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Original Research Article

Drug Utilization among Island Dwellers in Bayelsa State

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Abstract

Purpose: To assess drug utilization patterns in disease management and drug therapy problems (DTPs) inherent in prescribing practice at a secondary health care facility on Wilberforce Island, Bayelsa State, Nigeria.
Methods: 504 case notes of patients who attended the General Hospital on Wilberforce Island between January 1st and December 31st, 2012 were randomly selected. The case notes were assessed for pattern of drug utilization in relation to encountered diseases as well as DTPs.
Results: The mean patients' age was 26.94 ± 19.71 with females constituting 61.5 % of the cohort. Malaria (34.6 %), typhoid fever (17.0 %), urinary tract infection (9.9 %), and cardiovascular disorders (5.7 %) were the main ailments they presented at the health facility. Antibiotics (20.2%), analgesics (17.1%), multivitamins (14.8%), and antimalarials (13.5%) were the major drugs prescribed for the subjects. The average number of drugs prescribed per encounter was 5.43 ± 1.56 and detection rate of DTPs was 21.7% (1.19 ± 1.10 cases per prescription). Drug interactions (46.6%), unnecessary drug therapy (23.4%), need for additional drug therapy (19.7%) and wrong drug therapy (4.2%) were the major DTPs observed.
Conclusion: There was irrational prescription of drugs and high rate of DTPs for the Island dwellers**.**

Keywords: Drug therapy problems, drug utilization, Island dwellers, Bayelsa state, Nigeria

Indexing: Index Copernicus, African Index Medicus

Introduction

Occurrence of diseases varies in different regions of the world. Earlier studies revealed that communicable diseases constituted a huge health burden in Africa and developing countries as opposed to the western countries where non-communicable diseases accounts for a greater part of the morbidity and mortality [1]. More recently, increase in non-communicable diseases has been observed in Africa. They account for most hospital visits/admissions and are the leading causes of mortality and morbidity [2, 3]. Such diseases include diabetes mellitus, cardiovascular diseases and renal diseases [4, 5]. Also, a study carried out in Port Harcourt, South-South Nigeria revealed that diseases of the cardiovascular, endocrine and renal systems were the most prevalent non-communicable diseases among medical admissions [6].

In the management of diseases, appropriate drug utilization coupled with requisite non-drug therapy will improve health care delivery and reduce global morbidity and mortality rates. Irrational drug use and inappropriate prescribing result in drug therapy problems which are a huge burden in the delivery of health care [7]. The identification of disease trends, patterns of drug use and common drug therapy problems (DTPs) in a locality is essential for effective health care planning. That the pattern of diseases among Islanders can be different from those living inland can be seen in the work of Vos and colleagues [9] who reported that non-communicable diseases, notably the cardiovascular disorders were much larger contributors to the burden of diseases in groups of indigenous Islanders in Australia. Their findings informed the basis for planning and subsequent implementation of robust healthcare delivery package targeted at meeting health challenges of the concerned Islanders [10]. Thus, we aimed to determine drug utilization patterns as well as drug therapy problems (DTPs) inherent in prescribing practice at the only government secondary health facility in Wilberforce Island in the Niger Delta region.

Methods

The study was conducted at Amassoma General Hospital which is located in Amassoma town on Wilberforce Island, Southern Ijaw Local Government of Bayelsa State, Nigeria. The hospital has 40

functional bed spaces with about 4000 patients' turnover for the year 2012. It is the main health facility which provides health care services to the Amassoma community and its' environs. Because the State University is located within the Island, Amassoma has become the second largest town in the oil rich Bayelsa state with an estimated population of 6,970 indigenous people [11] whose main occupations are farming and fishing.

Following ethical approval, a retrospective review of randomly selected case notes of patients who attended the health facility between January 1st to December 31st, 2012 was undertaken. The sample size of 504 was determined with the aid of the sample size table using 95 % confidence interval, 5 % margin of error [12] and patients' attendance register as a guide. Only those (residents of Amassoma and its environs) who attended the clinic within the specified period were included in the study. Pregnant women were however excluded.

A data collection form was employed for the gathering of requisite patients' information which included patients' demographics, disease condition(s), and information on prescribed drugs such as name (generic/brand), dosages, duration of therapy as well as associated DTPs.

The main outcomes measured were pattern of drug utilization in relation to encountered diseases as well as drug related problems inherent in prescribing practices at the health facility. The DTPs were determined using clinical judgments and categorized as earlier reported [13].

Data analysis

Statistical Package for Social Sciences (SPSS) version 16.0 and GraphPad Instat 3.10 for Windows (GraphPad Software, San Diego California USA) were employed for data analysis. Data analyzed included patients' demographics, frequency of presentation with diseases, drugs prescribed and rates of occurrence of DTPs.

Results

Of the 504 case notes that were evaluated, majority (61.5 %) were for females. Most of the patients were within the age range of 12 - 49 years (58.7%) whereas those older than 64 years, (5.2 %) were in the minority category. The average age of the patients was 26.94 ± 19.71 years. Most (39.3 %) of the patients were unemployed (Table 1).

Malaria (34.6 %) was the most frequently presented ailments at the facility. This was followed by typhoid fever (17.0 %), urinary tract infection (9.9 %), cardiovascular disorders (5.7 %), Helminthiasis (5.2 %) and peptic ulcer disease (4.4 %) amongst others (Table 2).

Table 1: Patients' demographics (n = 504)

Variable	N (%)
Gender	
Female	310 (61.5)
Male	194 (38.5)
Age	
Children (0 – 11 yr)	133 (26.4)
Young and adults (12 - 49 yr)	296 (58.7)
Elderly (50 – 64 yr)	49 (9.7)
Very old (≥ 65 yr)	26 (5.2)
Average age (Mean ± SD)	26.94 ± 19.71
Occupation	
Unemployed	198 (39.3)
Students	114 (22.6)
Business/Artisan	82 (16.3)
Civil servant	54 (10.7)
Farmer	44 (8.7)
Retired	11 (2.2)
Employees of private companies	1 (0.2)

N, Number of patients

Table 2: Conditions presented with at the study centre

Diseases (n = 942)	N (%)
Malaria	326 (34.6)
Typhoid Fever	160 (17.0)
Urinary Tract Infection	93 (9.9)
Cardiovascular diseases	54 (5.7)
Helminthiasis	49 (5.2)
Peptic Ulcer disease	41 (4.4)
Respiratory Tract Infections	34 (3.6)
Diabetes mellitus	20 (2.1)
Diarrhoea	16 (1.7)
Threatening abortion	15 (1.6)
Appendicitis	12 (1.3)
Menstrual disorder	15 (1.6)
Chicken pox	10 (1.1)
Allergic reaction	9 (1.0)
Gastroenteritis	8 (0.9)
Musculoskeletal pain	8 (0.9)
Arthritis	7 (0.7)
Anxiety	6 (0.6)
Asthma	6 (0.6)
Anemia	5 (0.5)
Hemorrhoids	4 (0.4)
Fibroid	4 (0.4)
Eye diseases	3 (0.3)
Others	37 (3.9)

A total of 2739 drugs were prescribed for the patients, most of which were antibiotics (20.2 %), analgesics (17.1 %), multivitamins (14.8 %), antimalarials (13.5 %) and cardiovascular drugs (4.9 %). The average number of drugs prescribed per encounter was 5.43 ± 1.56 (Table 3). Proportion of drugs prescribed in their generic names was 37.1 % and there were no essential drug list and standard treatment guideline at the health facility.

Of all the drugs prescribed, 4.6% were injections. Out of these, analgesics (42.9 %) were the most encountered (Table 4).

Table 3: Drugs prescribed for patients

Drugs (n = 2739)	N (%)
Antibiotics	552 (20.2)
Analgesics	469 (17.1)
Multivitamins	405 (14.8)
Antimalarials	369 (13.5)
Cardiovascular drugs	133 (4.9)
Anthelminthics	106 (3.9)
Cough syrup	101 (3.6)
Benzodiazepines	84 (3.1)
Drugs used for peptic ulcer disease	75 (2.7)
Antihistamines	73 (2.6)
Antidiabetics	30 (1.1)
Antidiarrhoeals	24 (0.9)
Antifungals	19 (0.7)
Antiasthmatics	19 (0.7)
Hormonal preparations	11 (0.4)
Eye remedies	6 (0.2)
Others	263 (9.6)
Average number of drugs per encounter (mean ± SD)	5.43 ± 1.56

Table 4: Drugs prescribed as injectables

Injectable drugs (n =126)	N (%)
Analgesics	54 (42.9)
Antibiotics	17 (13.5)
Antimalarial drugs	13 (10.3)
Antihistamines	11 (8.7)
Multivitamines	9 (7.1)
Cardiovascular (antihypertensive) drugs	7 (5.6)
Others	15 (11.9)

Five hundred and ninety four DTPs were observed in this study which translated into 21.7 % rate of DTP detection among the subjects. Drug interactions were the most observed of the lots and the average number of DTPs per prescription was 1.19±1.10 (Table 5).

Table 5: Drug therapy problems (DTPs) profile

Variable (n = 594)	N (%)
Drug interaction	277 (46.6)
Unnecessary drug therapy	139 (23.4)
Need for additional drug therapy	117 (19.7)
Wrong drug	25 (4.2)
Dosage too high	18 (3.0)
Dosage too low	17 (2.9)
Adverse drug therapy	1 (0.2)
Inappropriate adherence	0 (0%)
Average number of DTP per patients	1.19 ± 1.10

Discussion

In the health facility studied, antibiotics (20.2 %), analgesics (17.1 %), multivitamins (14.8 %), as well as antimalarials (13.5 %) were mostly used in the treatment of most of the conditions encountered and each patient had at least a DTP. Malaria (34.6 %), typhoid fever (17.0 %) and urinary tract infections (9.9 %) were the commonly presented ailments.

While the high rate of malaria observed in this study is most likely due to the swampy nature of the Island which favours mosquitoes breeding, the typhoid fever high rate is probably associated with the drinking water in the area. This is because most of the residents rely on borehole water for drinking due to the absence of pipe-borne water. Also, most of the residents live in houses without toilets resulting in indiscriminate disposal of human wastes into the surrounding river water. Thus, contamination of the drinking water source was expected [14]. High prevalence of urinary tract infections may also be linked to compromised level of hygiene in the community.

The high proportion of antimalarials prescribed is relative to the number of cases of malaria recorded. That more antibiotics were prescribed for the patients studied could be readily explained by the high prevalence of typhoid fever and other forms of infections which include urinary and respiratory tract infections. Several analgesics were found to be routinely exploited for the management of pain and pyrexia which often result from underlying disease states such as malaria, infections and other conditions capable of precipitating aches and fevers [15]. Also, high rate of multivitamins prescribing might probably be informed by the need for nutritional supplementation in most of the subjects given the predominant diets in the community which comprise majorly plantain and fish [16].

The percentage encounter with antibiotics in this cohort is in agreement with World Health Organization (WHO) specification [17] as opposed to findings elsewhere [18] where higher levels of antibiotic prescribing were reported. Polypharmacy [17] observed in this study is similar to that reported in Osun State, Nigeria [19]. One of the possible reasons for the seeming polypharmacy at the study center could be the absence of essential drug list and standard treatment guidelines which collectively serve as benchmark for prescribing. The high rate of DTPs reported in this study is of major importance as it could lead to hospitalization, longer stay in hospital beds and higher cost of care. While the interpretation of this study may be limited to the community studied, it provides useful information on the need for adequate training of health personnel who work in riverine communities, particularly in Nigeria.

Conclusion

Polypharmacy and high rate of DTPs were common in the facility studied, and are associated with the medications prescribed for the patients. This calls for adequate training of health personnel deployed to riverine communities.

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Competing Interests

No competing interest exists among authors.

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References

1. Ebrahim S, Smith GD. Exporting failure? Coronary heart disease and stroke in developing countries. Int J Epidemiol 2001; 30(2):201-205.
2. Omran A R. The epidemiologic transition: a theory of the epidemiology of population change. Milbank Q 2005; 83(4):731-757.
3. World health Organisation. Reducing risks, promoting health life- Geneva. The world report. 2002.
4. Ansa VO. Profile and outcome of cardiovascular admissions at the University of Uyo Teaching Hospital, Uyo-a five year review. Niger J Clin Pract 2008; 11(1):22-24.
5. Anyanwu A C, Odeniyi IA, Fasanmade OA, Adewunmi AJ, Adegoke O, Mojeed AC et al. Endocrine-related diseases in the emergency unit of a Tertiary Health Care Center in Lagos: A study of the admission and mortality patterns. Niger Med J 2013; 54(4):254.
6. Agomuoh DI, Unachukwu CN. Pattern of Diseases among Medical Admissions in Port Harcourt, Niger Med Pract 2008; 51(3):45-50.
7. Tamuno I, Fadare JO. Drug prescription pattern in a Nigerian Tertiary Hospital. Trop J Pharm Res 2012; 11(1):146-152.
8. World Health Organization. Promoting Rational Use of Medicines Saves Lives and Money, WHO Experts Say. Available at http://www.who.int/mediacentre/news/notes/2004/np/en/ (Accessed on May 24, 2014).
9. Vos T, Barker B, Stanley L, Lopez AD. The burden of disease and injury in Aboriginal and Torres Strait Islander People 2003. Brisbane: School of Population Health. The University of Queensland. 2007.
10. Australian Institute of Health and Welfare. The health and welfare of Australia's Aboriginal and Torres Strait Islander people, an overview 2011. Cat. No. IHW 42. Canberra: AIHW. 2011.
11. Amassoma: map, population, location. Available at http:www.tiptopglobe.com/city?n=Amasso (Accessed on May 07, 2014).
12. Research advisor. Sample Size Table 2006. Available at http://www.research-advisors.com (Accessed on May 14, 2013).
13. Strand LM, Morley PC, Cipolle RJ, Ramsey R, Lamsam GD. Drug-Related Problems: Their Structure and Function. Ann Pharmacother 1990; 24(11): 1093-97.
14. Jatau AA. Knowledge, Attitudes and Practices Associated with Waste Management in Jos South Metropolis, Plateau State. Mediterr J Soc Sci 2013; 4(5):119-127.
15. Builders MI, Okonta JM, Aguwa CN. Prescription Patterns of Analgesics in a Community Hospital in Nsukka. J Pharm Sci Res 2011; 3(12):1593-1598.
16. Suleiman IA, Amogu EO, Ganiyu KA. Prevalence and control of hypertension in a Niger Delta semi urban community, Nigeria. Pharm Pract 2013; 11(1): 24-29.
17. Isah AO, Laing R, Quick J, Mabadeje AFB, Santoso B, Hogerzeil H, Ross-Degnan D. The Development of Reference Values for the WHO Health Facility Core Prescribing Indicators. West Afr J Pharm Drug Res 2002; 18:6-11.
18. Chima IE, Obidiya OS, Mc Abraham CV. Evaluation of drug use and patient care practices in a referral health facility in Yenagoa, Bayelsa State, Nigeria. Continental J Pharm Sci 2012; 6(1):10-16.
19. Babalola CP, Awoleye SA, Akinyemi JO, Kotila OA. Evaluation of prescription pattern in Osun State (Southwest) Nigeria. J Public Health Epidemiol 2011; 3(3): 94–98