

Health Status Report



2010 - 2015

Vital Statistics



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Chapter 3

Vital Statistics

Table of Contents

List of figures.....	3
Key Findings	4
Vital Statistics.....	5
Natural Growth Rate	5
Mortality Rate	6
Age-Specific Mortality Rate	6
Infant Mortality Rate.....	7
Leading Causes of Death, 2010-2015	7
Lung cancer was the most common cause of cancer deaths for both females and males in NITHA (see figure 4).....	9
Methodology.....	10
Appendix D.....	12

List of figures

Figure 1: Natural growth rate, crude birth rate and crude death rate among First Nations On-reserve population, NITHA, 2004-2015.....	5
Figure 2: Age-specific crude death rates (CDR) per 1000 population, NITHA, 2010-2015	6
Figure 3: Proportion of leading causes of deaths, all ages and gender, NITHA, 2010-2015 (N=137)	8
Figure 4: Causes of cancer deaths, all ages and gender, NITHA, 2010-2015	9

Key Findings

- Between 2004 and 2015, NITHA natural growth rate was positive with a downward trend which shows that the population is still growing but at a slower rate.
- Among NITHA partnership communities, the combined age-specific mortality rate (for the five years period of 2010 to 2015) was relatively low among the 1-14 and 15-24 years-old age groups. The age-specific mortality rate increased steadily from 0.6 per 1000 population in the 25-44 years-old age group to 1.9 deaths per 1000 population in the 45-64 years-old age group. The 65 years-old age group had the highest mortality rate (11.4 deaths per 1000 population).
- Over all, the causes of death for 69% (137/197) of reported deaths were known. The leading cause of death for NITHA population from 2010 to 2015 was malignant neoplasm (30%) followed by diabetic mellitus (8%), pneumonia (7%), and acute myocardial infraction (5%).
- Lung cancer was the commonest cause of cancer death for both female and male.

Vital Statistics

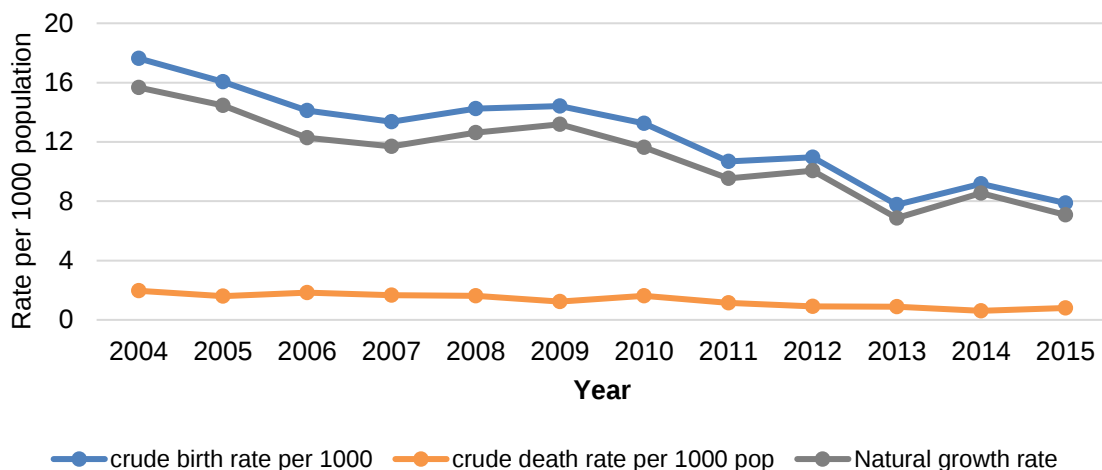
Vital statistics provide information about the well-being of a population that can be used to develop targeted policies and programs¹. This chapter provides information about the natural growth rate, age specific mortality rate, and causes of death for First Nations population living on-reserve for the NITHA partnerships.

Natural Growth Rate

The natural growth rate is a measure of the population growth, using only the addition of newborn to the population and the subtraction of deaths - excluding migration². According to the statistical profile on the health of First Nations of Canada from 2003 to 2007, the First Nations population in Western Canada was growing 4 times the rate of the general population in Canada³. The natural growth rate is also 4 times the rate of the First Nations living on-reserve in Saskatchewan compared with over all Saskatchewan population⁴.

Between 2004 and 2015, NITHA natural growth rate was positive with a downward trend which shows that the population is still growing but at a slower rate (Figure 3). The crude birth rate for NITHA population decreased from 17.6 per 1000 population in 2004 to 7.9 per 1000 population in 2015. During the same period, the crude death rate also decreased from 2 deaths per 1000 population to 0.8 per 1000 population in 2015. Since the decrease of the death rate was minimal over the years, the downward trend for the birth rate is the main contributor to the decreasing natural growth rate (Figure 1) (Appendix D.1).

Figure 1: Natural growth rate, crude birth rate and crude death rate among First Nations On-reserve population, NITHA, 2004-2015



¹ Health Canada. (2012). First Nations Health Status Report: Alberta Region 2010-2011. Edmonton, Alberta: First Nations and Inuit Health. Catalogue no.: H26-4/2011E.

² Porta, Miquel. (Ed.), (2008). A Dictionary of Epidemiology. (5th ed.). New York: Oxford University Press.

³ Health Canada. (2014). A statistical profile on health of first nations in Canada, 2003-2007. Retrieved 13 December 2016, from http://publications.gc.ca/collections/collection_2014/sc-hc/H34-193-3-2014-eng.pdf

⁴ Health Canada, (2015). First Nations Health Status report 2012, Saskatchewan regions. Retrieved from: http://publications.gc.ca/collections/collection_2015/sc-hc/H34-293-2015-eng.pdf

Mortality Rate

Information about the population characteristics and health outcomes such as the mortality rate and the leading causes of deaths, provides valuable understanding of the burden of diseases in a population⁵. Estimating those health indicators help to develop policies and programs that reflect current population needs by assessing the impact of diseases and injuries on a population and developing appropriate interventions⁶.

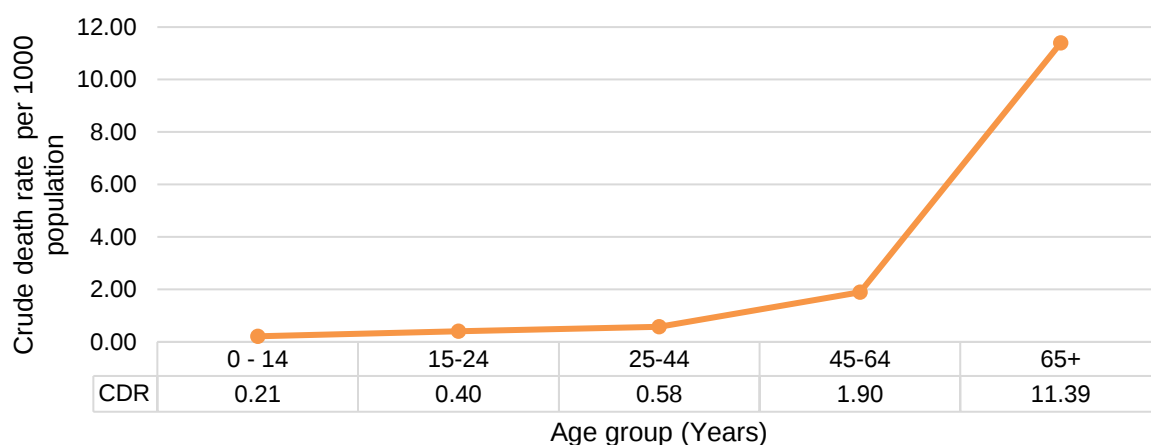
Age-Specific Mortality Rate

Age-specific crude mortality rates identify the burden of diseases and injuries on a specific age group. This information helps to plan targeted programs and interventions within a population by identifying the burden of disease among certain age groups³.

Among NITHA partnership communities, the number of deaths for each age specific group for each year varied between 0 to 20 deaths. When the numerator is smaller than 20, a small change in a numerator can lead to a large change in a rate from one year to the next. To address this problem and achieve a stable mortality rate, we looked at the combined five-year rates from 2010 to 2015⁷.

Among NITHA partnership communities, the combined age-specific mortality rate (for the five years period of 2010 to 2015) was relatively low among the 1-14 and 15-24 years-old age groups. The age-specific mortality rate increased steadily from 0.6 per 1000 population in the 25-44 years-old age group to 1.9 deaths per 1000 population in the 45-64 years-old age group. The 65 years-old age group had the highest mortality rate (11.4 deaths per 1000 population) (Figure 2).

Figure 2: Age-specific crude death rates (CDR) per 1000 population, NITHA, 2010-2015



⁵ Mathers CD, Ma Fat D, Inoue M, Rao C, Lopez AD. Counting the dead and what they died from: an assessment of the global status of causes of death data. Bulletin of the World Health Organization 2005; 83: 171-177.

⁶ Health Canada, (2015). First Nations Health Status report, 2012, Saskatchewan region. Retrieved from: http://publications.gc.ca/collections/collection_2015/sc-hc/H34-293-2015-eng.pdf

⁷ Indiana University. (2017). Stats.indiana.edu. Retrieved 9 February 2017, from <https://www.stats.indiana.edu/vitals/CalculatingARate.pdf>

Infant Mortality Rate

The infant mortality rate (IMR) is defined as the number of infant deaths (less than one year old) in a population, for every 1000 live births³. The IMR, reflects population health, including, physical, social and economic conditions that a child is born into⁸. The number of reported infants' deaths varied from 0 to 2 deaths for the period 2010 to 2015. Due to lack of available accurate data on number of live births per year, we could not report the IMR at this time. According to previous studies, there may be data quality issues relating to accuracy of reporting IMR for First Nations living on-reserve⁹. Lack of accurate data to show the IMR for NITHA population may limit program planning and policy development to address the needs of this important cohort.

Leading Causes of Death, 2010-2015

For the period 2010 to 2015, the total number of reported deaths among First Nations living on-reserve for NITHA population was 197 deaths. The number of deaths per year ranged from 21 to 51 deaths. Since the number of reported deaths with known causes was less than 10 for some years, we combined the number of deaths for each cause for the period 2010 to 2015. In addition, a small sample size did not allow for comparison of causes of death between age groups and gender.

Over all, the causes of death for 69% (137/197) of cases were known. The leading cause of deaths for NITHA population from 2010 to 2015 were malignant neoplasm (30%) followed by diabetic mellitus (8%), pneumonia (7%), and acute myocardial infraction (5%) (see Figure 3).

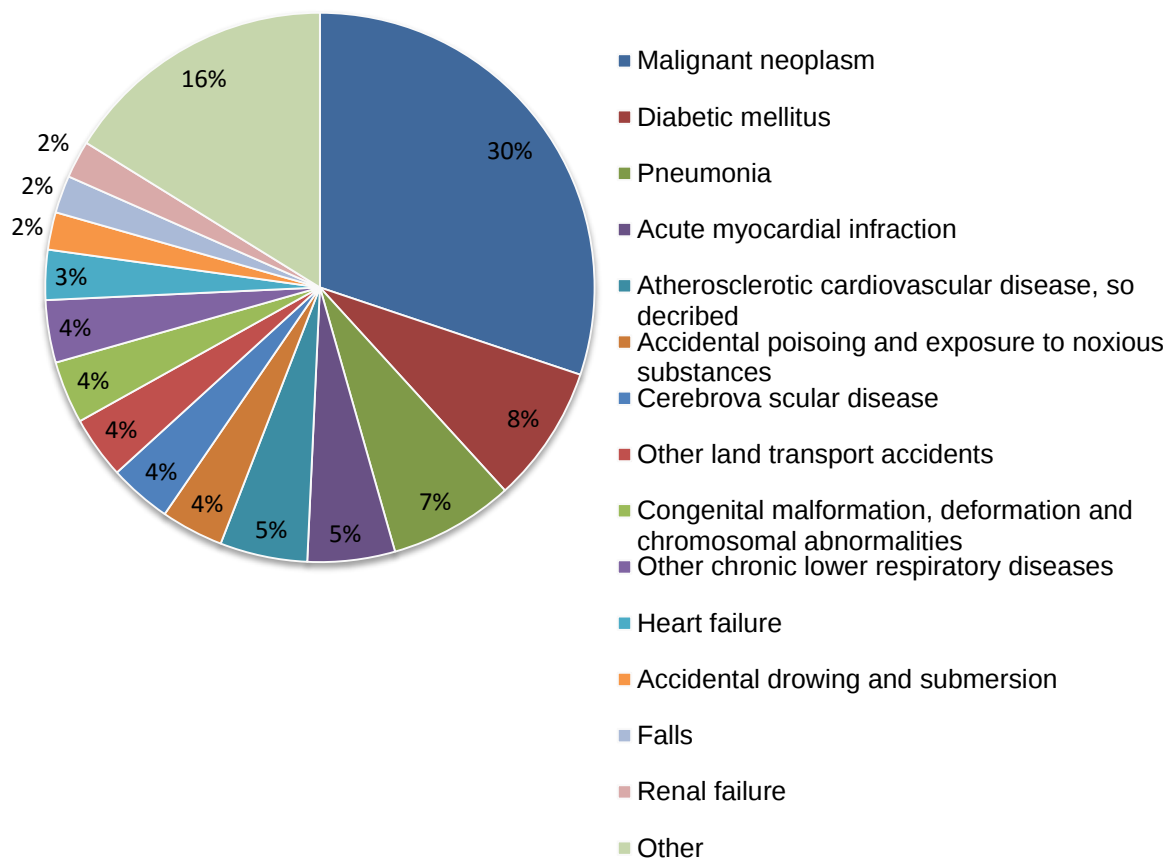
According to Saskatchewan Health Status Report in 2009, the leading causes of death in the province (including First Nations population living on-reserve) was circulatory disease followed by malignant neoplasm¹⁰. And the leading causes of death among Saskatchewan First Nations living-on reserve from 2003 to 2007 were external causes, followed by circulatory diseases and neoplasms¹. The fact that malignant neoplasms and diabetes are the leading causes of death in NITHA population indicate that NITHA population' needs could be different from the provincial population. Therefore, targeted policies are required to address the burden of the diseases with higher impacts on NITHA population compared to the provincial population.

⁸ World Health Organization (2012): World health statistics indicator compendium.

⁹ Smylie J, Fell D, Ohlsson A (2010). A review of Aboriginal infant mortality rates in Canada: striking and persistent Aboriginal/Non-Aboriginal inequities. Can J Public Health; 101(2):143-48.

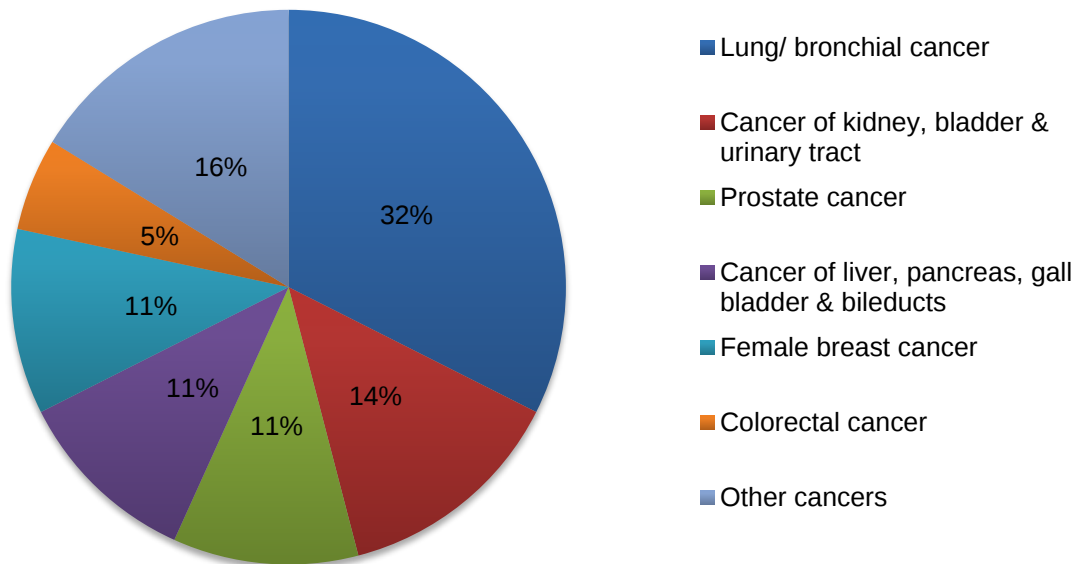
¹⁰ Government of Saskatchewan (2009). Saskatchewan health status report. Retrieved from: <https://www.saskatchewan.ca/government/government-structure/ministries/health/other-reports/health-status-reports>

Figure 3: Proportion of leading causes of deaths, all ages and gender, NITHA, 2010-2015 (N=137)



Lung cancer was the most common cause of cancer deaths for both females and males in NITHA (see figure 4).

Figure 4: Causes of cancer deaths, both gender, NITHA, 2010-2015



Methodology

Data Sources

The source of data for this chapter is from e-Health Saskatchewan and Indigenous and Northern Affairs Canada (INAC). We retrieved data on number of deaths and births for First Nations living on-reserve with Registered Indian Status (RIS) in northern SK from e-Health Saskatchewan. The data on total number of population living on-reserve for NITHA jurisdiction was derived from INAC.

Data Limitation

The acquired data from e-Health Saskatchewan represents only covered population, which are people who live on-reserve and hold Saskatchewan health coverage. There are individuals who live on-reserve, but might have registered for provincial health coverage with an off-reserve mailing address. Therefore, those individuals who live on-reserve with off-reserve mailing address and those without provincial health coverage are not included in this report. This report may include individuals who live off-reserve, but register for provincial health coverage with on-reserve mailing address that may not represent the on-reserve population. Caution should be taken while interpreting these data, as data may not be a true reflection of the NITHA population.

In this report the life expectancy and age-standardized mortality rate were not reported. To report the life expectancy accurately, WHO recommended having at least 90,000 populations¹¹. The combined number of population for NITHA communities for the period of 2010 to 2015 was less than 90,000; therefore, calculated life expectancy was not accurate to report.

To calculate the age-standardized mortality rate, we needed to apply the NITHA mortality rate for each age group for each year from 2010 to 2015 to the standard population (Saskatchewan population). Based on our small sample size, calculating mortality rate for each year would be unstable. Therefore we could not calculate the age-standardized mortality rate for this report.

Calculation of the indicators:

Crude Birth Rate:

Crude birth rate for the period of 2004 to 2015 was calculated as follow:

$$\frac{\text{Number of births in a given period} *}{\text{Total number of people in the same period} **} \times 1000 \text{ population}$$

¹¹ World Health Organization (2016). WHO methods and data sources for life tables 1990-2015. Retrieved from: http://www.who.int/healthinfo/statistics/LT_method.pdf?ua=1&ua=1

Crude Death Rate:

Crude death rate for the period of 2004 to 2015 was calculated as follow:

$$\frac{\text{Number of deaths in a given period} * \text{Total number of people in the same period} **}{\times 1000 \text{ population}}$$

Natural Growth Rate:

The natural growth rate was calculated as follow:

$$\text{Crude birth rate given year} - \text{Crude death year given year}$$

Age – Specific Mortality Rate:

Age-specific mortality rate for the period of 2010 to 2015 was calculated as follow:

$$\frac{\text{Number of deaths (within the same age group)} *}{\text{Total number of people iwith in same age group} **} \times 1000 \text{ population}$$

Infant Mortality Rate (IMR):

Infant mortality rate for the period of 2004-2009 and 2010 -2015 was calculated as follow:

$$\frac{\text{Number of deaths in a given period (< 1 year age) } *}{\text{Total number of live births during the same period } ***} \times 1000 \text{ live births}$$

The proportion of a cause of death:

The proportion of a cause of death was calculated as follow:

$$\frac{\text{Number of deaths by given cause (within the category) } *}{\text{Total number of deaths (within the same category) } *} \times 100$$

* Data derived from eHealth Saskatchewan's Health Registries, 2016

** Data derived from INAC's Indian Register, as at December 31st, 2015

*** Data on number of live births per years was not available at the time of this report

Appendix D

Appendix D.1: Natural growth rate, crude birth rate and crude death rate among First Nations On-reserve population, NITHA, 2004-2015

Year	First Nations on-reserve population	Crude birth rate per 1000 population	Crude death rate per 1000 population	Natural growth rate
2004	27,511	17.6	2.0	15.7
2005	28,151	16.1	1.6	14.5
2006	28,914	14.1	1.8	12.3
2007	29,574	13.4	1.7	11.7
2008	30,275	14.2	1.6	12.6
2009	30,945	14.4	1.2	13.2
2010	31,530	13.3	1.6	11.6
2011	32,203	10.7	1.1	9.5
2012	32,712	11.0	0.9	10.1
2013	33,488	7.8	0.9	6.9
2014	34,352	9.2	0.6	8.6
2015	34,889	7.9	0.8	7.1