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RESEARCH PAPER

MORBIDITY PATTERN AMONGST THE ADULT POPULATION IN THREE LEVELS OF HEALTH CARE IN THE NORTH AND CENTRAL SENATORIAL DISTRICTS OF EDO STATE, NIGERIA

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ABSTRACT

This retrospective cross-sectional survey assesses the morbidity pattern in the North and Central senatorial districts of Edo, State, Nigeria, using a combination of random and systematic sampling techniques. Diagnostic records in case notes of 2,500 general outpatients for the year 2007 were studied. The data collected was analyzed using SPSS statistical software (version 16) and the values expressed as mean \pm standard deviation. Tests of statistical significance were also performed using the chi square and goodness of fit tools. Results showed that Malaria was the leading cause of morbidity followed by Hypertension, Musculoskeletal system (MSS) pathologies/trauma, Peptic Ulcer Disease (PUD), Sexually Transmitted Diseases (STD) and Skin diseases/infections (ranked lowest). Diseases comprising anaemias, helminthiasis, diabetes mellitus, HIV/AIDS, and Adverse Drug Reactions (ADR), as well as CNS, CVS, ENT, Eye diseases among others, were most common in ISTH. Overall, malaria, hypertension, MSS pathology and PUD were the commonest cause of morbidity, while skin diseases, UTI and disease of the GIT were the least. These findings could be a guide to provision of health services and allocation of resources by relevant agencies.

Key words: Morbidity pattern; Health care facilities, Diseases

INTRODUCTION

The morbidity pattern /disease burden determines global and national priorities for health (Snow *et al.*, 1990). This is because study of disease burden cum morbidity pattern of an area provides information that should guide allocation of health resources, preparation of Essential Drug list (EDL), as it also determines the clientele and utilization.

The morbidity profile of an area is determined by a number of interacting factors such as climate, vegetation, flora, fauna, occupation, habits, genetic constitution etc (Lee *et al.*, 1993). Given the interplay of these disease precipitating factors, and except for fluctuations seen during epidemics, the clinical case mix in an area is relatively constant over a reasonable time period, with minimal baseline perturbations (Isah *et al.*, 2002).

This relative stability in morbidity swing allows for planning in the health care system, since the real health needs, as distinct from patients demands or imposed use can be determined (Col & O'Connor, 1987). Consequently, it is possible to detect any discordance between resource allocation and utilization in any aspect of the health sector. Earlier studies of morbidity pattern include Ukoli 1982; Ezenwa 1985; Osinusi & Oyejide, 1989, and Isah *et al.*, 2002. The three previous studies addressed symptomatic presentations, while the later synthesized the clinical features to present a diagnosis.

This retrospective study, adapted after the method of Isah *et al.* (2002), assesses the morbidity pattern in health care facilities situated in the North and Central senatorial districts of Edo, State, Nigeria, using a combination of random and systematic sampling techniques.

MATERIALS AND METHODS

Study Area: The study was carried out at three levels of health care facilities in the North and Central Senatorial Districts of Edo State, Nigeria; which lie in the rain forest belt between latitudes $6^{\circ} 29^1 \text{ N} - 7^{\circ} 35^1 \text{ S}$ and $5^{\circ} 37^1 \text{ E} - 6^{\circ} 41^1 \text{ E}$. The major seasons are the wet (rainy) and dry seasons. The wet season starts in April, lasting through October with a break of about 2-3 weeks in August; while the dry season starts in November and lasts through March, with a short spell of Harmattan from mid December to early January. The average rainfall of the area is 150-200 cm. The temperature ranges between 25°C in the rainy season to 28°C in the dry season. The vegetation is rain forest in the central with guinea savannah in the north. The area is inhabited by the Esan, Etsako (Afemai), Owan and Akoko-Edo speaking peoples, whose common ancestry and descent is traced to the ancient Bini Kingdom. The population of the study area is 1.5 million (National Census, 2006), which are near homogeneous and relatively young with a dependency ratio of 0.89 (NDHS, 2008). The major occupation in the study area is farming, trading, with a few artisans and civil servants.

The health care facilities (HFs) studied included one Teaching hospital [Irrua Specialist Teaching Hospital (ISTH)], 7 General hospitals (GHs) and 22 Private hospitals (PHs); selected retrospectively in a cross sectional survey using a combination of stratified random and systematic sampling. The operations of this HFs are regulated by the government.

ISTH serves the Ambrose Alli University (AAU) College of Medicine in undergraduate training of doctors and runs specialist program in Family medicine/General practice and other disciplines. It has a busy General Out patient clinic. ISTH is the only tertiary health facility (HF) in the study area and serves as a referral centre for all the other HFs. For this study it was selected on its own merit.

The GHs are run by the Edo state government, via a zonal structure. The thirty three (33) GHs in the state are divided into medical zones (MZs). The eleven (11) local government areas (LGAs) in the study area have seven (7) MZs and twenty one (21) GHs. Each MZ covers one or two LGAs, and in each LGA there is at least one GH (MOH, May 2006). The GHs also have vibrant General Outpatient clinics, especially in ones where there is a doctor.

The PH's are run by various categories of doctors registered with both the Edo State Ministry of Health and the Nigerian Medical and Dental Council (NMDC). There are seventy-five (75) registered PHs in the study area (MOH, 2007), out of which twenty two (22) were selected for the study.

Data Collection: The data collectors were trained over a period of one week just before the study. In each HF, an initial assessment of the medical record system was carried out during the pre-study visits to ensure a true representation of cases seen.

Case notes of patients fifteen years (15) years and above were selected for review. Using a standard format, information such as age, sex and diagnosis as recorded in the 2,500 medical case notes of Out-patients seen from 1st January – 31st December, 2007, {(700 from ISTH; 700 (100 each) from 7 GHs; 1,100 (50 each) from 22PHs} selected by systematic random sampling, were obtained.

Ethical Consideration: Formal consent, permission and ethical approval were obtained from the Ethical Committees and Management of ISTH, Irrua and Edo State Ministry of Health. The nature, scope and implications of the study were explained to the Directors of the twenty-two (22) selected PHs and the Zonal Medical Directors (ZMDs) of the GHs. They not only gave consent and allowed the research team access to their medical records, but also directed the Senior Medical Records Officer (SMRO) to assist with the data collection. The confidentiality of the Patients records and the clinician's/patient's identity was adequately protected, as neither the Hospital number, name of the patient, nor that of the Doctor was included. The selected case notes were coded (for cross reference purposes).

Statistical Analysis: The data was entered into Microsoft excel spread sheet (Microsoft corporation, USA), double checked and then transferred into SPSS -16.0 statistical software. This was used to analyze the diagnoses, age, sex distribution of the patients as shown below and the results presented in tables and figures:

Cross-tabulation of data and test for statistically significant differences in between parameters and the HF's was done using Chi square test of significant associations. Comparisons with significant differences were further confirmed using Chi square goodness of fit, to decipher the points of statistical differences between the HF's. At a confidence interval of 95%, two-tailed p-value less or equal to 0.05 was considered significant in all cases. The values are also expressed in percentages.

RESULTS

A total of two thousand 2946 morbidities were encountered form 2500 case notes: ISTH 1007, GH932, PH 1388, indicating co-morbidity of 446(17.8%). There was significant difference in the documentation of age in the three categories of HF's (A, B, C in table 1). Whereas age stratification was dutifully done in the tertiary health facility (ISTH), 87(12.4%) and 664(60.4%) of the patients in GHs and PHs respectively were classified as adults, without stating their actual ages. The mean age of the patients was ISTH (40.8±.17), GH (41±.18), PH (31.5±15). Peak age was 21-30 years and cut across the three categories of hospitals.

Though there is no statistically significant difference in sex of patients among the three categories of hospitals, more females attended hospital in the period under review than males in the three categories of hospitals; ISTH-female 400(57.14%), male 300(42.9%); GH female 428 (61.41%), male 272(38.86%); PH female 655(59.55%), male 445(40.45%) (Figure 1), with a female/male ratio of 4:3, 5:3, 5:3 respectively, all showing female predominance. There is a highly statistical significant difference in age stratification among the HF's. A, B, C in superscripts indicates points of statistically significant differences (P<0.001). No statistical difference in sex distribution of patients studied in the three categories of HF's (P>0.05).

Table 1 Age distribution in years.

Age distribution (years)	ISTH		G H		P H	
	NO	(%)	NO	(%)	NO	(%)
15-20	60	8.6	82	11.7	108	9.8
21-30	230	32.7	157	22.4	190	17.3
31-40	80	11.4 ^a	116	16.6 ^a	59	5.4 ^b
41-50	150	21.4 ^a	93	13.3 ^b	27	2.5 ^c
51-60	100	14.3 ^a	74	10.6 ^a	21	1.9 ^b
61-70	50	7.1 ^a	61	8.7 ^A	21	0.9 ^b
71-80	20	2.9	22	3.1	10	0.9
81 & above	10	1.4 ^a	8	1.1 ^a	0	0 ^b
Adult	0	0 ^c	87	12.4 ^b	664	60.4 ^a
Total	700	100	700	100	1100	100

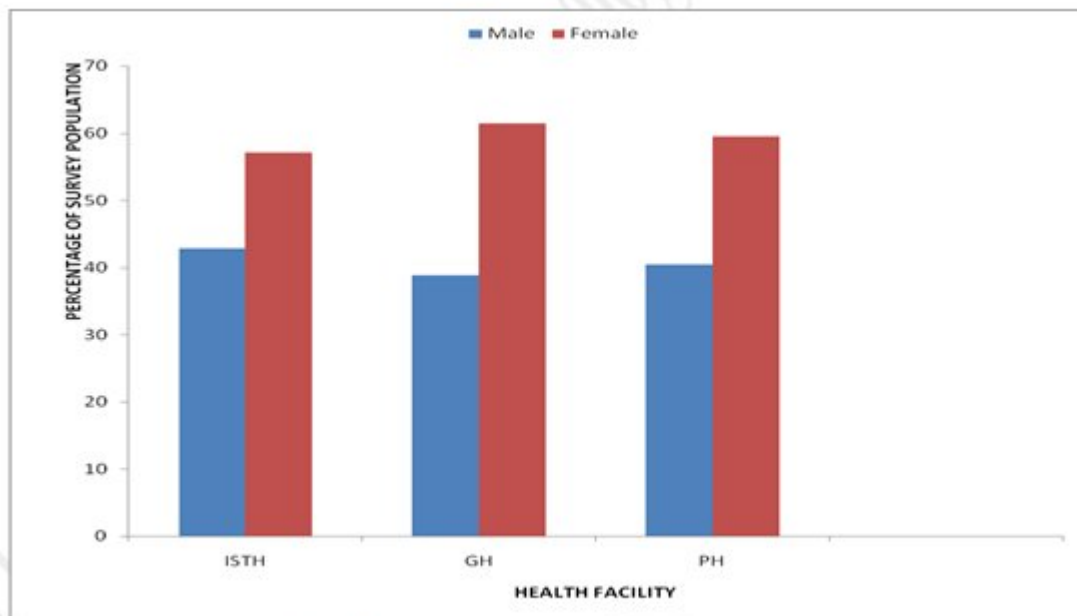


Figure 1 Sex distribution of patients in the HFs

Malaria was the leading cause of morbidity [ISTH (320;31.8%), GH (332;35.6%), PH (454;32.%)]; followed by Hypertension [ISTH (175;17.4%), GH (142;15.2%), PH (133;9.6%)], Musculoskeletal system (MSS) pathologies/trauma [ISTH (86;8.5%); GH (73;7.8%); PH (160; 11.5%)] and Peptic Ulcer Disease (PUD) [ISTH (105;10.4%); GH (47; 5.0%); PH (104;7.5%)]; Sexually Transmitted Diseases (STD) [ISTH (15;1.5%); GH (4;0.4%); PH (11;0.8%) and Skin diseases/infections [ISTH (22;2.2%); GH (16;1.7%); PH (46;3.3%) ranked lowest. Worthy of mention is the near absence of Typhoid fever in ISTH1 (0.1%) compared to GH (156;16.7%) and Private PH (104;10.1%). Other diseases comprising anaemias, helminthiasis, diabetes mellitus, HIV/AIDS, Adverse drug reactions (ADR), CNS, CVS, ENT, Eye diseases etc were most common in ISTH 135(13.4%), 15(1.6%), 53(3.8%).

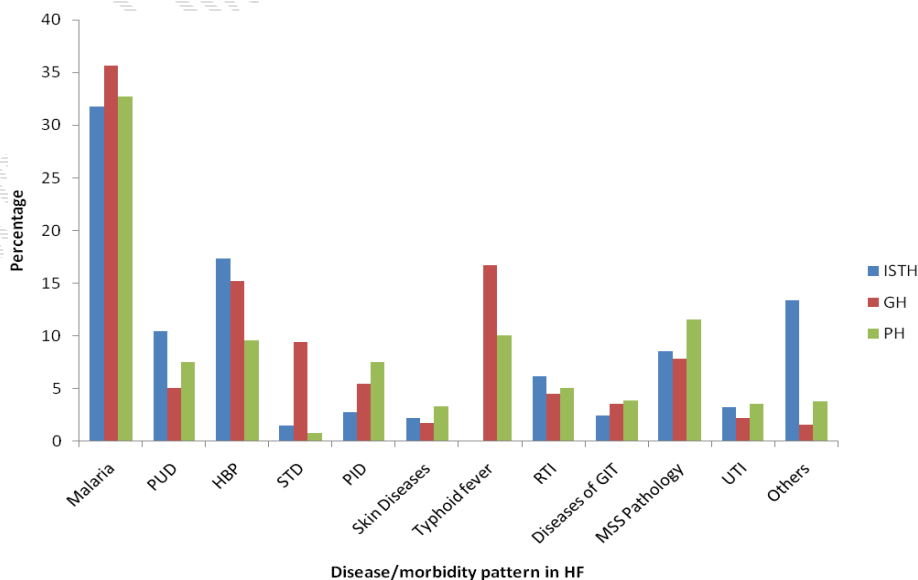


Figure 2: Bar chart showing percentage (%) of disease/morbidity pattern in the three categories of hospital.

Malaria was the leading cause of morbidity, ranking highest in GH but virtually the same in ISTH and PH. Hypertension ranked highest in ISTH, followed by GH and was lowest in PH. PUD ranked highest in ISTH

followed by PH and least in GH. PID and MSS pathologies/trauma ranked highest in PH but showed no significant difference in the three levels of HF. Only one case of Typhoid fever was recorded in ISTH, ranking highest in GH. STDs were more common in GH than ISTH and PH, with significant differences ($P < 0.01$) in between the three HFs.

DISCUSSION

There was a sharp contrast in recording of age in the three categories of HFs studied, with highly significant association in age ($P < 0.001$). Whereas age stratification was dutifully done in the tertiary health facility (ISTH), same could not be said for GH and PH where 12.4% and 60.4% of the patients respectively, were inappropriately classified as adults without stating their actual ages (Table 1). Similar high figures were reported by Isah *et al.*, 2002; Enato and Uwaga, 2011 (60.4%) in Port Harcourt, South-South, Nigeria and Oyeduni *et al.*, 2011 (82.4%) at University College Hospital (UCH), Ibadan Southwest, Nigeria, where corresponding percentage of prescriptions had no age written on them, but a big contrast to that recorded by Sharif *et al.*, in a hospital in Dubai where age of the patient was not stated in 9.7% of prescriptions (Sharif *et al.*, 2007). This is in spite of the fact that spaces were provided for them in the case notes and this may suggest either impatience, carelessness or ignorance of the importance of age in medical statistics and therapeutics by the record clerks.

The peak age of patients who attended hospital in the period (21-30 years) was similar in the three categories of hospitals, and showed no statistically significant difference. This is similar to the findings of Isah *et al.*, 2002, who recorded an age profile with a preponderance of in the 20-30 age group. The mean age was ISTH (40.8 ± 17), GH (41.1 ± 18), and PH (31.5 ± 15). There is no statistically significant difference between the mean age of patients in ISTH and GH. However there is a highly significant difference in the mean age of patients that attended PH and ISTH and GH ($P < 0.001$). The observation shows that more older patients (41 years and above) attended the ISTH and GH, this could be because these hospitals are managed by the government; and patients expect them to have higher concentration of specialists, better clinical equipment and functional laboratories to take care of systemic and complicated systemic illnesses that are more common in the older age group. This finding is lower than Ratchina *et al.*, (2000) in Russia who recorded a mean age of 47.1 ± 15.2 in adult patients aged 16 to 88 years.

There is no significant association between sex and attendance in the three categories of HFs though more females attended hospital in the period under review than males in the three categories of hospitals (Figure 1), with a female/male ratio of 4:3, 5:3, 5:3 respectively, all showing female predominance. This female predominance is similar to the findings of Isah *et al.*, 2001 in Nigeria and (Ratchina *et al.*, 2000; Lamichhane *et al.*, 2006; and Karkal *et al.*, 2008) in India where more than 60% and 50% of patients respectively were females. The seemingly marginal difference and female predominance could be because Women are generally more conscious of their health status and so the woman is more likely to complain of any sign of ill-health first before the man.

Knowledge of the morbidity pattern enables policy makers, health care planners, and managers to reach informed decisions on allocation of health resources, both human and material, to the various areas within the health sub-sector (Bamgboye and Shoge, 1987).

As in previous studies (Ezenwa, 1985; Greenwood, 1990; Ofori-Adjei and Arhinful, 1996) which identified the pre-eminent position of the malarial disease burden, this study found that malaria has remained the predominant disease and the leading cause of morbidity, necessitating consultation in about a third of all the cases in the three categories of HFs. This prevalence of malaria may be underrepresented, since a significant proportion may not actually present to hospital due to indiscriminate self medication practices, or consultation of unorthodox practitioners; with only the non-responsive ones seeking medical attention (Isah *et al.*, 1995).

Next in ranking in the morbidity profile from the present study are the stress and urban related pathologies such as Hypertension, Musculoskeletal system (MSS) pathologies including trauma and Peptic ulcer disease (PUD), which may reflect an increase in the health impact of stressful life style creeping into the relatively suburban setting in which the study was carried. This study was carried out in the adult population. Industrialization, urbanization, much higher costs of bringing up and educating children and pressures for gratification of their desires nowadays bring pressure on their parents; and this invariably increase stress hormone levels. Hypertension is one of the most prevalent health problems around the world, and the incidence of 15.2 -17.4% recorded in public HFs in this study is similar to Al-Safi *et al.*, 2006 and Brown *et al.*, 2009 where 15-20.6% of the adult population in Jordan has hypertension. Sexually Transmitted Diseases (STDs) and Skin diseases/infections were the lowest. Worthy of mention is the near absence of Typhoid fever in ISTH (0.1%) compared to GH (16.74%) and PH (10.1%), despite the fact that all the hospitals are located in the same environment. This great significant difference could be

due to over diagnoses of Typhoid fever in the GH and PH as a result of poor diagnostic techniques in these hospitals. Other diseases comprising anaemias, helminthiasis, diabetes mellitus, HIV/AIDS, Adverse drug reactions (ADR), CNS, CVS, ENT, Eye diseases etc, were significantly most common in ISTH. This is not surprising considering its tertiary status, as the patients would on their own attend the specialist, with the hope that they will get the best service there. This study highlights the morbidity profile in out patients consultations in three level of HFs in the north and central senatorial districts, Edo state, South-South, Nigeria. It may serve as a reproducible method other settings and a potential guide for the provision of health services and allocation of resources in the health sector.

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AUTHORS CONTRIBUTIONS

OKOLI, R.I., designed the study, sponsored it and participated in data collection, analysis and drafting of the manuscript. ISAH, A.O., supervised the overall study, made very useful contributions in the design and proof reading of the final manuscript. OZOLUA, R.I. supervised the overall study, made very useful contributions in the design and proof reading of the final manuscript. OHAJU-OBODO, J.O., contributed in the design and proof reading of the manuscript. NWOKIKE, O.C. and OVIENRIA, W.A., made useful contributions during the design and data. All the authors co-sponsored the publication.