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Two decades of HIV/AIDS mortality trend analysis in the Philippines

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ABSTRACT

Public health surveillance indicates that the country's HIV infection rate is rising, with the Western Pacific region experiencing the highest growth. Due to the scarcity of studies on HIV in the nation, the present state of the HIV epidemic must be ascertained by gathering data from public health surveillance and HIV mortality time trend analysis. The Department of Health's Philippine Health Statistics (PHS) provided the information. The PHS-recommended algorithms for vital health indicators were used to calculate mortality rates. According to the study's findings, the death rate in the nation is rising, necessitating tight efforts to stop the virus's transmission and provide access to anti-retroviral therapy. Although there is a considerable difference between the two sexes, men had a greater mortality rate than women, suggesting that men were more vulnerable to HIV/AIDS mortality. The study also revealed that HIV testing hurdles were to blame for making young to middle-aged individuals the population most susceptible to mortality from this illness. Additionally, the National Capital Region has the most significant mortality rate, so the government should focus on promoting health in this area as it has the highest mortality rate.

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1. INTRODUCTION

In the Philippines, the first HIV infection was documented in 1984 [1]. Sixty-two thousand twenty-nine (62,029) HIV cases had been reported in 2018 [2]. According to data from public health surveillance, the number of HIV infection cases in the Philippines increased alarmingly over the past ten years, from 311 cases in 2007 to 8,151 cases in 2016 [3]. The country's infection rates increased by 174% between 2010 and 2017, the fastest increase in the Western Pacific Region [4]. Men were also the most affected, making up 91% of all illnesses reported between 1984 and 2014 [5]. 93% of cases that were documented involved sexual contact (24% were heterosexual, 47% were homosexual, and 30% were bisexual), while 5% involved drug injectors sharing needles. The remaining 2% were spread from mother to child, through blood transfusions, or as a result of needle prick injuries.

Ninety-seven thousand (97,000) people with HIV were anticipated to be living in the Philippines in 2019; 73% were aware of their HIV status, and 44% were receiving anti-retroviral therapy. The nation risks an emergent HIV epidemic due to long-term societal and behavioral variables such as poor condom use, stigma against sexual minority communities, and a lack of sexual education [6], [7]. HIV stigma was

pervasive in the Philippines, where it was believed that having HIV was a sign of vice and immorality [4], and there is growing evidence that HIV-related stigma and prejudice hamper HIV testing, disclosure of serostatus, retention in care, and uptake and adherence to anti-retroviral therapy [8]–[12]. Second, access to HIV prevention and treatment medications was limited [13].

Furthermore, HIV/AIDS is a newly emerging infectious disease, and the country's HIV/AIDS epidemic has received little research, making government efforts ineffectual. Studies on HIV could pinpoint the demographics and groups most at risk, helping to prioritize the appropriate health policies and measures. The current study used time-trend analysis to compare groups and draw conclusions about how exposure impacts different populations. For each group, equally spaced observations are made regarding illnesses' frequency, severity, and prevalence [14]. This study evaluated mortality rates for a specific period and determined whether there is a notable movement, such as an increase, decrease, or consistency over the period; time-trend analysis can be employed. This study uses the Philippine Health Statistics (PHS) information to provide a time-trend analysis of HIV/AIDS mortality in the Philippines from 1999 to 2020. The distribution of HIV/AIDS mortality across the country's sexes, age ranges, and regions hasn't been explicitly studied, so this study will use death trends by country, sex, age, and location to visualize the data.

2. METHOD

2.1. Collection of data

The HIV mortality statistics were collected through the annual publication of the Department of Health Philippines, the PHS series. The publication thoroughly summarizes the 'country's current statistics on Natality, Morbidity, and Mortality. The PHS results from the joint and collaborative efforts of the Philippine Statistics Authority (PSA), Department of Health (DOH), and the local health units.

2.2. Missing data

For the year 2000, there is insufficient mortality data. These data are regarded as "irresolvable," which indicates that it is not possible to determine or apply the source of the adjustment to the disagreement. Nevertheless, we took the liberty to get the average value from the preceding and succeeding year used to supplement missing data [15].

2.3. Computation of mortality rates

The HIV mortality statistics that were collected in the Philippine Health Statistics (PHS) were used to compute mortality rates. The computations system was based on the formula for vital health indicators recommended in the PHS, in which the rates were calculated per 100,000 populations.

$$\text{Specific Death Rate} = \left(\frac{\begin{array}{c}\text{Deaths in specific class or group registered} \\ \text{in a given calendar year}\end{array}}{\begin{array}{c}\text{Estimated population as of July 1 in same} \\ \text{specified class or group of said year}\end{array}} \right) \times 100{,}000$$

2.4. Data analysis

All of the computed mortality rates were used to construct trends for each nationwide annual mortality, Sex, and age-specific group and region using Microsoft Excel 2019. Age-specific standardized rates were computed based on the World Health Organization (WHO) World Standard Population Distribution [16]. Additionally, SPSS Software was utilized to analyse the data at a 95% confidence level in order to compute for independent sample t-tests; if the p-value is less than 0.05, the null hypothesis must be rejected.

3. RESULTS AND DISCUSSION

3.1. Annual HIV/AIDS mortality rate in the Philippines in 1999-2020

From 1999 to 2010, no substantial changes were found, as indicated in Figure 1. However, beginning in 2011, HIV/AIDS mortality grew considerably. The highest mortality rate (0.88 per 100,000) was recorded in 2020, while the lowest was recorded in 2000 and 2007 (0.02 per 100,000, respectively). The South East Asia region are popular travel destinations for sex tourism, which is one of the primary causes of the high mortality rates in the Philippnes [17]. In addition, this region has an unacceptablely high rate of STDs, especially among men who have sex with men and transgender individuals [18]. There is still no cure or vaccine for HIV/AIDS, but people with HIV have access to life-saving anti-retroviral therapy. The first effective drug for HIV treatment is zidovudine, which the FDA approved in 1988. In addition, protease inhibitors were introduced in 1995, which paved the way for using combinations of anti-retroviral drugs [19]. Although anti-retroviral therapy has decreased the number of AIDS-related deaths, not everyone has access to it, and the prospects for effective cures and vaccines are still unclear [20]. Despite the preventive actions and programs of the Department of

Health Philippines, like the HIV, AIDS, and STI Prevention and Control Program and the introduction of anti-retroviral treatments, there is still an increasing mortality rate from HIV/AIDS in the country.

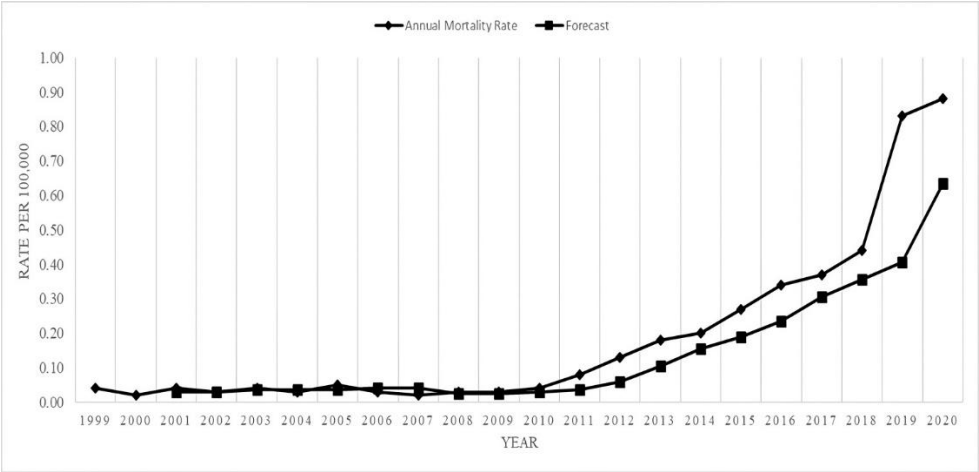

Figure 1. Annual HIV/AIDS mortality rate in 1999-2020

There are numerous impediments to addressing the HIV crisis in the Philippines. The stigma of having HIV infection is correlated to sins, limited access to HIV treatments, and disparities in access to primary healthcare services across the country [4]. In addition, WHO reported that HIV research conducted in the Philippines had been restrained across all areas, such as prevention, epidemiology, evaluation, and behavioral science, all of which are necessary for developing effective public health strategies [21]–[22]. The limited number of anti-retroviral treatment hubs in some regions of the country can partially explain the limited access for HIV-infected individuals. For instance, HIV-infected individuals living in highly urbanized areas like the NCR and Central Luzon have higher access to antiretroviral therapy (ART) treatment hubs and primary HIV care facilities compared to those living in the disadvantaged areas in Visayas and Mindanao.

3.2. Sex-specific HIV/AIDS mortality rate in 1999-2020

The annual death rate trend for each sex is shown in Figure 2. Men's mortality rates have significantly increased since 2011 compared to women's, and this trend is anticipated to continue in the coming years. Additionally, the year 2020 saw the highest mortality rates for both sexes. The independent sample test in Table 1 shows p-value 0.006 is less than 0.05, indicating enough data to prove that the two groups differed significantly. In other words, the information is used to explain why the average death rates for men and women vary substantially.

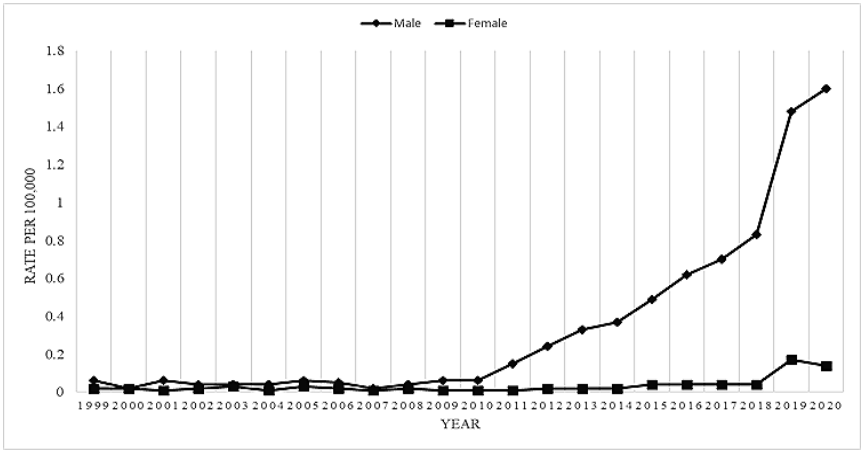

Figure 2. Annual HIV/AIDS mortality rate per sex in 1999-2020

Table 1. Independent sample t-test for HIV/AIDS-related death rates from 1999 to 2020

Sex	Mean	Standard deviation	t-statistic	df	p-value
Male	0.3345	0.46008	3.051	21.330	0.006
Female	0.0341	0.04079			

According to this study, Filipino men were likelier than Filipino women to die from HIV/AIDS. The course of HIV disease and the clinical characteristics of diseases may differ between men and women due to numerous biological and socioeconomic factors [23]. For instance, baseline clinical and immunologic status was found to be a predictor of HIV-related mortality and morbidity in HIV outcome studies conducted in both high- and low-income countries [24]. Men were also found to have a significantly higher rate of loss to follow-up and non-adherence to anti-retroviral treatment. Males routinely account for more than 90% of new infections in the population, according to the Department of Health Philippines [25], particularly homosexual men, bisexual men, and other men who have sex with men (MSM), with almost all illnesses being spread through sexual contact. Three months before to the follow-up visit, anal sex with a willing male partner was substantially linked with HIV incidence.

Additionally, MSM who admitted to not using a condom in the previous three months had a greater incidence of HIV [26]. The return of HIV through male-to-male transmission is a global problem. The hurdles to HIV testing within the MSM group are a crucial element in this. The continued stigma associated with HIV, combined with insufficient HIV education and limited understanding of infection prevention techniques, contributes to the spread of the pandemic. MSM living with HIV in the Philippines report experiencing increased stigma because of their sexual orientation, which has been shown to exacerbate already severe mental health issues and increase the obstacles to obtaining care [27]–[28]. Many MSM continue practicing Catholicism and struggle to accept their sexuality and serostatus [29]. Many Filipino MSM have expressed dissatisfaction with the quality of care they have received from medical professionals, including occasions when the experts have refused to treat them due to their patient's HIV/AIDS status [30]. More women than men seemed to blame external things (namely their spouses and their families) for their infection because they were unaware that their husbands were afflicted. Most women who were forced into marriage acknowledged that they had limited knowledge of the diseases' transmission mechanisms and methods for prevention [31].

3.3. Age-specific HIV/AIDS mortality rate in 1999-2020

All age groups had HIV/AIDS-related deaths, with those between the ages of 25 and 29 experiencing the greatest age-standardized mortality rate (1.100), as shown in Figure 3. The lowest age-standardized rates were in 5 to 9 and 10 to 14 (0.004 and 0.004, respectively). This study revealed that younger people were more prone to contracting HIV. Over one-fourth of incident infections in the Asia-Pacific area in 2018 were HIV infections in people aged 15 to 24 [32].

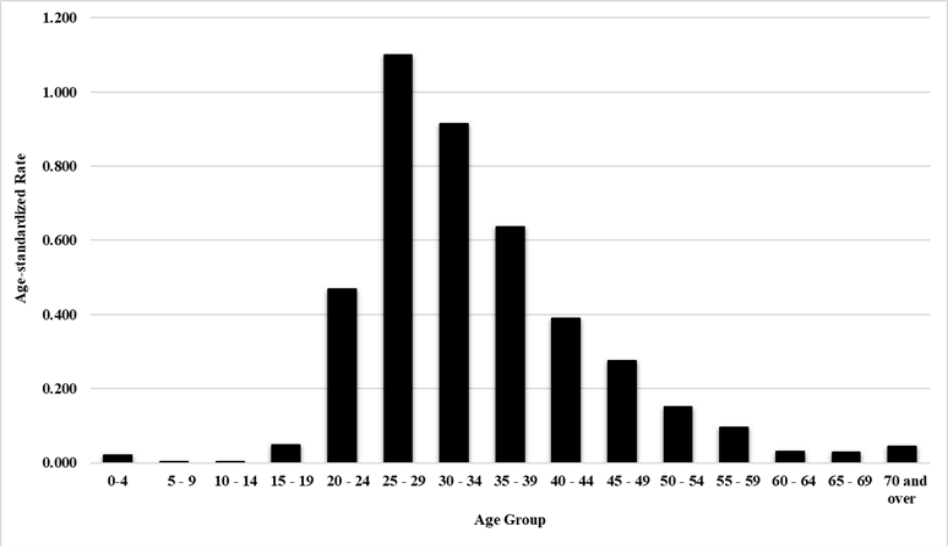

Figure 3. Age-standardized mortality rates for HIV/AIDS in 1999-2020

In contrast, the HIV prevalence rate in the Philippines is significantly greater among younger people, particularly those between the ages of 15 and 34. According to current trends, infection rates will eventually increase among younger age groups [5]. In the Philippines, sexually active MSM between the ages of 25 and 29 account for the majority of new HIV infections among MSM, and most of these men come from affluent socioeconomic backgrounds [33]. In addition, MSM between the ages of 15 and 24 comprise the most vulnerable group to HIV, accounting for 65% of all cases. This highlights the need for this group to be given priority for HIV prevention measures as it demonstrates the tendency for sexual activity among young MSM and their crucial involvement in fostering the HIV epidemic. One of the explanations of the high mortality rate among young MSM is those in the lower socio-economic level because the higher an individual's education level, the more knowledgeable they will be about HIV/AIDS [34]. This is supported by British MSM with a low-risk perception of HIV exhibited more risk behaviours towards the virus than MSM with a high-risk perception [35]. In addition, the high mortality rate among young MSM men may be related to having sex earlier, having multiple sexual partners, social stigma, and other social and behavioral factors that make them more susceptible to HIV than young heterosexual men [36]–[37].

3.4. Average HIV/AIDS mortality rate per region in 1999-2020

From Figure 4, The National Capital Region (NCR) and Region 11 (Davao Region) had the highest average death rates throughout the study. The region in Muslim Mindanao, known as Bangsamoro Autonomous Region (BARMM), had the lowest average death rate. Between January 1984 and January 2019, the regions with the highest number of cases reported were NCR, with 24,820 (39%) cases, Region 4A, 9,447 (15%) cases, Region 3, 5,817 (9%) cases, Region 7, 5,683 (9%) cases, and Region 11, with 3,525 (6%) instances [38]. The most severely impacted area is the National Capital Region (NCR). Highly urbanized areas had a higher prevalence of structural drivers of HIV, which would explain why the area's mortality rate is higher. Some structural drivers that can be considered are gender issues and socio-cultural drivers [39]. As of October 2020, 38% of total diagnosed HIV cases in the country were recorded in the National Capital Region followed by Region 4A with 15% [25]. These two regions belong to highly urbanized regions in the country.

Urban areas, like the National Capital Region, continue to have a high rate of documented HIV/AIDS mortality despite having more HIV treatment facilities than rural areas. This can be attributed to the susceptible young MSM group in Metro Manila, even though the younger MSM population in Metro Manila is well-informed about HIV/AIDS, they still participate in risky sexual behavior [40]. The only Muslim-dominated region in the nation is BARMM, and the region's high religiosity and commitment to Islamic law may be responsible for its lower death rate. A study that found that Muslims have a lower prevalence rate than Christians did corroborate this [41]. Additionally, the BARMM's residents visiting cities with a high risk of HIV infection can be blamed for the cases that have been reported there. However, the area has continued to present a low risk of HIV infection.

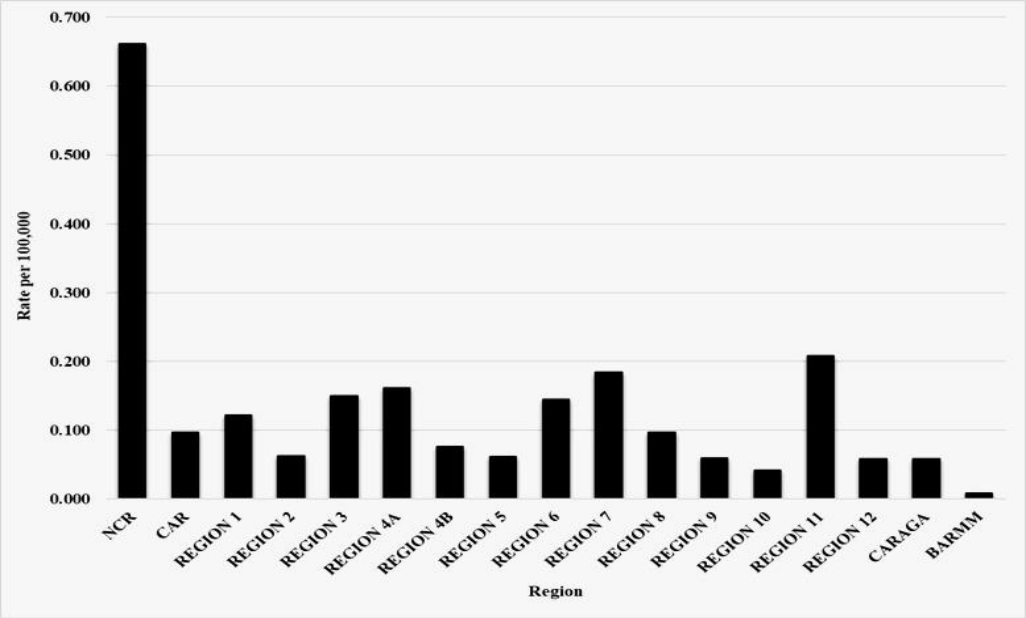

Figure 4. Average mortality rate from HIV/AIDS per region in 1999-2020

Throughout the study period, the mortality rate from HIV/AIDS increased, as the study anticipated. To some extent, we might infer that the health interventions in place did not adequately address the country's HIV epidemic. The main reason for HIV testing obstacles is the stigma attached to the virus, which prevents people from knowing their current status and causes the virus to be discovered later. Lessening HIV stigma by educating the susceptible population is the first step in combating this epidemic, because persons who are aware of their HIV-positive status may minimize risk behaviors and thereby impact transmission rates [42]. Although the focus of HIV awareness campaigns has been on younger generations, this program should be expanded to include other older people, particularly parents, since stigma related to HIV is thought to put shame on the family. The 90-90-90 UNAIDS criteria, according to which 90% of all HIV-positive people should be aware of their status, should be given top priority in the Philippines. It is crucial that 90% of all individuals with HIV infection who have been diagnosed receive persistent anti-retroviral medication, and 90% of all ART recipients experience viral suppression [43]. Using behavioral treatments to teach people how to stop transmissions is important. Examples include campaigns to encourage abstinence, condom usage, sexual communication, condom bargaining, HIV testing, a decline in the number of sexual partners, stigma reduction, and the use of clean needles among drug users [44]. It is possible to adapt biological therapies, such as pre-exposure prophylaxis (PrEP) and treatment as preventive (TasP) although these treatments are underutilized due to structural obstacles and societal factors that have an impact on health [45]–[47].

Interventions at the structural and community levels should also be taken into account. The context-related aspects (e.g., social, political-economic, policy-legal, and cultural) that affect HIV infection and transmission are the main focus of these HIV prevention activities, with an effect that extends to members of significant populations [48]. Community-level treatments aim to affect the social environment (such as community-level norms and collective self-efficacy) and behavioral patterns of entire populations, in contrast to individual-level interventions, which aim to change individual beliefs, standards, and behaviors [49].

4. CONCLUSION

The study revealed that HIV/AIDS mortality in the Philippines increased significantly from 1999 to 2020. Males were the most susceptible Sex to HIV/AIDS mortality, and MSM significantly contributed to HIV/AIDS mortalities. In addition, age-specific mortality rates show that every age group is affected by HIV/AIDS. Wherein the 25–29 age group was the most affected. This implies that this age group was the most affected by the HIV epidemic in the country. Furthermore, the National Capital Region (NCR) is the most affected region in the country, despite a higher number of testing and treatment centers. Meanwhile, the BARMM recorded the lowest mortality rate throughout the study period. This can be attributed to being a Muslim-dominated region with limited HIV cases recorded. To conclude, the rising number of AIDS-related deaths in the nation is a significant health burden. The main causes of this epidemic were widespread stigma and discrimination. Eliminating these two factors should be the primary step in addressing this epidemic. Less stigma and discrimination will lead to higher numbers of HIV tests and status awareness, eventually reducing risk behaviors and transmission.

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