Epidemiology Paper

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Author Note

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HIV/AIDS has emerged as a global epidemic in recent decades and has become a source of deep concern for health organizations as its global prevalence increases. In 2010, about 33 million people were infected globally by the HIV virus while another 20 million have already died as a result. Despite advances in prevention and treatment efforts, a 27% increase had occurred within a decade alone (Avert, 2018). Among the various at-risk populations, Latino, African-American, and MSM populations (men who have sex with men) are affected at a disproportionate rate compared to other groups (UNAIDS, 2016). Individual behavioral risk factors include injecting drugs and sharing of needles as a result, which leads to an almost 22 times higher likelihood of contracting the infection compared to other population groups (Avert, 2018). Close to a million people in the U.S. live with an HIV infection besides another million people who have been diagnosed with AIDS (Pellowski, Kalichman, Matthews, & Adler, 2013).

HIV refers to the human immunodeficiency virus which affects the immune system's cells by impairing their functions or destroying them. In turn, the process leads to a gradual deterioration of the body's immune system rendering it deficient to fulfill its purpose and role. Patients may exhibit symptoms after a few weeks of acquiring the HIV infection which may include influenza-like symptoms, sore throat, fever, rash, or headache, and as the infection spreads, it can lead to cough, diarrhea, loss of weight, and swollen lymph nodes. If HIV is untreated, it can lead to a range of other complications, key among which is AIDS or Acquired Immune Deficiency Syndrome. AIDS is the most advanced stage of HIV and occurs when the HIV infection has been untreated for over 10 years. Transmission either occurs from sharing drug-needles, blood transfusion, unprotected anal or vaginal intercourse and in some cases breastmilk. HIV treatment requires prevention efforts to minimize transmission risks and earlier diagnosis to begin antiretroviral drugs course such as methadone maintenance treatment (MMT) (Baker, Kochan, Dixon, Wodak, & Heather, 1995). Contrary to what is believed, HIV / AIDS is not a reportable Disease and thus infected individuals are not required to disclose their HIV status to their physician, or employer, etc.

# Social Determinants of Health & Contribution to HIV

Although there are a number of individual risk factors determined by epidemiologists, however, the incidence and prevalence of HIV is also dependent on a number of social determinants of health such as gender, sexuality, income, socioeconomic status, employment, and age. Furthermore, inequality, discrimination, and poverty are also included among the contributive social factors towards HIV. Other social factors include stigma which comes to be associated with HIV and contributes to misconceptions, late diagnosis, and fears of testing positive. Populations that are undernourished as a result of poverty progress from HIV to AIDS more rapidly than those with higher quality of life indicators. A breakup of social relationships is feared as a result of the stigma among certain communities if an individual were to disclose his or her status to her partners, family members, employees, or friends. Further social epidemiologic factors include the stress and psychological problems which come as a result of unemployment or low income, which increases the likelihood of engaging in more risky behavior. MSM-individuals are at higher individual risk but the social stigma associated with the condition exacerbates the problem by leading to delays or avoidance in testing, or a lack of disclosure of HIV status to their intimate partners, thus hampering prevention efforts (Rintamaki, Davis, Skripkauskas, Bennett, & Wolf, 2006).

 A key factor that leads to testing delays and subsequently treatment is reduced access to appropriate healthcare, which is connected to unemployment and a lack of insurance coverage. Minority populations in the U.S. are more likely to have delayed testing due to comparatively lesser access to healthcare than the White population (Pellowski, Kalichman, Matthews, & Adler, 2013). Nearly half of HIV infected individuals are believed to be receiving inadequate therapy and medication due to healthcare inequalities that significantly increases their risk to acquiring AIDS (Gardner, McLees, Steiner, Del Rio, & Burman, 2011).

# Epidemiologic Triangle and HIV

 The role of epidemiologists is to learn about diseases, its transmission among host populations, their susceptibility and ability to survive it. For this purpose, epidemiologists make use of an epidemiologic triangle to explain the cause of the disease and the conditions that lead to its spread. The triangle consists of the host, agent, and environment aspect. The agent refers to the microorganism, such as parasite, virus, bacteria, etc. that becomes the cause of the disease while the host signifies the organism which can carry the agent without necessarily becoming affected by it. The environment part refers to external factors that influence the spread of the disease yet are separate from the host and the agent.

 Applying the epidemiologic triangle to HIV will first involve identifying the agent. The HIV virus is the agent responsible for targeting and weakening the vulnerable individual's immune system rendering it incapable to effectively battle the HIV virus. The virus is transmitted mostly through bodily fluids which are transmitted either through shared needles or sexual contact. HIV is believed to have originally been hosted by chimpanzees whose blood and meat infected humans who consumed it with a mutated form of the virus. From there it was transmitted person to person through a bodily fluid coming into contact with damaged tissue or mucous membrane. The environmental aspect includes a range of socio-economic determinants and factors which expose a community to an outbreak. Those communities which report higher STD rates alongside lower reporting due to social stigma, discrimination, or pressure, are at an increased likelihood to have an HIV outbreak. Moreover, poverty, inequitable treatment, and discrimination prevent individuals from getting screened and seeking early care (Engard, 2017). In particular, a community's social influence, social participation and engagement, its access to informational and medical resources, the prevalence of mixing with the infected, and the extent of social support available all influence its environment in terms of its susceptibility to HIV/AIDS (Poundstone, Strathdee, & Celentano, 2004).

# Role of Community Health Nurse & Demographic Data

Modern communities are dynamic and varied and thus effective healthcare provision within it requires the service of a community health nurse (CHN) who should be able to adapt to the changing environment to enable needs-based quality care within it. The CHN, besides clinical skills, is expected to analyze complex situations and demographic data to advocate appropriate care and achieve wellness goals. CHNs are required to develop close bonds with their communities and establish meaningful relationships with it. They are expected to determine the needs of their communities through evidence-based research and adjust their care according to the clinical, socioeconomic, and cultural needs of their community. As researchers, they are required to collect and analyze evidence to advocate quality care or to validate health funding, improve access to health services, and reduce inequalities.

In this regard, CHNs are expected to provide evidence-based solutions that address the physical, environmental, biological, or social causes of various diseases. It requires a careful assessment of the population's health care needs through a systematic approach which may involve obtaining accurate demographic data of the community's various population groups. This will help them determine at-risk individuals and groups and thus contribute towards developing appropriate health promotion programs. The demographic data they collect from various sources will also help them determine the current status of illness and health of families and individuals within the community and identify risks to health. This will involve developing a data collection plan through utilizing appropriate tools and variables to measuring quantitative and qualitative data to inform care. They are also required to document and interpret health data in a manner that is understandable to all stakeholders within the community and to ensure that information sources are providing reliable and valid data for the purpose (WHO, 2017). Through this, CHNs can advocate policy changes and inform program planning, and intervention while collaborating with the community, to help them achieve better health outcomes.

# Agency Efforts to Reduce HIV Impact

A number of agencies and organizations are currently operating to eradicate and eliminate HI/AIDS in various parts of the world. In this regard, a leading effort is being done by the UNAIDS program which is the United Nations’ (UN) main body to develop a coordinated, comprehensive, and an accelerated global action to battle the HIV pandemic. The UNAIDS aims to strengthen, lead, and supported the global response to HIV/AIDS by undertaking efforts to preventing transmission, provision of support and care to the infected, while concentrating efforts to reduce the vulnerability of at-risk communities and individuals. A key part of their mission is to prevent the HIV epidemic from exacerbating and expanding. For this purpose, UNAIDS aims to provide advocacy and leadership towards effective action and to provide technical support and strategic support to guide global efforts. It also aims to evaluate, monitor and track the disease, and to mobilize resources and engage partners and civil society to develop a coordinated response in battling HIV/AIDs. The program became operational in January 1996 and is now operating with a board comprising of members from 22 governments. The organization has been successful in terms of being able to complement government efforts, mobilize the private and corporate sector within at-risk communities, and to enhance civil society participation to spread awareness and facilitate prevention efforts especially with regards to addressing discrimination and the issue of stigma (UNAIDS, 2006).

# Global Implication of HIV & International Efforts

Globally HIV/AIDS remains one of the most concerning public health issues, however, there is a shared global commitment toward reducing HIV prevalence and improving access of infected individuals to appropriate treatment. Nearly 5000 infections are still reported globally on a daily basis among which includes nearly 10% of children less-than-15. A significant portion of infected children belong to sub-Saharan Africa and became infected through breastfeeding, childbirth, or pregnancy. Globally, about 75% of the HIV infected population is estimated to be aware of their condition while the remaining lack appropriate access to screening services (KFF, 2019). Despite the global implications of the disease, there have been promising signs and notable successes in many parts of the world with respect to treatment, care, prevention, and support services, as global efforts to counter the epidemic were further enhanced in the last 10 years. Today, the number of individuals being treated for HIV have risen significantly compared to previous decades, yet despite improvements, HIV has managed to reach nearly every country in the world. Sub-Saharan Africa is affected in particular due to the various socioeconomic factors at play in the region.

International efforts to address HIV requires substantial financial and political commitment from domestic governments alongside donor countries and international organizations. These efforts have achieved notable progress as the number of AIDS-associated deaths and infected children have started to decline recently, with nearly 21 million individuals are estimated to be receiving treatment for HIV today. (KFF, 2019). However, various barriers such as a lack of access to treatment and prevention services, social stigma, discrimination, and poverty continue to complicate efforts in these countries. The very nature of the disease impacts not just individuals, but entire families, communities, and households, and subsequently economic growth of the region. These countries frequently also face food insecurity, developmental and health problems, and outbreaks of other infectious diseases. Therefore, there is a need to enhance targeted prevention efforts, especially within these high-risk Sub-Saharan countries to improve their physical health and social well-being. In addition, efforts also need to be targeted towards marginalized and minority population groups by reducing health inequality gaps within their host nations.

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