)
40 – 49	564 (22.3)	429 (18.6)	993 (20.5)
50 – 59	324 (12.8)	285 (12.3)	609 (12.6)
60 – 69	596 (23.6)	454 (19.7)	1050 (21.7)
≥ 70	338 (13.4)	248 (10.7)	586 (12.1)

**Table 2: Sex distribution of diseases among medical admissions**

Diagnosis	Sex			p value
	Male n (%)	Female n (%)	Total n (%)	
CVD	631 (25.0)	553 (24.0)	1184 (24.5)	0.025*
CCF	228 (9.0)	349 (15.1)	577 (11.9)	<0.001*
Sepsis	276 (10.9)	192 (8.3)	468 (9.7)	<0.001*
DM	255 (10.1)	211 (9.1)	466 (9.6)	0.046*
CLD	255 (10.1)	106 (4.6)	361 (7.5)	<0.001*
HPN	146 (5.8)	196 (8.5)	342 (7.1)	0.008*
SCD	118 (4.7)	121 (5.2)	239 (4.9)	0.897
Malaria	88 (3.5)	136 (5.9)	224 (4.6)	0.002*
PUD	70 (2.8)	103 (4.5)	173 (3.6)	0.015*
TB	105 (4.2)	65 (2.8)	170 (3.5)	0.003*
HIV/AIDS	27(1.1)	71(3.1)	98(2.0)	<0.001*
PLCC	63 (2.5)	28 (1.1)	91 (1.9)	1.000
Meningitis	72(2.9)	19(0.8)	91(1.9)	<0.001*
Tetanus	70(2.8)	5(0.2)	75(1.6)	<0.001*
Others	122(4.7)	119(5.0)	241(5.0)	0.896

Key : CVD, cerebrovascular disease; CCF, congestive cardiac failure; DM, diabetes mellitus; CLD, chronic liver disease; HPN, hypertension; SCD, sickle cell disease; PUD, peptic ulcer disease, TB, tuberculosis; HIV, human immunodeficiency virus, PLCC, primary liver cell carcinoma.

**Table 3: Pattern of admissions based on specialties**

Variable	Sex			<i>p</i> value
	Male n (%)	Female n (%)	Total n (%)	
<b>Infectious Disease</b>				
Yes	572 (22.6)	473 (20.5)	1045 (21.6)	0.070
No	1954 (77.4)	1835 (79.5)	3789 (78.4)	
<b>Cardiovascular</b>				
Yes	380 (15.0)	549 (23.8)	929 (19.2)	<0.001*
No	2146 (85.0)	1759 (76.2)	3905 (80.8)	
<b>Neurology</b>				
Yes	631 (25.0)	553 (24.0)	1184 (24.5)	0.410
No	1895 (75.0)	1755 (76.0)	3650 (75.5)	
<b>Gastroenterology</b>				
Yes	359 (14.2)	241 (10.4)	600 (12.4)	<0.001*
No	2167 (85.8)	2067 (89.6)	4234 (87.6)	
<b>Endocrinology</b>				
Yes	256 (10.1)	214 (9.3)	470 (9.7)	0.312
No	2270 (89.9)	2094 (90.7)	4364 (90.3)	
<b>Nephrology</b>				
Yes	34 (1.3)	10 (0.4)	44 (0.9)	0.001*
No	2492 (98.7)	2298 (99.6)	4790 (99.1)	



<b>Pulmonology</b>				
Yes	88 (3.5)	144 (6.2)	232 (4.8)	<0.001*
No	2438 (96.5)	2164 (93.8)	4602 (95.2)	
<b>Haematology</b>				
Yes	184 (7.3)	193 (8.4)	377 (7.8)	0.163
No	2342 (92.7)	2115 (91.6)	4457 (92.2)	
<b>Dermatology</b>				
Yes	5 (0.2)	2 (0.1)	7 (0.1)	0.456
No	2521 (99.8)	2306 (99.9)	4827 (99.9)	

\**p* value <0.05