

## The Prevalence of Tuberculosis at Butare University Teaching Hospital (Buth)

Claude BAYINGANA<sup>a</sup>, Pacifique NDAYISABA<sup>b</sup>, Marie-Francoise MUKANYANGEZI<sup>c</sup>

<sup>a</sup>National University of Rwanda, Faculty of Medicine, Department of Clinical Biology, Rwanda

<sup>b</sup>National University of Rwanda, Faculty of Science, Department of Biology, Rwanda

<sup>c</sup>National University of Rwanda, Faculty of Medicine, Department of Pharmacy, Rwanda

**Corresponding author:**

**Claude Bayingana**

### Abstract

**Background:** Tuberculosis (TB) remains one of the major public health problems, no other disease has so much socio-economic and health significance as tuberculosis. Despite efforts which are invested by the government of Rwanda in monitoring and treatment of tuberculosis, it remains the leading cause of mortality and morbidity. The objective of the present study was to evaluate the prevalence of tuberculosis from 2001 to 2010 at Butare University Teaching Hospital (CHUB). **Method:** In this retrospective study, data were collected from TB registers of the bacteriology unit of CHUB. **Results:** An increase of TB positive cases was observed from 2001 (14.08 %) to 2003 (22.99 %), followed by a progressive decrease of positive cases from 2003 to 2007 (10.02 %). An increase of positive cases was again observed in 2008, 2009 and 2010 with 10.33 %, 12.96 % and 13.33 % respectively. More than 65 % of all positive cases were in the age groups between 11 to 50 years. The age group of 21-30 years had the highest prevalence of TB with 18.46 %, followed by the age of 31-40 with 17.83 %. In both sexes, the age group of 21-30 years had the highest prevalence of TB. The prevalence of TB in the age group of 21-30 years was high in female than in male while in the group of 31-40 and 41-50 years the prevalence was high in male than in female. **Conclusion:** Efforts must be reinforced in monitoring and treatment of tuberculosis. We suggest that research on gender and tuberculosis needs to be directed in the way of examining the causes of any sex or gender disparities and understand the extent to which these are biological, socio-economical or cultural based. Research must also focus on the specific ways in which tuberculosis affects women of reproductive age which can have consequences on foetal and neonatal health

**KEYWORDS:** Tuberculosis, age, gender, Butare University Teaching Hospital.

### 1. INTRODUCTION

Tuberculosis (TB) remains one of the major public health problems, no other disease has so much socio-economic and health significance as tuberculosis [1, 2]. Tuberculosis is the major public health problem with almost 9 million new cases in 2011 worldwide and 1.4 million of death [3]. HIV/AIDS has impacted significantly

the disease and evidences have shown that the greatest opportunistic illness of HIV infected people is TB [4, 5]. Despite efforts which are invested by the government of Rwanda in monitoring and treatment of tuberculosis, it remains the leading cause of mortality and morbidity. The annual TB rate has more than doubled from 1995 to 2006 [6]. The objective of the present study was to evaluate the prevalence of tuberculosis from 2001 to 2010 at Butare University Teaching Hospital (CHUB).

## 2. MATERIAL AND METHODS

This study was carried at Butare University Teaching Hospital (CHUB) located in the southern province in Huye District. This is one of the three reference hospitals in Rwanda. It receives patients from southern province and all over the country including students of the National University of Rwanda. It is a retrospective study to evaluate the prevalence of tuberculosis from 2001 to 2010 at CHUB. Data were collected from TB registers of the bacteriology unit of CHUB. The following parameters were recorded: Age of the patient, sex, newness cases or being in control, sputum test results, and the admission date of the patient. Data were entered and analyzed using Microsoft Excel.

## 3. RESULTS

An increase of TB positive cases was observed from 2001 (14.08 %) to 2003 (22.99 %), followed by a progressive decrease of positive cases from 2003 to 2007 (10.02 %). An increase of positive cases was again observed in 2008, 2009 and 2010 with 10.33 %, 12.96 % and 13.33 % respectively.

More than 65 % of all positive cases were in the age groups between 11 to 50 years. The age group of 21-30 years had the highest prevalence of TB with 18.46 %, followed by the age of 31-40 with 17.83 %.

Males frequented TB diagnosis service than females with 57.95 % against 42.05 % for females. Tuberculosis was slightly higher in females (14.43 %) than in males (14.10 %) (Fig. 1). In both sexes, the age group of 21-30 years had the highest prevalence of TB, followed by the age group 31-40 years, then in females the age group of 11-20 years came third while in male the age group of 41-50 years came third (See Figure 2). The prevalence of TB in the age group of 21-30 years was high in female than in male while in the group of 31-40 and 41-50 years the prevalence was high in male than in female (See Figure 2).

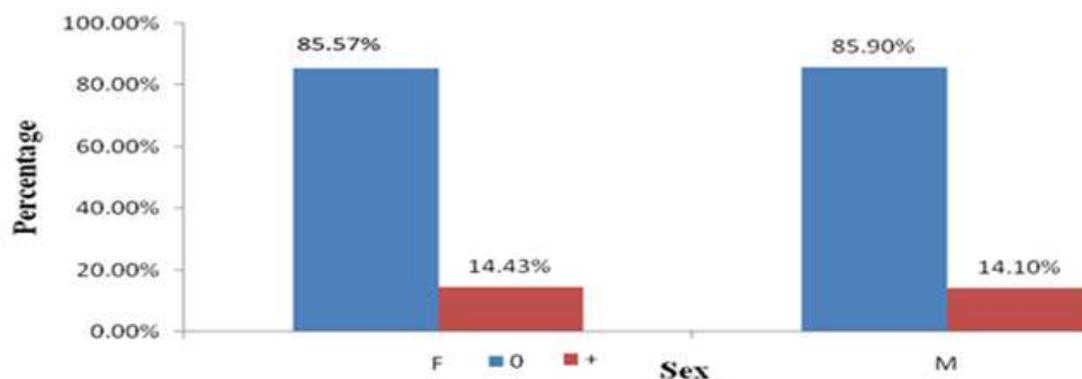
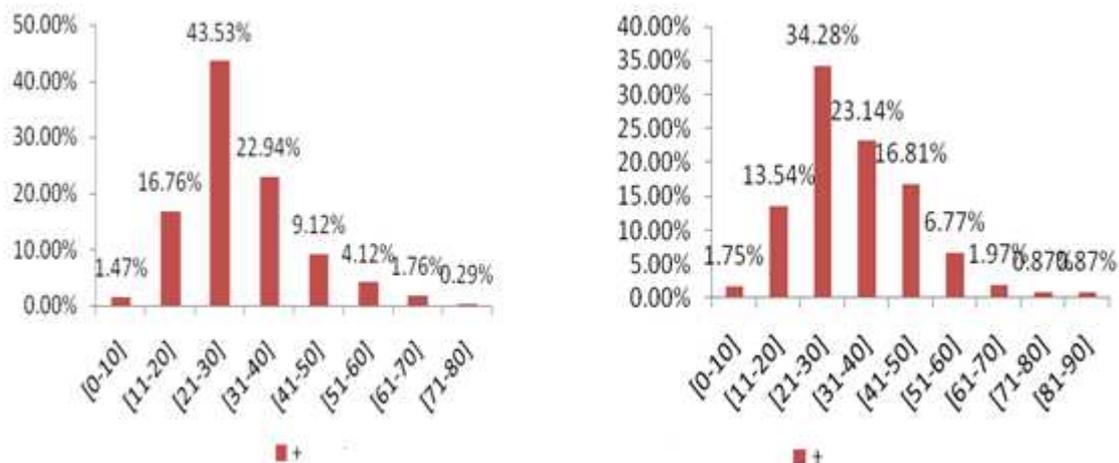
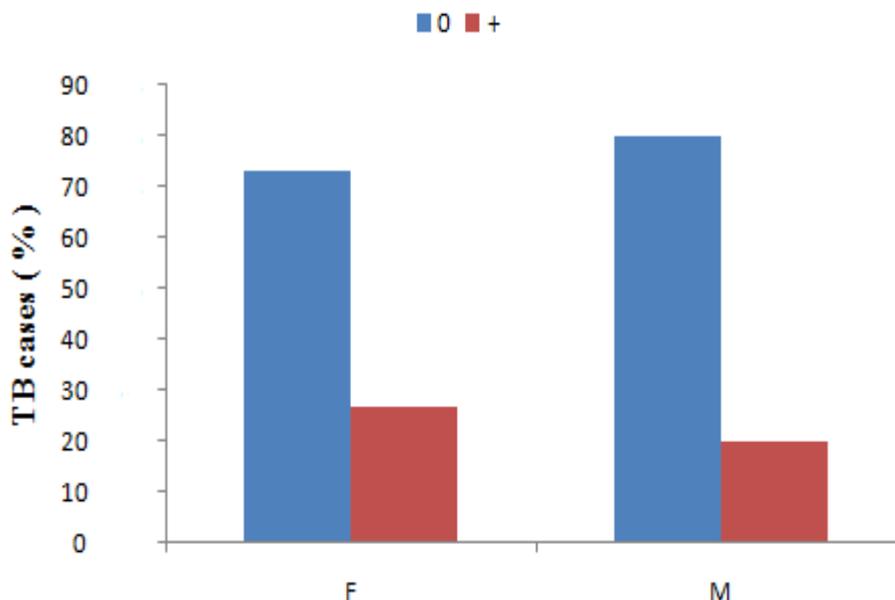


Figure 1. TB repartition according to sex



**Figure 2.** Repartition of TB according to age in females (Left) and in males (right)

The increase of tuberculosis in control test was observed from 2001 to 2003 with 21.97%, 24% and 32.58% respectively; then a significant decrease was registered 2004 with 15.83%. From 2005 to 2010, a variation of prevalence (increase and decrease) of TB was observed. In all female diagnosed patients in control test, 26.93% have been found positive while only 20.09 % in male (Figure 3).



**Figure 3.** TB repartition according to sexes in control exams

#### 4. DISCUSSION

The main purpose of this study was to evaluate the prevalence of tuberculosis from 2001 to 2010 at Butare University Teaching Hospital (CHUB). An increase of TB positive cases was observed from 2001 to 2003, followed by a progressive decrease from 2003 to 2008 and then again an increase of TB positive cases was registered in 2009 and 2010. The increase of TB positive cases from 2001 until 2003 may be due to different factors including the 1994 genocide which could still have an impact on

malnutrition of the population and the low levels of awareness on HIV/AIDS which is highly associated with TB (5). The progressive decrease observed from 2003 to 2008 may be explained by TB program improvement and it was shown that treatment success rates have increased from 58 % in 2003 to 81 % by the third quarter of 2006. In this period existing strategies have been strengthened including, Direct Observation Treatment (DOT) in 6 months, isolation places have been determined for resistant cases, health facilities have been put in places for TB detection and treatment while offering voluntary counselling, testing and antiretroviral therapy (7, 8, 9).

The increase of TB from 2008 to 2010 may be explained by the introduction of Ziehl-Nelsen technique which is more sensitive than the Kinyoun technique which was used before 2008 at CHUB (10), the emergence of Multi Drug Resistance TB (MDRT) strain may also explain this increase. This is supported by the fact that there was no reduction of TB prevalence after exam control between 2008 and 2010 compared with the prevalence between 2004 and 2007 (Table 4). A study done in Rwanda found that MDR-TB account for 4.6 % [11]. It may also be due to the adherence rate of the population to the community based health insurance (CBHI) which increased from 27 % in 2004 to 86 % in 2009. CBHI facilitates financially people to go to health centers and therefore their TB status known. CBHI allow the most vulnerable and poorest part of the population to be fully integrated into the health insurance system (12).

In the present study, we found that although the frequency of males in TB diagnosis service was higher than in females; the prevalence of TB was slightly higher in females than in males (Figure 1). Also results in control test showed that females yielded higher TB positive results than males (Figure 3). The stigma associated with TB may be greater in women than in men (13). This put women in a situation of hiding their TB status and therefore reducing the chance of access to treatment.

Tuberculosis was most prevalent in the age group between 11 to 50 years. This age group fits in the most socio-economically active group which makes it being more exposed to different risk factors than other age groups. The pick was identified at the age group of 21-30 and 31 to 40 years. Tuberculosis is highly associated with HIV/AIDS (14) and this is the most sexually active and therefore exposed to TB, also the high interaction in this group may facilitate the contamination rate (15). Findings of this study showed also that the prevalence of TB according to age was influenced by sexes; young women (11-20 years) were more affected by TB than men of the same age while men between the ages of 41 to 60 years were more affected by TB than women of the same age. This should be explained by that young women are at higher risk of HIV infection than men in the same age group and therefore at higher risk of contracting TB than young men (16). A previous study in Rwanda showed that the prevalence in urban areas among young woman between 15 to 24 years of age is nearly four times the prevalence among young men. In rural populations, prevalence among young women is more than three times greater than the prevalence in young men [17, 18]. Being in their reproductive age, women in these years are more sexually active than men of the same age, also this situation may be explained by the enrolment of young women in prostitution due to poverty. Alcohol abuse may explain why old men are more affected by TB than women of the same age [19].

Efforts must be reinforced in monitoring and treatment of tuberculosis. We suggest that research on gender and tuberculosis needs to be directed in the way of examining the causes of any sex or gender disparities and understand the extent to which these are biological, socio-economical or cultural based. Research must also focus on the specific ways in which tuberculosis affects women of reproductive age which can have consequences on foetal and neonatal health.

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