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Full Length Research Paper

Review of Morbidity Profiles and Drug Prescribing Patterns of a University Clinic in North-Western Nigeria

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Abstract

Figures about commonly managed ailments including the drug use pattern, data on morbidity profiles and the disease burden of a health institution are of critical importance in day to day decision making on where best to divert resources, planning and policy formulation. This study is aimed at describing the morbidity profile of the patients seen, managed and applying the WHO/INRUD core prescribing indicators to measure the performance of health care providers in drug prescribing practices in the Health Services Department of Usmanu Danfodiyo University Sokoto, Nigeria within the period of January to December 2011. This is a cross sectional, descriptive study by design. A total number of 7855 drugs were prescribed from January to December 2011. The average number of drugs per prescription was 3.6 only. The percentage of drugs prescribed by generic name was 4139 (69.9%), Percentage encounter with antibiotics and injections prescribed was 1203 (55.2%) and 217(10.01%) respectively, and percentage of drugs prescribed from the essential drug list was 5718(96.1%) only. Artemisinin based combination therapies (ACTs) was the most employed combination mode of malaria treatment in the clinic accounting for about 89.6% of all prescribed antimalarial, Penicillins were the most (44.53%) prescribed antibiotic. Out of the 11074 patients' records that met the inclusion criteria 1518, 3305, 6241 of the patients were seen and treated in the months of January, July and October respectively. Malaria alone accounted for 5845 (52.8%)of the cases seen and treated, and ranked as the most frequent morbidity, Respiratory tract infections, both upper and lower came a relatively distant second, followed by gastrointestinal and skin and soft tissue diseases ranking as the third and fourth respectively . In conclusion the findings in this study revealed that malaria, gastrointestinal, respiratory and skin diseases were the four leading causes of morbidity in the university clinic. Artemether-Lumefantrine, Penicillins and Non-steroidal anti-inflammatory drugs accounted for the highest number of drugs prescribed. The core prescribing indicators measured in this study were not in consonance with standard reference values. There is a need for training and retraining of health care service providers.

Keywords: Morbidity, Prescribing, University clinic, Sokoto-Nigeria.

INTRODUCTION

Figures about commonly managed ailments including the drug use pattern, data on morbidity profiles and the disease burden of a health institution are of critical importance in day to day decision making on where best to divert resources, planning and policy formulation. The importance of this cannot be overemphasized especially with the trend of global economic downturn and limited resources against several competing demands. The cost

of drugs may account for up to 60% in Nigeria and about 50 to 90% of non-personnel cost of health care in most developing countries (Okoro and Davies, 2001), globally more than one half of all medicines are prescribed, dispensed, or sold irrationally (Hogerzeil, 2004), and more than 50% of all Primary Health Care patients are not treated according to standard treatment guideline (WHO, 2003). A negative impact on health and economy of communities as a result of irrational prescribing have been reported (Bashrahil, 2010), up to 70% of cost efficiency in medicine expenditure as well as quality health care delivery can be achieved for communities by appropriate drug use (WHO, 2004; 2008).

Management at different levels of administration therefore needs the data on morbidity profile and pattern of drug use and the prevailing circumstances around the information to aid where and how funds are channeled. Analyzing profiles and pattern of both morbidity and drug use aids in objectively evaluating performance and reviewing progress made in time, and may also guide the consideration for priority purchases and supplies of both consumables and equipment including facilities, and areas of manpower development on a background of indigenous peculiarities (Allan et al., 2006).

Studies on morbidity profile in different settings give a clue of the common illnesses in such settings. In Southern Nigeria, Erah et al. (2003) identified malaria has the common illness hence antimalarials as the most commonly prescribed medication. This is similar to the report of Odusanya (2004) who identified malaria, acute respiratory tract infection and typhoid fever as the most common illnesses. Lamichlane et al. (2006) in a similar study in Western Nepal, India however identified upper respiratory tract infection and acid peptic disease as the most common illnesses. In another study among pediatric patients in central India, upper respiratory infection and acute gastroenteritis were topmost in the list of illnesses (Gedan et al., 2012).

In an environment like ours with an increasing agitation for better quality health care delivery system at the primary level on a background of scarce resources, the need for studies to better define the drug use policy and the disease burden in the University community to assist with a better understanding of the peculiarities of the University community; including students, staffs and their dependents and the surrounding community to assist in planning for priority interventions and to improve the quality of health care cannot be overemphasized (Chauke, 2010). The result of this study can ensure that services are effectively delivered and necessary equipment and the required drugs are always in stock, and guarantee that suitably skilled persons take up the personnel positions (Stephen et al., 2009) with an ultimate goal of improving and strengthening the health care delivery system in the University system. The information gathered should thus be reliable and generalized to the clinic for the year 2011; and since the University clinic caters for staffs and students of the institution and the surrounding community, a study of the morbidity profile in the clinic should reflect the health problems of the University and the surrounding communities. Thus enabling the management to prepare better and prioritize resources for their burden of diseases based on what they see regularly.

This study is aimed at defining the morbidity profile of the patients seen and managed and the drug prescribing pattern in the Health Services Department of Usmanu Danfodiyo University Sokoto, Nigeria within the period of January to December 2011. Applying the World Health Organization (WHO)/ International Network for Rational Use of Drugs (INRUD) core prescribing indicators to measure the performance of health care providers in drug prescribing practices, assessing key elements of patient care including clinical consultation and pharmaceutical dispensing, and checking for availability of facility-specific factors which support rational use, such as key essential drugs and minimum pharmaceutical information. Information on morbidity profile, medicine use, prescribing habits, and patients care from the study is to be fed back to prescribers and health-care managers via reports, seminars, workshops and publications.

MATERIALS AND METHODS

Study area and the population

The University is located in Wamakko Local Government Ares of Sokoto State. The state is located in the extreme North Western part of Nigeria and lies between latitude 13° 3’ 490N, longitude 5° 14’ 890E and at an altitude of 272 m above the sea level. The University population is composed of staffs and their dependants, students, and the surrounding communities. Being a federal university, it is cosmopolitan in nature with people from all over the country and even beyond. Within the university, there are some indigenous settlements comprising mainly of Hausa, Fulani and Zabarmawa. The major occupations of the populace include farming, fishing, and trading (MOI, 2008). The university area is dry Sahel surrounded by sandy terrain and isolated hills with ‘Rima’ river flowing through. Rainfall starts late (June) and ends early (September) but may sometimes extend into October. The average annual rainfall is 550 mm with peak in the month August. The highest temperatures of 45°C during the hot season are experienced in the months of March and April. Harmattan, a dry cold and dusty condition is experienced between the months of November and February (Abdullahi et al., 2009).

The University Clinic (Health Services Department)

The university clinic is a 20 bed health facility with an average patient turnover of about one hundred and fifty

patients per day, bed occupancy ratio of 100%. The staffs are general duty doctors in the rank of medical officers and principal medical officers (which represent the prescribing population), registered nurses, and medical laboratory technicians, pharmacy technicians and medical records. The services available are essentially primary health care services. Drugs prescribed were dispensed at the clinic's pharmacy free of cost to staffs, their dependants, and students alike, when available; as the students are expected to have contributed a token for medicals in their registration fees and the staffs are covered by the national health insurance scheme.

Morbidity Profile

This is a cross sectional descriptive study by design. The study population consisted of all records of cases seen and managed between January and December 2011 in the University clinic (Health Services Department). A cluster sampling method was employed in this study with a sample of three months of the twelve calendar months of 2011 randomly selected. Months of the year were grouped into three of four months each. Three months were then randomly picked from the clusters to reduce the chance of missing some seasonal variations. The cases seen and managed in the months of January, July, and October were selected and analyzed for this study. Cases with incomplete information or cases who visited the clinic for other reasons other than medical reasons were excluded from this study.

A retrospective review of all records of patients who were seen and managed in the clinic within the study period was done. Information on the working diagnosis was collected from the patient's record to determine the causes of morbidity and hospital visit. A data collection sheet was used to manually collect this information from the patient's record in the clinic. Percentage frequencies of the various medical disorders were determined. Privacy and confidentiality of the records was ensured throughout the study, the names and hospital numbers of all patients were left out of the data collected (Chauke, 2010).

Drug prescribing patterns

All prescriptions issued to patients who were seen during the period from January to December 2011 were collected from the clinic pharmacy and examined. A sample of one in every five prescription was selected for analysis. Information relevant to the WHO/INRUD core prescribing indicators were extracted by using a pre-piloted data collection form prepared from the WHO's health facility drug use indicator guide. Among the information which was considered during the data collection for prescribing pattern were: Date of prescription, age, sex, name and dosage form of prescribed drugs, number of drugs per prescription, duration and the drug combinations, presence of antibiotics and injections prescribed were also collected, presence of the prescribers name and signature was also considered.

The prescribing indicators were then calculated based on the WHO/INRUD guidelines on core prescribing indicators, including: average number of drugs per encounter, the percentage of drugs prescribed by generic name, the percentage of encounters with an antibiotic or injection prescribed, and percentage of drugs prescribed from the essential drug list. In addition, the calculated core drug prescribing indicators were compared with the WHO reference values.

All the data were collected, tabulated and analyzed with respect to the objectives of the study using Microsoft Excel and SPSS (Version 20) statistical packages.

RESULTS

A total number of 7855 drugs were prescribed on the 2179 sample prescriptions that were selected for analysis during the study period from January to December 2011 (Table 1). The average number of drugs per prescription was 3.6 only. The percentage of drugs prescribed by generic name was 4139(69.9%), Percentage encounter with antibiotics and injections prescribed was 1203(55.2%) and 217(10.01%) respectively, and percentage of drugs prescribed from the essential drug list was 5718(96.1%) only (Table 2). Artemisinin based combination therapies (ACTs) was the most employed combination mode of malaria treatment in the clinic accounting for about 89.6% of all prescribed antimalarial, with Artemether-Lumefantrine ranking as the most (84.3%) widely used antimalarial agent in this study. Non-ACT and monotherapy accounted for 8.6% and 1.9% respectively, with Amodiaquine-Sulphadoxine/Pyrimethamine combination being the most commonly prescribed non-ACT and Sulphadoxine/Pyrimethamine only being the highest ranking monotherapy employed (Table 3).

Penicillins were the most (44.53%) prescribed antibiotic, with amoxicillin being the most (29.51%) frequently used. This was closely followed by metronidazole (17.75) and the quinolone (ciprofloxacin) (14.95%). Two and three antibiotic drug combination was used, with predominantly two drug combination (Table 4 and 5).

A total of 11495 patient records seen and treated in the clinic for the months of January, July and October 2011 were obtained for analysis, 421 records did not meet the inclusion criteria and hence were excluded. Out of the 11074 records that met the inclusion criteria 1518, 3305, 6241 of the patients were seen and treated in the months of January, July and October respectively.

Table 1. Total Drug Count

SNO	Drug Classification	Frequency (%)
1	Anti-malaria	2326(29.61)
2	Antimicrobial	1318(16.78)
3	Vitamin/hematinic	600(7.64)
4	Analgesics	1615(20.56)
5	Antihistamine	383(4.88)
6	Antiulcer	669(8.52)
5	Antihypertensive	371(4.72)
7	Antidiabetics	318(4.05)
9	Antiasthmatic	177(1.49)
10	*Others	78(0.99)
11	**Total**	**7855**(100)

*Others: Steroids, Antispasmodics, antiepileptic, Anxiolytics, ORS, TT, Contraceptives and C/lotion

Table 2. WHO/INRUD Core prescribing indicators

SNO	Prescribing Indicators	N (%)	Standard Reference
1	Average number of drugs per prescription	3.6	1.6 – 1.8
2	% of drugs prescribed by generic names	4139(69.90)	100%
3	% of encounter with antibiotic prescribed	1203(55.20)	20 – 26.8
4	% of encounter with injection prescribed	217(10.010)	13.4 – 24.1
5	% of Prescribed drugs from essential drug list	5718(96.10)	100%

Table 3. Antimalarial Drug Use

SNO	Drugs	Combination	Frequency (%)
1	Artemether-lumenfantrin	ACT	969(84.3)
2	Artemether-lumefantrin + SP	ACT	47(4.1)
3	Artemether + SP	ACT	10(0.9)
4	Amodiaquine + Artemeter	ACT	2(0.2)
5	Artesunate + SP	ACT	1(0.1)
6	Amodiaquine + SP	Non-ACT	99(8.5)
7	Quinine + SP	Non-ACT	1(0.1)
8	SP Only	Monotherapy	11(1.0)
9	Amodiaquine	Monotherapy	6(0.5)
10	Artemether	Monotherapy	4(0.4)
11	**TOTAL**		**1150(100)**

Table 4. Antimicrobial Drug Use

SNO	Drugs	Frequency(%)
1	Amoxicillin	389(29.51)
2	Ampicillin/Cloxacillin	198(15.02)
3	Ciprofloxacin	197(14.95)
4	Co-trimoxazole	131(9.94)
5	Chloramphenicol	56(4.25)
6	Metronidazole	234(17.75)
7	Doxycycline	43(3.26)
8	Erythromycin	4(0.30)
9	Tetracycline	3(0.23)
10	Ceftriaxone	3(0.23)
11	Ampicillin	1(0.08)
12	Gentamycin	2(0.15)

Table 4. Continue

13	anti-fungal	36(2.73)
14	Antihelminthes	21(1.59)
15	**Total**	**1318(100)**

Table 5. Antibiotic Drug Combinations

SNO	Drug Combinations	Frequency (%)
1	Ciprofloxacin + Doxycycline + Metronidazole	6(2.84)
2	Ciprofloxacin + Gentamycin + Amoxicillin	1(0.47)
3	Amoxicillin + Metronidazole	61(28.91)
4	Metronidazole + Ciprofloxacin	52(24.64)
5	Ampicillin/Cloxacillin + Metronidazole	48(22.75)
6	Doxycycline + Metronidazole	13(6.16)
7	Doxycycline + Ciprofloxacin	12(5.69)
8	Co-trimoxazole + Metronidazole	10(4.74)
9	Chloramphenicol + Amoxicillin	5(2.37)
10	Doxycycline + Amoxicillin	3(1.42)
11	Total	211(100)

Malaria alone accounted for 5845 (52.8%)of the cases seen and treated and ranked as the most frequent morbidity, Respiratory tract infections, but upper and lower came a relatively distant second, followed by gastrointestinal and skin and soft tissue diseases ranking as the third and fourth respectively (Table 6).

DISCUSSION

This study was an attempt to assess the disease profiles and the drug prescribing pattern at a University clinic. Our study identified infectious diseases as the most prevalent health problem presented at this primary health care facility, especially malaria which accounted for over half of all reported infectious illnesses (52.8%). This was followed by gastrointestinal diseases (13.1%) and then respiratory tract infections (12.3%). This finding is similar to previous studies by Enato et al. 2012 and Isah et al. (2002), carried out in Edo state, south west Nigeria, where malaria was found to be the most prevalent clinical encounter. Malaria is known to be endemic in Africa and is a known major public health problem in the country, resulting in high morbidity and mortality, particularly among pregnant women and young children (FMH, 2004). Though there have been several national and international efforts at reducing the intolerable burden of the disease such as the distribution of insecticide treated mosquito nets geared at prevention of the disease. The WHO recommends supplying Insecticide treated mosquito nets without charge or with a high subsidy and using a combination of periodic mass campaigns and routine delivery channels to deliver ITNs at scale (WHO, 2005), the impact of these efforts are yet to be fully seen at the community. Diseases of gastro intestinal system follow malaria in proportion. This is also similar to the result obtained by Enato et al, (2012) who reported that diseases of the alimentary system was second to malaria in Edo state Nigeria. Lamichhane (2006) also reported that diseases of the digestive and respiratory system were the second and third indications respectively for visiting the OPD in a teaching hospital in western Nepal, the highest in that study being skin diseases. However skin and soft tissues infections were also prevalent in this present study and ranks among the leading causes of morbidity. Another study in Lucknow, the capital city of Uttar Pradesh, the most populous state of india by Kumari, (2008) identified acute respiratory infections, wounds, dental caries skin disease and worm infestation as the five most commonly observed illnesses. This further buttresses this fact that malaria is endemic in sub-Saharan Africa. Consequently antimalarial drugs were the most commonly prescribed medications followed by antimicrobial agents. A more detailed investigation into the types of antimalarial drug prescribed revealed that Artemisinin-based combination therapy (ACT) accounted for majority of antimalarial prescriptions (89.6%). Hudu et al. (2013), in a similar study reported that Artemisinin based combination therapy prescription was 75%. This observation is a clear indication that the prescribers in this community adhered to the current malaria treatment guideline in the country. The Nigerian antimalarial treatment policy of 2004, recommended artemisinin based combination therapy (ACT) for the treatment of acute uncomplicated malaria in children and adult non-pregnant women (FMH, 2004). Though ACTs are proven to be safe and effective in the management of malaria in endemic countries (WHO 2001), ability to pay for these lifesaving medications has always been a major challenge. This

Table 6. Morbidity profile of patients attending the University clinic

Morbidity	January	July	October	Total (%)
MALARIA				
Malaria	589	1252	4004	**5845 (52.8)**
RESPIRATORY				**1477 (13.3)**
Upper/lower Respiratory tract infection	187	313	865	1365 (12.3)
Asthma	37	26	35	98 (0.9)
Pulmonary Tuberculosis	3	8	3	14 (0.1)
GASTROINTESTINAL				**1449 (13.1)**
Peptic ulcer disease	144	254	276	674 (6.1)
Gastroenteritis	42	199	83	324 (2.9)
Enteric Fever	50	44	20	114 (1.0)
Helminthiasis	22	39	51	112 (1.0)
Dysentry	24	29	45	98 (0.9)
Enteritis		56	25	81 (0.7)
Constipation		24	2	26 (0.2)
Oral thrush		7	13	20 (0.7)
UROGYNAECOLOGY				**412 (3.7)**
Urinary Tract Infection	49	95	96	240(2.2)
Pelvic Inflammatory Disease	2	33	20	55 (0.5)
Dysmenorrhea	12	19	18	49 (0.4)
Sexually transmitted diseases	12	11	15	38 (0.3)
Candidiasis		9	4	13 (0.1)
Abortions	4	2	4	10 (0.1)
Schistosomiasis			3	3 (0.03)
Menstrual irregularity	2			2 (0.02)
Ovarian cyst			2	2 (0.02)
OBSTETRICS				**191 (1.77)**
Antenatal Care	44	67	72	183 (1.7)
Normal Delivery	3	3		6 (0.05)
Pueperal sepsis		2		2 (0.02)
SKIN AND SOFT TISSUES				**453 (4.1)**
Furunculosis	25	88	38	151 (1.4)
Septic skin rashes		29	54	83 (0.8)
Fungal Dermatitis	27	26	27	80 (0.7)
Allergic Dermatitis	13	46	15	74 (0.7)
Dermatitis	32	1	9	42 (0.4)
Tinea	2	5	7	14 (0.1)
Acne		5	2	7 (0.1)
Hypertropic scar		2		2 (0.02)
NON COMMUNICABLE DISEASES				**293 (2.7)**
Systemic Hypertension	33	94	74	201 (1.8)
Diabetes Mellitus	19	46	26	91 (0.8)
CVA		1		1 (0.01)
SURGICAL CASES/TRAUMA AND BURNS/A&E				**190 (1.7)**
Bruises and minor lacerations	10	47	30	87 (0.8)
Road Traffic Accident	15	15	10	40 (0.4)
Burns	8	4	6	18 (0.2)
Pyronychia		7		7 (0.1)
Circumcision	12			12 (0.2)
Haemorrhoids		3	3	6 (0.1)
Mastitis		3	1	4 (0.04)
Septic wound		4		4 (0.04)
Appendicitis		1	2	3 (0.02)
Anal fissure			2	2 (0.01)
Snake bite			1	1 (0.01)

Table 6. Continue

Dog bite	1			1 (0.01)
Shoulder Dislocation	1			1 (0.01)
ENT/DENTAL/EYE				**554 (5.0)**
Conjunctivitis	39	144	95	278 (2.5)
Dental Caries	17	29	40	86 (0.8)
Pharyngitis		28	35	63 (0.6)
Otitis Media		43	5	48 (0.4)
Tonsilitis	11	17	12	40 (0.4)
Gingivitis	4	23	1	28 (0.3)
Allergic rhinitis		5	3	8 (0.07)
Stye			2	2 (0.01)
Foreign body in the ear		1		1 (0.01)
MUSCULOSKELETAL				67 (0.6)
muscular pains		3	31	34 (0.3)
Arthritis		12	5	17 (0.2)
chronic back pain		8	8	16 (0.1)
OTHERS				**143 (1.3)**
Psychosomatic/Emotional Disorders	29	45	30	104 (0.9)
Measles		15	2	17 (0.2)
Mumps		7		7 (0.06)
SCDx			5	5 (0.05)
Bell's palsy		3	1	4 (0.04)
Chicken pox			3	3 (0.02)
Malnutrition		2		2 (0.01)
Epilepsy		1		1 (0.01)
Total	**1518**	**3315**	**6241**	**11074**

would not have been a challenge to their prescriptions in this study as drugs prescribed at the study center were dispensed free because the students are expected to have contributed token for medicals in their registration fees and staffs are covered by the national Health Insurance Scheme. Expectedly, antibiotic prescriptions followed antimalarial and accounted for 21.1% 0f all prescriptions followed closely by analgesics (20.8%) and Vitamins/Heamatinics (10.1%). A close observation of the pattern of antibiotics prescription showed that 19.1% were prescribed in combination (2 or 3 drugs) while 80.9% were prescribed as single agents. Amoxicillin (29%) accounted for the highest antibiotic monotherapy prescribed followed by Ampiclox (13.7%) and Ciprofloxacin (11.4%). In a previous study, Jimoh et al. (2011) reported that quinolones and penicillins accounted for 35.83% and 26.29% respectively of all antibiotics prescriptions. This may be because of the affordability of these agents by the health care provider. These antibiotics were older generation antibiotics and this is to be welcomed .However, the use of antibiotics should be in accordance with the sensitivity patens of microorganism in the particular area (WHO, 2001). If the organisms are sensitive to older antibiotics, they should be used. The newer antibiotics are expensive and should be kept in reserve to decrease the likelihood of resistance. The relatively moderately high proportion of vitamins/heamatinics and analgesics in this study may probably be due to the fact that they are usually prescribed as adjuncts in infectious diseases. It has been noted that clinicians most often think of the patient's problem as of multiple diagnoses, as being a combination of malaria and bacterial infections. Hence prescriptions usually include an antimalarial drug, an antibiotic and of course an analgesic as well as multivitamin (Ibrahim, 2004).

An assessment of the WHO core prescribing indicators showed that the average number of drugs per prescription was 2.7 only. In a previous study in two tertiary health care facilities in the same region, the means number of drugs was 3.5 (Ibrahim, 2004) whereas an average value of 4.3 was obtained among private medical practitioners (Ibrahim et al., 1999). An average number of drugs per encounter of 3.9 in a secondary heath care facility in Ilorin Nigeria. Our finding is however similar to 2.2 drugs per prescription noted in Terai districts and 2.1 drugs per prescription in the hill districts of Nepal (INRUD, 2005) both in India. In Uzbekistan, rural primary physicians prescribed 2.9 drugs per patient (Pavin et al., 2003). However our finding is still higher than the WHO reference and a

lower number of drugs per prescription is advocated in the study center as this will increase compliance, lower cost of therapy and decrease risk of drug interactions and development of resistance in relation to antibiotics. About 69.9% of drugs in our study were prescribed by generic name. In a previous study in the same region, 55.7% of drugs were prescribed generically (Ibrahim, 2004) while 99.2% was reported by Abubarkar et al. (2013) for antipsychotics. In previous studies in other parts of Nigeria, generic prescribing were 46.2% (Akande and Ologe, 2007) and 47.7% (Enato, 2012). Our findings is quite higher than what were obtains in other parts of the world where 19.2% (Lamichlane et al., 2006) 32.6%, (Shankar et al., 2002) and 24.4% (Sarkan and Das, 2002) have been reported.

The percentage of encounter with antibiotic prescribed is quite high (55.2%). This is similar to 51.2 % obtained in a previous study (Ibrahim, 2004). According to figures gathered by surveys presented to World Health organization (WHO) in 2000, about 60% of antibiotics in Nigeria were prescribed unnecessarily. Globally, the figure for unwarranted antibiotics prescriptions stands at roughly 50% (WHO, 2004)

Parenteral route prescription of drugs in this study was found to be relatively low when compared with findings from other studies, only 10.01% of the drugs prescribed in this study were parenteral drugs compared to 40.6% (Ibrahim, 2004) in a study in tertiary Health care facilities in the same region, 26.9% in a study in Enugu, Nigeria (Aghaji, 2002) and 10.1-17.0% in a study in two state, south-west Nigeria (Isah et al., 2002). The lower number of encounters with injection prescribed in this study may not be unconnected with the continuing medical education on rational use of injectables, it is a welcomed development and has to be encouraged.

About 96.1% of drugs were prescribed from the essential drug list. This is not unexpected as the health facility where the study was carried out is expected to make all drugs available to the students and staff. This is welcomed and should be encourage in order to prevent unnecessary out of stock burden in a primary health care system that is expected to be prescribing strictly from the essential drug list and also make all prescribed drugs available to the patients.

In conclusion the findings in this study revealed that malaria, gastrointestinal, respiratory and skin diseases were the four leading causes of morbidity in the university clinic. Artemether-Lumefantrine, Penicillins and Non-steroidal anti-inflammatory drugs accounted for the highest number of drugs prescribed. The core prescribing indicators measured in this study were not in consonance with standard reference values.

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