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Brief communication

Transitioning through AIDS epidemics – gender and temporality



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ABSTRACT

Objective: To understand the evolution of AIDS over time in Mato Grosso do Sul, Brazil, using incidence, lethality, and mortality coefficients.

Methods: A descriptive epidemiological study based on time series analysis of secondary data from the Notifiable Diseases Information System reported between 1985 and 2012.

Results: The prevalence of AIDS was higher among men, with evidence of feminization during the first 14 years of the epidemic. There was no statistically significant sex difference in AIDS lethality. Women were 1.3 times more likely to survive than men.

Conclusions: Gender differences must be considered when designing new HIV/AIDS prevention strategies.

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Introduction

Worldwide, it is estimated that there are 37 million people infected with human immunodeficiency virus (HIV).¹ In Brazil, the first AIDS case was identified in 1982 in the southeast region. According to the Brazilian Ministry of Health, 757,042 AIDS cases were reported through July 2014, with a higher incidence in the south.² Brazil is known, however, for its guaranteed universal access to HIV testing and antiretroviral treatment.

In face of a 28-year epidemic, the goal of this study was to understand the evolution of AIDS over time in a Brazilian state using incidence, lethality, and mortality coefficients.

Material and methods

This descriptive, time series, epidemiological study analyzed secondary data available from the Notifiable Diseases Information System (SINAN) of Mato Grosso do Sul state, Midwest Brazil. The analysis considered only adult AIDS cases (older

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than 13 years old) reported from 1985 to 2012. This information was divided into four 7-year periods (1985–1991, 1992–1998, 1999–2005, and 2006–2012) to allow for comparison among periods.

Records were cross-referenced to eliminate duplicate cases. Patient outcome (alive or dead) was evaluated using the Mortality Information System (SIM) and the cause of death was identified from the Death Certificate. The cause of death was considered to be AIDS-related if AIDS, HIV, Acquired Immunodeficiency Syndrome, or any other terminology involving HIV/AIDS was included on any of the three lines of the Death Certificate.

Sex-specific coefficients of mortality and AIDS incidence were calculated according to the population rate obtained from the Brazilian Institute of Geography and Statistics for the year considered to be the halfway point of each 7-year period (1988, 1995, 2002, 2009), as recommended by the Brazilian Institute for Health Development.³ These numbers were obtained from census and intercensal estimates.

Contingency and adherence tests were performed using chi square for equality of proportions to draw comparisons between men and women across the four study periods. The overall odds ratio (OR) for the 4 periods was estimated using binomial logistic regression analysis. Statistical analyses were performed using SPSS 17.0 software and Bio Stat 4.0.

This study was approved by the Ethics on Research Committee of the Federal University of Mato Grosso do Sul under protocol number 141.736.

Results

In the state of Mato Grosso do Sul the first AIDS case was identified in 1984 in a hemophilic child and the first adult case was identified in 1985. Since the beginning of the epidemic until June 2014, a total of 8608 adult AIDS cases were reported to SINAN across the counties of Mato Grosso do Sul.

Analysis of the case distribution by gender showed an increased AIDS incidence in both men and women during the study period; however, the AIDS incidence among women increased 21 times, whereas the incidence among men increased 6.3 times. As sexual orientation, the main categories identified were homosexuals, bisexuals and heterosexuals who use drugs, followed by heterosexual with sexual partners at high-HIV-risk.

In the first period, 1985–1991, 83.3% of AIDS cases occurred in men (176/210), with an incidence of 20.8/100,000 among men and 4.1/100,000 among women. The male to female ratio during this period was 5.1:1. During the next period, 1992–1998, men represented 71.8% (1032/1437) of all registered AIDS cases, with an incidence of 106.8/100,000 among men and 42.7/100,000 among women, resulting in a sex ratio of 2.5:1. In the third period, 1999–2005, there was a decrease in the incidence among men in relation to the previous period (100.8/100,000) and an increase in the incidence among women (64.1/100,000), resulting in a sex ratio of 1.6:1. In the fourth period, 2006–2012, the registered cases among men increased again to 60.3% (1551/2573) of all cases, with an incidence of 131.5/100,000 men and 86.1/100,000 among women, resulting in a sex ratio of 1.5:1. The difference between the

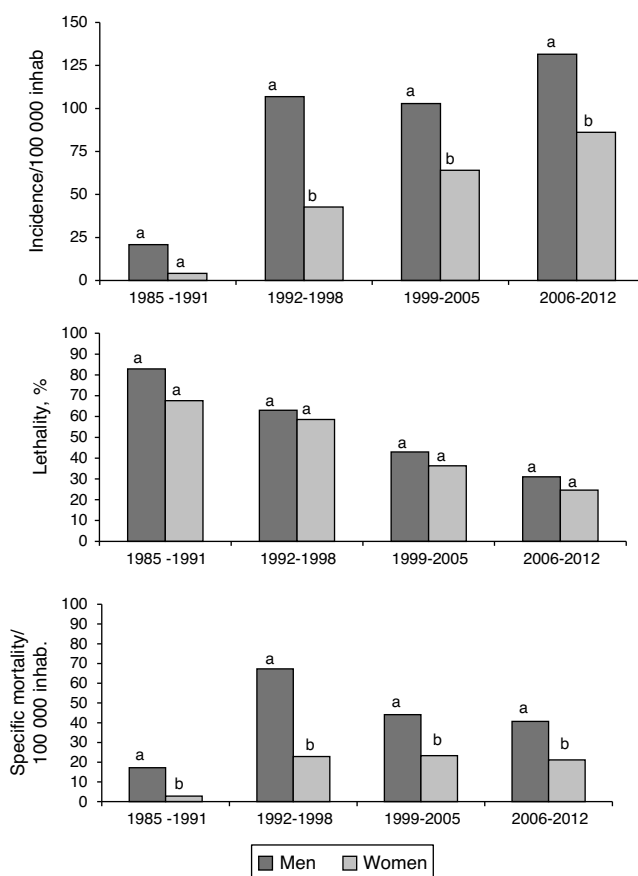


Fig. 1 – Incidence, lethality and mortality of AIDS in Mato Grosso do Sul state during the period of 1985–2012. Distinct letters between columns of the same period represent a statistically significant difference ($p < 0.05$).

incidence rates among men and women were not statistically significant during the first period; however, it was strongly significant during the other periods ($p < 0.05$) (Fig. 1).

Throughout the 28-year epidemic, the AIDS lethality rate in the studied population was 41.4%. In the first period, the lethality rate was higher among men (82.9%) than it was among women (67.6%) and the observed trend in male predominance was maintained during the subsequent periods. However, the lethality rates among women (24%) approached those of men (31.0%) in the last study period. Yet, there was no statistically significant difference in the lethality rates between sexes (Fig. 1).

In the analysis of mortality among AIDS cases during the period studied, women were 1.3 times more likely to survive during the study period than men. The AIDS-specific mortality in the first period of the epidemic was 17.2/100,000 men and 2.8/100,000 women. During the second period, the greatest difference in AIDS-specific mortality between men and women was observed (67.3/100,000 men compared to 22.6/100,000 women). In the third and fourth periods, mortality declined in both sexes in relation to previous periods but remained relatively stable (44.1 and 40.7/100,000 men and 23.3 and 21.2/100,000 women, respectively). The AIDS-specific mortality in men was higher than that of women and this

difference was statistically significant for all time periods analyzed (Fig. 1). The comparison between SINAN and SIM data identified 212 under-reporting AIDS-related deaths (8.5%).

Discussion

The AIDS incidence rate in the state of Mato Grosso do Sul during the 28-year epidemic increased 21 times among women and 6.3 times among men. It was higher than the national incidence during the same period (13.4 among women and 3.6 times among men).² The trend toward stabilization and decline in AIDS incidence in Brazil⁴⁻⁶ was not seen in the state of Mato Grosso do Sul. The data for this state showed an increasing incidence in both men and women, with no evidence of decline among women.⁵⁻⁷ The extensive border of Mato Grosso do Sul with Paraguay and Bolivia might have influenced the epidemiologic situation and AIDS incidence in this region as patients from those countries may have received treatment in health centers of the state.

The sex ratio observed across the four periods analyzed indicated a decline in the male-to-female (M:F) ratio of AIDS cases, confirming the observed tendency toward feminization of the epidemic, especially in the first 14 years, reflecting a trend similar to national data.² The higher vulnerability observed in women, unknown at the beginning of the epidemic, the rise in heterosexual transmission of HIV, and the unequal gender relations may explain this process.⁵

The AIDS lethality rate of 41.4% observed during the study period of 1985–2012 in Mato Grosso do Sul was approximately three percentage points above that of Brazil (38.65%) in the same period.² The gender-specific lethality rate was higher among men in all periods, a trend similar to national data.^{2,8} Free and universal access to antiretroviral treatment and early diagnosis may have been predominant factors contributing to the decline in lethality observed throughout the study period. The scarcity of studies examining these indicators hinders the comparability across studies.

Mortality due to AIDS among both men and women increased during the first two periods of the epidemic and declined in the 3rd and 4th periods, with a more significant decline observed among men. Again, both the accessibility to treatment and the switch from monotherapy to combination therapy in 1996 are believed to have had an impact on the reduction in AIDS-related mortality.

Throughout the 28-year AIDS epidemic in Mato Grosso do Sul, the incidence of AIDS increased greatly among women, especially during the first 14 years. In the last periods, a relatively stable growth rate was observed in AIDS incidence among women. Despite the tendency toward feminization of the AIDS epidemic in Mato Grosso do Sul, the incidence of AIDS among men is still relevant in this region, mainly observed in homosexuals, bisexuals and heterosexuals who use drugs, and heterosexuals with sexual partners at high-HIV-risk.

The AIDS lethality rate was higher among men throughout the four periods; however, the differences in lethality between genders decreased in the last 14 years. Considering all deaths, survival among women was 1.3 times higher, and the analysis of AIDS mortality in relation to gender showed that men had a higher risk of death in all analyzed periods.

The time distribution of AIDS incidence, lethality, and mortality according to gender throughout the 28-year epidemic in Mato Grosso do Sul can contribute to public health policies and plans of action against the spread of the AIDS epidemic through better understanding of gender differences, with respect to both preventative and therapeutic approaches.

Conflicts of interest

The authors declare no conflicts of interest.

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