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# An Examination of Contribution Factors and Controls in Tuberculosis and HIV among Aboriginal Population in Canada: A Review

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**Abstract**

*There is a disparity between the health status of the Aboriginal and non-Aboriginal populations in Canada. Similarly, the prevalence and incidence of infectious diseases such as tuberculosis and HIV/AIDS are much higher among Aboriginals when compared to the rest of the population. This paper provides a meta-analysis of the contributing factors and controls in tuberculosis and HIV/AIDS in the Aboriginal population by conducting a literature review of various government reports and peer-reviewed articles.*

*There are various factors associated with the higher prevalence of HIV/AIDS and tuberculosis among the Aboriginal population. This includes lower educational status, unemployment, low income, poverty, homelessness, poor housing conditions, racial discrimination, remote locations, culturally unacceptable healthcare awareness programs and delivery system (Reading & Wien, 2009).*

*We may be able to reduce the incidence and spread of HIV/AIDS and tuberculosis infection among Aboriginal people by encouraging them to improve their educational status, helping them find a job and thereby eventually eradicate poverty and homelessness in the Aboriginal community, making them aware of various infections, it's causative and risk factors and ways to prevent or control it and by providing them easily accessible and culturally acceptable healthcare delivery systems (Public Health Agency of Canada, 2010).*

***Keywords**: Aboriginal population, HIV/AIDS, tuberculosis, poor housing conditions, risk factors for HIV/AIDS and tuberculosis, Aboriginal healthcare systems, control of tuberculosis and HIV/AIDS, demographics of the aboriginal population*

## Introduction

Canada is well known for its universal health care system. Even though it provides equal healthcare services for all, the average health status of the Canadian population is not one of the best in the world. This is mainly because of the low health status of the aboriginal population in Canada when compared to the rest of the Canadians. This significant disparity between the health status of the Aboriginal and non-Aboriginal population in Canada is attributed to various factors such as socioeconomic status, education, housing conditions and healthcare delivery system. All these factors lead to a higher rate of diseases including infectious diseases such as tuberculosis and HIV/AIDS among the Aboriginal population when compared to the non-Aboriginal population in Canada. “Aboriginal or Indigenous people collectively refer to the original inhabitants of Canada and their descendants, including First Nations, Inuit and Metis people” (National Collaborating Centre for Aboriginal Health, 2013, p. 1).

## Problem Statement

Tuberculosis and HIV are two of the most common infectious diseases among the aboriginal population. The Canadian Tuberculosis Committee states that the First Nations, Inuit and Metis populations have a higher susceptibility to diseases such as tuberculosis when compared to the rest of the Canadians (2007). Also, “the HIV infection rate for Aboriginal people was about 3.6 times higher than among non-Aboriginal persons in 2008” (Public Health Agency of Canada, 2010, p. 19).

The objective of this capstone project is to identify various factors that contribute to the higher prevalence and spread of tuberculosis and HIV among the Aboriginal population in Canada and the ways to control it. I selected this topic because this report made me think that certain factors are specific

to the indigenous environment that contributes to the spread of these infections. This may be due to a lack of education, aversion towards infection control programs such as vaccination and lack of availability and accessibility of health care services. Identifying these factors may help in planning specific interventions thereby improving the health status of the First Nation, Inuit and Metis population.

## Demographics of Aboriginal Population in Canada

The Constitution Act of 1982 states that the Aboriginal population of Canada constitutes three major groups of people - First Nations (North American Indian), Métis and Inuit (Canadian Tuberculosis Standards, 2014). Aboriginal population constitutes a little below 4% of the total Canadian population in 2006 which includes nearly 60% as First Nations, one-third as Métis and about 4% as Inuit (Public Health Agency of Canada, 2010). "Estimates from the 2006 Canadian census for the Aboriginal population were as follows: 1,172,790 people identified their ethnic origin as Aboriginal, 698,025 of these as First Nations/North American Indian, 389,780 as Métis and 50,480 as Inuit" (Canadian Tuberculosis Standards, 2014, p. 3).

As per the records, the growth of the Aboriginal population is much faster than the non-Aboriginal population (Public Health Agency of Canada, 2010). "It grew by 45% between 1996 and 2006, almost six times faster than the non-Aboriginal population. The Aboriginal population is also younger than the non-Aboriginal population. The median age of the non-Aboriginal population is 40 years, compared to 27 years for the Aboriginal population" (Public Health Agency of Canada, 2010, p. vii).

## Statistics of TB and HIV Infections among Aboriginal Population

### Tuberculosis

The Aboriginal population of Canada which constitutes only about 4% of the total population of Canada accounted for about one-fourth of the total reported cases of active tuberculosis infection in Canada in the year 2012 (Public Health Agency of Canada, 2014). Even though the incidence rate of TB in the First Nation and Inuit populations is much higher than the rest of the non-Aboriginal Canadians, there are variations in rates based on the regions and communities in which they live (Canadian Tuberculosis Committee, 2014). "Status Indians in Manitoba and Saskatchewan and the Inuit in Nunavut have the highest incidence rates among Aboriginals in Canada" (Canadian Tuberculosis Standards, 2014, p. 2). When the incidence of TB infection among the Aboriginal population was compared with the rest of the Canadians, it was found that the incidence rate of active TB disease for Inuit was almost 400 times higher (Public Health Agency of Canada, 2014). Similarly, the incidence rate of TB among First Nations people who are on and off-reserve was about 32 times more than the rest of the non- Aboriginal people who are born in Canada (Public Health Agency of Canada, 2014). "In some areas of Canada, the

incidence of TB among First nations persons living off-reserve, either in communities adjacent to reserves or in the core area of cities is equal to the incidence among those living on-reserve" (Public Health Agency of Canada, 2014, p. 4). The Canadian Tuberculosis Standards states that tuberculosis infection among the Aboriginal population is more common among young individuals whereas infection among the Canadian-born non-Aboriginal population is more common among older age groups (2014).

### HIV/AIDS

Population-Specific HIV/AIDS Status Report in 2010 states that the Aboriginal population accounts for a large proportion of people affected by HIV and AIDS in Canada. The report also says that, in 2008, about 8% of the total population who are having HIV/AIDS in Canada are Aboriginals. "According to the Public Health Agency of Canada, in 2011, an estimated 12% of newly diagnosed HIV infections were among Indigenous people even though Indigenous people make up only 4.3% of Canada's total population" (The Ontario HIV Treatment Network, 2014, p. 7). Also, "the HIV infection rate for Aboriginal people was about 3.6 times higher than among non-Aboriginal persons in 2008" (Population-Specific HIV/AIDS Status Report, 2010, p. 9). Another interesting fact about HIV/AIDS distribution in Canada is that about half of the Aboriginal population affected by HIV/AIDS are women whereas, in the non-Aboriginal population, women account for only one-fifth of those affected (Public Health Agency of Canada, 2014).

## Contributing factors for the increased susceptibility of the Aboriginal population to TB and HIV/AIDS

Various factors influence the health status of a population. This includes "historic, political, social and economic factors, resources, health behaviors, physical and social environment. These factors influence diverse dimensions of health, but they also create health issues that often lead to circumstances and environments that, in turn, represent subsequent determinants of health" (Reading & Wien, 2009). For example, if a person lives in a poor economic condition, there are higher chances that he/she will have a disease or a disability, higher chance that the disease aggravates which leads to a diminished opportunity to work productively leading to aggravating the economic crisis.

### Education

Education and health status, in my opinion, are closely related. People with a higher level of education have better health status, lower morbidity rate, and higher life expectancy when compared to people with a lower level of education (Ross & Wu, 1995). People who are uneducated or those having a lower

level of education, according to Ross and Wu, are more prone to infectious diseases, chronic non-infectious diseases, higher rate of morbidity and lower life expectancy (1995). Similarly, lack of education has a direct relation with poor living conditions and thereby higher risk of acquiring a disease (Tilak, 2010).

The educational status of the Aboriginal population is less when compared to the non-Aboriginal Canadians. About 30 percent of Aboriginal peoples between the age of 25 and 64 had not completed high school when compared with about 10 percent of non-Aboriginal peoples (International Report Card on Public Education, 2015). "About 48 percent of Aboriginal peoples had attained a postsecondary credential (certificate, diploma or degree), compared with 65 percent of non-Aboriginal peoples.10 percent of Aboriginal peoples had attained a university degree, compared with 27 percent of non-Aboriginal peoples (International Report Card on Public Education, 2015, p. 18). These studies show that Aboriginal people have a lower educational status when compared to non-Aboriginal Canadians.

There is a strong relationship between low educational status and the risk of TB. People with low educational status usually find it difficult to find a job and may end up homeless or engage in activities that increase the risk of TB infection. They have a higher likelihood of poor housing conditions, food insecurities, higher rate of smoking, alcohol, drug use, malnutrition and lack of availability of healthcare services, all of which are known risk factors for TB (Public Health Agency of Canada, 2014). Similarly, People with lower educational levels and those with poor living conditions are at higher risk of acquiring HIV infection. Public Health Agency of Canada in 2010 states that the spread and progression of the disease are more among less educated and poor people as they lack easy access to healthcare services. Moreover, they are not aware of the pathology of the disease, the modes of spread and prevention techniques because of lower education level. "Aboriginal people have lower rates of high school completion and are less likely to obtain post-secondary training than the Canadian population overall. Aboriginal people also experience lower rates of employment and lower incomes than the general Canadian population, increasing the population's vulnerability to HIV infection" (Public Health Agency of Canada, 2010, p. 37). In my perspective, lack of education is one of the reasons for the higher level of infectious diseases such as tuberculosis and HIV/AIDS among the aboriginal population.

**Socio-political factors**

When compared with the Canadian-born non-Aboriginal population, First Nations, Inuit, and Métis peoples have considerably lower health outcomes (National Collaborating Centre for Aboriginal Health, 2013). One of the reasons for the lower health status of the Aboriginal population, according to Reading and Wien is the colonialization which leads to diminished self-determination and a lack of involvement in the making of policies that directly affects the living conditions of the First Nation, Inuit and Métis population (2009). "All Aboriginal groups have suffered losses of land, language and socio-cultural

resources, racism, discrimination and social exclusion" (Reading & Wien, 2009, p. 8). National Collaborating Centre for Aboriginal Health in 2013 states that, Statistics shows that First Nations, Inuit, and Métis population have a higher rate of disease incidence and on many health indicators, they display an asymmetric burden of health disparities. Aboriginal population living in remote areas, whether they are Métis, Inuit, or First Nations, faces a lack of economic development which if present might help to reduce health problems to an extent (Reading & Wien, 2009).

People who are having HIV/AIDS or those at risk of it face discrimination from society and the governments. The Aboriginal population is more prone to health issues as they are marginalized by society and governments. They experience the devaluation of their culture and language and also lack access to health care services that are culturally acceptable to them. "Aboriginal and non-Aboriginal scholars have suggested that the over-representation of Aboriginal people in HIV/AIDS cases in Canada must be seen within the historical context of colonization, including forced removal from traditional lands and spiritual connection to the lands, cultural genocide and, in particular, the history of the residential school system".(Public Health Agency of Canada, 2010, p. 34). All these socio-political factors contributed to poor health and increased the susceptibility of the Aboriginal population to infectious diseases such as HIV/AIDS and TB.

**Housing conditions**

The environment in which we live has a key role in determining our health status. "Among Aboriginal peoples, physical environments that are largely detrimental to health have been imposed through historic dispossession of traditional territories as well as current reserve or settlement structures" (Reading & Wien, 2009, p. 12). One of the most important after effects of this is the shortage in housing, below-average quality of existing houses and crowded housing conditions (Canadian Tuberculosis Committee, 2007). "In 1996, 36% of Inuit, 7% of Métis and 20% of First Nations lived in crowded housing conditions" (Reading & Wein, 2009, p. 12). A crowded living condition is associated with a higher risk of transmission of airborne diseases such as tuberculosis, sexually transmitted diseases such as HIV/AIDS and hepatitis B, higher rates of injuries and family tensions (Reading & Wein, 2009). Also, Aboriginal people were three times as likely as non-Aboriginal people to live in houses in need of major repair (National Collaborating Centre for Aboriginal Health, 2013).

Aboriginal people living on reserves are 10 times more susceptible to having a TB notification when compared with non-Aboriginal Canadians. Studies show that a higher proportion of aboriginal people are living in poor housing conditions when compared to non-Aboriginal Canadians. Also, the average number of people living in a house is higher in Aboriginal communities than the rest of the Canadians. This crowded and poorly ventilated housing condition increases the likelihood of the spread of Mycobacterium tuberculosis, the bacteria which cause tuberculosis. The infection spreads when a

patient with active tuberculosis sneezes M. tuberculosis into the air. The bacteria remain suspended in the air for hours. If the air with suspended bacteria is inhaled by another person, there are chances that he/she may get an infection. The higher the number of bacteria suspended in the air, the higher is the chances of the spread of the infection. (Canadian Tuberculosis Committee, 2007). Because of this, the Aboriginal population living in crowded and poorly ventilated houses are more susceptible to TB transmission.

Housing instability, including shelter use and homelessness, is of particular concern for Aboriginal people at risk of and living with, HIV/AIDS. Because of poverty and homelessness, many First Nations, Inuit, Metis people live in streets and neighborhoods where there are higher violence rates and limited access to healthcare services. Living in such conditions increases the chance of people engaging in activities such as drug injection abuse, survival sex, and sex with multiple partners, all of which may result in the spread of HIV infection. Also, people living in unstable housing conditions have difficulty accessing healthcare services. A person who is identified with HIV/AIDS infection needs appropriate and timely medications and treatment. Homeless people may be staying at different places and this prevents them from getting timely and consistent healthcare services. In a study among sex workers in Vancouver, out of 100, more than 50% of them were aboriginal people and 86% of them reported that they are homeless (Public Health Agency of Canada, 2010).

Aboriginal population experiences a higher rate of poverty, unemployment, and homelessness when compared to the non-Aboriginal population. This may lead to the involvement of this population in crimes and illegal activities. In a study conducted among the prisoners in Canada, it was found that the aboriginal population is over-represented in Canadian jails. Aboriginal peoples comprise about one-fifth of the total offenders in federal jails. HIV prevalence, as per the Public Health Agency of Canada is higher among persons in prison than the rest of the Canadian population (2010). “In 2006, 1.64% of people in federal prisons were reported to be HIV positive”(Public Health Agency of Canada, 2010, p. 40). This higher rate of HIV/AIDS in prisons maybe because of unprotected sexual practices. “Studies of gay, two-spirit and bisexual male populations suggest that Aboriginal men who have sex with men may be at increased risk for HIV infection compared to non-Aboriginal men who have sex with men” (Public Health Agency of Canada, 2010, p. 25). The higher chance of spread of HIV/AIDS when an Aboriginal partner is involved maybe because of the higher prevalence of HIV/AIDS infection among the Aboriginal population.

**Employment and income**

A secure job and a steady income are some of the factors which I think are necessary to lead a healthy life, both mentally and physically. The percentage of the Aboriginal population who are working is less when compared to the non-Aboriginal Canadians and when they do find jobs, their average annual

income is lower than the rest of the Canadians (Reading & Wien, 2009). “Among North American Indians, for example, the median total income was $12,263 in the year 2000, compared to almost twice that ($22,431) for other Canadians” (Reading & Wien, 2009, p. 14). A study conducted five years later showed that the median income of the Aboriginal population was $16,752 which was about $10,000 lower than the average income of non-Aboriginal Canadians (National Collaborating Centre for Aboriginal Health, 2013). Even though there was an increase in the employment rate of Aboriginal population in the late 1990s, studies show that the unemployment rate of Aboriginal population was more than twice that of the non-Aboriginal Canadians (National Collaborating Centre for Aboriginal Health, 2013). According to Reading and Wien in 2009, unemployment and low income is associated with food insecurity, malnutrition, higher rate of infections, violence, anxiety, addictions, diabetes, high blood pressure, and depression mental stress and lack of social support.

Food insecurity, malnutrition and lack of easy access to healthcare services are some of the major risk factors identified for tuberculosis. Food insecurity and malnutrition result in deficiencies of certain nutrients which may increase the susceptibility of an individual towards TB. Vitamin D deficiency associated with malnutrition is a known factor that poses a higher risk of TB. Many studies show that Vitamin D deficiency is prevalent among first nations, Inuit and Metis populations and is attributed to unemployment and poverty (Public Health Agency of Canada, 2014).

Similarly, employment and income have an effect in the spread and progression of HIV/AIDS. “low income and poverty can negatively impact the quality of life, increase social isolation, reduce access to healthy food and quality housing, and increase the rate of HIV progression to AIDS” (Public Health Agency of Canada, 2010, p. 37) . Also, because of unemployment and poverty, many of them engage in activities that pose them at a higher risk for HIV infection (Public Health Agency of Canada, 2010). In my opinion, unemployment and low income are some of the factors that lead to the deterioration of the health of the Aboriginal population and in turn, increase the susceptibility of the population to infections such as HIV/AIDS and tuberculosis.

**Healthcare systems**

Canadian Healthcare system is well known for its Universal health care delivery for all irrespective of one’s economic status. Even though Canada is having a universal health coverage system, the average health status of Canada is not one of the best in the world. This is mainly because of the low health status of the Aboriginal population. In my point of view, this means that there is something wrong with the health delivery system for the Aboriginal population. For a population to reap the benefits of an advanced healthcare system, there must be physical and social access to those systems, which is not present in the case of Aboriginals in Canada (Reading & Wien, 2009).” The federal system of health care

delivery for status First Nations people resembles a collage of public health programs with limited accountability, fragmented delivery and jurisdictional ambiguity" (Reading & Wien, 2009, p. 18).

Another important factor to maintain and improve the health status of a population, in my point of view, is the easy and timely access to healthcare services. "In the 2002–2003 First Nations Regional Longitudinal Health Survey, 35% of respondents felt that their access to health care services was less than Canadians in general" (Cameron, Plazas, Salas, Bearskin & Hungler, 2014, p. E4). There were also reports that the healthcare services provided were not culturally appropriate for the Aboriginal population (Reading & Wien, 2009). Another reason for the limited access in my point of view is that many aboriginal communities are living in remote rural areas where there is a scarcity of the availability of healthcare providers. Because of the limited access to the health care delivery system, there are chances that the Aboriginal people may ignore early symptoms of many diseases leading to the progression of the disease which otherwise could have been prevented. Also, the limited availability of healthcare services and providers results in a lower level of awareness of Aboriginal people about the causative factors, contributing factors and the preventive methods of various diseases. In my opinion, this is one of the factors for the higher rate of infectious diseases such as tuberculosis, HIV/AIDS, and hepatitis among Aboriginal people.

## Control Measures

There are various ways by which we can eliminate or at least reduce the incidence of infectious diseases such as HIV/AIDS and tuberculosis. In my opinion, methods like improving educational status, providing better access to health care systems, incorporation of Aboriginal culture into the healthcare delivery system are some of the ways by which we can achieve the goal of HIV/AIDS and tuberculosis incidence reduction. Also, representatives from aboriginal communities should be included in the councils which make decisions regarding healthcare delivery for the Aboriginal population.

One of the main reasons for the higher incidence of infectious diseases such as tuberculosis and HIV/AIDS among the Aboriginal population as per the Public Health Agency of Canada is lack of easy access to healthcare delivery systems and if available, they may not be culturally acceptable for Aboriginals (2010). Language is another barrier reported by the Aboriginal people about accessing the health care delivery system as many health care providers practicing in the aboriginal community do not know the aboriginal language. "The integration of First Nations, Inuit and Métis cultures into HIV/AIDS prevention approaches is a key element of successfully responding to HIV/AIDS and tuberculosis in Aboriginal communities" (Public Health Agency of Canada, 2010, p. 33). Jackson et al state that, when the Aboriginal population who are affected by diseases such as HIV/AIDS and tuberculosis are provided with adequate support and opportunity to reconnect with their culture and

tradition, the rate of physical and psychological improvement was faster when compared to the rest (Public Health Agency of Canada, 2010).

We should incorporate culturally acceptable methods such as oral teachings and awareness programs and flyers instead of displaying the control measures on a website or using any other social network platform as many Aboriginal communities live in remote areas where internet services are still not available. Also, it is important that the awareness classes and messages in the flyer should be in the regional language of that area. Even though the educational status of the Aboriginal population is less than that of non-Aboriginal Canadians, there are people who are well educated. We should utilize them to spread awareness among the Aboriginal population by peer education approaches as they are the ones who know various deleterious habits among their people and the approach they should follow to make the people aware of its ill effects (Public Health Agency of Canada, 2010).

Another effective method to reduce the spread of infections such as tuberculosis and HIV/AIDS among the Aboriginal population as per the Public Health Agency of Canada is by the early detection and treatment of people with active infection (2014). There is a higher chance of spread of infection if someone in an Aboriginal community has infections such as tuberculosis or HIV/AIDS when compared to the non-Aboriginal Canadians. This is because of the crowded living conditions, homelessness, and poverty which lead to involvement in activities such as drug abuse, survival sex and sex with multiple partners that may lead to the spread of the infection. Similarly, it is also important to identify and treat those who are having latent infections. If we treat it properly, we could prevent it from progressing to an active infectious state and thereby prevent the spread of the disease (Public Health Agency of Canada, 2014). In my opinion, to facilitate the early detection of infection and to identify people who are at risk of getting infected, facilities for periodic screening tests should be provided in Aboriginal communities, even the ones in remote areas. They should be given awareness classes about the need for screening tests and should be assured that the information will be kept confidential as per the rule. Also, the awareness classes, screening tests, and treatments should be in accordance with the culture and tradition of the community.

In my opinion, in order to reduce the spread of infectious diseases such as tuberculosis and HIV/AIDS among the aboriginal people, there are certain other things that we can do. It includes encouraging young aboriginal people to join schools and colleges. If the young people of the community are educated, they can make others in the community aware of the risk factors for various diseases such as tuberculosis and HIV/AIDS that are prevalent in their community. Also, education helps them find a job and thereby eventually eradicate poverty, homelessness and poor housing conditions from the Aboriginal communities. We should also conduct awareness classes and programs among the Aboriginal population about the causes, risk factors and preventive measures for various infectious diseases, even for the communities living in remote areas and those in the prisons.

## Conclusion

Canadian healthcare system provides universal health coverage for its entire population. Even though it is well known all over the world for its free and equal treatment for all policy, the average health status of the Canadian population is not one of the best in the world. The main reason for this is the low average health status of the Aboriginal people of Canada, which includes First Nations, Inuit and Metis populations (National Collaborating Centre for Aboriginal Health, 2013).

Tuberculosis and HIV/AIDS are the two major infectious diseases prevalent among the aboriginal population. In the year 2012, out of the total tuberculosis cases reported, one-fourth of them were Aboriginals (Public Health Agency of Canada, 2014). Similarly, about 8% of total reported HIV/AIDS cases in Canada are among Aboriginals even though they constitute only about 4% of the total Canadian population (Population-specific HIV/AIDS status report, 2010). Some of the factors which resulted in the higher prevalence and incidence rate of tuberculosis and HIV/AIDS among the Aboriginal people as per Reading and Wien were lower educational status, unemployment, low income, poverty, homelessness, poor housing conditions, racial discrimination, remote locations, culturally unacceptable healthcare awareness programs and delivery system (2009).

In order to reduce the incidence of tuberculosis and HIV/AIDS among the aboriginal population, we have to address the root causes first. In my opinion, lower educational status leading to poverty, poor living conditions of homelessness and lack of easy access to healthcare delivery systems or culturally unacceptable health systems are the major underlying factors leading to a higher prevalence of tuberculosis and HIV/AIDS. The government should encourage the young Aboriginal population to join schools and colleges. Education will help them find a job and eventually may help reduce or eradicate poverty and homelessness among Aboriginal people. Also, authorities should make sure that healthcare delivery systems in Aboriginal communities should be provided in their own language and in a culturally acceptable manner. Since the tests for tuberculosis and HIV/AIDS in communities and prisons were voluntary, there are chances that the actual number of people infected with HIV/AIDS and tuberculosis may be higher than the numbers based on available data which is a limitation of this study (Public Health Agency of Canada, 2010). I believe that implementing the control measures mentioned in this study will help reduce the incidence rate of tuberculosis and HIV/AIDS among aboriginal population.

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