Environmental Scan of Dental Services in Saskatchewan

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Executive Summary

The *Canada Health Act* states that their objective is to "protect, promote, and restore the physical and mental well-being of residents of Canada and to facilitate reasonable access to health services without financial or other barriers".[18] Many of these objectives are not being accomplished by the dental care system in Canada, which should be an extension of the health care system due to the connection between oral health and overall systemic health.

Oral health, or the lack thereof, impacts ones physical and mental well-being, especially when we are going through pain due to an oral health issue. This issue can us to lose sleep, stress over the financial struggle to afford dental care, impact our ability to eat, talk, and emotionally express ourselves facially due to the pain, and cause other health concerns if left untreated.

One of the major barriers to dental care is accessibility, especially for individuals living in rural/remote communities where they have to travel long distances to get access to care, as opposed to someone who lives in an urban community and is able to access dental care with ease due to the ease of transportation, availability of various health professionals, access to jobs, and other supports within the community. Other barriers to dental care include income, employment, environment, and food insecurity, which are all social determinants of health.

The aim of this report is to identify where the province of Saskatchewan has a saturation of dental disciplines, and which areas lack dental services, especially for Indigenous communities. In order to determine the locations of dental disciplines across Saskatchewan, we collected postal codes from registered dentists, dental assistants, dental hygienist, dental therapists, and denturists located in the province. These postal codes were then used to map out the location of dental services across Saskatchewan and in accordance with the census population from 2016. The dental discipline to population ratio was established per 10, 000 people in the population. By analysing the data that was presented geographically and numerically, we were able to establish that dental disciplines were scarce in Northern parts of the province, with some communities having no access to a dentist, but were able to access a dental assistant, hygienist, or therapist. Furthermore, some communities did not have access to a dentist or dental therapist, but could access a dental assistant or hygienist for dental care support. Denturists were even more scarce across the province, with a majority of them found in urban communities such as Saskatoon and Regina. Many communities did not have access to a denturist at all.

Additionally, as part of this project we also spoke to several stakeholders from varying dental disciplines to understand what other issues still exist in the province in order to offer recommendations and improvements. Some of the questions that were asked during the interview process centered around the lack of financial support available to people in the community who cannot afford dental care, cultural competency within dental care, continued prevalence of ECC in children even with available prevention programs, and social determinants of health, among others, as seen in Appendix 1. The comment that stood out the most included, the need for increased financial support for individuals who cannot afford dental care. Participants stated that individuals who did not have private insurance, did not fall under family benefits, were non-status, lived in remote areas, or were over 18 years of age, were likely to fall through the gaps within the dental care system as they have no means of affording care without an income that provides dental benefits. According to our participants, these individuals require more financial assistance. Additionally, another prominent theme that was discussed was food insecurity, which is determined by income and accessibility, and that then determines the diet/nutrition an individual would follow, which in turn can result in oral health issues such as dental caries. Food insecurity is a concern in rural/remote communities where prices for food items can be quite high due to the transportation costs. Additionally, some remote/rural communities also have problems with drinking water and accessibility to clean water. The alternative to drinking water that is not clean, is to consume sugary drinks or drinks that are packaged as a substitute. Sugary and processed food are also often priced cheaper than healthier foods, which makes it difficult for individuals to follow a healthy diet while on a budget.

In conclusion, after analysing the geographical maps of dental disciplines in Saskatchewan and speaking to several stakeholders, the recommendations that are most vital to implement include:

1) Provide dental therapist training to produce new therapists who can provide services to rural/remote and Indigenous communities
2) Modification to regulations that will allow dental assistants and dental hygienists to practice independently, so they can expand their services to other communities
3) Train medical doctors and nurses in oral health so they are able to provide care for communities that do not have readily accessible dental services. This collaboration between dental disciplines and primary health is crucial.
4) Integrate oral health with maternal health, so new mothers can be educated early about the benefits of oral health care.

Introduction

The Centre for Disease Control and Prevention (CDC) defines oral health as the physiological condition of the teeth, gums, and facial system of our body.[1] Oral health is important because by maintaining good oral health we are able to eat, speak, and express facial emotions properly.[1] The Canadian Dental Association (CDA) further indicates that,

"*oral health is multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex*".[1]

The lack of care in oral health can lead to other systematic health conditions, which can turn deadly if not treated in a timely manner.[3] An example of this includes periodontal disease or gum disease, which causes inflammation and infection of the gums and bone.[3] Pre-existing comorbidities such as diabetes, smoking tobacco, poor immunity, or hereditary conditions can also enhance periodontal disease and increase risk.[1] Ultimately, if periodontal disease is left untreated it can cause teeth to break and fall, infection to worsen, and bone is lost due to the weakening of the teeth.[1] Unfortunately, often times than not, oral health issues are considered to be separate from the body, when in actuality they are interconnected.[1] As mentioned earlier, communicable diseases such as diabetes and cardiovascular disease can also be related to poor oral health[1], therefore oral health cannot be looked at on its own, and an overall health approach needs to be adapted. Additionally, oral health conditions can be further damaged by diet and unhealthy nutrition intake, for example, consuming too many high sugar beverages and foods can cause cavities and tooth decay.[1] Cavities and periodontal diseases are the most common oral health issues around the world, with at least 60% to 90% of children and a large majority of adults' experience at some point in their life.[1] Fortunately, dental cavities are a preventable disease, but still poses a public health issue for health care providers globally.[2] According to the CDA, children between the age of 1 and 5 miss a number of school days per year due to dental illnesses, tooth decay, and dental surgeries, at least one third of dental surgeries are performed on children.[2]

The World Health Organization (WHO) recognizes health as a human right; however, this does not seem to translate over to oral health in many countries, which is also an integral part of overall health.[2] The CDA states that about 70% of the world's population is in need of affordable and accessible dental care services, which are often out of reach for individuals in the lower to middle income range.[2]

Some of the preventative oral health measures that the WHO[3] has recommended include:

- use of fluoride as a way to prevent dental cavities

- promotion of a healthy diet in order to reduce oral health diseases
- reduction of tobacco-use through collaboration with oral health practitioners for tobacco cessation
- promoting oral health in educational institutions
- improving oral health for the elderly by promoting oral health in a primary care setting
- implementing oral health into programs at the national and community level
- integrating services that focus on oral health prevention and promotion through the oral health system of the country.[3]

This environmental scan of dental services in Saskatchewan report has been compiled by the Oral Health Program of the Saskatchewan Health Authority and the Saskatchewan Oral Health Coalition to bring awareness to current oral health concerns and offer recommendations to improve future oral health initiatives in Saskatchewan.

Methods

Data collection for this screening report consisted of two parts. The first part involved speaking to various stakeholders around Saskatchewan through a series of interviews to establish what areas of dental care needed improvement, which initiatives could be worked on in the near future, and what populations were in need of dental care services within Saskatchewan. The interviews were conducted through an online platform called *Zoom* and via phone call due to the ongoing pandemic situation. The participants were provided with the consent form and a list of questions prior to the interview being scheduled. The second part of data collection consisted of obtaining postal codes from all dental disciplines in Saskatchewan and utilizing those postal codes to create a geographical map of the province in order to establish which communities lacked dental services. The postal codes were collected by the primary supervisor in November 2020. The geographical map of dental disciplines was created by a GIS specialist from the University of Saskatchewan using the provided postal codes.

Geographical Map of Dental Disciplines in Saskatchewan

A geographical map of dental disciplines in Saskatchewan was created by Dr. Shah, which involved mapping out all dentists, dental assistants, dental therapists, dental hygienists, and denturists within the province, as seen in figures 1 and 2. There were a total of 600 registered dentists, 1,463 dental assistants, 701 dental hygienists, 201 dental therapists,

and 67 denturists identified from the collection of postal codes. The total number of dental disciplines illustrated on the geographical map is 3,032. These postal codes were used to create geographical coordinates. Some dental disciplines were identified to be outside of Saskatchewan and Canada. 50 dental disciplines were located in Alberta, 11 in Manitoba, 21 in Ontario, 7 in British Colombia, 1 in Yukon. 7 of the postal codes were not valid, with 5 of them outside of Canada and 2 of the denturists were providing services remotely.

Once these postal codes that fall in the other category (outside Canada) were removed, we were left with 578 dentists, 1,429 dental assistants, 670 dental hygienists, 195 dental therapists, and 63 denturists located in Saskatchewan.

Table 1: The total number of dental disciplines found in Saskatchewan from the postal codes that were collected.

Discipline	SK	AB	MB	BC	ON	Other	Discipline Count
Dentist	578	9	3	3	5	2	600
Dental Assistant	1,429	23	5	1	5		1,463
Dental Hygienist	670	15	1	2	10	3	701
Dental Therapist	195	2	2	1	1		201
Denturist	63	1				3	67
Total Count	2,935	50	11	7	21	8	3,032

A set of geographical coordinates based on the Saskatchewan Health Authority (SHA) zones and sub-zones was used to map out the dental disciplines. The dental disciplines are displayed in figure 1 according to the census metropolitan influenced zone (MIZ), which allows us to differentiate between the varying geographical area which lies outside of the census metropolitan area (CMA) and census agglomerations (CAs).[24]

MIZ has five categories, they are:

1) Strong metropolitan influence zone
2) Moderate metropolitan influenced zone
3) Weak metropolitan influenced zone
4) No metropolitan influenced zone
5) Territories (which lies outside of CAs)[24]

A CMA consists of municipalities that are found within the centre of the population and is also referred to as the urban core.[24] The requirement for a CMA is a total population of 100, 000 at minimum, and at least 50, 000 (or more) of this total population must live within the centre/urban core based on the data from the Census of Population Program.[24] The requirement of a CA on the other hand, is a total population of 10, 000, which is based on the Census of Population Program data as well.[24]

For mapping purposes, the SHA health areas were used as an equivalent to MIZ, and the dental disciplines were mapped on top of these zones. In figure 1, the number of dental disciplines is mapped per 10, 000 population.

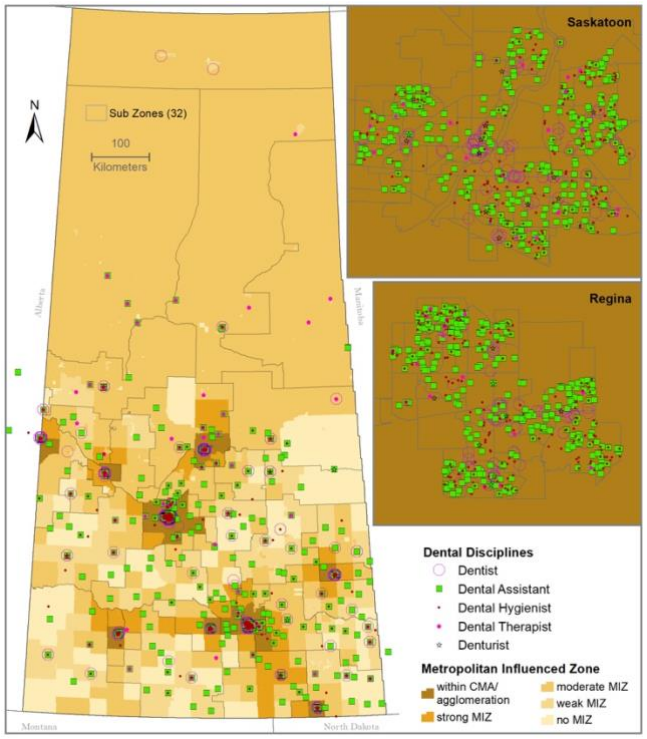
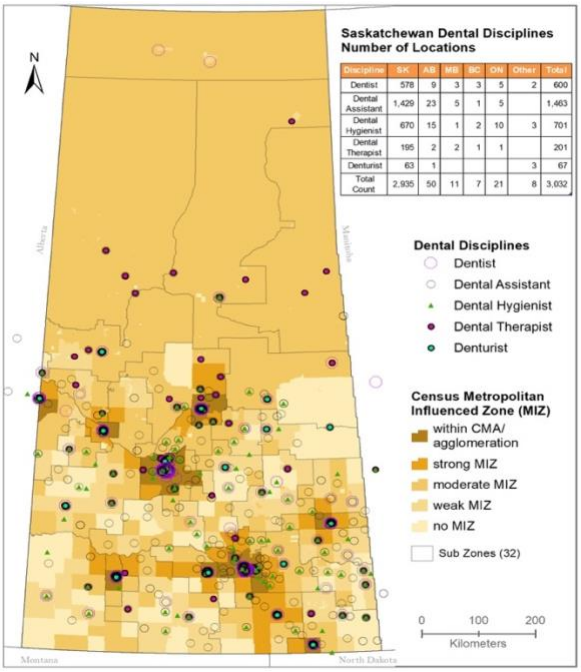


Figure 1 illustrates the geographical mapping of Saskatchewan's dental services to population ratio per 10, 000 people. There are 32 SHA sub-zones, and the dental disciplines are mapped across the five MIZ categories based on a standard deviation classification method. These five categories are, "within CMA/allgomeration", "strong MIZ", "moderate MIZ", "weak MIZ", and "no MIZ".

From figure 1, we can observe at first glance that a majority of the dental services are situated in the South West and South East of Saskatchewan, while the North East and North West health areas are visibly lower in dental service numbers. We can infer here that there is reduced service for dental care. To add to this already reduced service, some dentists in the Northern communities may not be available on a full-time basis as they rotate in and out of clinics on a regular basis. This further impacts the provision and accessibility of dental care. Additionally, some of these clinics serve as satellite clinic, which means that a dentist is not available in-



person but provides services through a dental therapist.

Figure 2 displays a map of the total number of dental services currently in Saskatchewan, based on the postal codes that were collected (as seen in Table 1).

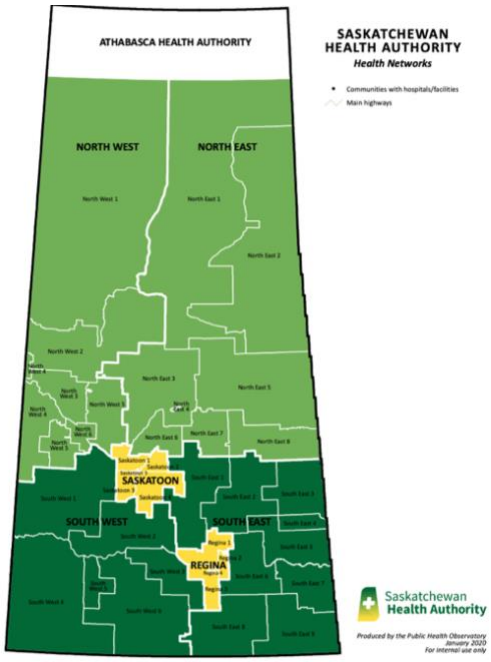


Figure 3 is a map of all the health regions in Saskatchewan according to the Saskatchewan Health Authority, for reference.

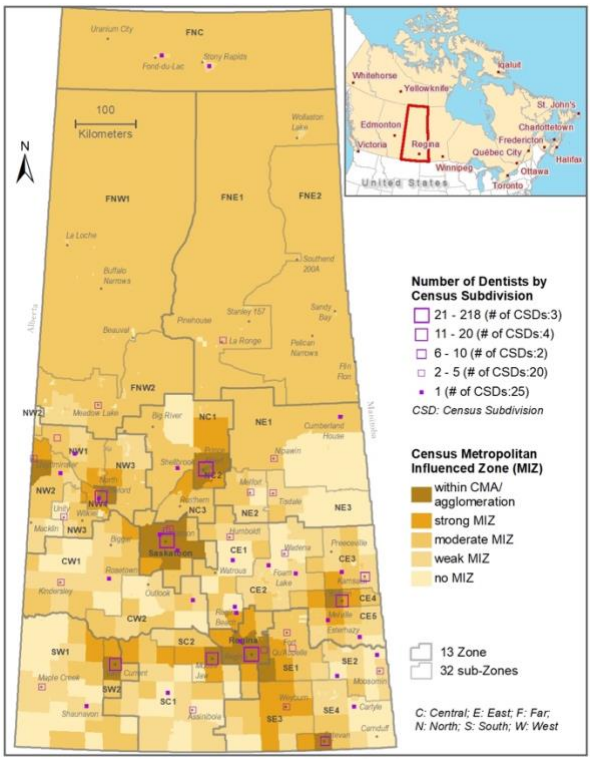


Figure 4 portrays a map of the total number of dentists in Saskatchewan in accordance with the census subdivision, regional zones and sub-zones.

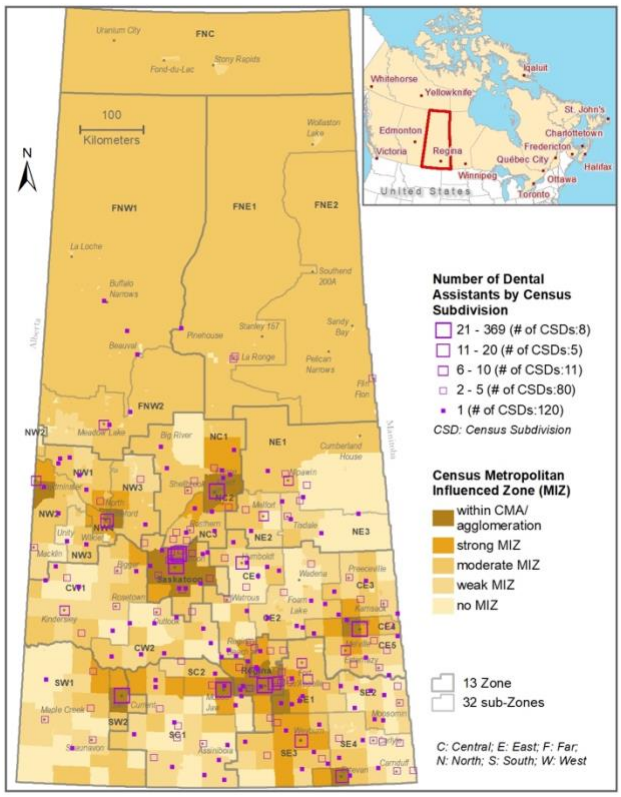


Figure 5 portrays a map of the total number of dental assistants in Saskatchewan in accordance with the census subdivision, regional zones and sub-zones.

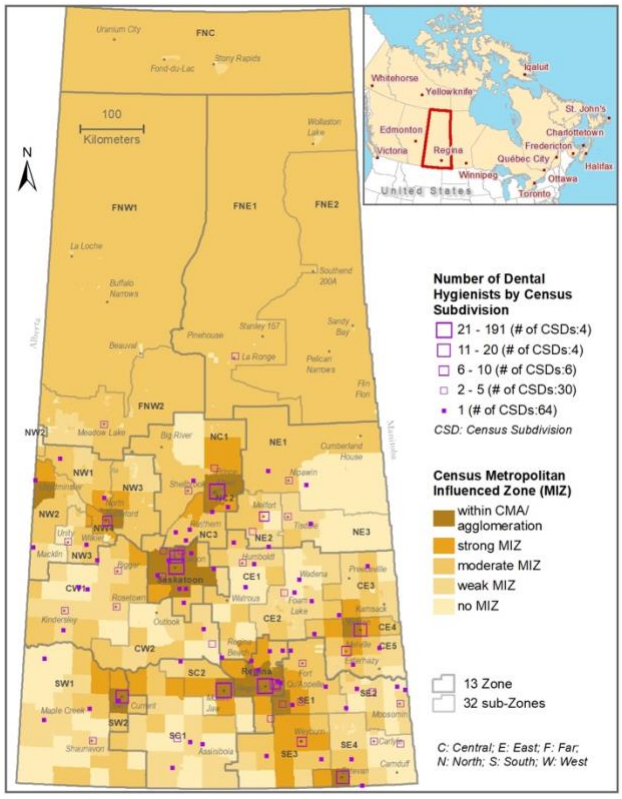


Figure 6 portrays a map of the total number of dental hygienists in Saskatchewan in accordance with the census subdivision, regional zones and sub-zones.

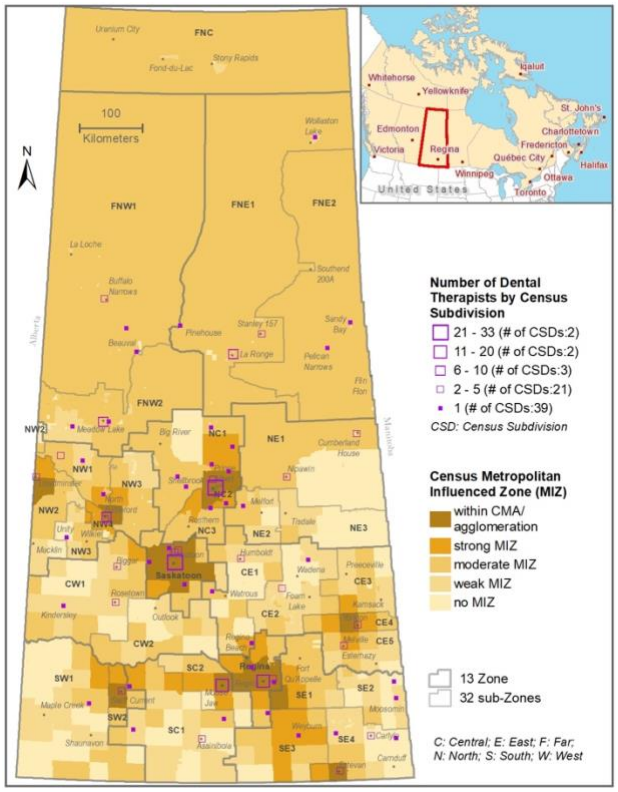


Figure 7 portrays a map of the total number of dental therapists in Saskatchewan in accordance with the census subdivision, regional zones and sub-zones.

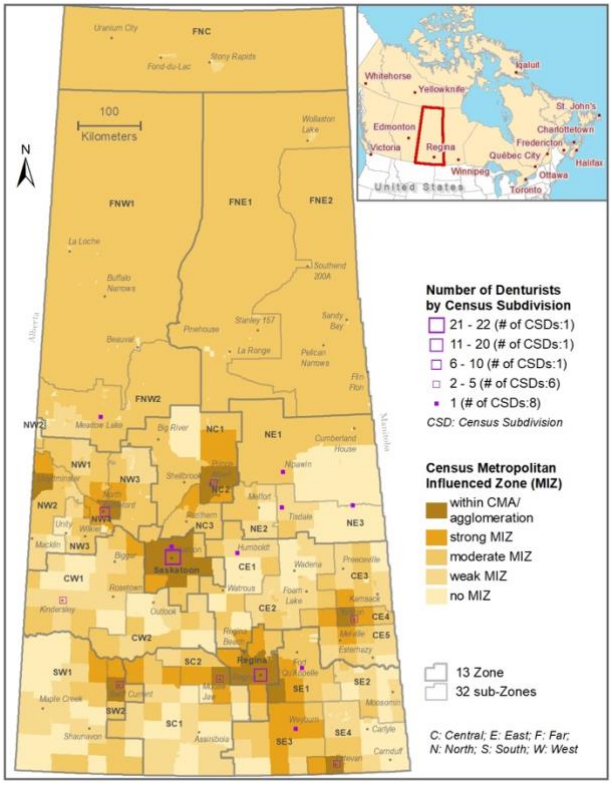


Figure 8 portrays a map of the total number of denturists in Saskatchewan in accordance with the census subdivision, regional zones and sub-zones.

Table 2: displays the number of dental disciplines to population ratio per 10, 000 population, based on the total postal codes that were collected and the population numbers from the 2016 census.

SHA Health Region		Pop	Dentist		Assistant		Hygienist		Therapist		Denturist		All Discipline	
Zone	*Map*	*2016^*	*n*	*ratio*	*n*	*ratio*	*n*	*ratio*	*n*	*ratio*	*n*	*ratio*	*n*	*ratio*
Central East	CE1	24,846	7	2.8	35	14.1	7	2.8	5	2.0	1	0.4	55	22.1
	CE2	16,583	4	2.4	12	7.2	7	4.2	3	1.8	0	-	26	15.7
	CE3	13,453	7	5.2	15	11.1	1	0.7	0	-	0	-	23	17.1
	CE4	20,387	18	8.8	26	12.8	18	8.8	4	2.0	3	1.5	69	33.9
	CE5	18,853	2	1.1	21	11.1	9	4.8	2	1.1	0	-	34	18.0
Central West	CW1	23,722	6	2.5	27	11.4	12	5.1	5	2.1	2	0.8	52	21.9
	CW2	11,741	1	0.9	13	11.1	3	2.6	0	-	0	-	17	14.5
Far North Central	FNC	2,632	2	7.6	0	-	0	-	0	-	0	-	2	7.6
Far North East	FNE1	13,783	2	1.5	7	5.1	2	1.5	13	9.4	0	-	24	17.4
	FNE2	7,304	0	-	2	2.7	0	-	2	2.7	0	-	4	5.5
Far North West	FNW1	10,020	0	-	3	3.0	0	-	4	4.0	0	-	7	7.0
	FNW2	15,735	4	2.5	9	5.7	5	3.2	8	5.1	1	0.6	27	17.2
North Central	NC1	30,198	1	0.3	18	6.0	6	2.0	9	3.0	0	-	34	11.3
	NC2	35,926	45	12.5	46	12.8	25	7.0	33	9.2	3	0.8	152	42.3
	NC3	16,200	0	-	12	7.4	4	2.5	1	0.6	0	-	17	10.5
North East	NE1	14,391	4	2.8	15	10.4	4	2.8	4	2.8	1	0.7	28	19.5
	NE2	14,351	4	2.8	13	9.1	9	6.3	1	0.7	0	-	27	18.8
	NE3	10,812	4	3.7	9	8.3	4	3.7	0	-	2	1.8	19	17.6
North West	NW1	10,021	1	1.0	8	8.0	1	1.0	2	2.0	0	-	12	12.0
	NW2	27,550	8	2.9	14	5.1	3	1.1	6	2.2	0	-	31	11.3
	NW3	15,675	2	1.3	5	3.2	4	2.6	1	0.6	0	-	12	7.7
	NW4	21,841	19	8.7	25	11.4	14	6.4	9	4.1	7	3.2	74	33.9
Regina	Regina	242,033	149	6.2	387	16.0	194	8.0	22	0.9	11	0.5	763	31.5
Saskatoon	Saskatoon	299,996	230	7.7	464	15.5	227	7.6	31	1.0	23	0.8	975	32.5
South Central	SC1	16,788	3	1.8	21	12.5	5	3.0	6	3.6	0	-	35	20.9
	SC2	41,168	11	2.7	69	16.8	30	7.3	11	2.7	2	0.5	123	29.9
South East	SE1	20,874	4	1.9	25	12.0	11	5.3	0	-	1	0.5	41	19.6
	SE2	13,862	7	5.0	11	7.9	8	5.8	2	1.4	0	-	28	20.2
	SE3	20,698	5	2.4	27	13.0	11	5.3	1	0.5	1	0.5	45	21.7
	SE4	29,728	9	3.0	39	13.1	23	7.7	7	2.4	2	0.7	80	26.9
South West	SW1	17,030	4	2.3	13	7.6	5	2.9	1	0.6	0	-	23	13.5
	SW2	20,151	15	7.4	38	18.9	18	8.9	2	1.0	3	1.5	76	37.7
Saskatchewan		**1,098,352**	**578**	5.3	**1,429**	**13.0**	**670**	**6.1**	**195**	**1.8**	**63**	**0.6**	**2,935**	**26.7**

From table 2, we can observe that Saskatoon has the highest number of dentists in all of Saskatchewan, with a sample size of 230 dentists located within the city and a dentist to

population ratio of 7.7, which means that for every 10, 000 people there are 7 dentists available to provide service. Regina has the second highest number of dentists in the province, with a sample size of 149. The dentist to population ratio for Regina is 6.2, which means that for every 10, 000 people there are 6 dentists available to provide service.

The zones of the SHA health areas that do not have access to any dentists are the Far North East 2 (FNE2), which includes the communities of Sandy Bay, Flin Flon, and the Indigenous community of Pelican Narrows (as seen in figure 4). Approximately 7, 304 people do not have a dentist in their community and seek care from a dental assistant or a dental therapist as there are 2 of each these disciplines that provide service to this zone. Furthermore, there are only 2 dentists located in the Far North East 1 (FNE1) zone, which includes the Indigenous communities of La Ronge, Pinehouse, Stanley 157, and Southend 200A, with a dentist to population ratio of 2.2, which means that for every 10, 000 people there are only 2 dentists available to provide services. This is relatively low for a population of 13, 783 in this zone. Additionally, there are 7 dental assistants, 2 dental hygienists, and 13 dental therapists providing service to communities in the Far North East 1 area. Both the Far North East 1 and 2 zones do not have access to a denturist. According to the Canadian Dental Association, in 2016 the population to dentist ratio was 1,622, in Canada, which indicated that there was one dentist available for every 1,622 people. If we use that as a comparator, the dentists available in the Northern region of Saskatchewan for the population are comparatively less.

Overall, there is a total sample size of 63 denturists in Saskatchewan, with the majority of them residing in Saskatoon, and zero available in the Central East 2, 3, 5, Central West 1, Far North Central, Far North East, Far North West 1, North Central 1, 3, North East 2, North West, South Central 1, South East 2, and South West 1, zones of the SHA health regions.

There are zero dentists available in the North Central 3 (NC3) zone of Saskatchewan, with a population of 16, 200. Additionally, there are 12 dental assistants, 4 dental hygienist, and 1 dental therapist that provide dental services in the area. This area is entirely dependent on these other dental disciplines to meet their dental care needs. The North Central 3 area consists of communities in Rosthern, with Indigenous communities of Beardy's and Okemasis First Nation and One Arrow First Nation located nearby. The closest dentist to these Indigenous communities would be located in Prince Albert, which is the North Central 2 region on the map in figure 4, and according to table 2 this area as 45 dentists available to provide dental services in the region.

In the Central West 2 (CW2) zone of Saskatchewan, there is 1 dentist available for a total population of 11, 741, zero denturists, and zero dental therapists. There are 13 dental

assistants and 3 dental hygienists located in this area to provide dental care. The Central West 2 area consists of communities in Outlook.

The North West 1 (NW1) zone of Saskatchewan has 1 dentist for a total population of 10, 021, 8 dental assistants, 1 dental hygienist, and 2 dental therapists available to provide dental services in this region. North West 1 consists of nearby Indigenous communities of Onion Lake First Nation, Thunderchild First Nation, Island Lake First Nation, and Makwa Sahgaiehcan First Nation.

Majority of the areas in Saskatchewan have less than 20 dentists situated in their area or close by, whereas Saskatoon, Regina far exceeds this number. This is an indication that there is a saturation of dentists in these two urban cities. Prince Albert also has more than 20 dentists in the city, with a total of 45 dentist providing services to the communities in this area. The rural and remote areas of Saskatchewan lack dental services, especially the northern communities, who only have access to a dental therapist, assistant, or hygienist. Some areas do not have access to a dental therapist, and this leaves them with access to a dental assistant and/or hygienist, who may not be equipped to provide all the dental services required. Denturists are the second dental discipline that are quite scarce in other areas of Saskatchewan, as a majority of them are situated in Saskatoon and Regina, as well as the North and South Central areas of the province.

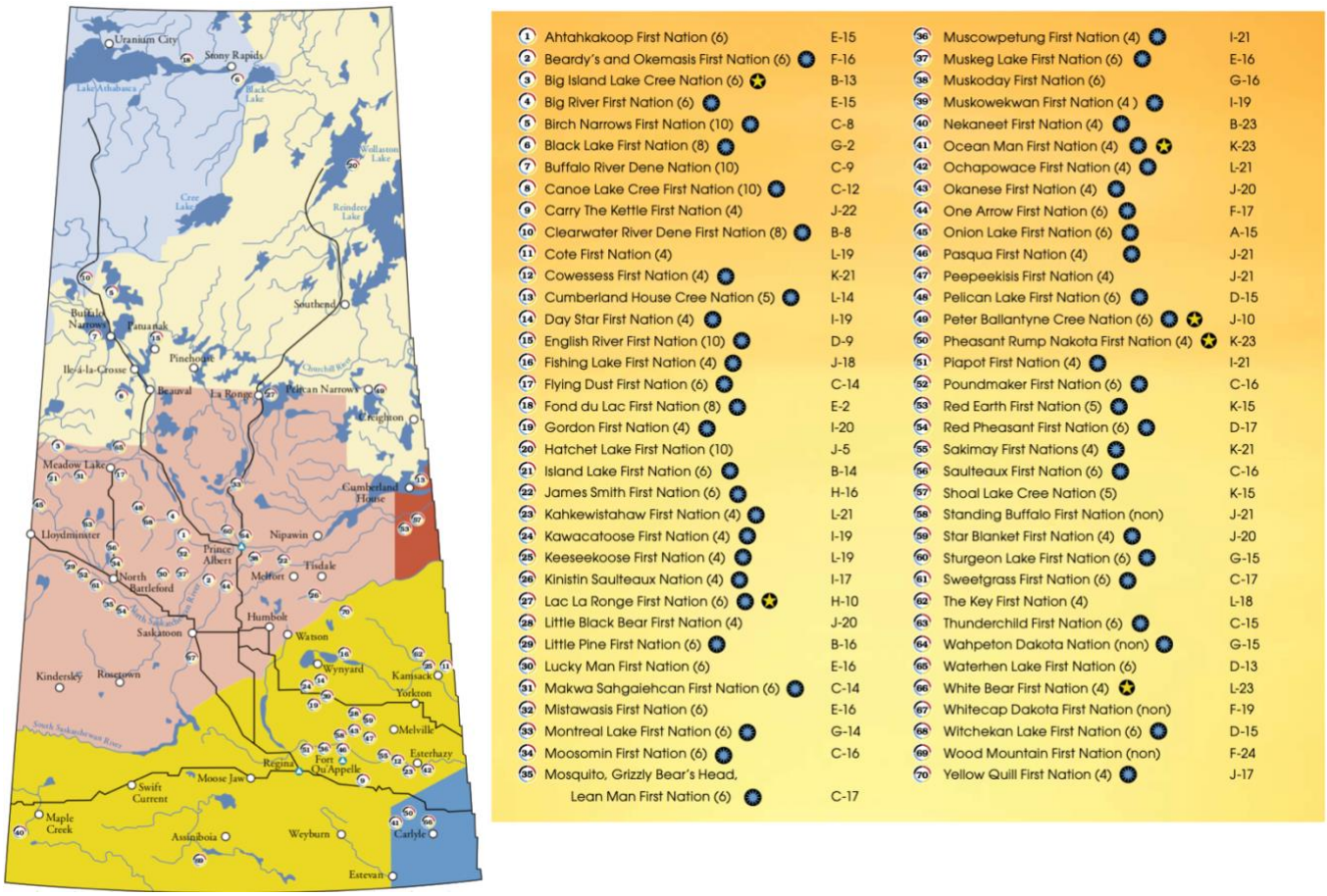


Figure 9 is a map of all the Indigenous communities located in Saskatchewan, created and compiled by the Indian and Northern Affairs Canada, Saskatchewan Region (2016).

Interview Results

Another component of this project involved, conducting interviews via the online platform *Zoom*, with 13 stakeholders from various dental backgrounds and disciplines. These stakeholders provided a wide array of perspectives and comments based on their experience and interaction with the dental care system and their communities in Saskatchewan.

Some common themes that emerged from the interviews included:

1) Financial Concerns
   Participants stated there was not enough financial assistance available to individuals who required dental care. They also provided a connection between social determinants of health to good oral health. In this case, income determined an

individual's likeliness of accessing dental care services and their ability to obtain private dental insurance from their place of employment. If individuals had access to dental care services, then they would be able to maintain good oral health or seek help when required. The higher the income an individual had, the greater their ability to access dental care services when they required them. The lower the income, the less likely an individual would access dental care or be provided dental benefits from their place of employment. Participants explained that there were options available to families and individuals who could not afford dental care such as, social assistance, family health benefits, disability assistance, and coverage by the federal government through Non-Insured Health Benefits (NIHB), as well as the Jordan's Principle. However, there are specific criterion required for each of these options, which cannot always be met by everyone and results in them not seeking dental care.

Participants also mentioned that the College of Dentistry was available to treat individuals who required dental care at a discounted price; however, this was not enough to support people as some individuals may not be able to afford the discounted price either.

All of the participants interviewed, except for one, were familiar with the resources that were available to individuals and/or families who required dental care but did not have private dental insurance. According to the participants, the population that fell through the gaps and were largely marginalized within the community were individuals who did not qualify for any social assistance due to their above low-income status but had no health or dental benefits from their employer. These individuals could not obtain dental care as they did not qualify for any of the government funded financial assistance programs and were likely to suffer from dental health issues due to delay of treatment and diagnosis.

2) Human Behaviour

Another common theme that emerged from the participants' answers, was human behaviour and the difficulty in changing behaviours. When participants were asked what prevented individuals from seeking dental even when they had access to private dental insurance, participants often answered with an explanation of human behaviour. For example, if parents implemented the habit of brushing and flossing teeth from a young age, this habit would then carry on into adulthood and assist the individual in preventing future oral health issues. Similarly, if parents normalized going to the dentist, then children would continue going to the dentist as adults. However, participants also recognized that we live in a busy and fast paced society,

which often means that oral health or dental care in general takes the back seat unless pain is experienced, or there is a dental emergency. The prioritization of other daily tasks over dental health was provided as the main reason as to why individuals who had private health insurance do not seek dental care until needed.

3) Food Insecurity

A major theme that was consistently discussed among all participants during the interview was the connection between food insecurity and oral health when participants were asked about the prevalence of ECC in children. Participants stated that individuals would continue to display oral health issues when they ate an unhealthy diet high in sugars, which causes damage to the teeth and results in dental caries. However, these diets were also an indication of the types of foods that were affordable and available to individuals within their community. Some of these individuals who live in rural/remote areas cannot afford high food prices when they are on a limited budget. According to participants, dental disease and other oral health issues can be treated, but in order for prevention to be successful, food insecurity needs to be addressed as well. Additionally, when food insecurity is combined with poverty, the oral health of the individual declines over time, sometimes to the point where oral health concerns may be difficult to reverse, and further financial means is necessary in order to provide treatment. One participant stated that if the economic situation could be improved then individuals would have access to the healthier food, i.e., foods that are less processed and lower in sugars. Also, if the water crisis in Indigenous communities could be fixed, then people within the community would be able to drink water safely again and not be reliant on alternative beverages.

4) Cultural Competency

When asked about cultural competency in dental care, all but one participant had difficulty in answering the question and required further explanation. Another participant did not agree with the premise of the question due to a difference in opinion. Once the question on cultural competency was clarified, a majority of the participants agreed that cultural competency needed to be taught at the institutional level when dental care students were training to become dental professionals. Other participants stated that not enough was being done in terms of cultural awareness within the dental field and more initiative should be taken at the education level, so future dental professionals can learn to appropriately interact with the growing diverse community in Saskatchewan.

5) Health Professionals

Interestingly, many of the participants stated that not enough was being done by dental health professionals to prevent oral health issues within Saskatchewan. Participants felt that more could always be done to bring awareness to oral health concerns and make improvements within the province. One participant indicated that dental health professionals need to collaborate together as there is a disconnect and business focus within the dental field, when there should be sharing of information and initiatives. Additionally, many participants also mentioned that training other medical professionals and nurses in oral health, would solve many concerns of accessibility when it comes to oral health, especially in rural/remote communities.

6) Water Fluoridation

All interview participants cited misinformation, social factors, and access to the internet as influencing factors on the public perception of water fluoridation. Majority of the participants indicated that adding fluoride to water was a positive public health measure that assisted communities in preventing oral health issues, but it was not a cure for all dental health concerns. One participant explained that there was hesitancy among some Indigenous communities in regard to water fluoridation due to mistrust, but also because there are already existing water concerns within these communities that need to be addressed. The participant indicated that Indigenous communities need to be provided evidence-based research on water fluoridation as education is the key to making informed decisions. Additionally, there was also a concern in regard to Silver Diamine Fluoride, which was concerning to some in the community. Two other participants pointed out that fluoride is effective when there is enough saliva in the mouth. However, a small percentage of the population suffers from dry mouth, e.g. the elderly, and this method of fluoride-use would not be effective for them. Fluoride is also much more accessible in food now than it was in the past. All participants agreed that more education needed to be provided to the general public about water fluoridation and fluoride in general. One participant understood why individuals may have doubts in regard to water fluoridation because it can be problematic when consumed in excess, just like any other product or food. They also stated that there were some dental professionals who brought up concerns regarding water fluoridation due to fluorosis.

Social Determinants of Health

The social determinants of health (SDH) that influence the everyday life of an individual include the following[6]:

- *Income and income distribution*
- *Education*
- *Unemployment and Job Security*
- *Employment and Working Conditions*
- *Early Childhood Development*
- *Food Insecurity*
- *Housing*
- *Social Exclusion*
- *Social Safety Network*
- *Health Services*
- *Aboriginal Status*
- *Gender*
- *Race*
- *Disability* [6]

The World Health Organization defines SDH as the,

"*non-medical factors that influence health outcomes. They are the condition in which people are born, grow, work, live, and age, and the wider set of forces and system shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems*".[5]

The SDH contribute to many chronic health conditions that we see today, such as cardiovascular disease, obesity, diabetes, and depression.[5] Additionally, many of the SDH are interconnected, that is to say, a lack of education can impact the prospects of getting a job, which in turn prevents an individual from obtaining health and dental benefits, and ultimately this causes their overall health to decline as they are unable to access services due to the lack of affordability.[5] In the Canadian dental context, if an individual's employment does not provide enough income and no private insurance, then the individual has no choice but to either defer seeking dental care as there are other priorities, or they would have to rely on family health benefits, which has its own set of criteria that needs to be followed. Those individuals whose income is not low enough to qualify for social assistance or family health benefits, and their income is not high enough to afford dental care or private dental insurance, are the individuals who fall through the gaps in the dental care system and are the most vulnerable or marginalized in the community.

According to the Canadian Public Health Association (CPHA), governments at the federal, provincial, and municipal level can impact the social determinants of health directly

through policies, legislations, and funding.[6] One example of this, is the enactment of laws around employment, which would ensure that employees are working in a safe environment and receive the benefits and income that they are due.[6] Other examples include the implementation of policies around maternity leave, providing funding for childcare, healthcare, and social services, to name a few.[6]

So, why are SDH important in the dental context? SDH affects an individuals' ability to seek dental care due to affordability and accessibility. If an individual is unemployed, or has low income, they may not have access to health benefits, and are less likely to seek dental care.[7] In comparison, if an individual has a higher income, they are likely to have health benefits and would not hesitate to seek care should they have dental issues.[7]

Food insecurity is another SDH which impacts oral health outcomes.[7] Individuals who are on a lower income will more often than not, reach for cheaper foods, rather than purchase more expensive items.[7] Additionally, individuals who live in rural or remote communities have to make the decision between spending more money on fresh food or purchasing items that are higher in preservatives, sugars and fat, but cost much less.[7]

Taking the SDH into consideration, dental care field needs to change and start incorporating integration practices with a focus on patient-centered care, rather than a biomedical model of care.[8] This change in direction of the profession needs to start at the education level within dental schools. Patients who utilize the dental care system, or the lack thereof, face a number of social complexities which affects an individual's behaviour, expectation, and perception.[8] Another way that dental professionals can start changing the field of dentistry is by advocating on behalf of their patients to bring change in dental practices, methods of payment, and implement policies that would help the vulnerable and marginalized in our communities.[8]

Early Childhood Caries

Early Childhood Caries (ECC) are the most common and easily preventable oral health issues that children experience from a young age. The CDA recognizes that ECC has various contributing factors, such as diet, nutrition, and social determinants of health. The CDA defines ECC as,

"*the presence of one or more decayed (noncavitated or caviated lesions), missing (due to caries) or filled tooth surfaces in any primary tooth in a preschool-aged child between birth and 71 months of age*".[9]

ECC can progress rapidly after tooth eruption and is infectious and transmissible, and affects a child's daily life such as eating, sleeping, and overall development.[9] The more severe cases of ECC cause chronic pain, tooth loss, and consequently an increase in financial expense for dental care services if ECC is left untreated.[9] As mentioned in previous Dental Health Screening reports, ECC is a significant concern in children within Canada and the prevalence of this disease continues to grow despite the preventative programs available to children.[9] ECC are also the primary reason for general anesthetic surgeries among children, which increases the cost of care on the health care system as these surgeries have an annual cost of approximately $21, 184, 5455.[12] This could be a result of SDH, not enough education being provided to parents, and/or the enforcement of healthy oral health habits is not taking place.[12] It is important to provide counselling to parents in regard to ECC for children from a young age, so that the risk of the child developing ECC later on can be reduced.[9] The CDA has recommended that parents begin dental assessment of children as young as 6 months, when the first tooth erupts, or at least by the time the child turns 1 years old.[9] In order to prevent further damage of teeth, early intervention and assessment is key.[9] This is also when prevention methods would be more successful.

According to Ezer et al., there is a connection between socioeconomic status and ECC.[10] Parents who have a higher level of education and income and have health benefits (private insurance) as a result of their economic status, often have children with a lower rate of ECC and lower chronic cases, in comparison to children who come from low-income families with lower levels of education.[10] This is due to the affordability factor.[10] A higher income allows parents to obtain health benefits or pay out of pocket if necessary, which is not an option for someone who is living pay cheque to pay cheque; thus, creating a barrier to care.[10]

Treatment for ECC in children is a costly and time-consuming process, especially if ECC persist as the child grows.[10] Additionally, it can be difficult for dental professionals to have children sit still while performing a procedure, and other measures have to be taken to treat the caries, such as general anesthesia, which drives up the cost of treating ECC.[10] The highest cost for day-surgery in children who had dental caries were in Nunavut and the norther territories, which indicates that Indigenous children are impacted the most with ECC in Canada.[10] According to Schroth et al., at least 12 per 1000 children in the age group 12 – 59 months make up 31% of day-surgeries for ECC in Canada.[12] This rate is 7.5 times higher for communities where the majority of children were Indigenous.[12] Furthermore, the rate of day-surgery for dental caries in children from rural communities was 3.2 times higher in comparison to children who resided in an urban setting.[12] In Saskatchewan, the rate of day surgery was 35 per 1,000, with the highest rates of surgery found in Mamawetan Churchill River Regional Health Authority and Athabasca Health Authority.[29]

Saskatchewan had the highest rate of day surgery in hospital for ECC in children from age 1 to 5 years old, in comparison to British Colombia and Alberta.[29]

Presently, there are oral health prevention and treatment programs in place to address ECC in children within Saskatchewan.

Oral Health in Long Term Care

Poor oral health has always been an issue for seniors living in long term care as the basic need for brushing one's teeth becomes forgotten when faced with other health issues.[13] However, it is even more pertinent to emphasize oral health and good oral health hygiene practices for a vulnerable community when tending to their care.[13] Some medical conditions that long term care residents may experience are cardiovascular disease, dementia, Alzheimer's, respiratory disease, other cognitive issues, and loss in muscle movement.[13] This greatly impacts the ability to brush their teeth or carry out other oral health practices.[13] Additionally, taking prescription medication can cause certain oral health side effects, which further adds to preexisting oral health concerns that the long-term care resident may be dealing with.[13] Accessing dental care services outside of the long-term care home may also be challenging for a resident due to mobility issues, transportation, or other medical needs that prevent them for visiting a dental office.[13] Taking these barriers into consideration, it is important to implement oral health programs in long term care homes for the benefit of residents or have dental care services on site.

Financing for long term care facilities falls under provincial or territorial jurisdiction with variations across the country.[14] Residents have the option to opt for a privately funded long term care home or a publicly funded one.[14] Typically, the publicly funded long term care homes have long wait lists, and only 27% of them are operated by the government.[14] The staff, medical care, and operations of public long-term care facilities are provided by the provincial or territorial government.[14] Individuals who belong to the Veterans Affairs Canada and the Department of National Defense and Canadian Armed forces are provided additional funding benefits if they choose to stay in a long-term care facility.[14] Unfortunately, Indigenous people do not have such benefits when it comes to long term care and are not provided any additional financial assistance to cover the cost of their stay.[14] Fees for accommodation within long term can be quite high.[14]

When it comes to dental care, there is no coverage provided for residents in long-term care by the government, as dental care is a privately financed service which requires out of pocket payments.[14] According to Silva, only 39% of seniors have coverage for dental care through their private health insurance, which is less than the younger age groups where at least 67% have coverage for dental care.[14] Residents in long-term facilities that do not

have any dental coverage, can access publicly funded dental programs, but there are limitations to the cost of what is covered, and what procedures can be performed, which does not always meet the needs of residents.[14] In Saskatchewan, the fee for long-term accommodation can cost anywhere between $1, 086 - $2,065, with 80% coverage from income subsidies via the Ministry of Health for those residents that can afford the entire fee.[14]

In long term care facilities, care for residents is delivered by nurses, personal support workers, doctors, and health care aides. [14] They have a variety of responsibilities, including documenting medical and oral history, providing oral health education, overseeing and assisting residents with daily oral health hygiene, and helping residents with their medication. [14] Dental hygienists also work in long term care facilities and participate in training nurses in oral health education and practices. [14] Therapeutic techniques are also used in long term care settings, such as the use of fluoride varnish or silver diamide fluoride. [14]

According to Silva, at least 71% of seniors in long term care experience poor oral health due to a lack of oral hygiene, which causes them to develop oral health disease such as dental caries, periodontal disease, pain, infection, denture related issues, and other oral health problems. [14] Periodontal disease and dental caries are of primary concern in seniors that are in long-term care facilities as these two conditions lead to tooth loss, and age increases the risk of periodontal disease. [14]

Ultimately, it is important to factor in oral health care in long term care facilities for residents. Since the last oral health report, Saskatchewan has implemented the Better Oral Health in LTC (BOH-LTC) program in 13 long term care homes to enhance oral health education, assessment, hygiene, and treatment by following the Australian model. [30] Additionally, a dental care clinic was set up in one long term care home where residents could be provided on-site treatment and procedures without leaving the building premises. [30] These two factors have attributed to the improvement of overall oral health of seniors in long term care homes. The oral health status of individuals in long term care improved aspects of their lips, tongue, gum, oral cleanliness, denture, and saliva due to the BOH-LTC. [30] After 12 months of implementing BOH-LTC, there was a 40.6% improvement of oral cleanliness in residents, and unhealthy dentures were significantly reduced by 77.7%. [30]

Dental Care for Indigenous People

As mentioned earlier, ECC in Indigenous children are a cause for concern due to accessibility issues, social determinants of health, and other disparities that exist within Indigenous communities. Another major concern brought up by our interview participants

is the process of seeking treatment for ECC, especially for families that live in northern or rural communities as they have to arrange for transportation to get to a dental care facility, and factor in the economic cost of the trip as well as the amount of time spent travelling. This is not always feasible for everybody and is a barrier to care.

Currently, Indigenous people are provided coverage for dental care under the Non-Insured Health Benefits (NIHB) program. However, there are limitations that exist with coverage, as only some procedures or treatments are covered based on the individual's case. [21]This poses a dilemma for dental care providers as they try to provide the best care possible within the limitations of coverage. [21]

The dental care covered by the federal government for Indigenous people in Canada are limited to the following [21]:

- Diagnostic services
- Preventative services
- Restorative procedures
- Endodontic
- Periodontal
- Removable prosthodontic
- Oral surgery
- Orthodontics
- Adjunctive [21]

The Government of Canada states that they encourage dental care providers to bill NIHB directly, rather than take the amount directly from clients. [21] However, in reality this is not always the case as dental care providers differ in how they manage billing practices with patients. Additionally, there are certain criteria that the NIHB programs considers when providing coverage for dental care for Indigenous people, which includes the client's oral health status, coverage for treatment of dental disease or treatment of health issues as a result of dental disease. [21] Coverage can also vary from person to person based on their specific situation. [21] Dental services that are not covered by the NIHB program includes cosmetic and extensive rehabilitation services, as well as other services that have not met the program's policies, guidelines, or criteria. [21] Furthermore, the dentist, dental specialist, dental hygienist, and denturist, must be recognized by NIHB as being licensed and in good standing with the provincial or territorial regulatory body. [21]

The reimbursement process that NIHB follows may also be a deterrence to direct billing for some dental providers as it requires extra administrative work and providers may find it easier to bill the client/patient directly, than seek reimbursement later. Dental providers must follow the terms and conditions of the NHIB program in order to be reimbursed for

their services, and reimbursement requests must be submitted within one year of the service date. [21] In order to make reimbursement easier, dental care providers are advised by NIHB to enroll into their program so they can submit claims to Express Scripts Canada directly and in this way clients/patients would not have to pay any fees out of pocket. [21] Although, the intent of NHIB is to make the process of reimbursement easier, there are additional requirement for claim submissions, where dental care providers have to attach proof of payment, an NIHB Client Reimbursement Form, and either a Dental Claim and Treatment Plan Form, or a Standard Dental Claim Form, or a Canadian Association of Orthodontics Information form. The alternative is to submit proof of payment and an NIHB Dental Claim Form. In some cases, NIHB requires an Explanation of Benefits (EOB) form as well. [21]) There are further coverage restrictions that dental care providers have to work around, such as the age limit for services, the specific teeth that can be worked on for restorative care, the specific materials that have to be for teeth repair, and even the combining of procedures is limited.[21] NIHB does not allow multiple procedures to take place on the same day.[21]

The Indigenous population in Saskatchewan consists primarily of First Nations and Metis communities.[26] There are approximately 70 First Nations in Saskatchewan and they belong to Cree, Dakota, Dene (Chipewyan), Nakota (Assiniboine) and Saulteaux linguistic groups. 61 of these First Nations communities belong to a Saskatchewan Tribal Council. [26]

According to Statistics Canada, there are 157, 740 Indigenous people residing in Saskatchewan [20], of which 103, 205 identify as First Nations, 52, 450 as Metis, and 290 as Inuit.[20] Approximately 9 in 10 First Nations people were reported to have been a Registered Indian or Treaty Indian as per the *Indian Act* of Canada.[22] Indigenous people can only obtain access to dental care through NIHB if they are a Registered Indian and have a Branch or Treaty number.[22] If an Indigenous person does not have a Branch or Treaty number, then they cannot access services that would otherwise be available to them.[22] This type of public policy creates a barrier to care. It is also due to unclear historical public policies that the provision of care for Indigenous people varies across provinces and territories, and thus creates gaps in the system, resulting in Indigenous people not receiving the care they need.[22]

There are historical factors that contribute to the health disparities that exist in Indigenous communities as a result of colonization.[23] The Indigenous population in Canada has higher rates of chronic disease, diabetes, heart disease, cancer, and HIV/AIDS, among other illnesses.[23] Some of the social determinants of health that contribute to poor health outcomes in Indigenous communities include housing, income, employment or lack thereof, education, and the environment.[23] Oral health issues within Indigenous communities are also due to social determinants of health, social inequities, and generational trauma.[23] One example of this is seen in Indigenous children, who experience a higher rate of caries

compared to non-Indigenous children.[23] An example of generational trauma that was provided by a participant during our interviews, was linked to residential schools. The participant explained that in residential schools, Indigenous children were forced to undergo dental procedures against their will and without their parents' knowledge. Therefore, some of the elderly Indigenous patients were still uncomfortable visiting a dental care provider or seeking dental care as it caused their trauma to resurface. The participant went on further to state that they work with Indigenous communities to build trust so they can overcome this trauma related to dental care, with patience and understanding. This is also where cultural competency is crucial in providing care.

First Nations Oral Health Survey National Report reported that a higher number of First Nations visited a dentist in comparison to non-Indigenous people, and at least 2% of children and 5.8% of adolescents and adults avoided going to the dentist due to the cost.[19] However, this was not cited as the main reason why First Nations did not seek dental care; the most prominent reason was the lack of services available to them in their communities.[19] At least 45.7% individuals living in rural First Nations communities had concerns about the transportation costs that would be required in order to access dental services outside of their community.[19] Additionally, about 83.1% of First Nations children aged 6 years old or older required dental care, which is much lower than non-Indigenous and Indigenous people who live off reserve (in urban communities) and require care.[19]

Disparities in oral health still exist in First Nations communities across Canada, with SDH such as employment, income, education, food insecurity, inadequate housing, lack of culturally appropriate health services, and inaccessibility of health services, all contributing to poor health outcomes in First Nations communities.[31]

Some community-based interventions that can improve dental care in Indigenous communities include maternity programs where new moms are taught about the importance of oral health and incorporating it into traditional child-rearing practices.[31] Willow cradles, for example, were traditionally used by First Nations communities as a method of pacifying babies.[31] However, over time this was replaced by bottles and sugary drinks. Additionally, new mothers can be counselled on oral health with the use of health education and helpful pamphlets.[31]

Other initiatives include, recruiting individuals from Indigenous communities in an effort to train more dental care providers that can contribute to their own communities.[31] This would greatly improve accessibility to dental services in remote or rural areas.[31] One example of such an initiative was accomplished by pediatric residents from the University of British Colombia, who were brought into the Hartley Bay (Gitga'at) First Nations community in British Colombia as part of their training.[31] They worked with the community to provide care, while learning about their needs and culture.[31] The pediatric

residents were also paired with dental care professionals, who educated them on oral health and other dental topics that were relevant to the needs of the community.[31] The focus was primarily on prevention methods in dental care, rather than treatment.[31] A similar program needs to be established within the University of Saskatchewan Medical School as well.

Prevention Programs

The oral health prevention programs that have been implemented in Saskatchewan are as follows:

- Fluoride varnish program in schools.
- Sealant program in schools.
- Fluoride mouth rinse program in rural schools.
- Silver Diamine Fluoride program
- Dental screening for children every five years.
- Toothbrush program in schools.
- Community water fluoridation.
- Oral health care plan, treatment, assessment, education, and best practice standards in long term care homes, which have been implemented in 13 long term care homes in Saskatoon since its inception.
- Promotion, education, and advocacy of oral health through various avenues such as workshops, social media, consultations, etc.[11]

Canada's Universal Healthcare System

The *Canada Health Act* was established in 1984 under the federal government and declared that health care in Canada would be portable, accessible, universal, comprehensive, and publicly administrative.[18] The federal government was also responsible for collecting taxes that would contribute to the overall funding of the Canadian health care system.[18] Provincial governments were given charge of maintaining and operating hospital, which still applies today, under the *Constitution Act* of 1987.[18] This universal health care system was highly influenced by Tommy Douglas who spear headed the campaign for the implementation of a medical insurance plan in Saskatchewan, and which became a reality in 1962.[18] The federal government soon followed in Saskatchewan's footsteps and enacted the *Medical Care Act* in 1966.[18] The Medical Care Act stated that the federal and provincial government would share costs between the provincial/territorial government and doctors who worked outside the hospital.[18] This sharing of costs was eventually replaced with

block fund, where the federal government provided a lump sum amount to the provinces and territories, and they were then responsible for the provision of care.[18] Canada's health care system's organization, roles and responsibilities are divided among the provincial, territorial, and federal governments.[18] As stated previously the provincial and territorial governments are responsible for delivering health care to individuals residing within their own province.[18] The coverage of health care varies from province-to-province and territories as some provinces cover more services than others.[18]

Funding for our public health care system comes from taxes collected by the federal, provincial, and territorial governments which includes, sales tax, corporate tax, personal tax, payroll tax, among others.[18] Provinces are able to charge health premiums as well, but the condition is that it cannot create limitations for basic and medically required services.[18] Other subdivision that fall under health care include infectious disease, public health, sanitation, and health education – this can be at the municipal or local level.[18]

Regrettably, when Canada's universal health care system was being established, it did not include dental care services, coverage for prescription medication, and vision care. This is primarily due to the legislation that was established at the time.[16] Dental care was initially included within the health insurance plan in 1943, but by the end of World War II this had changed, and the government declared that dental services would be financed at a later time.[16] Unfortunately, this commitment never followed through due to debates that centered around the allocation of power in regard to legislation to do with the health insurance plan.[16] Then from 1961 to 1964 the Royal Commission on Health Services provided recommendation in developing a Canadian health care system that included dental care, as they recognized the oral health issues can attribute to overall health concerns.[16] They also recommended including other services under the universal health care system such as prescription medication, prosthetic services, and home care service.[16] The dental care professionals at the time of these discussion were highly influential in ensuring that dentistry did not fall under the Medicare plan and advocated for its exclusion.[16] Dental professionals were not pleased with government intervention between patient and practitioner relationships.[16] Additionally, an introduction of water fluoridation in the 1950s offered an alternative to dental coverage as it was an effective method of prevention.[16] There were also economic and social factors that contributed to the exclusion of dentistry in the Medicare plan.[16]

The jurisdiction of power when it comes to the health care system in Canada lies with the provinces and territories respectively.[16] Publicly funded dental care services only applies to Indigenous people that are recognized by the state (have treaty status) and the Armed Forces. Individuals who are low income or on social assistance, their dental care falls under the provincial jurisdiction.[16] At present in Canada, the attitude towards privatization has

changed significantly and the support, and advocacy, for a publicly funded dental care system that is accessible and affordable to all is steadily gaining momentum.

Community Water Fluoridation

Water fluoridation has become a controversial topic over the years with the use of social media, misleading information being readily available on the internet, and social attitudes towards water fluoridation changing as a result. Water fluoridation is regarded as a successful public health measure because it is cost effective, equitable, does not require change in human behaviour as everyone drinks water to survive, and is accessible to everyone regardless of economic status.[15] So why do we need fluoride? Fluoride has been proven to be a successful prevention method in tackling dental caries and preventing other oral health issues.[15] However, the optimal level of fluoride that is required to obtain the best results for oral health is 0.7 mg of fluoride per liter of water.[15] Contrary to popular belief, fluoride is also found in some foods and beverages we consume, but the levels are not high enough for us to benefit from them.[15]

Fluoride comes from the ionic form of fluorine and can be found naturally in the air and water.[32] Fluoride can also be found in other products such as toothpaste, tea, seafood, and supplements.[32] It can be absorbed into the stomach and small intestine quickly when ingested.[32] Consuming fluoride in your diet reduces the risk of dental caries, which is a highly prevalent oral health issue in children in Canada.[32] Tooth decay in children and adults is reduced by 25% – 30% by drinking water that is fluoridated.[32] It also prevents other issues such as pain, infection, and loss of teeth. Community water fluoridation enables individuals to reduce their dental costs, missed fewer days at work or school due to dental pain, improves oral ability to eat, and in turn benefits your psychological wellness.[32] As stated previously, the cost of fluoridating water a public health measure is relatively inexpensive, with an estimated cost of 60 cents - $1 for one person annually; this may vary based on the community.[32] The amount of money saved from fluoridation is $5 - $93 in dental costs for each individual.[32] In Saskatchewan, 26% of the population has access to fluoridated water, which is much lower than Manitoba (69.9%), and Alberta (43%), despite Calgary's decision to discontinue fluoridating their water in 2011.[32] Humboldt, Melfort, Moose Jaw, Prince Albert, Saskatoon, Swift Current and Weyburn are cities in Saskatchewan where a large number of residents have access to fluoridated water.[32] Additionally, there are 24 communities in Saskatchewan that have naturally occurring fluorite in water at the 7mg level.[32]

Alternatively, according to Saskatchewan Dental Public Health Network, there is not much difference in the rate of dental caries within communities when comparing fluoridated and

non-fluoridated water supply.[32] Fluoridated water supply resulted in 94.31% of caries-free permanent teeth and 84.89% primary teeth.[32] Alternatively, a non-fluoridated water supply resulted in 90.43% caries-free permanent teeth and 80.90% primary teeth.[32]

Ultimately, the benefits of community water fluoridation far outweighs the cons as it provides an easy way of preventing oral health issues in an inexpensive way, and by reaching the most amount of people in the community.

Discussion

In conclusion, much still needs to be improved within the dental care system when it comes to accessibility of resources for the marginalized and vulnerable population, especially for individuals who do not have access to private health insurance or social assistance programs. These individuals are often left to fend for themselves and may not seek out dental care due to other priorities that take precedence over oral health, such as putting food on the table, taking care of their family, or ensuring that they have a roof over their head. This is one of the gaps found in the dental care system in Saskatchewan. The second gap in care is largely prevalent in Indigenous communities due to accessibility and coverage issues. As seen in figures 1 and 2, many northern First Nations communities in Saskatchewan are quite a distance from the nearest dental care professional. This can act as a deterrence from seeking care due to the difficulties in driving to a clinic that is further away, spending money and time on getting there, and weather changes in the winter can cause barriers for accessibility as well.

The current preventative and treatment programs for oral health largely target children under the age of 18 years old. Although, this is may be a successful prevention method in the long run, it also excluded other age groups that require dental care. For example, adults and the elderly. Additionally, COVID-19 has now impacted the prevention programs in schools such as the oral health prevention programs that were previously offered in schools, and dental care that was offered for the elderly in long term care. Furthermore, given the limited options available to rural and northern communities in the province, we suspect that the pandemic has exasperated issues with accessibility for dental care services in this ongoing situation. There needs to be increased communication between primary health care professionals and dental care professionals so they can share the burden of care to ensure that patients are able to treat oral health issues in a timely manner.

Recommendations

Some of the recommendations that we encourage the Saskatchewan Health Authority and the Saskatchewan Oral Health Coalition to implement are as follows:

Surveillance

- Continuation of oral health surveillance in Saskatchewan.

Policy

- Modifying legislative policies so dental assistants and dental therapists can pursue independent practice to assist patients in northern communities, Indigenous communities, and rural/remote areas.

- Addressing food insecurity and affordability as a component that contributes to poor oral health. If food remains expensive for those living in northern and rural/remote communities, it becomes difficult to follow a healthy diet due to the high expense, and thereby results in poor oral health conditions. This circles back to the social determinants of health.

Training

- Re-opening the dental therapist school to train more dental professionals, especially from northern, Indigenous, and rural/remote communities, so they can give back to their community and provide much needed dental care.

- Investing time and effort in training health care professionals, such as nurses and family physicians that interact with the community frequently, in oral health to bring awareness to the connection between oral health and overall health, and to practice prevention and promotion of oral health in the absence of a dental professionals.

Prevention and Promotion

- Expanding the fluoride varnish, sealant and Silver Diamine Fluoride programs for children so it is available to all schools in Saskatchewan.

- Expanding dental care promotion and prevention programs in all long-term care homes in Saskatchewan.

- Providing free toothbrush and toothpaste to those in need, especially for those who cannot afford it.

- Continuing to educate the public on the importance of oral health through health promotion practices.

- Increasing oral health education for nursing and medical students in educational institutions. Collaboration needs to occur among dentists, family physicians, and nurses.

- Integration of dental care services with primary health care, so physicians, dentists and dental professionals can work together to reduce the burden of chronic disease while preventing oral health disease.

Coverage

- Expanding dental coverage and services offered by the Oral Health Program under the guidance of the Saskatchewan Health Authority with a focus on long-term prevention for the patient. For example, teeth extraction should be a last resort if possible and not the first option due to coverage limitations.

- Implementing and working towards a provincial dental care system through policymaking by the provincial government. If optometrist services are covered until the age of 18 years old in many provinces, why can this not be applied to dental care?

- Changing the funding model for dentists from fee-for-service to a salary-based system.

- Implementing direct billing of insurance in all dental offices across Saskatchewan. The province should recognize that not everyone has a credit card or income in the bank to pay for all their dental expenses up-front at the dentist's office. Therefore, direct billing to insurance should not be an option, rather it should be mandatory.

- The province needs to look at other funding programs for individuals who are unable to afford dental care, and do not qualify for social assistance, family benefits,

or private health insurance.

Long Term Care

- Allocating appropriate space in every long-term care home for dental equipment in order to provide surgical, restorative, and preventative care.

Children

- Educating pediatric nurses in oral health and implementing oral health education and promotion in the “Healthy Mother and Healthy Baby” program.

APPENDIX

Appendix 1: A list of questions that were asked of interviewees who participated in the interviews for this project.

Time Required: 30 - 45 minutes

1. Social determinants of health are a major indicator of health outcomes for individuals, how does someone who has no source of income or private health insurance receive dental care in Saskatchewan?
2. In your experience who is impacted the most by a lack of dental care services in Saskatchewan?
3. Indigenous communities in remote or rural area often don't have access to dental care services. How is this gap in care being addressed in Saskatchewan by your organization?
4. Good oral health is connected to overall health, and a neglect in oral health can lead to systematic health issues. Is enough being done by health care professionals in Saskatchewan to understand or address this concern?
5. In your opinion, what possible change is required to improve dental care dramatically for the marginalized and vulnerable populations within Saskatchewan?
6. Would a national model for dental care be more advantageous and equitable? Please explain your reasoning.
7. Fluoride has become a hot topic in recent years. Why has there been such a major shift in how individuals view fluorine, especially when it has been proven to be a good public health measure for good oral health?
8. Could you provide other issues that you see in Saskatchewan that prevent individuals from seeking dental care, even if they may already have private health insurance?
9. Why are Early Childhood Caries still an issue within the population, even with the introduction of programs that have addressed these concerns?
10. What other dental prevention programs could be implemented in Saskatchewan that are not available at the moment?
11. How can cultural competency be improved in dental care within Saskatchewan?

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