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Research Article

RURAL AND URBANANALYSIS OF HIV/AIDS PREVENTION METHODS BY THE GOVERNMENT OF THAILAND: EVIDENCE-BASED LESSONS FOR SUB-SAHARAN AFRICAN COUNTRIES

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ABSTRACT

This research study addresses critical issues of HIV prevention in rural and urban regions of Thailand from an epidemiological perspective. Infrastructural health inequalities and geographical diversity in Thailand will be used to suggest HIV prevention improvements in South Africa (SA) plus other sub-Saharan African countries such as Lesotho, Namibia, Angola, Zimbabwe, and Swaziland. Comparisons between past and current HIV prevalence rates in Bangkok, Thailand and sub-Saharan countries will be used a benchmark to assess the effectiveness of the 100% condom program implemented by the Thai government. Significant public health and infrastructural improvements in Thailand will be analyzed as well. Important lessons reaped from the great success by the government of Thailand in reducing HIV prevalence rates from 95% to close to 25% by 2014 can be emulated and adopted in sub-Saharan Africa particularly in South Africa (SA), which has the highest rate of HIV prevalence in the world i.e. 6.4 million according to Mabaso, Simbayi, Maduna, Ramaliba and Naidoo (2016).

INTRODUCTION

HIV infection has claimed innocent lives of different persons in most parts of the world. Vulnerable victims of HIV may either be residing in rural or urban parts of any given country. While Platt, Easterbrook, Gower, McDonald and Sabin (2016) state that there are 37 million people infected with HIV, Bishop Simeon Trust (2016) assert that the effect of HIV/AIDS on families in SA is devastating while accounting for a third of women and aquarter men aged 30-34 years living with HIV/AIDS, leaving behind an estimated 2 million orphans. Not all governments of most countries have been very proactive in implementing effective HIV prevention and healthcare promotion policies. Claasen (2002) states that Uganda's HIV/AIDS prevention programmes are more effective than SA stating that the SA government is not stepping up its methods of fighting HIV infection amongst its population. Sub-Saharan African countries are still under serious threats of HIV infection from different vehicles of transmission such as commercial sex workers, migrants, and consumers of recreational drugs such as cocaine, alcohol, and heroin.

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Low Socioeconomic (SES), poverty, behavioral attitudes, and lack of adequate HIV prevention education are arguable risk factors that may account for the rising incidence rates of HIV in rural regions as well as parts of urban regions in sub-Saharan Africa and Thailand. Jansen, Wit, Stroebe and Griensven (2000) state that lower socioeconomic status (SES) has been associated with higher rates of HIV infection as well as higher rates of unsafe sex. Bangkok Thailand is a perfect example of an urban city that is blessed with wonderful climate and a vibrant tourism industry. However, HIV infection remains a significant public health concern. Despite significant reductions of the HIV prevalence rates as elucidated by Index Mundi (2016) - 1.12% and Averting HIV and AIDS (2016) - 1.1% respectively; much credit has to be given to the Thai government directly by positively enforcing and creating HIV-prevalence reductions via the 100% condom program.

Social, Economic, and Political Response to the HIV Epidemic

HIV/AIDS is a global epidemic that still threatens the human race in many parts of the world. Governments of certain countries in collaboration with local departments of health as well as international stakeholders have made remarkable improvements in reducing the prevalence of HIV amongst its population.

The government of Thailand as elucidated by Levine (2007) serves as a perfect example of a country that has demonstrated that HIV/AIDS prevalence can be lowered from high to low rates i.e. decreased by 80% from 1991 to 2000 as a result of effective leadership, efficiency, and collaboration with other branches of government such as law enforcement (p.10). The successful significant reduction of HIV/AIDS prevalence in Thailand can also be attributed to an effective Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis that is possibly applicable in sub-Saharan Africa where HIV/AIDS prevalence is highest in the world. Allison and Kaye (2005) suggest that successful organizations tend to exploit strengths rather than weakness while nurturing the steps that result in these aforementioned successful outcomes. The word organization can be substituted for by Thai government in this case in association with its other branches of government as previously mentioned. Levine (2007) elucidated that the Thai government nurtured behavioral change and a 100% condom use program and policy as dependent variables with a goal of minimizing the risk of HIV transmission amongst its population (p.10).

Governments in countries such as South Africa (SA), Botswana, Lesotho, Namibia, Malawi, and Swaziland that are located in sub-Saharan Africa have done less compared to the Thai government in advocating for behavioral change and its consequences of rising HIV transmission rates amongst its populations. Mabaso et al. (2016) points out that the main source of new HIV infections occurs mainly through high risk behaviors such as unprotected heterosexual intercourse, multiple sex partners, alcohol and drug use before sexual intercourse despite SA being the biggest HIV/AIDS global leader with an estimated 6.4 million people that is equivalent to 12.2% of the population. HIV/AIDS prevention programs involve colossal amounts of funding (US dollars) to sustain. Financially and economic wealthy nations such as the United States (US), Germany, England, Sweden, Japan, and Switzerland can comfortably allocate funds to sustain HIV prevention programs while countries in developing nations such as Thailand, SA, Bangladesh, and Lesotho are unable to self-sufficiently sustain HIV prevention programs. Global Trends (2015) points out that the UShas an annual Gross Domestic Product (GDP) of $53,400 while Thailand and SA both have GDPs of $14,500 and $12,500 respectively. It is evident that Thailand is not an economically wealthy endowed nation compared to the US, Germany, England or Sweden. Thailand was able to overcome the burden of high HIV prevalence rates of 3.5% to 9.3% from 1989 to 1990 according to Levine (2007) despite negative behavior being both a weakness and threatening analytical variables of the SWOT analysis (p.9). Political stability and influence are variables that directly influence movement of persons from rural to urban parts of any country and vice versa. The HIV epidemic in Thailand required a politically integrated network that ensured successful reductions of HIV/AIDS. Levine (2007) elucidates that both The National AIDS Committee, Thai Ministry of Public Health, and University of Thailand officials were able to conduct a joint HIV prevention campaign with a 100% condom program particularly due to lack of restriction of movement and government support (p.11). This in itself was ample evidence of a strong response by the Thai government in effectively collaborating with relevant partners and coordinating the100% condom use program.

Data Analysis and Critical HIV Issues in a Health Setting from an Epidemiological Perspective

It is estimated that 38.6 million people are affected with the HIV/AIDS pandemic according to Levine (2007). This high statistic of HIV/AIDS global infection can be attributed to multiple factors that includes rural to urban migration for betterment of socioeconomic statuses, behavioral factors, poverty, political instability, polygamy, health dipartites and accessibility of health care, HIV-associated stigmatization, and lack of HIV-prevention education knowledge. Richter, Chersich, Vearey, Sartoruis, Temmerman, et al. (2014) found that despite cross-border migrant sex workers being better educated than their SA counterparts were 12.4 times more likely to acquire HIV than the general population with a 95% confidence interval (CI) ranging from 8.9 to 17.2. This is clear evidence that persons who migrate from both politically and economically unstable countries such as Zimbabwe to SA end up in commercial sex trade thus accelerating HIV prevalence rates in sub-Saharan Africa. Thailand is not exempt from this migration phenomenon similar to the aforementioned scenario in SA. Levine (2007) states that Thailand ranks second highest of all Asian countries with close to 572, 500 people infected with HIV/AIDS and an infection rate of 90% as of June 1992 from a previously recorded 14% in 1989 (p.8).

Public Health Response from A Systems Perspective

The government of Thailand's rapid response initiative to the HIV/AIDS epidemic between 1989 through the mid-1990s displayed a perfect example of a major public health response. Data from The Center for Disease Control and Prevention's (2010) fact sheet about Thailand indicates that HIV ranks number five in mortality causes of death whereas cancer, ischemic heart disease, stroke, and lower respiratory infections rank first, second, third and fourth respectively.

This information from CDC's (2010) fact sheet on HIV in Thailand is evidently clear that HIV as a cause of mortality of death slipped from first to fourth, as was the case from 1989 to 1990. Levine (2007) points out that from 1989 through 1990, the proportion of sex workers infected with the HIV virus escalated from 3.5% to 9.3% with an all-time recorded high of 21% a year later (p.10). It would be important to delve into how best did the Thai government contain this HIV problem? The answer to this question is multifaceted. One method that was adopted as key strength was implementation of the 100% condom program as previously elucidated while secondary measures employed included contact tracing, development of healthy collaborative partnerships between the Thai Ministry of Health (MOH) with local and international health care and HIV prevention-agencies. CDC (2010) fact sheet HIV in Thailand asserts on the close working relationship with the CDC and Thai MOH by preventing HIV and improving the quality of life of people living with HIV through model approaches coupled with surveillance from evidence-based approaches.

Methodologies used in Dealing with HIV-Related Urban Response

A proposed and pragmatic method on dealing with a major public health problem such as HIV/AIDS infection especially in an urban setting is a rapid response initiative such as screening of people and effective contact tracing.

Though such aforementioned screening methods may be costly in terms of expense from a financial standpoint as pointed out by Levine (2007) indicating a total of $375 million spent on HIV/AIDS program in Thailand (p.8); the end result would yield better surveillance systems of monitoring persons infected with HIV/AIDS. A major weakness of the Thai government was lack of efficient methods of contact tracing and adequate positive feedback reporting coordination from the 100% condom program. However, it would be a tall order or task for the Thai government to monitor each individual infected with HIV owing to a relatively average healthcare system and infrastructure compared to those in developed countries such as the US, Canada, Australia, and Switzerland. Despite all the aforementioned weaknesses in the HIV-prevention 100% condom campaign adopted by the Thai government, data from UNAIDS (2015) suggests that these efforts have paid off with total annual AIDS mortality decreasing from 55, 831 in 2000 to 20, 492 cases in 2014 of which mortality of female children reduced from 669 to 59 cases from the year 2000 to 2014 respectively.

Scope of HIV and Trends of Health Concern

Human Immunodeficiency Virus (HIV) disease transmission in developing countries mainly occurs through sexual contact between HIV-infected persons and non-infected HIV persons. Factors that contribute to the high prevalence rates of HIV-transmission in developing countries such as Thailand, Bangladesh, and South Africa (SA) may include sexual practices in sex trade establishments or otherwise known as brothels, migration, poverty and low socioeconomic statuses (SES), erratic and irresponsible sexual mentality associated with intoxication from excess alcohol and illegal drug consumption. The government of Thailand through solid and effective leadership developed a HIV prevention program that encouraged its entire nation residing in rural and urban localities to use condoms before engaging in sexual activities. Levine (2007) states that in 1989 HIV rate was up 98% indicating a worsening health concern and possible HIV epidemic that was demolishing the lives of innocent families in Thailand. What important lessons can be learned from the important strides made by the robust response by Thai government that can be extrapolated to regions such as sub-Saharan African countries such as SA, Lesotho, Zimbabwe and Namibia? The answer lies in Thailand's government swift collaboration with law enforcement, public health and university institutions cost-effective, pragmatic strategic planning, good leadership, and envisioned success evidenced by the HIV prevalence rate dropping to 4.4% by 2002 as pointed out by Levine (2007).

Health Inequalities

Just as in most developing countries, Thailand faces numerous health inequalities in rural and urban regions that can be attributed to variations of different socioeconomic statuses across the entire country. Nishiura et al. (2004) successfully proved via scientific evidence-based research methods of the unequal distribution of medical personnel across Thailand with a Gini Index = 0.4333 that was specific to physicians by provincial location. Persons of higher SES have access to arguably better health care services compared to those of lower SES.

However, despite the aforementioned health inequalities the Thai government proved its worth by overcoming the health care inequalities as evidenced by a current HIV prevalence rate of 1.1% in adults with less than 20,000 newly infected with HIV down from 45,000 infections in 2005 (Averting HIV and AIDS, 2016). Possible factors that may have contributed to the skewed distribution of medical services and personnel in both rural and urban Thailand are more trained medical specialists compared to training family medicine physicians, initially but currently improving governance and health policies geared towards improving health care services. Nishiura et al. (2004) states that a shortage and uneven distribution of health manpower resources still exists between urban areas, predominantly Bangkok Metropolis, and the rural areas, albeit significant improvements being achieved in the last decade.

Geographical, Environmental Factors and Population Demographics

Thailand is favored by tropical climate, which is complimented by a vibrant and thriving tourism industry that promotes migration of persons both locally and internationally thus increasing the risk of acquiring HIV infections. World Travel Guide (2016) acknowledges that Thailand's weather is generally very hot in the months of March through May, which favors domestic and more so international tourism. Transmission of infectious diseases such as HIV may be accelerated where numerous people congregate or throng at a particular place for tourism purposes, such as Bangkok. Index Mundi (2016) reports that the annual urbanization rate in Bangkok is 2.9% between 2010-2015 with a total life expectancy of 74.7 years, 71.5 years in males and 78 years in females respectively, which indirectly may reflect on a variation of quality of life in different parts of Thailand in relation to geographical and environmental factors. Bangkok is the capital city of Thailand that is the most densely populated province compared to other rural provinces such as Samut Prakan and Chachoensao. Voyage 99 (2016) states that Bangkok lies within a geographical setting of latitude 13.45 North and longitude 100.35 East with an overall area of 1, 569 square miles, coastline stretching to 4.4 Kilometers, and 6.5 feet above sea level promoting that the greatest population density in Thailand. Lamphun, Pai, and Chiang Rai are the one the smallest rural towns in Thailand, which are favorite tourist destinations hot spots similar to Bangkok. City Population (2010) states that Lamphun, which is the favorite rural city amongst the Pai and Chiang Rai recorded a population census of 412, 741 in September 2010 while in April of 2000 the population census was 413, 299. Bangkok being the capital city would have more inhabitants compared to Lamphun and possibly with a numerous variations of culture. Index Mundi (2016) reports that Bangkok has a current population census of 68, 200, 824 while taking into account that excess mortality attributed to HIV/AIDS –adult prevalence rate of 1.12%, 438,100 persons living with HIV, 14,200 deaths due to HIV, population a growth rate of 0.32%, birth rate of 11.1 births per 1000 population, and a death rate of 7.9 deaths per 1000 population.

Physical, Psychological and Environmental Factors

Thailand and South Africa (SA) share similarities in geographical topology and favorable climate that entices lots of local and foreign tourists.

For example, both countries enjoy relatively tropical climates with varied seasons and have a long coastline of the Indian and Atlantic oceans respectively. Star travel (2016) states that Thailand is blessed with tropical climate plus a mean annual temperature of 82 degrees Fahrenheit and high humidity. Fun and good climate are both catalysts for engaging in activities such as sports, vacationing, and lots of travelling of tourists as previously mentioned. Having fun can be associated with consumption of large amounts of alcoholic beverages as well as recreational drugs such as heroin and cocaine, which may all impair decision making capacities thus increasing the risk of acquiring HIV infection by not using barrier methods such as condoms during sexual intimate encounters. Levine (2007) states that HIV surveillance conducted by Thailand's Department of Health showed that the HIV virus was spreading swiftly through sex between 1989 and 1990, with the proportion of sex workers infected tripling from 3.5% to 9.3% and 21.6% within one year (p.10).

SA lies in sub-Saharan Africa that has the highest HIV infection rate as elucidated by Richter, Chersich, Vearey, Sartorius, Temmerman, et al. (2014) with a 95% confidence interval (CI) ranging from 8.9 to 17.2 possibly due to irresponsible sexual behavior that may be highly associated with use of excess alcohol consumption and use of recreational drugs as previously mentioned. Mabaso, Simbayi, Maduna, Ramaliba and Naidoo (2016) state that HIV positive persons are the source of new infections occurring mainly through risk behavior with a high-risk partner and have associations with socio-demographic characteristics such as age at sexual debut, multiple sexual partners, condom use at last sex, self-perceived risk of HIV infection and alcohol use. Most common to both Thailand and SA's rural regions is prostitution that is triggered by migration, poverty and low socioeconomic status (SES). Levine (2007) points out that Thailand's Director of the Regional Office in Communicable Disease Control in Thailand's Ratchaburi Province, located in a rural area, stressed that it was important to make sure that sex was conducted safely and thus collaborated with owners of sex establishments enforcing a rule of no condom no sex (p.10).

Potential Collaborators and Ethical Standards

Collaborators are very instrumental in working with both local and state departments of health in order to reap maximum success of disease prevention and health promotion program or policies. Rowitz (2006) points out that one of the main reasons for collaborative ventures between two or more organizations is pooling power so that several agencies working together can address challenges such as HIV infection in a community, region or country resulting in substantial impact and successful outcomes (p.172). For example, as previously cited, the high HIV transmission rate could only have been reduced by a joint effort of the Communicable Disease Control Regional Offices in Thailand's Ratchaburi province, The Institute for Population and Social Research at Mahidol University, Ministry of Public Health, National AIDS Committee, nongovernmental organizations (NGOs), Provincial Health and Police Departments of Thailand (Levine, 2007, pp.10-11). The positive aspect of involving external collaborators and government departments ensures that ethical standards are not breached during any public health programs such as HIV prevention and health promotion policies.

Additionally, any collaborators would not want to provide funds for financing health prevention programs if ethical standards are not perfectly met. Commercial sex workers in Thailand's Ratchaburi's province were autonomously allowed to use condoms with their clients while ensuring that they were made to understand ahead of time about the consequences of not using condoms, which may result in a higher risk of contracting new HIV infections. Levine (2007) asserts that due to the well-coordinated systems that were put in place prior to implementation of the 100% condom program as part of the national AIDS campaign, the Thai government's budget rose from $2.62 million in 1991 to $82 million by 1996, 96% of which was financed the Thai government and resulted in 60 million condoms being distributed annually (p.11). External collaborators such as the World Bank and Disease Control and Prevention (CDC) may have contributed the remaining 4% of funds for HIV/AIDS prevention programs in Thailand.

Technological Advances in HIV Surveillance, Preventionand a Promising Future for HIV Eradication

HIV/AIDS prevention has come a long way in the last decade globally. With the development of vaccines such as the RV144 that was tested in Thailand's HIV population is gaining ground and is currently being extrapolated in SA where the HIV prevalence is highest in the world. The U.S. Military HIV Research Program (MHRP) has been conducting a clinical trial called the RV144 otherwise known as "The Thai Study" that is collaborated with other collaborators in the world and as of 2015 is conducting a similar trial in SA targeting the most common HIV subtype known as "subtype C" primarily predominant in SA and other sub-Saharan countries such as Lesotho, Swaziland, and Namibia (U.S. Military HIV Research Program). Home-based HIV-self testing is a new and cheap technologically advanced paradigm that individuals may opt to use before engaging in sexual intercourse and can be extremely beneficial in educating commercial sex workers as well as the general public about its benefit and significantly reduce the spread of HIV. Maksud, Fernandes and Filgueiras found that home-based HIV-self testing in the Brazil, United States, and Africa provided an important HIV prevention strategy by supporting people in making decisions about HIV prevention by future use of condoms prior to sexual encounters, choice of partners by seroserology (serosorting) and relationship agreements regarding sexual partners with an educated mindset of knowing ones serostatus.

Current HIV/AIDS screening equipment such as ELISA and Western blot testing kits though expensive are more accurate in detecting the HIV virus with a sensitivity and specificity of close to 99%. Health line (2016) defines enzyme-linked immunosorbent assay (ELISA) or enzyme immunoassay (EIA) as the first test used to screen a person for HIV while the Western blot test detects HIV antibodies in the blood of a suspected HIV-infected person. However, Thailand has a relatively better financial economy compared to SA with a Gross Domestic Product (GDP) of $13, 930 and Life Expectancy (LE) of 75 years while SA has a GDP of $12, 450 and LE 60 years as elucidated by Global Trends (2015). It would be a good idea to equip most rural and urban health care facilities with ELISA and Western Blot screening materials to efficientlyoversee contact tracing of HIV infected and suspected persons with a goal of improving HIV-surveillance

thus reducing incidence rates of the HIV infection in Thailand and SA respectively. The success of preventing HIV does not solely depend on the development of the RV144 vaccine – efficacy of 31.2% according to U.S. Military HIV Research Program (2015) and anti-retroviral medications that are used to suppress the HIV-viral load below detectable levels but in thoroughly educating both rural and urban populations of Thailand, SA, and other countries on basic methods of preventing HIV such as use of condoms, previously mentioned home-based HIV-self testing that costs less than $10 according to Maksud, Fernandes and Filgueiras (2015), better HIV-disease transmission comprehension, effective governance as exhibited by the Thai government in Levine (2007), and involvement of collaborators for provision of adequate funding to sustain, create, and prevent HIV prevention programs and policies respectively.

Closing Statements and Recommendations

There is still a lot of work that is required by governments of most countries and stakeholders to further decrease the rate of HIV transmission. More education is still required to enlighten local populations in urban and rural settings of affected region as Thailand and in sub-Saharan Africa with a long-term conceptualized goal of reducing the rate of HIV transmissions in most. Levine (2007) states that Thai government public health officials fell short of encouraging men and women to use condoms in casual but noncommercial sex skewing the results that may actually depict the true HIV prevalence rates in Thailand (p.13). Therefore, in whatever geographical setting that is affected by the HIV epidemic requires consistent education of the local population with emphasis of a targeted population such as commercial sex workers in Thailand.

While it is imperative to stress enough on the importance of educating local rural and urban populations of affected HIV-stricken regions, it is essential to positively modify behavioral attitudes and promote HIV-prevention awareness via implementation of pragmatic HIV-prevention health promotion policies. Knowledge of HIV-related epidemiologic patterns in rural and urban setting is extremely essential in projecting inference on how best to mitigate HIV epidemics as witnessed in Thailand and currently in sub-Saharan Africa. Friis and Sellers (1999) in Coreil (2010) elucidate that knowledge of epidemiologic patterns is very useful in planning health services and formulating public health policies in order to meet the needs of the local population as witnessed in the HIV epidemic in Thailand (p.45). Collaborative relationships between most governments and external stakeholders are essential in ensuring that public health prevention of communicable disease is achieved. Obel (2015) and Issel (2014) both elaborate on the effectiveness and importance collaborative relationships for example between the Thai government and external stakeholders such CDC in ensuring effective community involvement and to decrease health disparities (p.65). Sub-Saharan Africa still grapples with the continuously rising HIV prevalence rates. Averting HIV and AIDS (2015) estimated that 25.5 million living with HIV in sub-Saharan Africa of which 2.1 million were attributed to new infections, 150,000 amongst children, and a vast majority of these living in East and Southern Africa. Governments of countries in East and Southern parts of sub-Saharan countries seriously ought to emulate, develop, and implement HIV-prevention public health policies similar to the functioning HIV prevention program in Thailand. In 1989 and 1990 the HIV prevalence rate expeditiously increased from 3.5% to 9.4% and 21.6% within a year in Thailand as reported by Levine (2007). Evidence shows that this simple and cost-effective method of 100% condom program is paying of with citizens of Bangkok and other cities in Thailand practicing safe sex with knowledge that lack of using condoms during sexual intercourse increases the risk of acquiring HIV/AIDS possibly leading to death in the long-term. Index Mundi (2016) shows that in 2012 the contraceptive prevalence rate was 79.3% in 2012 correlating to the HIV-adult prevalence rate of 1.12% in comparison to Levine's (2007) report of a HIV prevalence rate of 21.6% in 1990 (p.9).

A pragmatic solution that may work is sub-Saharan Africa is adopting the 100% condom program that is magnanimously working in Thailand coupled with mandatory HIV testing in special circumstances with contact tracing. Contact tracing via coordination of authorized patient health care data and standardization of Electronic Medical Records (EMRs) is a practical solution of monitoring both HIV infected and contact-person within a particular region. Carter (2009) asserts on the importance of HIV contact tracing that it can successfully lead to diagnosis of other individuals with HIV and is vital to controlling the spread of HIV with evidence showing that individuals with acute HIV infection more likely to be tested compared to partners with already established infection – 50% vs 39%, $p<0.01$. Special circumstances that may be prudent in screening people of HIV globally and in sub-Saharan countries as aforementioned that bears the highest HIV rates in the world includes visa application processes, migration of persons to and from different countries, annual screening of students and workers in universities as well working class professionals in companies respectively. Continuous HIV prevention education still remains top priority in addition to the aforementioned steps of significantly reducing HIV prevalence in rural and urban sub-Saharan Africa.

Conflict of Interest

None

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