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Research Article

Gender Differences among Clients Attending Tuberculosis Unit of a Teaching Hospital in Southern Nigeria

Johnson Ofonime Effiong*, Ibekwe Felicia Nwakaego
Department of Community Health, University of Uyo Teaching Hospital, Nigeria

***Corresponding author**
Johnson, Ofonime E
Email: drjohnsonoe@yahoo.com

Abstract: Globally, the case notification rate (CNR) of tuberculosis (TB) in males has been reported to far exceed the rates for females even though TB is a leading infectious cause of death in women worldwide. The aim of the study was to determine the gender differences occurring in patients presenting in the TB clinic of University of Uyo Teaching Hospital (UUTH), Nigeria in 2012. This study was a retrospective review of records of clients attending the TB clinic of the hospital between January and December 2012. Data collected was analyzed using MS-Excel and Graph pad prism software version 5.1. A total of 265 clients were registered in the clinic in 2012, out of which 146 (55.1%) were males and 119 (44.9%) were females. The CNR for males consistently exceeded those for females in eight out of the 12 months reviewed. Majority of the males, 84.2% and females, 81.5% were above 15 years of age. The HIV co-infection rate was significantly higher among females, 51.2% compared to the males, 37% ($p<0.05$). All or most of the defaulters recorded in the clinic in 4 out of the first 6 months of 2012 were females, while the males had a higher success rate in 4 of the 6 months assessed. Although the CNR was higher among males, the higher defaulter rate, HIV co-infection and lower treatment success rates recorded among the females was worrisome. Factors contributing to these negative indices among female TB clients in this environment should be explored.
Keywords: Tuberculosis, Case Notification Rate, HIV co-infection, defaulter rate and treatment success rate.

INTRODUCTION

Tuberculosis (TB) remains a crucial public health issue at a global scale which regardless of sex affects mostly the disadvantaged young population sub groups [1]. It is the leading infectious cause of death in women worldwide and also the third leading cause of death among women of reproductive age (15–44 years) [2]. It ranks as the five cause of death worldwide among women aged 20–59 years [3]. Because women account for 70% of the world's poor, women in the developing countries are disproportionally affected by the disease [4]. In most countries, however, more men than women are diagnosed with tuberculosis (TB) and die from it [5, 6]. Past studies have suggested biologic differences, socioeconomic and cultural factors as reasons for this disparity and some authors have gone further to posit that the low Case Notification Rates in females is due to under notification and hence the need for active case finding of TB cases in our communities as against passive case finding.

According to the WHO global TB report 2012 which is the first WHO report on global TB care and control to include estimates of the number of TB deaths among women, there were an estimated 0.5 million TB deaths among women. This included 300 000 (range, 250 000–350 000) TB deaths among HIV-negative women and 200 000 (range, 185 000–215 000) HIV-associated TB deaths. More deaths occurred among women than men in the African region [7]. As tuberculosis affects women mainly in their economically and reproductively active years, the impact of the disease is also strongly felt by their children and families [8]. Nigeria is currently ranked 10th among the 22 high burden TB countries in the world and in 2010, there were 90,447 cases notified with 41,416 (58%) as new smear positives [9].

The risk of developing tuberculosis (TB) has been estimated to be between 12-20 times greater in people with HIV than those without HIV [10]. Worldwide, women constitute more than half of all people living with HIV/AIDS [11] while in sub-Saharan Africa, they constitute 60% of people living with HIV [12]. In Nigeria, the TB burden was also compounded by the high HIV national prevalence of 4.1% [13] and 10.9% in Akwa Ibom State [14] where this study was carried out. There are no known published studies on gender and epidemiology of Tuberculosis in Uyo, Nigeria. This study attempted to find out whether the TB indices recorded in University of Uyo Teaching

Hospital (UUTH) were similar to what is reported globally.

MATERIALS AND METHODS

This study was a retrospective review of records from the DOTS unit of University of Uyo Teaching Hospital. The Hospital is a tertiary institution located in Uyo the capital of Akwa Ibom State, in the south-south geopolitical zone of Nigeria. The hospital offers specialist care and also serves as a referral centre for the State and neighboring States. The survey was carried out to cover the period between January and December 2012. Information which was retrieved using a checklist included case notification trends by month, case notification trends by age and sex, sputum smear positivity in females compared to males and rate of co infection with HIV in females compared to males. Other relevant information included defaulter trends in females compared to males, treatment success trends in females compared to males and classification of patients into extra-pulmonary and pulmonary Tuberculosis categories.

The data collected was subsequently analyzed using MS-/Excel and Graph pad prism software version 5.1. and data analysis was done using descriptive statistics (Frequency, proportions, means and standard deviation to summarize variables) and Inferential statistics (chi square, to test the significance of association between two categorical variables with level of significance set at 5%.

Ethical Considerations

Ethical clearance was sought from the Ethical Committee of the University of Uyo Teaching Hospital, Uyo, Nigeria. There was no physical contact with the TB patients. Highest degree of confidentiality was maintained while reviewing the records as patients' names and addresses were not utilized in the study.

RESULTS

A total of 265 clients were registered in the DOTS unit in 2012, out of which 146 (55.1%) were males and 119 (44.9%) were females, giving a male: female ratio of 1.23/1. The monthly breakdown showed that the CNR for males consistently exceeded those for females in eight out of the twelve months considered (Fig 1). The notification rate by age distribution for both sexes was very similar as 123 (84.2%) of the male and 97 (81.5%) of the females were above 15 years of age (Fig. 2). Among the females, a total of 79 (66.4%) of all clients seen in the clinic during the above period were women of reproductive age (15-44yrs).

The HIV co-infection rate was significantly higher among females, 51.2% compared to males, 37% ($p<0.05$).

The smear positivity rate in both sexes was similar, being 73(50%) in males and 59 (49.6%) in females. In both sexes, majority of the patients presented with Pulmonary Tuberculosis with only 18 (12.3%) of the males and 13 (10.9%) of the females presenting with Extra-pulmonary TB (EPTB). The difference was not statistically significant (Table 1).

An assessment of the defaulter rates within the first 6 months of 2012 showed that all or most of the defaulters recorded in the DOTS clinic in 4 out of 6 months were females as 100% of the defaulters recorded in the DOTS clinic in January, May and June and 67% in February 2012 were females. It was therefore only in April, 2012 that the clinic recorded a 100% treatment success rate among the females and a 100% defaulter rate among the males (Table 2).

The males recorded a higher treatment success rate in 4 of the 6 months assessed with a success rate of 67% in January, February, March and 100% in May, 2012. Thus in general, the females were more likely to default during treatment and to present as failures to treatment compared to the males.

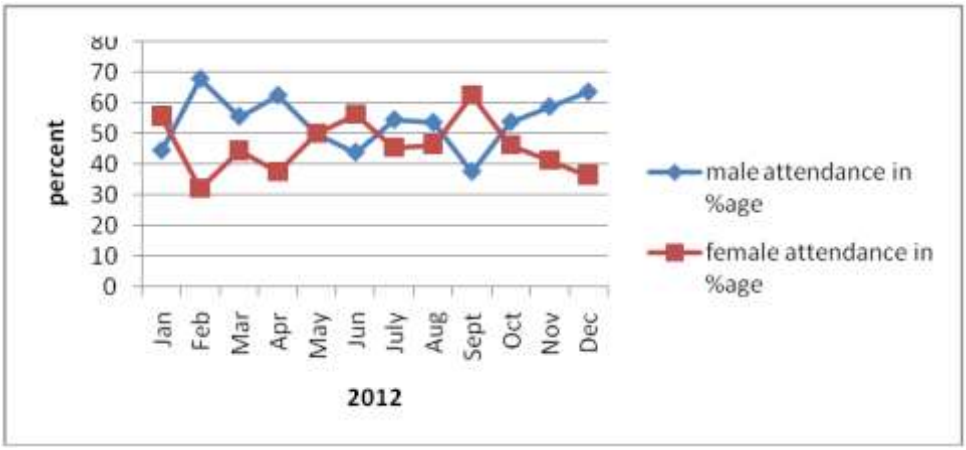

Fig. 1: Case notification in DOTS, UUTH by sex and month (2012)

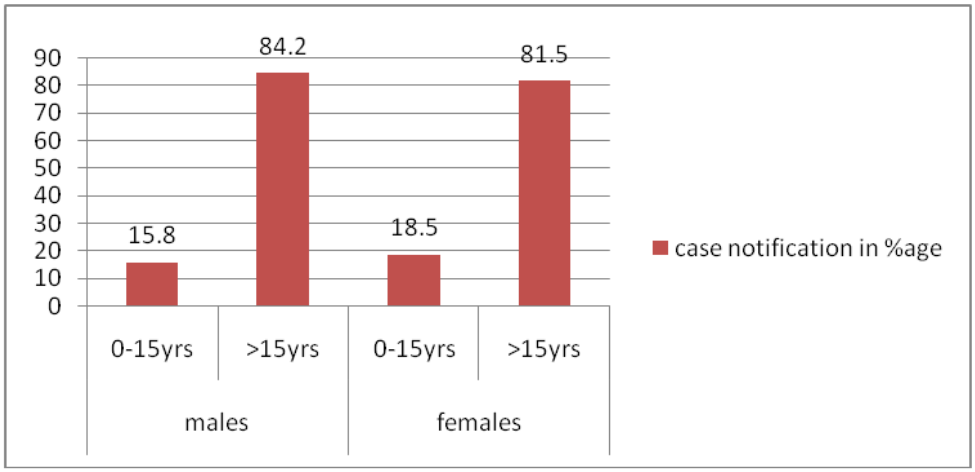

Fig. 2: Case notification in DOTS, UUTH by age and sex

Table 1: Classification of tb patients in UUTH

	Males		Females	
Month	**PTB**	**EPTB**	**PTB**	**EPTB**
Jan	8(100)	0 (0)	8(80.0)	2(20.0)
Feb	17(94.5)	1(5.5)	9(90.0)	1(10.0)
Mar	14(93.3)	1(6.7)	10(83.3)	2(16.7)
April	16(80)	4(20)	12(100)	0(0)
May	13(100)	0(0)	12((92.3)	1(7.7)
June	6(85.7)	1(14.3)	8(80.0)	2(20.0)
July	12(92.3)	1(7.7)	10(100)	0(0)
Aug	13(86.7)	2(13.3)	12(92.3)	1(7.7)
Sep	4(66.7)	2(33.3)	7(87.5)	1(12.5)
Oct	7(100)	0(0)	4(66.7)	2(33.3)
Nov	9(90)	1(10)	7(87.5)	1(12.5)
Dec	9(64.3)	5(35.7)	7(87.5)	1(12.5)
Total	128(87.7)	18(12.3)	106(89.1)	13(10.9)

Table 2: Defaulter and treatment success rate by sex

Month	Female defaulter rate (%)	Male defaulter rate (%))	Female treatment success rate (%	Male treatment success rate (%)
Jan	100	0	33	67
Feb	67	33	33	67
Mar	0	0	33	67
Apr	0	100	100	0
May	100	0	0	100
Jun	100	0	0	0

DISCUSSION

Globally, more men than women are diagnosed with TB especially in countries with a high prevalence of TB. The notification rate in this study agreed with the global trend as the female to male case notification ratio was 1/1.2. This was similar to findings of a study in Saudi Arabia where the incidence of TB in males was higher than in females [15] and also consistent with results of some studies carried out in Nigeria which gave female to male case notification ratios of 1/ 1.3 and 1/1.5 respectively [16, 17]. One of the possible reasons for the higher case notification rates (CNR) among males may be the stigma attached to the disease which seems to have more impact on the females than males.

A study which reviewed 137 articles on barriers and delays in TB diagnosis and treatment services reported that among articles reporting disparity, women faced greater barriers of which stigma was 85% compared to 15% among males [18]. Socio economic factors may also contribute to the higher CNR observed among the males. A study carried out among TB patients in Albania reported a positive association of female sex with a lower socio economic status, unemployment, lower access to health care and a poor health seeking behavior [13]. These may be possible reasons for a lower case notification rate among females.

Contrary findings were however reported in a study carried out in Pakistan, which showed that the rate of notified cases were 20-30% higher in young females compared with males and that female rates remained higher regardless of increasing age [20].

The higher prevalence of TB/HIV co-infection among females in the present study was similar to findings in a study carried out in Nassarawa, northern Nigeria, where the prevalence of co-infection was reportedly higher among females (44.82%) than males (38.30%) and this difference was found to be statistically significant ($p<0.05$) [15]. Similar findings were reported in a study carried out in Abuja, Nigeria to investigate the sex differences in the clinical presentation of urban Nigerian patients with pulmonary tuberculosis which showed that women were more likely to be co-infected with HIV than the male patients [17]. This finding also agrees with a Togo study which gave HIV prevalence among TB patients as 22.4% (76 of 339) among men and 25.6% (59 of 230) among women with no statistical difference [22].

These findings agree with the report that in sub-Saharan Africa, women constitute 60% of people living with HIV [12] and tuberculosis is a common opportunistic infection among HIV patients.

Studies carried out in Southern California and Burkina Faso however reported TB/HIV co-infection to be significantly associated with male gender compared to female [23, 24]. Some studies have shown that although the overall prevalence of pulmonary TB is lower in women, progression from infection to disease as well as case fatality rates are higher in women of reproductive age than males in the same age range [18].This agreed with the finding of the present study in which the treatment success rate was higher among the males.

A study carried out among 1,254 smear positive pulmonary TB patients in Ibadan, Nigeria however reported that the male sex was a risk factor of unsuccessful treatment outcome [25]. Several factors therefore come into play in different geographical regions which influence the findings reported.

Various studies have shown treatment default to be significantly associated with the male sex [26-28]. The greatest danger of defaulting is the issue of Multi Drug Resistant-TB which poses a threat to successes recorded in the control of TB in the past.

A study carried out in India also reported that male patients outnumbered female patients in all the unfavorable outcomes like death, failure and default although none of the differences was statistically significant [29]. In the present study however, the findings seemed to be the opposite as treatment default was much higher among the females compared to males.

Various studies in Africa have shown dominance in male smear positivity [16, 30, 31]. However, in Afghanistan, females were found to have a higher sputum smear positivity rate compared to males [32]. The smear positivity among clients in UUTH was comparable among both sexes.

A little more than a tenth of the all TB patients in this study presented as extra pulmonary cases with a slightly higher figure in males than females. This is contrary to findings of several studies where extra pulmonary tuberculosis was reportedly more common in women than men [33, 34]. It is however similar to findings of a study in Tennessee where extrapulmonary tuberculosis incidence per 100,000 population was 5.93 in black men, 3.21 in black women, 1.01 in non-black men, and 0.58 in non-black women [35].

CONCLUSION

Although case notification rate was higher in this study among males, the higher defaulter rate, HIV co-infection and lower treatment success rate among the females was worrisome. Possible factors affecting case notification among female TB clients in this region should be explored. There is also need for active case finding of TB cases and active follow up of defaulters among the clients presenting in the TB clinic of this tertiary institution.

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