Université de Montréal

Pratique dentaire en milieu rural: perspectives des étudiants en médecine dentaire du Québec

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Mémoire présenté à la Faculté des études supérieures
en vue de l'obtention du grade de
Maîtrise ès Sciences (M.Sc.)
En sciences buccodentaires

Mars 2015

Université de Montréal
Faculté des études supérieures

Ce mémoire intitulé:

Pratique dentaire en milieu rural: perspectives des étudiants en médecine dentaire du Québec

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RÉSUMÉ

Introduction: La répartition de la main-d'œuvre dentaire à travers le Canada est fortement balancée en faveur des zones urbaines, une situation qui favorise les disparités dans l'accès aux soins de santé buccodentaire. En engageant des professionnels de la santé buccodentaire dans la pratique dentaire en milieu rural, il faut d'abord comprendre leurs opinions personnelles et professionnelles, ainsi que les obstacles et les facteurs motivant leur choix de pratique. Cependant, il existe un manque des connaissances sur la perception des étudiants de soins de santé buccodentaire à l'égard de la pratique rurale. Par conséquent, nous avons voulu vérifier comment les étudiantes en médecine dentaire perçoivent la pratique dentaire en milieu rural.

Méthodes: Nous avons effectué une recherche qualitative dans deux grandes facultés de médecine dentaire au Québec. Un échantillonnage intentionnel et la technique boule de neige ont été utilisé pour recruter des étudiants finissants et des résidents en médecine dentaire en tant que participants à l'étude. Des enregistrements sonores des entrevues, d'une durée de 60 à 90 minutes, semi-structurées et face à face ont été colligés jusqu'à atteinte de la saturation. Nous avons procédé à une analyse thématique pour dégager les enjeux. Cela a inclus un compte-rendu des entrevues, l'encodage des transcriptions, la présentation des données et leur interprétation.

Résultats: Dix-sept entretiens (10 F et 7 M, âge: 22 à 39) ont été réalisées. Cinq grands thèmes ont émergé des entrevues: niveau des connaissances sur les inégalités de la santé buccodentaire en milieu rural, image de la ruralité, image de la pratique dentaire en milieu rural, obstacles perçus et facteurs mobilisateurs. Les étudiants ont exprimé que

l'éducation dentaire, les avantages financiers, le professionnalisme, le soutien professionnel, et les médias sociaux peuvent influencer positivement leur intérêt à l'égard de la pratique dentaire en milieu rural.

Conclusion : Les résultats de cette étude soutiennent la mise en place de stratégies connues pour augmenter la connaissance et la motivation des étudiants en médecine dentaire pour choisir leur profession dans une région rurale. Les acteurs des politiques éducatives ont un rôle essentiel dans la promotion de ces politiques et stratégies facilitantes.

Mots-clés: Rural, pratique dentaire, étudiant en médecine dentaire, recherche qualitative, interpretive description

ABSTRACT

Introduction: The distribution of dental workforce across Canada is highly skewed toward urban areas, a situation which favours disparities in oral health care access. Engaging oral health care professionals in rural dental practice necessitates understanding the personal and professional points of view of these professionals, as well as barriers and motivators in regard to the choice of practice. However, little research exists on how dental students perceive working in rural and remote areas. Therefore, this study aimed to explore the knowledge and perspectives of future Quebec dentists in regard to rural dental practice.

Methods: We conducted a qualitative interpretive descriptive research study in two major Faculties of Dental Medicine in Quebec. A purposeful sampling and snowball technique were used to recruit fourth-year dental students and dental residents as study participants. Audio-recorded, 60–90 minute, face-to-face and semi-semi-structured interviews were conducted, with the number of interviews being determined by saturation. Qualitative data were analyzed using a thematic approach including interview debriefing, transcript coding, data display, and interpretation.

Results: Seventeen interviews (10 F and 7 M, age: 22–39) were carried out. Five major themes emerged from the interviews: awareness on rural oral health care access, image of rurality, image of rural dental practice, perceived barriers and enablers in regard to rural dental practice. Students expressed that undergraduate dental education, financial rewards, professionalism, professional support, and social media can positively affect their perspectives on rural dental practice.

Conclusion: The results of this study support the implementation of strategies that are known to increase the knowledge and motivation of dental students toward rural dental practice. Educational policy maker have an essential role in encouraging these facilitating policies and strategies.

Keywords: Rural, dental practice, dental students, qualitative research, interpretive description

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LIST OF ABBREVIATIONS

WHO	World Health Organization
DHHS	Department of Health and Human Services
SES	Socioeconomic status
OECD	Organization for Economic Co-operation and Development
NIH	National Institute of Health
NIDCR	National Institute of Dental and Craniofacial Research
CIAR	Canadian Institute of Advanced Research
CIAR	Canadian Institute of Advanced Research
RST	Rural and small town
MIZ	Metropolitan Influenced Zones
OECD	Organization for Economic Co-operation and Development

DEDICATION

To my beloved parents and sister: Afsaneh, Mahmoud and Naghmeh

Thank you for your endless love and support throughout all these years of my studies.

ACKNOWLEDGMENTS

There are a number of people without whom the successful completion of this master thesis would not have been possible and to whom I owe my deepest gratitude.

First and foremost my heartfelt appreciation is extended to my supervisor and my mentor Dr. Elham Emami for her invaluable guidance and support throughout my master's program. Thank you Dr. Emami for giving me the encouragement and means to learn. I am grateful for all the help and knowledge you provided me during my journey. I also appreciate your inspiring commitment to education and mentoring students seeking knowledge.

Secondly, I was privileged to have the opportunity to meet Dr. Sally Thorne, who presented the interpretive description methodology. I sincerely appreciate her fruitful advices and comments, which inspired me to acquire the appropriate methodology needed for this qualitative project.

I would also like to acknowledge the Network for Oral and Bone Health Research (RSBO), which awarded me the scholarship of Fondation de l'Ordre des Dentistes du Québec (FODQ).

Furthermore, I would like to thank my extraordinary friends and colleagues at the Oral Health and Rehabilitation research unit of Université de Montréal who have provided me valuable insight, technical advices and feedback during my whole research process.

Finally, my heartfelt gratitude is extended to my be loved family, parents and sister for their understanding and ongoing support. Thank you for believing in me and helping me pursue my dreams.

CHAPTER I

LITERATURE REVIEW

1.1. INTRODUCTION

Providing optimal and accessible oral health care to rural and remote communities has for decades been a challenge in Canada and all around the world [1-4]. Access to health care is a complex issue and a multitude of factors at micro, meso and macro level play a role in the delivery of dental services [5,6]. Among these factors, the shortage of dental workforce in rural and remote areas presents a major barrier to availability of oral health care for these undeserved communities [3]. In fact, worldwide distribution of dental workforce is highly skewed toward urban areas, a situation which favours disparities in oral health care access [7-11]. Furthermore, the aging and retirement of the current rural and remote dental workforce and reluctance of new dental professionals to replace them will lead to the widening of these disparities [9]. Contributing factors include lack of oral health care policies and dental public health as well as issues related to the financing of oral health care programmes and innovative models of health care [12].

Addressing the shortage of rural health care workforce has been recognized by health policy makers as a high priority for the health care system [13]. The changes toward an effective health system necessitate identifying barriers and facilitators, sharing knowledge, delivering information and creating strategies to improve dental workforce attraction and retention in rural and remote communities [14,15].

This master's research project has been primarily centred on exploration of the perspectives and attitudes of senior dental students towards rural dental practice as a means of informing educational strategies and taking action to improve rural oral health care disparities.

1.2 ORAL HEALTH DISPARITIES

1.2.1 Definition

The terms *health inequalities, health disparities and health inequity* represent ambiguous concepts and there is a little consensus about their exact meanings [16-19]. Health inequality is a generic descriptive term that refers to differences and disparities in the health of individuals. If these inequalities are unfair and unjust, they are then called health inequities [20]. Knowledge on the definition of these terms is important as it determines how they are measured and how they are implemented by policy makers, with practical consequences [18]. The lack of standard for definition and measurement will limit comparisons of health disparities and their determinants between and within countries and could misdirect implementation strategies [21].

Several definitions have been used to define health inequalities, health disparities and health inequity [16,21,22]. A common trend in the most accepted definitions is that not all differences in health are considered as health disparities. Rather, differences in health status, which systematically and negatively impact disadvantaged populations, are termed as health inequalities or health disparities [17,21]. In this master's project the terms health inequality and health disparity are used interchangeably.

In August of 1980, health disparity was addressed by "Working Group on Inequalities in Health" and the United Kingdom Department of Health and Social Security [18,23]. In 1984, Aday asserted that health care equity required access and allocation of resources based on health needs [17]. Mooney also noted that health equity required equal treatments for equal needs [24].

In the early 1990s, Margaret Whitehead in United Kingdom proposed the most concise and intuitive definition of health inequity [21]. Whitehead referred to health inequities as differences in health that "are not only unnecessary and avoidable but, in addition, are considered unfair and unjust". She wrote: "Equity in health implies that ideally everyone should have a fair opportunity to attain their full health potential and, more pragmatically, that no one should be disadvantaged from achieving this potential, if it can be avoided." Moreover, she defined equity in health care "as equal access to and equal utilization for equal need, equal quality of care for all" [16].

In 1995, public health researchers at the World Health Organization (WHO) recognized the need for a more precise definition of disparity in health and articulated a different approach to measuring health disparities. The new approach measured the magnitude of health differences among ungrouped populations (all individual in a society, without dividing them into social groups). However, this method was discontinued with the new leadership of WHO in 2003 [25].

In January 2000, the Department of Health and Human Services (DHHS) in the United States launched the Healthy People 2010 project, which defined health disparities as "differences that occur by gender, race or ethnicity, education or income, disability, geographical location or sexual orientation" [22,26]. Carter-Pokras and Baquet, in 2002,

recognized 11 definitions of health disparities in the United States and discussed some policy implications of these definitions [23]. The National Institute of Health (NIH) in 2005 referred to health disparities as "differences in the incidence, prevalence, mortality and burden of diseases and other adverse health conditions that exist among specific population groups in United States" [19].

The definition proposed by Braveman in 2006 completed previous definitions on health disparities. Recognizing the need for a clear definition, she declared: "A health disparity is a particular type of potentially avoidable difference in health, in which a disadvantaged social groups (such as the poor, racial/ethnic minorities, women, or other who have experienced social discrimination in the past) systematically experience worse health or greater health risk than the most advantaged social groups" [16,19].

Overall the term health disparity in the United States has more focused on racial and cultural differences [22]. In the international literature, however, socioeconomic status (SES), gender disparities, disparities among populations with special needs and disparities by sexual orientation have been pointed out [17,23]. In all of these definitions "health" refers to all aspects of general well-being including the physical health, mental health and quality of life.

While oral health is an integral component of overall well-being, oral health disparities have been often neglected in health disparity definitions [27]. The National Institute of Dental and Craniofacial Research (NIDCR), a branch of the National Institutes of Health (NIH), recognized oral health conditions among the most common health problems and defined oral health disparities as "a disproportionate burden and risk of poor dental health

in a particular populations such as low-income, racial/ethnic minority, disadvantaged, disabled, and institutionalized individuals" [28].

Sheiham and Watt (2000) noted that differences in gender, age, race/ethnicity, income and education level, geographic location and insurance coverage were associated with oral health disparities [29]. During the last decade, global public health policies have put considerable effort into addressing health disparities and the influences of health determinants in shaping people's health.

1.2.2 History and determinants of health disparity

Health determinants are defined as: "the range of personal, social, economic and environmental factors that influences health status" [30]. In Canada, the concept of *health determinant* was based on the work of Thomas McKeown in the 1970s [31]. His work led to two movements and influenced the direction of research on population health.

The first movement was initiated by Hubert Laframboise and served the development of the *health field* concept and the Lalonde report by the Canadian National Department of Health and Welfare in 1974 [32]. The Lalonde report identified four major determinants of health: human biology, environment, lifestyle and health care services [31,32].

The second movement influenced by McKeown was articulated by Fraser Mustard and the Canadian Institute of Advanced Research (CIAR), producing evidence on disparities in health [31]. Mustard and the CIAR recognized the stronger impact of social and economic factors on population health, when compared to individual characteristics, and put forward the concept of health inequalities [31].

In January 1997, the Federal, Provincial and Territorial Advisory Committee on Population Health in Canada extended the number of health determinants from the Lalonde report from four to twelve [31]. These include income and social status, social support networks, education, employment and working conditions, social environments, physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, gender, culture and health services [23]. The causal pathways of health disparities are complex [33] and are mostly related to the social determinants of health [34].

1.2.3 Social determinants of oral health disparities

The concept of social determinants was introduced as a major driver of population health in the late 1970s and early 1980s [35,36]. Canada has extensively contributed to the concept of social determinants of health and has been acknowledged as a "health promotion powerhouse" in the eyes of the international public health organizations [37]. Canada's Lalonde report was the first worldwide report on the importance of social determinants in developing public health policies [30,32,35].

Several conceptual models, such as the ones proposed by Brunner and Marmot [38], Dahlgren and Whitehead [39], Nijman [40] and Evans and Stoddart [41] have been developed to better explain the social determinants of health and to serve as a framework to empower health care policies [35]. These models, although different in style and complexity, represent health as the outcome of the interactions between social and biological risk factors of disease [35].

Among all the models of social determinants of health, the one introduced at York University Conference held in Toronto in 2002 has been of great importance in the recognition of the effects of social determinants on the health of the Canadian population[37]. This model nominates aboriginal status, gender, disability, housing, early life, income and income distribution, education, race, employment and working conditions, social exclusion, food insecurity, social safety net, health services unemployment and job security [37] as social determinants of health. In addition, it emphasizes that the effect of these determinants on individuals' health is stronger than the behavioural and life style determinants such as dietary habits, physical activity, tobacco and excessive alcohol consumption [37].

A wide body of epidemiological research acknowledges the association between the social determinants of health and health disparities [34,39]. However, as mentioned by Graham [35], it is important to distinguish between the social causes of health and the social determinants of health inequalities [35]. In fact, social determinants of health inequalities are the "causes of the causes" [35,42] and are categorized as macro-environmental factors. Figure 1.1 compares the social determinants of health and health inequalities [35].

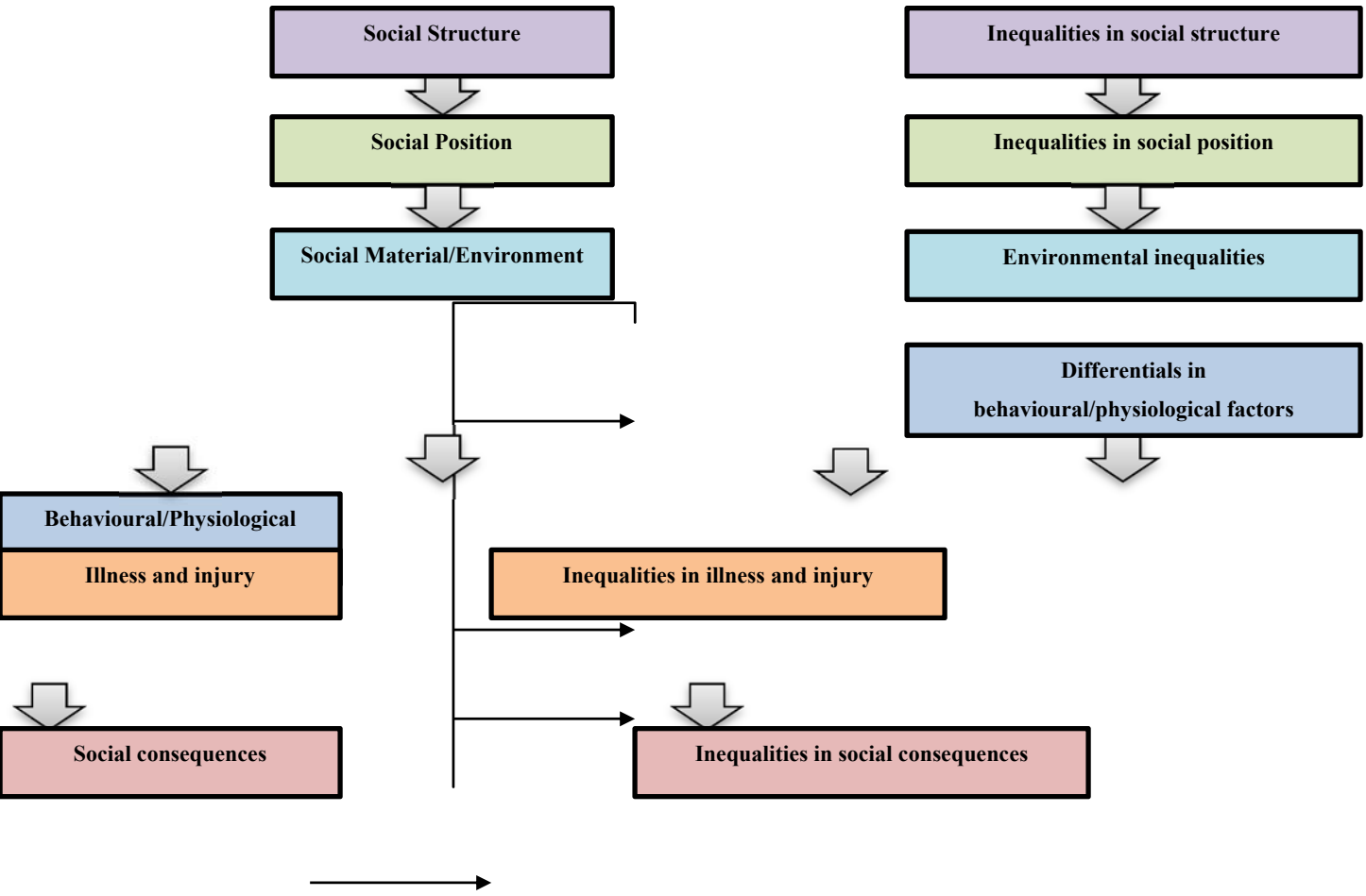

Figure 1.1: Social determinants of health (A) and health inequalities (B)

(Adapted from Graham 2004 [35] with permission (Appendix II))

There is a lack of theoretical frameworks to conceptualize the social processes of oral health disparities [43]. In 2012, Watt developed a framework to inform a range of actions in addressing the social determinants of oral health inequalities (Figure 1.2) [44]. The framework emphasizes the need to develop strategies that encompass both the structural and intermediary determinants of oral health disparities [44].

A comprehensive conceptual framework proposed by Patrick et al. (2006) [45] introduced a series of dynamic mechanisms through which institutional, political, community and social factors impact individual oral health [45]. These factors are configured according to their time sequence in affecting oral health disparities and include distal/macro, intermediate/community, immediate/interpersonal and proximal/individual factors [45]. This model can be used to explain how contextual factors such as geographical location impact the optimum oral health and use of oral health care services [45]. Geographic variations can reflect differences in need, service use and health outcome and continue to motivate policy decision making to improve the quality and distribution of health care resources [46].

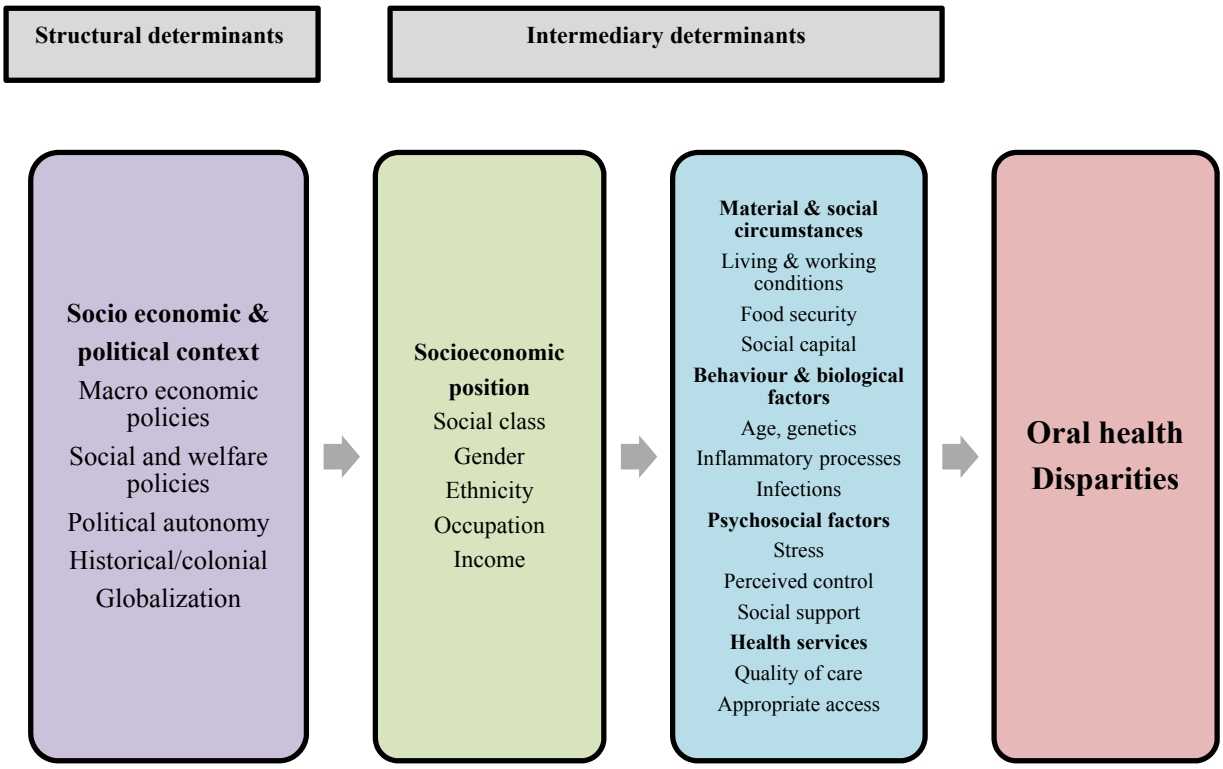

Figure 1.2: Social determinants of oral health disparities

(Adapted from Watt 2012 [47] with permission (Appendix III))

1.2.4 Geographical determinants of health and health care disparities

Three different pathways have been introduced to explain the geographical determinants of health [48]. These include compositional, contextual and collective factors or effects[20,48,49]. Compositional effects refer to the characteristics of individuals concentrated in particular geographic areas [20,49]. Contextual effects explain the extra-individual and socio-organizational contexts, which are related to the physical, ecological and social characteristics of the areas [20,48,50-52]. Collective effects are socio-cultural and historical characteristics, such as social norms, traditions, values and beliefs that influence population health [20,48,49].

It has been widely reported that rural environment contributes to health disparities [53]. According to the literature, Canadian rural populations show higher mortality rates, shorter life expectancies, and higher prevalence of proportions of unhealthy behaviours such as smoking and poor dietary habits [54,55]. While some of these outcomes are related to occupational hazards such as agriculture, forestry, fishing and mining in rural environments [54], some others are related to socioeconomic status, high unemployment levels and few prospects for economic growth [56].

There is a large body of evidence on the role of rurality in oral health disparity [53,57]. In general, oral health status and access to care of individuals living in rural and remote areas is shown to be poorer than is the case for those living in urban communities [58,59], and does not present a monotonic pattern [60].

Addressing oral health disparities across the rural–urban continuum requires exploring the nature of disparities and the barriers to health care which interact with the public or private societal efforts, to provide, organize and finance services that promote the oral health of rural communities.

1.2.5 Definition of rurality

The term *'rural'* is an elusive concept and has been defined according to the issue of interest [61]. In general, it refers to either a geographical characteristics or a socio-culture representation of the communities [62]. The initial definition of rurality focused on the sociological theories and the intrinsic social differences between rural and urban as two poles of a dichotomy [63]. However, the rural–urban dichotomous approach was soon rejected in favour of the rural–urban continuum model developed by Redfield in 1941 [63]. This conceptual framework indicated that simplistic dichotomies could not identify the distinctions between rural and urban communities in terms of physical, environmental and economic characteristics on one hand and differences in organization, social cohesion and dynamism on the other [64].

Each country has specific definition for a place as urban or rural, as developed for political, geographic, administrative and health research purposes [65]. There are currently several classifications used to represent rural Canada within two major geographic [66] and social categories [61].

Geographic definitions rely on land features or population statistics for defining rural communities [66], while social definitions consider socio-cultural aspects of rural population [61]. Using two different geographic and social definitions of rural can have a significant impact on the way one may view rural Canada [61].

Geographic definitions, originally categorized by Halfacree in the United Kingdom in 1993 [67], rely on distance, population density, commuting areas and land use statistics and the degree of remoteness [61,62,68].

In Canada, geographic definitions include:

- Statistic Canada's census of population: communities with 10,000 residents outside urban centres, not >1000 or 400 persons /sq.km [69].
- Rural and small town (RST) and metropolitan influenced zones (MIZ) or census agglomerated influenced zones: individuals in towns or municipalities outside the commuting zone of larger urban centres with 10,000 or more population [61,66].
- The Organization for Economic Co-operation and Development (OECD) definition: individuals in communities with less than 150 persons per square kilometer [59,62].
- Beale non-metropolitan regions: individuals living outside metropolitan regions with urban centres of 50,000 or more population [61].
- Rural postal codes: communities with a "0" as the second character in their postal codes [61]. However, in 1996 the use of "0" was discontinued in New Brunswick and most of Quebec [61].

The advantage of these classifications is that they allow for quantitative comparisons. However, their limitation is that they do not cover the socio-cultural aspects of rural communities [51]. In this regard, the recognition of common social and cultural selected variables is necessary to define the rurality and to ensure that these variables are indicative of rural or urban inclination. Social definitions of rurality imply the notion of the *'rural idyll'*, which is what individuals perceive when they think of rural areas [70]. Researchers in Nova Scotia implemented data analysis techniques to determine how different definitions of rural associate to individuals' perceptions of rurality [70]. Dukeshire indicated the importance of the individual's self-perceptions of rurality and described that members of communities may perceive themselves quite differently from what traditional definitions explain [70]. Pitblado suggested the *'coffee index of rurality'* as a social definition of Canada rural and remote communities [66] :

"You know that you are rural if there is no Starbucks or Second Cup…you know that you are remote if there is no Tim Hortons." *Dr. Roger Pitblado (2005)*

However, some authors believe that there exists no successful social definition for rural areas [66].

Du Plessis et al. (2001) [61] strongly recommended the use of an appropriate definition based on the research question and the goal of the research, and indicated that different definitions might generate a different and variable number for rural population [61].

Halfacree proposed using a combination of the geographic and social definitions due to the failure of using each separately [67].

For the purpose of this qualitative master's project, we used the notion of the *'rural idyll'*, to capture what study participants perceive when they think of rural areas. Despite the clear distinctions between *'rural'* and *'remote'* communities, the term *'rural'* is used to refer to all types of rural and remote populations.

1.2.6 Rural Canada: a brief portrait

Canada is the second largest country in the world after Russia by total area, with a small and widely scattered population [54,71]. Depending on how *'rural'* is defined, about a quarter to a third of the Canadian population (22% to 38%) and over 95% of the land mass of Canada is considered as rural [61,72]. The lowest percentage of rural residents live in Ontario and British Columbia while the highest percentage is in the territories and the Atlantic provinces [73]. In the province of Quebec, approximately one in five persons (21%) currently lives in rural communities [54]. The rural Canadians are mainly composed of individuals below age 15 (18.4%) and those 65 years old and over (14%) [54].

Rural Canada fuels the Canadian economy and about 95% of Canada's natural resources are in rural, remote and northern areas [72]. Up to 50% of Canada's exports are extracted from the natural resources, energy, agricultural products and raw materials from rural areas [72]. Fourteen percent of rural Canadians (compared to 18% urban Canadians) had average incomes below Statistics Canada's low-income cut-off [74]. The employment conditions, incomes and education levels decrease the farther one goes from the urban centers [54].

Rural residents have poorer health in terms of general and specific health indicators when compared to urban residents [54]. They experience lower life expectancy at birth, higher infant mortality rates, higher accident, injury and mortality rates, higher levels of smoking, obesity, disability, respiratory and hypertensive diseases, suicide and stomach cancer, lower physical activity and poor dietary habits, compared to their urban counterparts [54,75]. Despite the fact that a higher percentage of rural individuals have their own family physicians, they less frequently visit specialists and general practitioners than urban dwellers [54].

1.3 RURAL ORAL HEALTH DISPARITY

1.3.1 Rural oral health and dental care

The World Health Organization emphasized in its 2003 global overview the importance of oral health among underserved populations in both developed and developing countries [76]. According to the Rural Healthy People 2020 project in the United States, oral health ranks as the fifth most important priority amongst 28 public health priorities after the access to quality health services, heart disease, diabetes and mental health for rural and remote communities [77].

Despite the fact that in many industrial countries, oral health and dental care have been improved substantially over the past decades [78], they still remain suboptimal for people who live in rural and remote zones [77,79,80]. In general, individuals living in rural communities experience higher rates of dental caries, periodontal diseases and tooth loss as well as oral and pharyngeal cancer [77,79,80].

In the United States in 2006, the rural population had higher rate of tooth loss due to decay or periodontal disease, comparing to urban dwellers [81]. Moreover, endentulism was more prevalent in men residing in rural areas (18.7%) compared to those living in urban settings (15.3%) [82]. Data from elderly populations in 2003 have demonstrated that the prevalence of edentulism is 10% higher for rural and remote Australians, compared to those residing in urban areas [83].

A cross-sectional survey on pre-school children in 2005 in a rural community of Western Australia reported that 72% of rural children have experienced dental caries [84]. In rural Alaska in 2011, 57% to 91% of rural children had one or more decayed, missing, or filled permanent tooth, and 45% to 68% had one or more decayed permanent tooth [85].

In fact, rural residents are less likely to have an annual dental check-up and dental insurance coverage than do their urban counterparts [11,77,79,80,86-88]. In the United States, 72% of rural residents reported not having any dental insurance coverage [89]. According to Ahn et al. (2006) about one quarter (24.1%) of rural Americans suffered from oral health problems related to delayed dental care [90].

To the best of our knowledge, there exists minimal evidence on the oral health status of rural Canadians [91]. According to some studies in Canada, rural residents were more likely to have oral diseases, tend to forgo routine dental check-ups and rarely visit the dentist[54,92-94]. In 2001, the Canadian Community Health Measure Survey indicated that many rural residents did not have dental insurance and pay high out-of-pocket expenses for dental care [54,95]. Moreover, rural residents were reluctant to use oral health care services and the motivation toward dental care utilization decreased the farther one goes from metropolitan areas [54,91]. Data from three dental outreach clinics in rural communities in 2007 revealed a high level of treatment need and poor oral health-related quality of life among rural Canadians [96]. In 2012, residents of rural communities in Alberta were more likely to forgo annual dental visits, compared to the residents of the metropolitan cities [94].

A recent qualitative study on rural Quebecers highlighted several barriers to oral health, including limited availability and accessibility of oral health care providers, which was more problematic among people with specific needs and disabilities [91]. This situation is even worse in some developing countries where preventive oral health care services are not provided for the entire population [97].

Several factors at the individual level (e.g. health behaviours), environmental level (e.g. social and cultural norms) and system level (e.g. dental workforce) play a role in rural oral health disparities [79]. Among them, some have the potential to be modified by health care policies and innovative strategies such as better dental workforce distribution [98].

1.3.2 Access to care and rural dental workforce disparity

As defined by Penchansky and Thomas (1981) [99], access to care is a multi-dimensional construct that encompasses the accessibility, accommodation, affordability, acceptability and availability of health care [99]. This is an important issue in public health since it may affect the quality of individuals' oral health, with a significant impact on the overall health and the quality of life [6,100].

According to Emami et al. (2014) who conducted a qualitative study in rural Quebec communities, accessibility of oral health care, particularly for the elderly and individuals with special needs, was affected by transportation and accommodation issues that were perceived as primary barriers to dental care access [91]. The other barrier was affordability related to insurance coverage and socioeconomic factors, particularly for younger people with low income [91].

Furthermore, some of the rural residents indicated the problem of acceptability due to the dentists' unwillingness to accept them as new patients or because of their socioeconomic status [91].

The other important aspect of access to care is the availability of dental service providers to serve rural populations according to their needs [91,101]. There is mounting evidence on the urban–rural skew of dental workforce to the detriment of rural populations [80,82,102,103]. In addition, geographic maldistribution of dental caregivers has negative impact on the quality of delivered dental care due to decreased access in rural communities [91,104].

As a matter of fact, in Canada, 94% of dental health care is delivered by the private dental sector [105,106] and only a small percentage (6%) of dental care is delivered through publicly financed dental care programmes in the provinces or territories [106]. However, the cost of establishing and maintaining a private dental practice needs sufficient market strength to support this kind of practice [6,107,108]. This could explain why most oral health professionals prefer to work in metropolitan areas [109].

Recent Canadian data indicated the growing disparities between rural and urban areas in number of dental providers per capita [7,10,110]. In 2009, the dentists to population ratio in Canada was 57.6 dentists per 100,000 individuals [111]. However, this ratio in rural regions was 3.5 times lower compared to urban communities [111] and only 11% of the nation's dentists practice in rural settings [112]. Furthermore, in 2006 the number of dental clinics per 1,000 population was lower in rural Canada than in urban areas [54]. In Quebec, in 2010, approximately 90.3% of dentists were located in metropolitan zones [7].

These disparities are likely to increase since a large proportion of the rural dental practitioners are nearing retirement age, while in turn, there is a reluctance among younger dental care providers toward rural orientation [113]. Attracting and retaining of dental professionals has been recognized by health political leaders as a high priority for rural and remote populations [2,4,13,116,115]. In fact, recruitment and retention of rural dental workforce is a complex interaction of different factors [8].

1.3.3 Recruitment and retention of rural dental workforce

The result of the literature review of this master project (based on the methodological framework of York University in 2005 [116]) indicated that many factors influence the decision-making of dental professionals in regard to the location of their practice and their retention in rural areas.

1.3.3.1 Individual factors

The various individual factors including demographic characteristics, family issues and rural upbringing and background need to be recognized when enhancing recruitment and retention of health care workforce in rural dental practice [8,117,118]. Literature suggests that older male dentists are more likely to pursue a rural career and may stay longer in rural areas [3,119]. Furthermore, family does tie in with dental professionals' career decisions, particularly among females [8,120]. According to Kruger et al. (2005), fewer female dentists move and stay in rural practice, because of the lack of partner's employment [8].

Therefore, work opportunities for dental professionals' spouse/partners, the need for family proximity and support and children's education must be considered in attracting and retaining of dental workforce in rural dental practice [2,4,120]. This is supported by the community experience in Queensland, Australia (2004), which has been successful in improving the retention of health care professionals through ensuring their integration with their family members in the rural community [121].

Furthermore, according to the literature, rural upbringing and background are among the most important factors that influence the recruitment and retention of dental professionals in rural dental practice [104,122-124]. Rural background may increase the ability of acculturation with rural societies [125] and enable the dental workforce to function effectively within the rural and remote practice [122,126,127].

According to the systematic review by Laven et al. (2003), the likelihood of working in rural practice is approximately twice greater among health care providers with a rural background [128]. Cutchin (1997) [129] highlighted the importance of rural background that reinforces the sense of place among rural health care providers [129]. McFarland et al. (2012) found that rural-born dental professionals were approximately six times more likely to choose rural practice and may stay there for longer periods of time, comparing to the urban-born workforce [130].

1.3.3.2 Rural lifestyle and environmental factors

According to a survey by Kruger et al. (2005), rural lifestyle was the key recruitment influence that was mentioned by 82% of rural dental professionals [8]. Some specific features of rural life and rural community such as social cohesion and closer interpersonal bonding, positive social interactions and multiple outdoor activities have been suggested as factors which attract health care providers to move to and stay in rural communities [125,131-133].

Reimer (2003) defined social cohesion as *"the extent to which people respond collectively to achieve their valued outcomes and to deal with the economic, social, political, or environmental stresses (positive or negative) that affect them"* [134]. Social cohesion comes in two basic concepts: bonding and bridging between members of a society [135], developed through relationships and social interactions [134]. Research by Joyce et al. (2003) revealed the critical role of social support and interactions in health care professionals' retention in rural practice [136].

In addition, dental professionals set high value on environmental factors [4,137]. Unsuitable climate, slower pace of rural life, separation from metropolitan societies and decreased social networks, and lack of infrastructure, facilities and entertainments are major barriers toward rural practice [8,132,133,138]. Cutchin et al. (1994) reported that the quality of life, including recreational opportunities, has a strong influence on rural retention for health care workforce [139].

1.3.3.3 Rural dental education and dental practice

Consistent evidence has confirmed the positive effects of rural training and education such as rural rotations, rural placement and outreach programmes as well as vocational training on the dental professionals' attitude and motivation in choosing rural practice [100,110]. In fact, the experience received during rural trainings could influence future career choices [140], and prior experience of rural environment can facilitate community assimilation [104].

Research has shown that rural dental professionals have more workload stress than their urban counterparts due to the lack of professional support and the shortage of allied oral health workforce in rural areas, particularly dental specialists [3,141]. In addition, professional isolation from educational institutes and peers and lack of continuing education opportunities were identified as barriers toward rural practice, particularly among newly graduated professionals [8,104,118]. According to Silva et al. (2006), professional isolation and lack of continuing education and professional development are important determinants of health care rural retention [4].

1.3.3.4 Job satisfaction and financial issues

Job satisfaction has been the subject of a number of studies [3,142] and has been linked with several variables such as financial incentives, work content and work environment[3,119,141]. Although it appears to be the key element in retention of rural dental practitioners [142], it has been reported that job satisfaction is significantly lower among dentists in rural and remote zones [141]. It impacts not only one's job productivity and job progression, but also

creates overall life satisfaction [4,119,143], which increases the retention rate of health care providers in rural settlements [3].

A number of studies have found that the overall job satisfaction of rural dental professionals is attributed to income, autonomy and work–life balance and decreased environmental pressures due to better dentist–patient relationships [3,119,141].

Financial incentives are among the most effective strategies to promote recruitment and retention of rural health care providers in rural areas [3,4,8,104,144]. Examples of such incentives include scholarships, loan repayments and tax incentives [104]. In the United state, 38% of rural workforce who benefited from three loan repayment programmes in Colorado between the years of 1992 and 2007 reported this financial support as an important factor in their retention [144].

The indirect financial incentives such as lower start-up expenses in rural areas and existing market competition in urban zones have also been linked with dental workforce choice of rural practice [3,145,147]. However, these decision-making patterns were more transient rather than permanent, leading to unstable rural dental workforce [2,3]. Achieving financial stability and workload are also associated with the choice of rural dental practice [2,104].

Table 1 briefly presents the results of the literature review.

Table 1. Factors associated with recruitment and retention of dental workforce in rural dental practice

	Motivators	Barriers
Individual factors	**Demographic characteristics:** - ↑Age - Being male **Rural upbringing and background**	**Family issues:** - Lack of work opportunities for dental professional's spouse/partner - Proximity to family members - Children's education
Rural lifestyle and environmental factors	-↑Social cohesion and closer interpersonal bonding - Positive social interactions - ↑Outdoor activities	- Climate - Slower pace of life - Separation from metropolitan societies and social networks - ↓Infrastructure, facilities and entertainments
Rural dental education and dental practice	**Under/post graduate education:** - Rural rotations - Rural outreach programmes - Vocational training **Rural work experience**	**Availability of allied workforce:** -↓Dental specialists -↓Dental hygienist and dental assistants -↓Dental technicians **Professional isolation:** - Isolation from peers -↓Continuing education opportunities
Job satisfaction and financial issues	**Financial incentives:** -Scholarships -Loan repayments -Tax incentives -↑Remuneration -↓Start-up practice expense -↓Market competition **Practice-related issues:** - ↑Work–life balance - ↑Flexibility and autonomy - ↓Environmental stress	-↓Financial stability -↑Work load and number of patients

CHAPTER II

METHODOLOGY

2.1 STUDY OBJECTIVES AND RESEARCH QUESTION

Minimal research exists on the identification of factors influencing decision-making, recruitment and retention of future generation of dentists in rural and remote Canada. Furthermore, to our knowledge, no studies have sought to understand how oral health care practitioners and allied workforce perceive working in rural and remote areas.

Consequently, the main objective of this master's research project was to explore and to generate hypotheses on the knowledge and perspectives of Quebec dental students toward rural dental practice. The secondary objective was to identify strategies and positive and negative factors that could influence the decision-making and recruitment of future Quebec dentists in regard to rural dental practice.

In order to achieve the study objectives, a qualitative study was designed to answer the following research question: How do Quebec dental students perceive rural dental practice?

2.2 RESEARCH METHODOLOGY AND METHODS

2.2.1 Research paradigm and study design

Because this study was an exploratory and hypothesis-generating study, a qualitative approach and interpretive description methodology were selected to collect textual descriptions of dental students' perspectives in regard to rural dental practice. The use of qualitative research facilitated in-depth understanding of their perceptions, their knowledge and their attitudes toward rural areas as a future location of their practice [147]. Interpretive description, which was introduced by Sally Thorne in 1996, is a non-categorical scaffold within the constructivist paradigm and naturalistic inquiry [148-151].

The constructivist paradigm identifies the importance of subjective human meaning creation, but doesn't reject some aspects of objectivity [152,153]. Constructivism assumes that reality is multiple and constructed. In addition, the researchers are essential in all stages of research process. Findings can be constructed through researchers' and participants' negotiation dialogues [151].

Although interpretive description was derived within nursing epistemology, it has been adopted in many other practice-linked health care disciplines [150]. Interpretive description borrows the best of methods from traditional methodologies such as phenomenology, grounded theory and ethnography [149]. Moreover, it uses theory as a tool, instead of using it as an entire goal. In fact, this type of qualitative inquiry acknowledges the shared realities and contextual nature of human experience at the same time and serves as a bridge between theory and practice [149].

In brief, use of this methodology allowed us:

1. To understand *"what we do or don't know"* from existing evidence
2. To answer *"so what?"* [150] , which means to find a practical solution for the problem

2.2.1.1 Conceptual framework

The conceptual model of Schoo et al. (2005) [151] for the allied workforce enhancement project of the Greater Green Triangle University was used to provide guidelines and interpret the results of this master's research project. This framework is discussed in detail in Chapter IV.

2.2.1.2 Sampling strategies and study participants

In order to identify students with different backgrounds regarding rural practice experience, place of residency training and university curriculum, the purposive maximum variation and snowball sampling techniques were used. Purposive maximum variation strategy is implemented when the researcher wants to understand how a phenomenon is seen and understood among different people, from different backgrounds, with different expertise and in different settings [148]. Moreover, the recruited participants were invited to refer to us other students who could potentially participate in the study. This sampling strategy, which is termed as snowball, assisted us to obtain more eligible participants for this study [155].

Study participants were recruited from Université de Montréal and McGill University 4th year undergraduate students and postgraduate residents. The students were invited to participate in the study through emails from the communication agent of Université de Montréal (M.L Houde Simard), as well as verbal invitations through student networks.

2.2.1.3 Data collection: individual semi-structured interviews

Qualitative data were collected through interviews between April and July 2013. Interviewing is a familiar technique to derive qualitative data from subjective knowledge. It provides the opportunity to explore the truth through dialogue between researchers and participants. By engaging *informants* into discussions (with open-end questions), themes can be constructed and emerge in findings.

Semi-structured, face-to-face and in-depth interviews were conducted by a postgraduate student (N.SH) at a location convenient for the participants. The student was trained by a researcher supervisor (E.E), which accompanied her for few interviews to ensure the high quality of in-depth interviews.

Interviews lasted 30-90 minutes each and were audiotape recorded. A digital recording is an essential method to capture the raw data during the interviews. However, it does not exclude the need for taking field notes. Thus, notes were taken during the interviews, in order to facilitate the later data analysis [148].

A bilingual (English and French) interview guide (Appendix VI) with open-ended questions was used, which was designed based on the theoretical knowledge from the literature review. Open-ended questions were formulated with the aim of allowing the respondents to express their ideas and viewpoints in their own words. The guide was

organized in four sections, started from general to more personal questions. Throughout the interview, a 'probing technique' was used in order to follow up on a vague answer and obtain in-depth information on a specific discussion topic

At the beginning of each interview, the objectives of the study were described to the participant. All participants were then invited to sign the consent form (Appendix V). Throughout, the interviewer used the probing technique (follow-up questions), allowing the participants to describe more details about their answers to questions [148].

Since the objective of this study was to gain an insight into dental students' perception and knowledge, the first section of the interview was assigned for the evaluation of their awareness in regard to rural oral health care disparities. The second section was allocated to the recruitment and retention of dental workforce and associated factors. Then, the interviewees were asked about their future career intentions with more personal questions. Ultimately, they were invited to share their expectations and recommendations for engaging and retaining dental students in rural dental practice. However, the order of the questions was flexible depending on the answers of each participant.

Finally, each participant was asked to respond to the confidential socio-demographic questions. During the interviews, trust and rapport were established between interviewer and the respondents, which is essential for the quality of sharing information.

2.2.1.4 Data analysis process

Qualitative data analysis refers to a procedure in which common themes are identified and the raw data are transformed to the research findings [156]. In order to develop a qualitative account of dental students' perspectives, reflective exploration and careful

analysis is required. In interpretive description the researcher has some freedom in the analysis process [150].

The data collection and data analysis were performed concurrently [149]. The analysis of this project included transcription, debriefing, codification, data display, thematic analysis and interpretation. Interviews were transcribed word by word (verbatim) from the recordings and the reflection on data was started after the first interview. Moreover, the field notes included information about participants or some details, which were not captured by the recording. We anticipated the data saturation point by verbatim transcription after each interview and additional data collection sources (notes). Saturation was reached after the 12th interview. However, the data collection process was continued in order to ensure the saturation level.

Each transcript was read carefully with constant debriefing and reflection on the meanings, adopting the results of the literature review as a platform. The raw data were coded manually. At this stage, the preliminary themes were extracted. To this end, each transcript was summarized and sorted in the form of tables under the preliminary emerged theme headings to identify the commonalities and differences among participants [150]. Ultimately, the preliminary themes and interpretations were reviewed by a second person (thesis supervisor) and major themes were elaborated.

2.3 ETHICAL CONSIDERATION

Ethical approval for this study was obtained from Institutional Review Boards of the Université de Montréal (Appendix I) and informed written consent (Appendix V) was

obtained from each participant prior to the interview. In addition, the confidentiality of documents and anonymity of participants were assured throughout the study.

2.4 CANDIDATE'S ROLE IN THE PROJECT

During this master's project, the candidate fulfilled several roles. First of all, she conducted a literature review on the subject. In addition, she had the responsibility to recruit study participants and collect and analyze data. She also participated in the knowledge translation activities of this research project.

2.5 KNOWLEDGE TRANSLATION

The candidate presented the results of this master's research project during several national and international conferences and scientific workshops:

Oral presentations

1. ***N. Sharifian**, IJ. El-murr, E. Emami. Rural dental workforce shortage: Why? International Dental Student Convention and Research Day of University of Montreal, Montréal, Québec, 2013.
2. ***N. Sharifian**, A. Charbonneau, G. Lavigne, E. Emami. Rural dental practice: Quebec dental students' perspectives. Annual Canadian Rural Health Research Society (CRHRS) and Annual IDC Northern Research Days, Prince George, British Columbia, 2013.

3. ***N. Sharifian,** C. Bedos, J. Wotton, A. Charbonneau, E. Emami. Dental students' perspectives on rural dental practice: A qualitative study. Journal Club at the Université de Montréal, Montréal, Québec, 2014.

Poster presentations

1. ***N. Sharifian**, IJ. El-murr, C.Ghosn, E. Emami. Rural dental practice: A scoping review. International Dental Student Convention and Research day of University of Montreal, Montréal, Québec, 2013.
2. ***N. Sharifian**, IJ. El-murr, C. Ghosn, E. Emami. Rural dental practice: A scoping review. Canadian Dental Research Student Workshop, London, Ontario, 2013.
3. ***N. Sharifian**, IJ. El-murr, C. Ghosn, E. Emami. Rural dental practice: A scoping review. Journée Dentaires Internationales du Québec, Montréal, Quebec, 2013.
4. ***N. Sharifian**, IJ. El-murr, C. Ghosn, E. Emami. Rural dental practice: A scoping review. Annual Canadian Rural Health Research Society (CRHRS) and Annual IDC Northern Research Days, Prince George, British Columbia, 2013.
5. ***N. Sharifian**, C. Bedos, A. Charbonneau, G. Lavigne, E. Emami. Rural dental practice: Quebec dental students' perspectives. The Network for Oral and Bone Health Research (RSBO) Scientific Day, Montréal, Québec, 2014.
6. ***N. Sharifian**, IJ. El-murr, C. Ghosn, E. Emami. Rural dental practice: A scoping review. The Network for Oral and Bone Health Research (RSBO) Scientific Day, Montréal, Québec, 2014.

7. ***N. Sharifian,** C. Bedos, A. Charbonneau, G. Lavigne, E. Emami. Rural dental practice: Quebec dental students' perspectives. Scientific Day at University of Montreal, Montréal, Québec, 2014.
8. **E. Emami,** *N. Sharifian, A. Charbonneau, G. Lavigne. Exploring effective strategies to promote rural dental practice. International Association for Dental Research (IADR), Cape Town, South Africa, 2014.
9. ***N. Sharifian**, C. Bedos, A. Charbonneau, G. Lavigne, E. Emami. Rural dental practice: Quebec dental students' perspectives. Journée Dentaires Internationales du Québec, Montréal, Québec, 2014.
10. ***N. Sharifian**, C. Bedos, A. Charbonneau, G. Lavigne, E. Emami. Rural dental practice: Quebec dental students' perspectives. Canadian Dental Research Student Workshop, Edmonton, Alberta, 2014.

Media-based knowledge translation

N. Sharifian. How do Canadian dental students perceive setting up a practice in rural areas? Interview with Dr. John O'keefe, the Director of Knowledge Networks of Canadian Dental Association, published in the Oasis Discussions website of Canadian Dental Association.

The link to this interview: http://www.oasisdiscussions.ca/2014/12/09/rap/

Finally, the candidate has submitted the article included in chapter III of this master's thesis for publication.

CHAPTER III

RESULTS

3.1 MANUSCRIPT

Dental students' perspectives on rural dental practice: a qualitative study

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Abstract

INTRODUCTION: This study aimed to explore the knowledge and perspectives of Quebec's future dentists towards rural dental practice and their future career intentions.

METHODS: We conducted a qualitative study in Quebec at two major dental faculties, using interpretive description methodology. Purposeful maximum variation sampling and snowball techniques were used to recruit fourth-year dental students and specialty residents as study participants. Audio-recorded, 60–90 minute, face-to-face, semi-structured interviews were conducted. Qualitative data were analyzed using a thematic approach including interview debriefing, transcript coding, data display, and interpretation.

RESULTS: Seventeen interviews (10 F and 7 M, age: 22–39) were carried out. Five major themes emerged from the interviews: awareness on rural oral health care access, image of rurality, image of rural dental practice, perceived barriers and enablers in regard to rural dental practice.

Students expressed that undergraduate dental education, financial rewards, professionalism, professional support, and social media can positively affect their perspective on rural dental practice.

CONCLUSIONS: The findings of this study indicate that there is a need to implement and support strategies that are known to increase the knowledge and motivation of dental students for choosing rural practice. Dental educators have an essential role in professional character formation and apprenticeship towards these goals.

Keywords: Rural, Dental Practice, Dental Students, Qualitative Research, Interpretive Description

BACKGROUND

The chronic shortage of dentists and allied oral health care professionals in rural, remote, and Aboriginal communities is a persistent challenge for health care systems as it may affect the quality of provided care to these communities [1-7]. It is widely reported and recognized that rural and remote residents have lower access to dental care services because of geographic isolation [8]. Since inadequate access to oral health care can negatively affect oral health status, several countries have implemented sustainable intervention programs and policies to service these disadvantaged populations [9-15]. Some of these programs have focused on the integration of research, service, and education and have been associated with effective workforce recruitment and retention [14,16,17]. Lessons learned from these experiences suggest that changes toward an effective health system necessitate identifying barriers and facilitators, sharing knowledge, delivering information, and creating strategies to improve the attraction and retention of healthcare professionals in rural and remote communities [3,17-19].

A review of the literature indicates that several factors impede the recruitment and retention of oral health care providers in rural and remote areas [20]. These include socio-demographic characteristics, environmental barriers, income, and lack of professional and familial support [2,3,16,20-23]. Although previous research in this field has provided valuable information on this concept, to our knowledge relatively few studies have sought to understand how oral health care practitioners and allied workforce perceive working in rural and remote areas [3]. The views of dental students are pivotal to understand challenges that the future generation may encounter during their decision-making in regard to the location of their dental practice[11,24].

Therefore, the purpose of this qualitative exploration was to understand the perspectives and knowledge of Quebec final-year dental students and specialty residents, in regard to rural and remote dental practice.

METHODS

This study used a qualitative approach and interpretive description methodology to gain deep insight into perceptions of dental students toward rural dental practice [25,26].

In 1997, Sally Thorne introduced the "interpretive description" approach as an alternative to traditional qualitative methodology. This applied qualitative approach places emphasis on the generation of knowledge that is grounded theoretically in practice and will lead to informed action. This method, without sacrificing the reliability and truthfulness of qualitative research, identifies themes and patterns by broadening the interpretive lens within a practice-linked health care discipline [26,27].

Study setting, sampling, and participants

This study was conducted in Montreal, Canada, within two major dental faculties.

Study participants were recruited from Université de Montréal and McGill University 4th year undergraduate students and postgraduate residents via direct communication and emails. To select the study participants, purposive or selective sampling with maximum variation was used [25,29]. Contrary to random sampling, the goal of purposive sampling is to select a sample that enable the qualitative researcher to answer the research questions without any intent to make generalization to the whole population[25]. The heterogeneous sampling (maximum variation) allowed capturing a wide range of perspectives of dental students with different backgrounds regarding rural practice experience, place of residency training, and university curriculum. Moreover, the recruited participants were

invited to refer to us other students who could potentially participate in the study (snowball technique) [29].

The recruitment continued even after saturation was reached, in order to ensure that with bringing in a new participant no additional findings would arise from the interviews [30]. Ethical approval for this study was obtained from Institutional Review Boards of the Université de Montréal. Informed written consent was obtained from each student, specifying that his/her participation was completely voluntary and would not in any way affect their academic standing. Ethical guidelines were respected to ensure the confidentiality and anonymity of the students.

Data collection

Semi-structured, face-to-face, and in-depth interviews were conducted between April and July 2013 at locations convenient for the participants [31]. A postgraduate student (N.SH) trained in qualitative research and interviewing technique was responsible for conducting the interview. Neither the lead researcher (E.E) nor any other person from academia was involved in the interview process, to avoid potential bias caused by issues of trust. Interviews were audio-recorded, and lasted between 60 to 90 minutes each.

A bilingual interview guide with open-ended questions was used, which was designed based on the theoretical knowledge gained from the literature review [26].

Each interview started with general questions regarding the level of knowledge about rural dental practice, followed by more specific questions about the participant's perspectives, attitudes, and expectations. Further questions was based on what the interviewee said and consisted mostly of clarification and probing for details [25]. At the end of each interview, students were invited to answer questions regarding their age,

marital status, and perceived socio-economic status.

Data analysis

Qualitative data analysis refers to a procedure in which common themes are identified and the raw data are transformed to the research findings [32,33]. The data analyses included transcription, debriefing, codification, data display, thematic analysis and interpretation. Data collection and analysis were performed concurrently [33].

The primarily data analysis was started after the first interview to confirm the relevance of central questions, and to shape further data gathering [25]. The data saturation was reached after the 12th interview. However, he data collection process was continued in order to ensure the saturation level (*15th interview)* [25].

Interviews were transcribed word by word (verbatim) from the recordings. Each transcript was read carefully with constant debriefing and reflection on the meanings, adopting the results of the literature review as a platform. The raw data were coded manually followed by software-assisted data analysis (ATLAS-ti version 7 produced by ATLAS-ti Scientific Software Development GmbH) to facilitate the analysis[35].

At this stage, the preliminary themes were extracted. To this end, each transcript was summarized and sorted in the form of analytic matrices [35] under the preliminary emerged theme headings, to identify the commonalities and differences among participants [26].

The interview transcriptions and coding were conducted primarily by the first author (N.SH). Then, the lead researcher (E.E) cross-examined the raw data. Labeling and sorting the data into themes and sub-themes was done collectively to reach an overall agreement on the emerging interpretations and results.

Ultimately, the preliminary themes and interpretations were reviewed during team meetings and major themes were elaborated.

RESULTS

Participant characteristics

Socio-demographic characteristics of the study participants are demonstrated in Table 1 (page 58). Seventeen interviews were carried out with ten women and seven men, aged between 22 and 39 years. Thirteen participants were 4th year undergraduate dental students, and 4 were residents in orthodontic and prosthodontic disciplines. Most of the participants described their socio-economic status as average, but emphasised on the high amount of their educational expense debts (Table 1).

Themes

Five major themes emerged from the qualitative analyses: awareness on rural oral health care access; image of rurality; image of rural dental practice; perceived barriers; and perceived enablers to rural dental practice.

Awareness on rural oral health care access

The majority of students were aware of disparities between rural and urban regions in regard to availability of dental workforce and access to dental services. However, they did not have enough knowledge about the causes of these disparities and the health care policies that could improve this situation. Students were exposed to underprivileged populations via outreach programs, community dentistry, and dental public health theoretical courses, but these academic activities did not focus on rural communities.

"Well, maybe we have some courses in the university like public health, and it's kind of interesting, but rural dentistry was not a topic that has been talked about in class."

A few students mentioned that the representatives of dental recruitment agencies and dental companies were the main sources of information for rural dental practice. These agencies conduct a meeting each year for senior dental students in Université de Montréal in order to provide them the possible choice of dental practice vacancies.

" I met … who has a recruitment agency and she is my only source of information about metropolitan or rural sections."

A few students, especially those with a rural background and/or having work experiences in rural and remote regions, had more knowledge about rural access to care.

"There is not enough infrastructure especially in the health care system."

Image of rurality

The participants had different images of rurality. Most of them thought that rural areas were different compared to urban areas: they associated rural regions with a slower pace of life and a family-oriented type of environment. A few students appreciated the supportive social interactions among rural community members and thus believed that dentists would have a sense of belonging to the community.

"I think they are isolated communities. But at the same time, you can have a slower life style and you can raise a family there perhaps. It's a more relaxing type of atmosphere and simpler life that people might enjoy."

"Rural is a family-oriented kind of environment…as if the whole community is looking out for you and your family."

However, there was consensus that these regions were not attractive for younger dentists. Few participants were concerned about the privacy of their lives in a small town.

"…this [the dental treatment] *will cost 5000$ and it's expensive for them* [rural patients]. *Then in the weekend, when you want to do the cruise on your private boat, they will judge you for having a beautiful luxurious life…"*

Image of rural dental practice

The participants perceived rural dental practice as having a high level of autonomy associated with high responsibility and multitasking.

"There's a real ownership and autonomy about the way you practice. The flip side is also you have the total responsibility. You are the only dentist there."

Most of the students were positive about rural working hours, the type of clientele, and the lack of competition between dentists. A few mentioned that the lack of specialists in rural areas would increase the workload of rural general dentists and the nature of the treatments that they offered.

"You have to work more, because you cannot refer patients easily… There are not a lot of specialists, so the general dentists should be able to offer different treatments."

Furthermore, they mentioned the critical importance of a dentist's reputation in small rural communities.

"In a small town your reputation is everything... You're getting feedback from your patients."

Perceived barriers to rural dental practice

Three subthemes emerged under this theme: proximity maintenance and separation distress; fear of the unknown; lack of infrastructure, resources, and professional support.

Proximity maintenance and separation distress. The desire to remain close to people they are emotionally attached to and fear of isolation are two psychological concepts that emerged from the discussions.

"One of the factors that make professionals not go to rural areas is the isolation, you don't have Internet, you are already far from family, city, and people. So, you feel even more isolated."

The majority of students with an urban backgrounds were concerned about substituting their metropolitan lifestyle for a countryside way of life.

"Leaving friends, cultural and social activities as a result of moving to a far rural region is hard for someone who comes from Montreal (the urban area)*."*

"For the person who was born, raised, and studied in cities, going to work in rural regions is very difficult."

Fear of the unknown. Participants without a rural background and/or rural experience expressed fear originating from their lack of knowledge and uncertainty about the nature of rurality and rural dental health care services. In addition, a lack of confidence in treating rural patients was felt in their comments.

"When someone has never been in a small town, they often see small towns for what they lack! As opposed to seeing what small towns have to offer. So, it's scary. It's fear of the unknown."

Lack of infrastructure, resources, and professional support were considered to be disadvantages of working in rural areas for the majority of dental students.

"The lack of infrastructure and resources is the main barrier which can possibly affect the quality of your work in a rural area."

Perceived enablers to rural dental practice

Four subthemes emerged from this theme: highlighting the advantages of rural dental practice; monetary and non-monetary incentives; creating job opportunities for partner/spouse; dental education.

Highlighting the advantages of rural dental practice. Participants expressed the importance of marketing to provide dental students with more information about positive aspects of rural dentistry and working in rural and remote regions. They suggested putting efforts in social networking as a good interface for knowledge dissemination among young dentists.

"We should mention the benefits of working in rural [areas] *because people don't know the advantages."*

"There can be a trip in which we might invite future graduates. They can look up and try to go and visit the place by themselves."

"Giving the information out there and make it as attractive as possible…They have to be somehow convinced that their urban chic lifestyle can be satisfied there and that's a challenge. The key is marketing!"

Monetary and non-monetary incentives. The participants suggested debt forgiveness and tax bonuses as effective initiatives, addressing the debt phobia of the majority of dental students.

"I think incentivizing is a great way to go…. you could send a dentist to Siberia with debt forgiveness."

They explained that the government could intervene to support health care professionals financially and psychologically.

"Definitely the government should make some steps to encourage dentists to go to rural areas and stay there."

However, a few participants believed that the government had already offered enough incentives and being part of an autonomous industry, dentists resist government measures. One of the participants mentioned the critical role of government in dental insurance challenges for rural communities.

"We need government subventions for dental insurance in rural populations."

Creating job opportunities for partner/spouse. Most of the female participants perceived partner's career as an important factor in their decision-making and retention. However, they knew creating job opportunities requires collaborative endeavors between governmental employment bodies and rural communities.

"It's not just attracting one person, it's attracting a couple! And if the other one can work there or not."

Dental education. The participants suggested that dental schools could contribute to improvement of rural dental practice by adopting rural-oriented admission strategies and dental curriculum, and exposing dental students to rural regions.

"It would be a good idea to put rural dentistry course in the university curriculum."

DISCUSSION

This exploratory study encompasses a deep understanding of dental students' perspectives on rural dental practice. To our knowledge, this is the first qualitative study that explores Canadian students' points of view in regard to rural and remote dental practice.

Our findings showed that fear and lack of professional confidence, limited knowledge, and not having worked or lived in geographically isolated communities constituted major barriers toward establishing rural dental practice. Furthermore, dental students believed that rural and remote training and education could be a good opportunity to be engaged in rural communities and learn about rural dental practice. It was interesting to note that although our students' profiles were different in term of the year of education (undergraduate students versus specialty residents), they shared the same perspectives in regard to the choice of practice location.

These findings support the initiatives of various dental schools in providing community-based dental educational programs with the ultimate goal of increasing access to oral health care for rural and remote populations [36,37]. Evidence from successful programs in the United States, Australia, and other countries show that these programs are effective in terms of raising students' awareness, educational skill, and positive attitude towards future rural practice [11,14,38].

Furthermore, such rural-focused programs and training might help students to understand the significance of their contribution towards promotion of the oral health of underserved populations [22,39,40], and will increase their sense of professionalism and social responsibility [40].

The results of our study indicated that students with rural upbringing and experience might be more interested in a rural career and more sensitive to the needs and demands of rural communities [12,15,41-46]. According to McFarland et al. (2012), these students are six times more likely to return to work in rural communities after graduation [13,46]. These findings support, firstly, the policies of certain dental faculties in regard to the selection of students with rural and remote backgrounds [13,46]. Secondly, they highlight the need to invest in strategies that modify or ensure the human desire of maintaining proximity to bonds such as family, partner, peers, places, and neighborhoods. *According to the attachment theory introduced by Bowlby and Ainsworth[47], relationships and bonds between people provide a sense of security for individuals, and separation may cause anxiety and distress* [47]. Thus, strategies such as psychosocial education, rural infrastructure development and entrepreneurship, creation of various job opportunities for partners and families, as well as monetary incentives could be beneficial to overcome the shortcomings of rural deprivation.

Our findings also showed that monetary incentives including scholarships, loan forgiveness, and tax bonuses could act as motivators due to the increasing debt load of Canadian dental school graduates [3,23,48-53]. However, it is important to note that these financial incentives could help in the recruitment of dental workforce but may not impact the retention of these professionals in rural and remote areas [22,54]. This highlights the need to focus on non-monetary incentives such as access to professional support and job satisfaction [3,20]. There is overwhelming evidence on how job satisfaction can overcome all the other barriers and help to retain health care professionals in the rural and remote regions.

This study raises awareness of the role of academia and policy makers for providing appropriate education and infrastructure for rural dental practice and any other health-related discipline. Different models of education and curricula should be developed to promote social dentistry and to prepare students for working in rural and remote areas. Development of a rural residency dental program with adequate governmental financial support could be one of the target strategies.

However, the results should be interpreted with caution due to the limitations of our methodological approach. Our study was limited in that it reflected a particular group of dental students: French- and English-speaking dental students in Montreal, Quebec, Canada. As a consequence, our findings might not be generalizable to dental students from other societal, geographical, and academic contexts. It is also important to note that our study reports the perspectives of a relatively small number of participants, even though the size of the sample is adequate considering interpretive description methodology.

Within this methodology, when the theoretical saturation is attained, the minimum total number of 8 interviews could be considered adequate [26,30] to uncover insight related to the study objectives. However, this limited number does not allow generalization of the results [55]. In fact, in qualitative approach, credibility of the findings is ensured by triangulation of interpretations [56,57]. Further research in other settings is necessary to determine whether the themes identified in this study are relevant to other dental students from different faculties and countries.

CONCLUSIONS

The findings of this study suggest that there is a need to implement and support strategies that are known to increase the knowledge and motivation of dental students for choosing rural occupations. Dental educators have an essential role in professional character formation and apprenticeship towards these goals.

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to the dental students of Université de Montréal and McGill University for their active engagement in this study. We also acknowledge Ms. Sara Homayounfar and Mr. Charbel Ghosn for their useful efforts in different stages of the study. A grant from the Network for Oral and Bone Health Research funded this research. The corresponding author Dr. Elham Emami is currently supported by a CIHR clinician scientist-award.

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Table 1. Socio-demographic characteristics of participants (n=17)

CHARACTERISTIC	NO. PARTICIPANTS
Sex	
Male	7
Female	10
Age group (age)	
20–25	9
26–30	4
31–35	2
35–40	2
Self-reported socio-economic status (SES)	
Low	0
Average	16
High	1
Language	
Bilingual	14
Anglophone	2
Francophone	1
Rural upbringing and/or rural experience	
Yes	6
No	11
Education level	
4th year undergraduate	13
Last year postgraduate residents	4
Dental faculties	
Université de Montréal	14
McGill University	3
Marital status	
Single	11
In relationship	5
Married	1

CHAPTER IV

DISCUSSION

This master research study provides a deep understanding of dental students' perceptions toward rural dental practice as well as the challenges they perceived for their future career opportunities. To our knowledge this is the first study that uses a qualitative approach to explore the perspectives of Quebec dental students toward practicing in rural and remote communities and to investigate the factors that influence their decision-making in this regard.

Findings of the present qualitative study revealed five major themes: awareness on rural oral health care access, image of rurality, image of rural dental practice, perceived barriers to rural dental practice and perceived enablers of rural dental practice.

In this chapter, the main findings of this study as well as recommendations and directions for future research are briefly discussed.

4.1 CHOICE OF STUDY DESIGN

A qualitative approach and interpretive description methodology were used to conduct this research project. This methodology made it possible to capture a deep understanding of dental students' perceptions in regard to rural dental practice [149,150]. Interpretive description is a new methodology that is being used in many applied health disciplines such as nursing, medicine and dentistry [150,157,158].

As implied by its name, this methodology provides an interpretation of qualitative descriptions, rather than disseminating any novel theory [151]. It also allows the researcher to use his/her clinical expertise to orient the research process in the field of applied science [151]. Furthermore, in the data analysis, the researcher is encouraged to move beyond the self-evident findings and to apprehend the meanings of the gathered data by asking deep concurrent questions such as "*What does this mean?*" or "*How does this finding contribute to the practice?* " [151].

As suggested by Sandelowski and Barroso (2003) [159], data interpretation should be continued until it satisfies the purpose of the study and ensures sufficient insight for the future practical implementation of the results [151,159].

4.2 CHOICE OF THE CONCEPTUAL FRAMEWORK

After comprehensive literature review, the conceptual model of Schoo et al. (2005) [151] was used as a theoretical scaffold for this research project interview guide design. This model was developed for the Allied Health Workforce Enhancement Project of the Greater Green Triangle University Department of Rural Health, to improve the recruitment and retention of allied health care professionals in southwest Victoria, Australia [151]. Health service researchers in Australia are at the forefront of research on the health care workforce challenges in rural and remote settings, because of the large Australian rural population [160].

There exist several other conceptual frameworks that address recruitment and retention of health care professionals in rural practices, and that closely match the model we chose. For example, Crandall et al. (1990) [161] introduced four conceptual models that can be

used in the development of programmes and policies for increasing the number of medical professionals in rural and remote communities [161]:

1) Affinity model: According to this model the rural practice choice of medical professionals is related to their rural background or their prior rural training and experience. Therefore, this model emphasizes the implementation of selective admission criteria and rural-oriented medical curricula. According to the literature review by Crandall et al. (1990) [161], the affinity model was successfully used in the design of rural training and externships programmes, aiming to improve students' interest, professional skills and confidence toward rural practice [161].

2) Economic incentive model: This model is based on the reinforcement of financial supports for medical professionals in rural and remote zones. One successful example of the use of this model is the physician's income guarantees given to medical professionals working in rural and remote areas of the United States in the 1970s [161].

3) Practice characteristic model: According to this model the lack of professional and technical support might impede rural practice. In fact, access to group practice and continuing education has been shown to be effective in attracting health care providers to rural and remote areas [161].

4) Indenture model: This model is based on temporary service-providing in rural and remote zones [161]. Policies based on this model have been used in several countries such as Iran and the Dominican Republic [161-163]. It has also been used in developed countries such

as Canada for foreign-trained medical specialists to serve marginalized communities by providing services under a restricted practice licence for a minimum of 5 years [164].

In this master research project, we drew on the model of Schoo et al. (2005) [151] in order to: 1) summarize the results of the literature review; 2) develop the interview guide for the purpose of data collection; and 3) interpret the study results. The Schoo model, which is based on Glasser's choice theory [151], puts emphasis on the balance between "needs" and "responsibilities" of the health care workforce and tries to explain the factors that influence their recruitment and retention in rural and remote zones. According to Glasser, responsibility refers to *"the ability to fulfil one's needs, in a way that does not deprive others of the ability to fulfil their needs"* [151].

As demonstrated in Figure 4.1, the Schoo model encompasses three domains: 1) personal, 2) organizational and 3) community [98,151]. The factors within each of these domains show dynamic interrelationships [151].

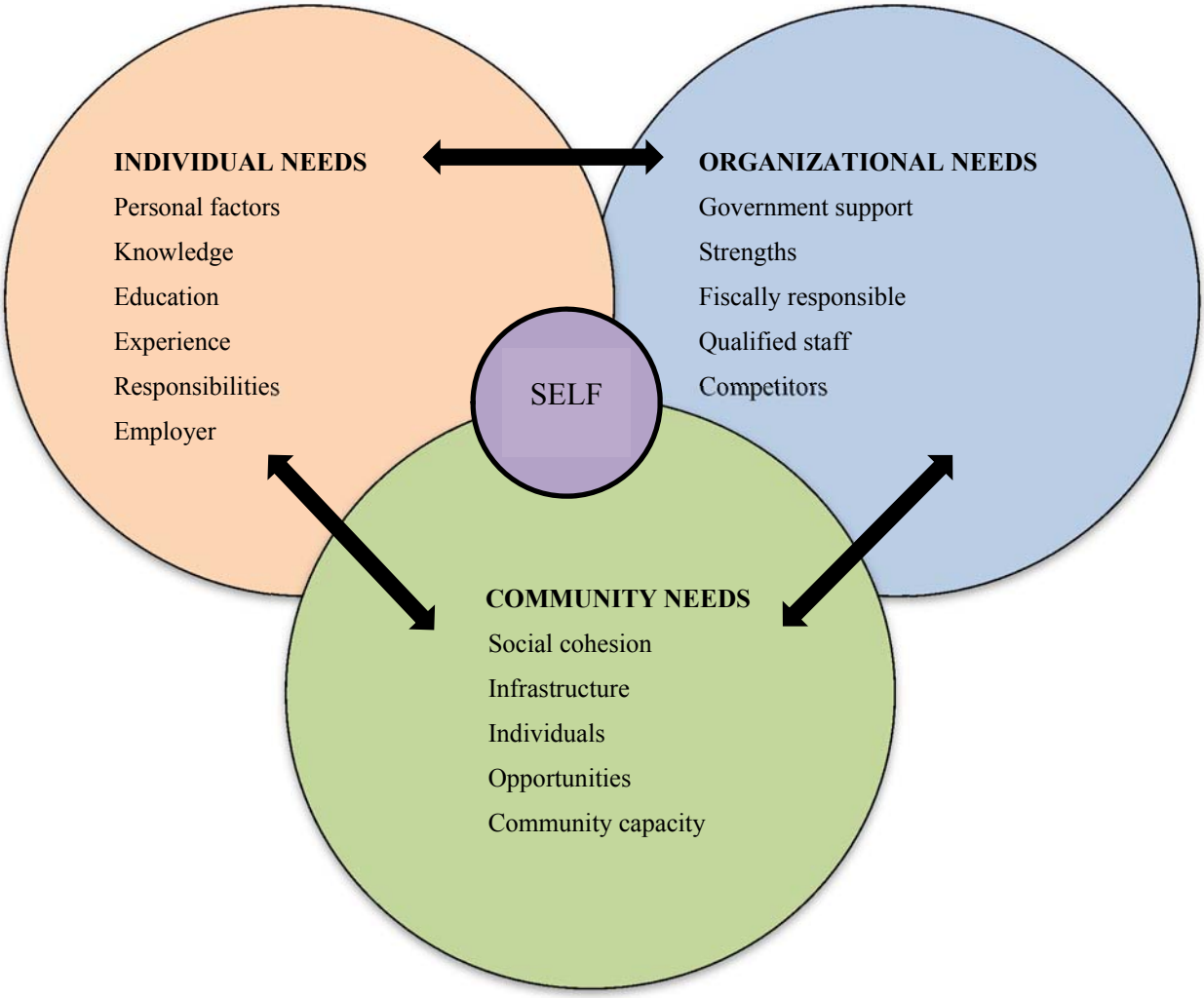

Figure 4.1: Multidimensional interactive conceptual model for the recruitment and retention of dental workforce in rural and remote communities

(Adapted from Schoo 2005 [151] with permission (Appendix IV))

4.3 REFLECTION ON THE STUDY FINDINGS

In this exploratory study, we identified five major themes: awareness on rural oral health care access, image of rurality, image of rural dental practice, perceived barriers to rural dental practice and perceived enablers of rural dental practice. Furthermore, several subthemes emerged within these major themes: proximity maintenance and separation distress, fear of the unknown, lack of infrastructure, resources and professional support, highlighting the advantages of rural dental practice, monetary and non-monetary incentives, creating job opportunities for partner/spouse and dental education. In this section, a brief discussion on these themes and subthemes is provided.

4.3.1 Awareness on rural oral health care access

In this study dental students were aware of the existing disparities, having learned about them through a number of sources of knowledge such as undergraduate outreach programmes and the community-based dental courses. However, they expressed not having deep knowledge about rural dental practice.

Although community dentistry is part of the dental undergraduate curriculum in Quebec, dental education has mostly been through "in-house" training [165]. As suggested by the literature, extramural dental education such as rural placement programmes and rural rotations has a potential positive impact on the delivery of dental students' new knowledge and skills and preparing these students to meet the oral health needs of rural populations [166-168].

As an example, we can refer to the Pipeline programme undertaken by 15 dental schools in the United States (2007). This five-year project aimed to reduce dental care access disparities by implementation of community-based dental education [166]. As part of this project, the California Endowment foundation located twenty-five percent of its community facilities in rural areas, where senior students had to deliver their services to rural communities for sixty days [166]. This project was successful in terms of improving access to care for underserved populations [165]. Furthermore, dental students who participated in this project had a deeper understanding of community needs and broader experience to provide care to those communities including rural populations [165].

In our study, dental students expressed that rural upbringing and background might lead to a better understanding of rural community needs and demands, and may also help to develop more interest in rural dental practice [104,123-125,128,161,169]. In line with this finding, McFarland and her associates (2012) reported that dental students coming from rural communities were six times more likely to return to their origin and were more willing to offer dental services to their society [130]. Furthermore, rural background seemed to increase dental professionals' retention in rural areas [130].

Our findings also support several innovative approaches to improve dental workforce recruitment and retention in rural and remote areas. These strategies include selective admission policies, rural-based curricular changes, rural placement programmes, vocational training and rural extension of dental schools [3,4,84,104,110,130,133,170-173]. This is in line with the conceptual framework of this research project (Schoo et al.[151]) as well as the affinity model of Crandalle et al. (1990) [161]. Although Crandalle model was presented for the medical field, our results suggest that it can be used in the dental discipline as well.

4.3.2 Image of rurality and rural dental practice

Even though there was a consensus that rural environments are not attractive for young dental professionals, it is interesting to note that some of the dental students participating in this study were intrigued with rural traits such as slow pace of life, being family-oriented and having a supportive social environment. They also perceived potential benefits to working in rural dental practice such as having autonomy, flexible working hours and the lack of competition between dentists. These beliefs are supported by a report from the Australian Dental Association in 2012 that acknowledged advantages of working in rural and remote areas such as broader variety of work, community attachment, comprehensiveness and continuity of care, autonomy and rural lifestyle [174].

Students also expressed concern about the lack of specialists and allied dental workforce in rural and remote zones, which would increase the responsibility and workload of rural general dentists. This finding is supported by previous research confirming that dental professionals may experience more workload stress due to the lack of allied workforce support in rural areas, particularly dental specialists [3,141].

4.3.3 Perceived barriers to rural dental practice

In this study we noticed that dental students desired to remain close to people they are emotionally attached to such as their partners, families and friends. This connectedness kept them from choosing rural practice and supported the results of the study conducted by Gallagher et al. (2008). According to that study, 81% of dental students in 2005 preferred to be in proximity to their families, which influenced their choice of practice location [2].

Our study findings also supports the *attachment theory* introduced by Bowlby (1969) and Ainsworth (1973) [175]. Attachment theory is a psychological and evolutionary theory concerning bonds between human beings with lasting psychological connectedness including partners, families and friends. It explains how connection to the primary attachment figures provides a sense of security and actual loss or separation from them may cause anxiety and distress [175].

Despite the importance of family proximity, the implementation of strategies to support dental professionals and their families in rural setting is laborious, costly and requires collaborative endeavours between government and local communities. As an example of these approaches, we can cite a successful development of community action plans for recruitment and retention of medical professionals in Queensland, Australia (1999) [176]. During this project two rural communities with different physical and social characteristics developed a series of common strategies to recruit medical practitioners[176]. These strategies included the development of a stakeholder liaison committee, providing information packages for future medical professionals, designing a series of procedures to assist in settlement and housing of physicians and their families, supporting a medical student to take part in the community and providing employment and educational opportunities to doctors' partners or family members [121,176].

Another finding of this study was that dental students who were less familiar with rural environments expressed more fear and lack of professional confidence. This highlights an important psychological notion, which is termed "fear of the unknown" [177]. As reported by Riezler (1944) [178]: "The fear will overtake us in decision-making when we do not know which of several knowable possibilities will occur" [178]. According to a recent cross-sectional survey in Thailand, dentists' professional confidence level could be enhanced by rural practice experience [179].

This master research project also confirmed the practice characteristics model of Crandalle et al. (1990) [161]. According to this model, lack of professional and technical support might be barriers toward rural practice [161]. It has been suggested that many young health care professionals need professional support and sophisticated clinical equipment, which is not accessible in rural settings [117]. Additionally, many health care providers are not adequately trained to be able to establish a rural practice without a professional support system [12,161].

4.3.4 Perceived enablers of rural dental practice

As suggested by some of the students participating in our study, it is an effective tool to highlight the positive and negative aspects of working in rural and remote regions, through knowledge transfer activities. In fact, according to students, social networking and marketing will inform and educate them in this regard.

The students also articulated the role of monetary incentives as a motivator for the choice of practice location. This finding supports initiatives that have been based on offering financial rewards to rural dental professionals [172]. The United States and Australia have made use of student loan repayment policies and remuneration to enhance rural recruitment [3,4,84,170]. These strategies are in line with the economic incentive model of Crandall et al. (1990) [161]. However, there is still no evidence on the effect of financial incentives for the long-term retention of rural professionals [104].

However, in line with the study of Kruger et al. (2005) [8], we found that financial incentives were not the only source of attraction for Quebec dental students. Other non-monetary factors such as lifestyle and family proximity seemed to influence recruitment and retention in rural and remote areas.

4.4 STUDY LIMITATIONS

It is acknowledged that this study presents several limitations. First, the study was only based on selective sampling of dental students from two Quebec dental faculties. Furthermore, the sample size was small and study participants were not representative of dental students with different background, education, culture and needs. This raises the question of generalizability in qualitative research, which has been much discussed in the literature [180,181]. However, within interpretive description methodology, when the theoretical saturation is attained, even the minimum number of interviews could be considered adequate to explore the study objectives [148,149]. We ensured the transferability of this research by detailed description of the research methods, which makes it applicable to other contexts.

4.5 RECOMMENDATIONS

Despite the fact that many Canadian populations reside in deprived rural and remote areas, Canada is lagging behind its counterparts such as Australia and the United States in delivering policies to address the limited research on rural dental workforce. In fact, health workforce planning is a complex issue and demands the collaboration of policymakers, researchers and academia as well as communities.

A logical starting point is to promote knowledge transfer activities. Since the new generation is fascinated by social networks, we should use social media integration activities such as creating websites and Facebook and Twitter pages to target this population. In addition, visual publicity and advertisements in the university environs, student councils and dental care centres could be effective as well.

Moreover, academia should address poor access to rural dental care through changes in related policies such as selective admission strategies in favour of students with rural background, reformulating the dental educational curriculum with more emphasis given to rural and remote oral health, exposing dental students to rural dental practice experience by extramural dental training and evaluating the relative effectiveness of these programmes.

In order to increase the supply of dentists and allied dental workforce, policymakers should create incentive schemes for dental graduates in order to encourage them to select rural practice. Moreover, they could have contractual agreements with dental students to locate their practice in rural and remote areas upon graduation, in return for their educational expenses and fees.

In addition, policymakers should remodel successful strategies adopted by other countries. Finally, the government should reinforce rural infrastructure, facilities and job opportunities to encourage the recruitment of dental professionals and their family members to rural and remote areas.

4.6 DIRECTIONS FOR FUTURE RESEARCH

Further research might replicate this qualitative study in other dental institutions across Canada to capture variations in the perspectives of students and validate the results of this study. Furthermore, quantitative research design could be adopted to add to the generalizability and external validity of this study.

Many conceptual models have been used to predict successful recruitment and retention of healthcare professionals. Future studies might also examine the applicability of these conceptual frameworks to increase the rural dental workforce in the field of oral health.

CHAPTER V

CONCLUSIONS

The results of this master research project suggest that:

1. Senior dental students and dental residents of two Quebec dental schools expressed a lack of knowledge, experience and professional confidence in regard to rural dental practice. This may influence their decision-making towards their future practice location. From this study, it can be deduced that any strategic changes in educational background of the students may have a significant impact on dental workforce planning in the future.
2. Several barriers kept dental students from considering working in rural dental practice. These barriers include proximity maintenance and separation distress, fear of the unknown and lack of infrastructure and professional support. There is a need for collaboration between dental researchers and academia, policymakers and communities to overcome these barriers.
3. Dental institutions and dental faculties should extend their community-based dental education to rural and remote communities to better prepare future dentists for rural dental practice. Educational policy makers have an essential role in implementing the related policies.

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APENDICES

APENDIX I: ETHICS APPROVAL CERTIFICATE

Université de Montréal

Comité d'éthique de la recherche en santé

2 décembre 2014

Objet: Certificat d'approbation éthique - 2ième renouvellement – « Promoting Rural Dental Practice Through a knowledge Transfer Process »

Mme Elham Emami,

Le Comité d'éthique de la recherche en santé (CERES) a étudié votre demande de renouvellement pour le projet de recherche susmentionné et a délivré le certificat d'éthique demandé suite à la satisfaction des exigences qui prévalent. Vous trouverez ci-joint une copie numérisée de votre certificat; copie également envoyée au Bureau Recherche-Développement-Valorisation.

Notez qu'il y apparaît une mention relative à un suivi annuel et que le certificat comporte une date de fin de validité. En effet, afin de répondre aux exigences éthiques en vigueur au Canada et à l'Université de Montréal, nous devons exercer un suivi annuel auprès des chercheurs et étudiants-chercheurs.

De manière à rendre ce processus le plus simple possible et afin d'en tirer pour tous le plus grand profit, nous avons élaboré un court questionnaire qui vous permettra à la fois de satisfaire aux exigences du suivi et de nous faire part de vos commentaires et de vos besoins en matière d'éthique en cours de recherche. Ce questionnaire de suivi devra être rempli annuellement jusqu'à la fin du projet et pourra nous être retourné par courriel. La validité de l'approbation éthique est conditionnelle à ce suivi. Sur réception du dernier rapport de suivi en fin de projet, votre dossier sera clos.

Il est entendu que cela ne modifie en rien l'obligation pour le chercheur, tel qu'indiqué sur le certificat d'éthique, de signaler au CERES tout incident grave dès qu'il survient ou de lui faire part de tout changement anticipé au protocole de recherche.

Nous vous prions d'agréer, Madame, l'expression de nos sentiments les meilleurs,

Guillaume Paré
Conseiller en éthique de la recherche.
Comité d'éthique de la recherche en santé (CERES)
Université de Montréal

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Université de Montréal

N° de certificat
12-083-CERES-D(2)

Comité d'éthique de la recherche en santé

CERTIFICAT D'APPROBATION ÉTHIQUE

- 2ième renouvellement -

Le Comité d'éthique de la recherche en santé (CERES), selon les procédures en vigueur et en vertu des documents relatifs au suivi qui lui a été fournis conclu qu'il respecte les règles d'éthique énoncées dans la Politique sur la recherche avec des êtres humains *de l'Université de Montréal*

Projet	
Titre du projet	**Promoting Rural Dental Practice Through a knowledge Transfer Process**
Chercheuse requérante	**Elham Emami** (05671), Professeure agrégée, Faculté de médecine dentaire - Département de dentisterie de restauration

Financement	
Organisme	Réseau de recherche en santé buccodentaire et osseuse
Programme	Transfert de connaissances 2012-2013
Titre de l'octroi si différent	
Numéro d'octroi	Lettre signée par M. René St-Arnaud du 12 juillet 2012
Chercheur principal	
No de compte	

MODALITÉS D'APPLICATION

Tout changement anticipé au protocole de recherche doit être communiqué au CERES qui en évaluera l'impact au chapitre de l'éthique. Toute interruption prématurée du projet ou tout incident grave doit être immédiatement signalé au CERES.

Selon les règles universitaires en vigueur, un suivi annuel est minimalement exigé pour maintenir la validité de la présente approbation éthique, et ce, jusqu'à la fin du projet. Le questionnaire de suivi est di

Guilla
Conseiller en éthique de la recherche.
Comité d'éthique de la recherche en santé
Université de Montréal

2 décembre 2014
Date de délivrance du renouvellement ou de la réémission*

1er janvier 2016
Date du prochain suivi

12 juillet 2012
Date du certificat initial

1er janvier 2016
Date de fin de validité

*Le présent renouvellement est en continuité avec le précédent certificat

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APPENDIX II: PERMISSION FROM THE AUTHOR (GRAHAM, 2004)

Dear Nastaran Sharifian

Thank you for your email, and in particular for taking the trouble to ask my permission formally. I am pleased to give that permission, and would appreciate you including with the figure a note that it is used 'with permission of the author'.

All good wishes

Hilary Graham

> Dear professor Graham,
>
> I hope you are doing very well.
>
> My name is Nastaran Sharifian. I'm a dentist and currently, doing my masters in Universite de Montreal, Canada. My master project is about dental practice in rural and remote areas. Actually, I would like to ask your permission for using the figure of "Social Determinants of Health" in your article entitled "Social Determinants and Their Unequal Distribution: Clarifying Policy Understandings" as part of my master thesis.
>
> I really appreciate your kind cooperation in advance and looking forward to hearing from you.
>
> Kindest regards,
> Nastaran Sharifian

APPENDIX III: PERMISSION FROM THE AUTHOR (WATT, 2012)

Dear Nastaran

Many thanks for your message. Of course it is absolutely fine for you to use the social determinants figure in your thesis - I am just glad you have found it of some value.

Good luck with your thesis and pass my regards to Paul Allison if you see him.

Best wishes

Richard

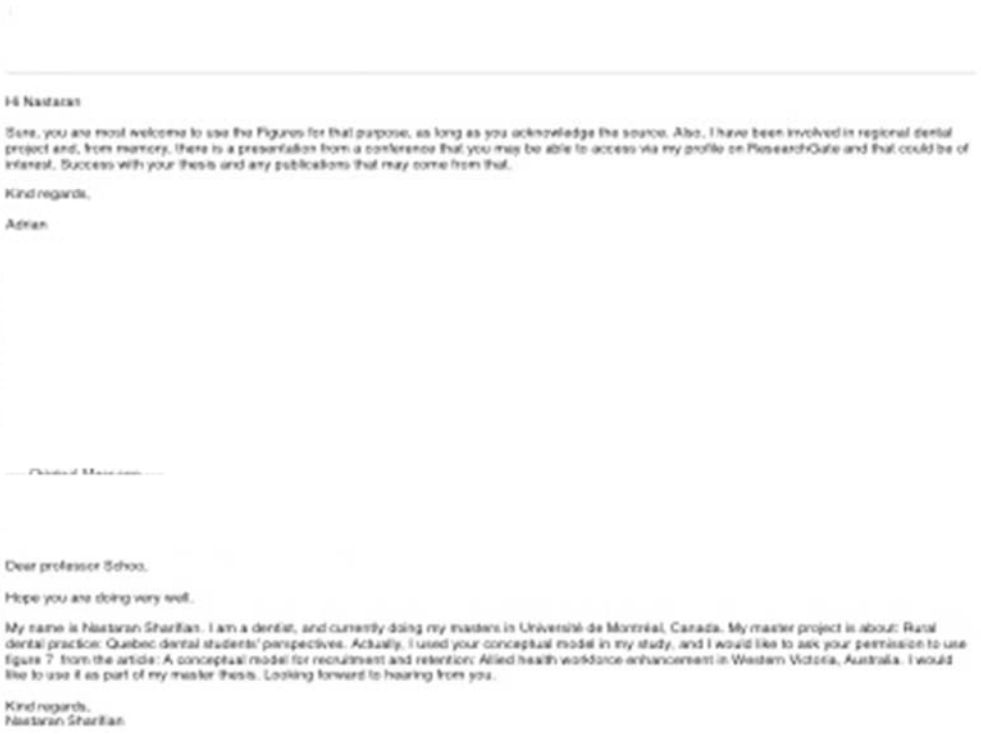
Dear professor Watt,

I hope you are doing very well.

My name is Nastaran Shatifian. I'm a dentist and currently, doing my masters in Universite de Montreal, Canada. My master project is about dental practice in rural and remote areas. Actually, I would like to ask your permission for using the figure of "Social determinants of oral health inequalities" as part of my master thesis. I really appreciate your kind cooperation in advance and looking forward to hearing from you.

Kindest regards,
Nastaran Shatifian

APPENDIX IV: PERMISSION FROM THE AUTHOR (SCHOO, 2005)



Hi Nastaran

Sure, you are most welcome to use the Figures for that purpose, as long as you acknowledge the source. Also, I have been involved in regional dental project and, from memory, there is a presentation from a conference that you may be able to access via my profile on ResearchGate and that could be of interest. Success with your thesis and any publications that may come from that.

Kind regards,

Adrian

Dear professor Schoo,

Hope you are doing very well.

My name is Nastaran Sharifian. I am a dentist, and currently doing my masters in Université de Montréal, Canada. My master project is about: Rural dental practice: Quebec dental students' perspectives. Actually, I used your conceptual model in my study, and I would like to ask your permission to use figure 7 from the article: A conceptual model for recruitment and retention: Allied health workforce enhancement in Western Victoria, Australia. I would like to use it as part of my master thesis. Looking forward to hearing from you.

Kind regards,
Nastaran Sharifian

APENDIX V: CONSENT FORM

RENSEIGNEMENTS AUX PARTICIPANTS

ET

FORMULAIRE DE CONSENTEMENT

Renseignements généraux

Nous vous demandons de participer à ce projet de recherche parce que vous êtes un étudiant dans le domaine de la médecine buccodentaire. Avant d'accepter de participer à ce projet de recherche, veuillez prendre le temps de lire et de considérer attentivement les renseignements qui suivent.

Ce formulaire de consentement vous explique le but de cette étude, les procédures, les avantages, et les inconvénients, de même que les personnes avec qui communiquer au besoin. Le présent formulaire peut contenir des mots que vous ne comprenez pas. Nous vous invitons à poser toutes les questions que vous jugerez utiles aux chercheurs et aux autres membres du personnel impliqués dans ce projet de recherche et à leur demander de vous expliquer tout mot ou renseignement qui n'est pas clair. À partir du moment où vous êtes en possession de ce formulaire, vous disposez d'une période raisonnable de réflexion pour donner votre accord et nous le retourner signé et daté si vous acceptez de participer au projet de recherche. Le nombre d'étudiants à interviewer n'a pas été fixé car nous prévoyons continuer à faire des entrevues jusqu'à saturation, jusqu'à ce que aucune information nouvelle ne soit recueillie.

Description du projet de recherche

Les inégalités en accès aux soins en santé buccodentaire sont notables dans les régions rurales du Canada et représentent un défi pour notre système de santé. La pénurie en professionnels de la santé buccale dans ces régions affecte directement ces inégalités, l'accès aux soins dentaires et empêche d'offrir des soins de qualité. Le changement envers un système de santé efficace nécessite d'identifier les barrières et les facilitateurs, de transférer des connaissances et de créer des stratégies pour améliorer l'attraction et la rétention de la main-d'œuvre dans ces régions.

L'objectif de ce projet est de comprendre comment et jusqu'à quel point les problèmes reliées à la main d'œuvre influencent l'accès équitable aux soins oraux dans les milieux ruraux, de développer un instrument de transfert de connaissance qui encourage la dentisterie rurale, et de sensibiliser les étudiants dans leur prise de décision grâce à une éducation dentaire communautaire.

Notre projet sera basé sur un transfert de connaissance qui sera accompli grâce à deux méthodes. Premièrement, une revue de la littérature sera effectuée, peu importe le modèle d'étude, pour recueillir de l'information sur notre sujet. Deuxièmement, nous allons effectuer un transfert de connaissance en utilisant des méthodes d'action participative et des entrevues avec des étudiants en dentaire. En se basant sur les résultats, le site-web de la dentisterie rurale sera amélioré.

Conditions de participation

Vous pouvez participer à cette étude si :

1- Vous êtes, présentement, un étudiant en médecine dentaire dans une faculté canadienne ;

2- Vous êtes un étudiant en médecine dentaire qui vient de graduer cette année (2012).

Nature de la participation et durée de l'étude

Si vous vous portez volontaire pour participer dans cette étude, nous vous invitons à participer à une entrevue individuelle, avec l'étudiant responsable de l'étude, selon votre disponibilité ou votre désir. Pendant l'entrevue, nous vous demanderons quelques questions sur votre perception de la dentisterie en milieu rural, des obstacles ou facteurs qui empêchent le dentiste d'orienter sa pratique vers les milieux ruraux, et des stratégies efficaces qui pourraient aider les dentistes à choisir les régions éloignées, ainsi que sur l'efficacité du site-web, les éléments à améliorer ou toute autre information utile qui pourrait être ajoutée au site.

Cette entrevue ne devrait pas durer plus de 1 h30 à 2h. Si vous trouvez que cette période est trop longue, nous vous proposerons de raccourcir l'entrevue et de poursuivre la discussion un autre jour, en fonction de vos convenances. Vous pourriez choisir le temps et le lieu de l'entrevue selon votre commodité et accord. La discussion sera enregistrée avec un magnétophone car il est impossible au chercheur de tout noter pendant l'entretien. La discussion contenue sur la cassette audio sera ensuite dactylographiée, puis la cassette audio sera détruite, l'enregistrement audio sera effacé sur l'ordinateur.

Risques et inconvénients

Participer à cette étude ne vous fera courir aucun risque particulier puisqu'il s'agit simplement de discuter avec un chercheur et nous vous garantissons la plus stricte confidentialité. Vous aurez le droit, à tout moment, de vous retirer de l'étude. Si certaines questions vous mettent mal à l'aise, vous aurez également le droit de ne pas y répondre. Dans tous les cas, vous ne subirez aucune préjudice du fait de votre retrait ou parce que vous n'avez pas répondu aux questions d'entrevue.

Avantages et bénéfices

Vous ne retirez aucun bénéfice personnel par le biais de votre participation à ce projet de recherche. Par ailleurs, les résultats obtenus pourraient contribuer à l'avancement des connaissances dans ce domaine.

Votre participation permettra donc d'encourager les professionnels de la santé à travailler dans les milieux ruraux ce qui permettra de combler les besoins dans ces régions et de réduire l'inégalité des soins buccodentaires entre les milieux ruraux et urbains.

Compensation

Vous ne recevrez pas de compensation pour votre participation à ce projet de recherche. Si vous deviez subir un préjudice ou quelque lésion que ce soit du à votre participation à ce projet, vous recevrez tous les soins et services requis par votre état de santé, sans frais de votre part.

En signant le présent formulaire d'information et de consentement, vous ne renoncez à aucun de vos droits ni ne libérez les chercheurs de leurs responsabilités civile et professionnelle.

Diffusion des résultats

Vous pourrez communiquer avec l'équipe de recherche afin d'obtenir de l'information sur l'avancement des travaux ou les résultats du projet de recherche. L'état d'avancement de nos travaux vous sera disponible à la fin du projet de recherche. Les résultats de cette recherche pourraient être présentées au cours de journées scientifiques ou publiées dans des revues scientifiques, mais aucune information pouvant vous identifier ne sera dévoilée ni dans les présentations, ni dans les publications.

Protection de la confidentialité

Durant votre participation à ce projet, le chercheur et son équipe recueilleront dans un dossier de recherche les renseignements vous concernant nécessaires pour répondre aux objectifs du projet. Tous les renseignements recueillis demeureront strictement confidentiels. Vous ne serez identifié que par un numéro de code auquel seule Dre Elham Emami ou l'étudiant responsable auront accès. Les données de recherche seront conservées au laboratoire de recherche du directeur de cette recherche, Dre Emami, à l'Université de Montréal, au local D-523 du Pavillon Roger-Gaudry pendant sept ans après la fin de l'étude et les dossiers seront détruits par la suite. Par contre, les cassettes audio des entrevues seront détruites lorsque leur contenu aura été dactylographié, en effaçant le fichier électronique.

Vous avez le droit de consulter votre dossier de recherche pour vérifier les renseignements recueillis, et les faire rectifier au besoin, et ce, aussi longtemps que le chercheur responsable du projet ou l'établissement détiennent ces informations. Cependant, afin de préserver l'intégrité scientifique du projet, vous pourriez n'avoir accès à certaines de ces informations qu'une fois votre participation terminée.

Pour des raisons de surveillance et de contrôle de la recherche, votre dossier pourra être consulté par le CÉRES. Toutes ces personnes respecteront la politique de confidentialité.

Les données pourront être publiées dans des revues scientifiques, mais il ne sera pas possible de vous identifier.

Droit de retrait

Votre participation à ce projet est tout a fait volontaire. Vous êtes donc libre de refuser d'y participer. Vous pouvez vous retirer de cette étude à n'importe quel moment, sans avoir à donner de raison. Vous avez simplement à aviser la personne-ressource de l'équipe de recherche et ce, par simple avis verbal.

En cas de retrait, vous pouvez demander la destruction des données ou du matériel vous concernant. Enfin, il est impossible de retirer les analyses menées sur vos données ou votre matériel une fois ces dernières publiées ou diffusées.

Personnes –ressources

Si vous avez des questions sur l'aspect scientifique de cette étude, ou si vous voulez vous retirer

Pour toute information d'ordre éthique concernant les conditions dans lesquelles se déroule votre

Pour plus d'information sur vos droits comme participants, vous pouvez consulter le portail des

Toute plainte relative à votre participation à cette recherche peut être adressée à l'ombudsman de

FORMULAIRE DE CONSENTEMENT

Engagement et signature du (de la) participant(e) :

Votre participation à cette étude est tout à fait volontaire. Vous êtes donc libre d'accepter ou de refuser d'y participer sans que cela affecte vos études académiques. En acceptant de participer à ce projet de recherche, vous ne renoncez à aucun de vos droits ni ne dégagez les chercheurs de leurs responsabilités.

Je, ……., déclare avoir pris connaissance du présent formulaire d'information et de consentement et j'accepte de participer au projet de recherche. J'affirme avoir discuté avec les chercheurs et compris le but, la nature, les avantages, les risques et les inconvénients de l'étude. J'affirme avoir reçu une copie de ce document.

Après réflexion et un délai raisonnable, je consens librement à prendre part à cette étude. Je sais que je peux me retirer en tout temps sans préjudice.

Je consens à ce que Dre Emami conserve mes coordonnées pour les années à venir et que l'on me recontacte afin de me proposer de participer à un autre projet de recherche relié à la médecine dentaire, que ceci soit sous forme d'entrevue.

☐ Oui ☐ Non

Je consens à ce que les données recueillies dans le cadre du présent projet de recherche soient utilisées dans d'autres projets de recherche reliés à la médecine dentaire en milieu rural pour des fins de recherche ou d'enseignement sans jamais dévoiler mon identité et ceci conditionnellement à leur approbation par un comité d'éthique de la recherche.

☐ Oui ☐ Non

Signature du participant……..date……

Engagement et signature de l'étudiant responsable :

Je, ……..…….…….…….…….. déclare avoir expliqué le but, la nature, les avantages, les risques et les inconvénients de l'étude ainsi que d'avoir répondu à toutes les questions du participant. Je m'engage avec l'équipe de recherche à respecter ce qui a été convenu au formulaire d'information et de consentement et à en remettre une copie signée au participant.

Signature …….. date……

APPENDIX VI: INTERVIEW GUIDE

A) OPENING THE INTERVIEW: Courtesy introduction, consent form

B) CONDUCTING THE INTERVIEW: Technical Councils, key and complementary questions

SECTION 1: General discussion

- Oral healthcare disparity
- Underlying factors
- Rural dental practice

SECTION 2: Individual needs

- Perspectives and career goals
- Career and lifestyle expectations

SECTION 3: Community needs

- Rural vs. Urban
- Opportunities

SECTION 4: Organizational needs

- Strength and weaknesses
- Government support
- Source of information

SECTION 5:

- Demographic and socioeconomic profile