DENTAL STUDENTS' READINESS TO TACKLE SOCIAL DETERMINANTS OF HEALTH:
A DESCRIPTIVE QUALITATIVE STUDY

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PCC : Person-centered care

SDH : Social Determinants of Health

ACFD : Association of Canadian Faculties of Dentistry

WHO : World Health Organization

ADA : American Dental Association

USA : United States of America

HIV : Human Inmunodeficiency Virus

DENTP : Dent-P Program, McGill University five-year undergraduate dental program for immediate graduates of the Quebec Collegial (CEGEP) System (This program combines a preparatory year in the Faculty of Sciences followed by the four year DMD Program in the Faculty of Dentistry).

CEGEP: French acronym for Collège d'enseignement général et professionnel (General and Vocational College in English)

Abstract

Background: Many dental professional organizations have agreed on the need to reform the dental education sector. One aspect of this reform is to adapt the skills of future dentists to meet the needs of disadvantaged people and communities. Despite the increasing interest in incorporating courses to educate future dentists about social determinants of health (SDH), there is limited knowledge that helps understand how future dentists view current reforms of the undergraduate dental curriculum, and how ready they feel to address SDH in their future clinical practice.

Objectives: The purpose of this investigation was twofold: (1) to describe dental students' perceptions of undergraduate learning about SDH, and (2) to explore how they feel prepared to address them into their future practice.

Methods: This was a qualitative descriptive investigation. Third- and fourth-year undergraduate dental students were invited to participate in semi-structured individual interviews ($N = 15$). These interviews were audio-recorded, transcribed verbatim, and thematically analyzed.

Findings: The participants from this study reported that they have taken several courses related to SDH. They valued this enrolment to establish appropriate dental treatments and reported that they felt ready and willing to identify patients' SDH. Furthermore, they were confident enough to identify SDH in their future clinical practice. They also stressed that their exposure to projects at the community level made them want to participate in community services initiatives in the future. They also pointed out that they would like to have more knowledge in understanding how to support their patients through interdisciplinary clinical practice. Nevertheless, the participants disclosed that they did not feel able to support or to

guide their patients regarding several obstacles to access to dental care, especially on the financial component, pointing out the McGill University Outreach Dental Clinics as the main service to refer patients with financial constraints.

Conclusions: Current undergraduate dental curriculum seems to support students' acquisition of knowledge and skills to identify their future patients' SDH. However, it still appears insufficient to help future dentists adequately address these social determinants in their clinical practice.

Résumé

CONTEXTE: Les associations professionnelles s'accordent sur la nécessité de réformer le secteur de l'éducation en médecine dentaire. Un des volets de cette réforme est d'améliorer les compétences des futurs dentistes pour répondre aux besoins des patients et des communautés défavorisés. Malgré l'intérêt croissant pour l'intégration de cours sur les déterminants sociaux de la santé, nous savons mal comment les futurs dentistes voient les reformes actuelles et s'ils se sentent prêts pour aborder ces déterminants sociaux dans leur future pratique.

OBJECTIF: Notre but était de mieux connaitre les opinions des étudiants en médecine dentaire sur les déterminants sociaux de la santé, et de savoir dans quelle mesure ils se sentaient préparés pour les incorporer dans leur future pratique.

METHODES: Dans le cadre d'une étude qualitative descriptive, nous avons recruté 15 étudiants en médecine dentaire de troisième et quatrième années de premier cycle. Ces derniers ont participé à une entrevue individuelle semi-structurée qui était enregistrée, retranscrite et analysée de manière thématique.

RÉSULTATS: Les participants rapportent avoir suivi des cours sur les déterminants sociaux de la santé et considèrent pertinent d'en tenir compte pour établir des plans de traitement appropriés. Ils se sentent confiants pour identifier les déterminants sociaux de la santé et ont souligné que l'exposition à des projets communautaires les incitait à participer à des initiatives communautaires dans le futur. Toutefois, les participants aimeraient approfondir leurs compétences pour traiter les personnes issues de ces milieux. Ils ont notamment relevé qu'ils ne se sentaient pas prêts pour guider leurs patients face à plusieurs obstacles dans l'accès aux soins dentaires, notamment sur le plan financier, soulignant l'utilité des cliniques outreach de McGill pour servir ces patients.

CONCLUSIONS: Le programme actuel de médecine dentaire de premier cycle semble fournir aux étudiants des connaissances et des compétences pour identifier les déterminants sociaux de la santé de leurs patients. Cependant, il reste insuffisant pour aider les futurs dentistes à agir sur ces déterminants sociaux.

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Dr. Charo Rodríguez, professor in the Department of Family Medicine, was the co-supervisor of this study. As an expert in qualitative methodologies in health research, she has been the founding director of the Family Medicine Education Research Group since 2014. She is the founding director of the McGill MSc in Family Medicine – Medical Education Concentration. Both supervisors have not only been a source of inspirational knowledge to me, but also of caring and supportive mentorship at the academic and personal levels alike.

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Authors' contributions

This project was realized through innumerable meetings with my supervisors, Dr. Bedos and Dr. Rodríguez, and the committee members, Dr. Hovey and Dr. Jordan. We discussed and reflected on the appropriate way to conduct this research. Dr. Bedos invited me to participate in his courses, Dental Public Health and Clinical Decision-making, with the aim to involve me with students' education about social determinants of health, prior to the recruitment of my participants. Dr. Rodriguez added her expertise in qualitative research throughout the entire process, from study conceptualization through fieldwork and data analysis to the writing of this research report.

I performed a literature review about social gradient, dental education, and social dentistry. Once the evaluations for Dr. Bedos's courses were done, I recruited the participants and interviewed them. I transcribed and analyzed the data collected and I wrote my findings, always with the supervision of Dr. Bedos and Dr. Rodriguez.

1. Introduction

Besides biological predispositions, social and economic environments shape people's daily life situations and determine their risk of illness and their ability to be treated (Dharamsi, Pratt, & MacEntee, 2007; Sharma, Pinto, & Kumagai, 2017). These social conditions are a set of forces that translate into social gradients of health and that are labelled *social determinants of health* (SDH). As a result of these determinants and their unequal distribution in society, most diseases and causes of death are more common in the lower levels of the social hierarchy (Pederson, Raphael, & Johnson, 2010). Since the beginning of the 20th century, when the seminal Flexner report was published in the USA and Canada, medicine has progressively embraced "science," a trend sometimes viewed in opposition to "social" dimensions of clinical practice (DePaola, 2008). This can be considered one of the main driving forces that has sustained an increasing mismatch between people's health needs and the way future health care providers are trained (Pan-Canadian Health Inequalities Data Tool, 2017).

Compelling evidence about the interaction between biology and the social environment has nonetheless motivated an interest in biopsychosocial approaches in medical education over the last two decades (Coria, McKelvey, Charlton, Woodworth, & Lahey, 2013). Recent times have witnessed the emergence of new models in medical education with the objective to integrate psychosocial dimensions into biomedical education programs. Terms like "social medicine," "open-mindedness," "social justice," "structural competency," "narrative medicine" and "patient-centred care" have emerged to define this innovative way of understanding diseases and healthcare delivery (Apelian et al.,2014; Dharamsi, Ho, Spadafora, & Woolard, 2011; Sharma et al., 2017; Ventres & Dharamsi, 2015). These trends have also been present in dentistry. Scholars trace the beginning of dentistry educational reform at the end of the 20th

century, with the ultimate goal of better preparing future dentists to their professional challenges in years to come. Over the last two decades, multiple reports from different institutions, such as the Institute of Medicine's *Dental Education at the Crossroads*, the ADA, and others have established a compelling case for change in dental education (Coria et al., 2008; DePaola et al., 2004; DePaola, 2008). Even though fully biomedical programs are still the norm in most Western faculties of dentistry, a movement for reforming dental education is on the way. In Canada, for example, the Association of Canadian Faculties of Dentistry (ACFD) recently produced a dental educational framework to form "competent dentists." The latter should be able to treat their patients integrally, taking into consideration medical, psychosocial and dental histories along with the clinical and radiographic examinations, and diagnostic tests (Dharamsi et al., 2007). Thus, competent dentists should "work with patients to address social determinants of health that affect them" (Mouradian, Huebner, & DePaola, 2004). More specifically, several faculties of dentistry in North America, such as the University of British Columbia, the University of North Carolina at Chapel Hill, or Harvard University, have been incorporating new courses to educate future dentists about (Berg, 2001; DePaola, 2008; DePaola & Slavkin, 2004; Feldman & Valachovic, 2017). Despite this increasing interest, these concepts have mostly been taught as a "grocery list," with very limited results, if any (Donoff, 2006). Most recently, contemporary undergraduate dental education is striving to privilege innovative learner-centred approaches (e.g. using transformative learning) to prepare students to address SDH.

However, there is a dearth of empirical investigations to help understand how future dentists view current reforms of undergraduate dental curriculum, and how they feel prepared (i.e. readiness) to face the challenges that their future patients' SDH will generate in their

clinical practice. This thesis aims to help fulfil this knowledge gap. The *Merriam-Webster Dictionary* defines readiness as both a state of preparation to perform an action and an attitude of prompt willingness (Dharamsi et al., 2007; "Readiness," 2006). In the dental literature, the term readiness is in effect generally understood as the state of being fully prepared to accomplish a task (Sharma et al., 2017). In the context of this investigation, readiness is understood as the ability of dental students to not only understand how SDH influences patients' health status but also their perceived competency and positive attitude to address SDH in their future clinical practice.

I have structured the rest of the thesis as follows. Chapter 2 corresponds to the literature review, where I cover concepts as health inequalities, social gradient, and SDH. I also include how social determinants have been taught in medicine and in dentistry. In chapter 3, I present the purpose and the research question. In chapter 4, I describe the implemented methodology. In chapter 5, I present the results, highlighting the three main themes that emerged from this research. Chapter 6 includes the discussion, with an emphasis on the strengths and weaknesses of this study and recommendations for future directions. Finally, I end this dissertation with the conclusions extracted from this inquiry.

2. Literature review

2.1. Health and oral health inequalities

Although Canada is a developed country, not all Canadians achieve and maintain good health; there are many inequalities as a result of social and economic disadvantages. Studies have shown that low-income neighbourhoods have 28% higher death rates than higher-income ones (Mikkonen & Raphael, 2010; Wilskinson & Marmot, 2003). The Pan-Canadian Health Inequalities Reporting initiative describes the degree and distribution of these inequalities in Canada. The results of life expectancy and health-adjusted life expectancy in Canada show that Canadians in the lowest income group live 11.3 fewer healthy years than those in the highest income (Pan-Canadian Health Inequalities Data Tool, 2017). Adults living in the lowest income areas have a lung cancer incidence rate that is 1.7 times that of adults living in others in which the population holds highest education levels (Pan-Canadian Health Inequalities Data Tool, 2017). Considering the bidirectional relationship and impact of the oral health on general health, this report also describes the inequalities in oral health in Canada. For instance, 1.8 million Canadians experience an inability to chew, which can be caused by illness, tooth decay or pain, missing teeth, lack of dentures or ill-filling dentures (Bedos, Levine, and Brodeur, 2009). The proportion of adults unable to chew is 3.3 times higher in low-income populations than the higher income population (Pan-Canadian Health Inequalities Data Tool, 2017).

Moreover, the report of the Oral Health Component of Canada Health Measures Survey revealed that the people from lower-income individuals have the worst outcomes in terms of oral health, compared with the higher-income ones (Locker, 2007). Of note, 47% of lower-income Canadians had oral health needs compared with 26% of the higher-income group (Bagramian, Garcia-Godoy, & Volpe, 2009; Bovington, Srinivasan, & Bowers, 2014). In

general, Canadian people from lower-income families have 2 times worse oral health outcomes compared with higher-income families in many measurements (Bagramian et al., 2009; Calvasina, Muntaner, & Quiñonez, 2014).

Health inequalities refer to differences in health status between groups in society. These differences can be due to biological factors, individual choices, or chance; however, it is well known that beyond individual biological predispositions, there is a socioeconomic gradient that produces a profound impact on their health and well-being. This gradient is composed of a set of forces or indicators that shape people's daily life. These factors are known as SDH (Calvasina et al., 2014; Gift, Reisine, & Larach, 1992; Muirhead, Quinonez, Figueiredo, & Locker, 2009; Schroth & Cheba, 2007; Waldman, Perlamn, & Cinotti, 2009; Watt, 2007).

2.2. Social gradient

Low-income individuals have a shorter life expectancy around the world (Wilkinson & Marmot, 2003). According to those authors, people from a low social status usually run at least twice the risk of serious illness and premature death than those in a higher level (Marmot & Bell, 2009; Wilkinson & Marmot, 2003). Poor social and economic circumstances affect health through life. From the lower to the higher social status, general health is observed as a gradient (Marmot & Bell, 2009; Watt, 2002; Wilkinson & Marmot, 2003). Most diseases and causes of death are more common in the lower social hierarchy. In general, wealthy people live longer on average than middle-class people, and middle-class people live longer than lower-class people. Moreover, the social gradient represents material disadvantages and the effects of insecurity, anxiety, and lack of social integration (Mikkonen & Raphael, 2010; Pan-Canadian Health Inequalities Data Tool, 2017; Watt, 2002). Indicators like mortality, incidence, prevalence of

chronic diseases, and general health outcomes reveal wide health inequalities within social classes. Morbidity and mortality rise when social or socioeconomic status decreases (Mikkonen & Raphael, 2010; Wilkinson & Marmot, 2003).

2.3. Social determinants of health

The World Health Organization (WHO) defines SDH as *"the conditions in and under which people are born, grow, work and live, and the broader set of forces and systems that shape the conditions life"* (Sharma et al., 2017). These forces can include political and economic policies and systems and social institutions, among others. When we consider SDH of a person at an individual level, these social conditions can determine not just the risk of the illness, but the possibility to be cured and the ability to have access to preventive health care measures (Sharma et al., 2017). Those social conditions include housing, employment status, and working conditions (Embrett & Randall, 2014; Sharma et al., 2017; WHO, 2010).

In 2002, York University in Toronto developed a model highlighting the strong effects of social determinants on the health of Canadians (Mikkonen & Raphael, 2010). These determinants have a strong relation with negative health outcomes and the perpetuation of some diseases and disorders. These determinants are associated with people's behaviours, such as diet, physical activity, and even tobacco and excessive alcohol use, which could contribute or be the cause of diminished health status (Bryant, 2009; Marmot et al., 2008; Mikkonen & Raphael, 2010). The model has identified 14 SDH: namely aboriginal status, disability, early life, education, employment and working conditions, food insecurity, health services, gender, housing, income and income distribution, social exclusion, social safety net and unemployment and job security (Mikkonen & Raphael, 2010).

Income is perhaps the most important SDH. The level of income shapes overall living conditions, affects psychological functioning, and influences health-related behaviours such as quality of the diet, the extent of physical activity, tobacco and alcohol use. In Canada, income received determines the quality of other SDH such as food insecurity, housing, and other basic prerequisites of health (Bierman & Dunn, 2006; Bryant, 2003; Mikkonen & Raphael, 2010). The distribution of income across the population is related to the health of the population. Equal income distribution has proven to be one of the best predictors of the overall health of a society (Mikkonen & Raphael, 2010). Low income predisposes people to material and social deprivation. Deprivation also contributes to social exclusion by making it harder to participate in cultural, educational, and recreational activities. In the long run, social exclusion affects one's health and the ability to live a fulfilling day-to-day life (Bierman & Dunn, 2006; Mikkonen & Raphael, 2010). The Canadian dental care system is predominantly funded and delivered privately since the public healthcare system does not cover dental treatments. Hence, low income constitutes one of the most important limitations to access to needed dental care.

In turn, *employment* provides not just a person's income, but also brings a sense of identity and helps to structure daily activities. Therefore, unemployment leads to material and social deprivation, psychological stress, and the adoption of health-threatening coping behaviours. Indeed, lack of employment is associated with physical and mental health problems that include depression, anxiety, and increased suicide rates (Mikkonen & Raphael, 2010). *Unemployment* often leads to material deprivation and poverty by reducing income and removing benefits that were previously provided by one's employer. On the other hand, losing a job is a stressful event that lowers one's self-esteem, disrupts daily routines, and increases anxiety. In addition,

unemployment increases the likelihood of turning to unhealthy coping behaviours such as tobacco use and drinking (Mikkonen & Raphael, 2010).

In Canada, men in the wealthiest 20% of neighbourhoods live on average more than four years longer than men in the poorest 20% of neighbourhoods. The comparative difference for women was found to be almost two years (Berthelot, Wilkins, & Ng, 2002; Mikkonen & Raphael, 2010). In addition, the suicide rates in the lowest-income neighbourhoods were almost twice those seen in the wealthiest neighbourhoods. Adult-onset diabetes and heart attack are also far more common among low-income Canadians (Berthelot, Wilkins, & Ng, 2002; Mikkonen & Raphael, 2010).

At the same time, *education* is an important SDH. People with higher education tend to be healthier than those with lower educational preparation. On the one hand, education is highly correlated with other SDH like the level of income, employment security, and working conditions. On the other hand, higher education means that people have better opportunities if their employment situation suddenly changes. Moreover, education facilitates people to be involved in the political process: people can better understand how the world and their factors influence societal factors that shape their health (Mikkonen & Raphael, 2010).

In addition to the social determinants described above, *social exclusion* plays an important role in civic participation. In general, people who suffer from adverse social and material living conditions also experience high levels of physiological and psychological stress. Stressful experiences arise from coping with conditions of low income, poor quality housing, food insecurity inadequate working conditions, insecure employment, and various forms of discrimination based on aboriginal status, disability, gender, or origin. The lack of supportive relationships, social isolation, and mistrust in others increases stress (Mikkonen & Raphael,

2010). Indeed, stressful living conditions make it extremely hard to take up physical leisure activity or practice healthy eating habits because most of one's energy is directed towards coping with daily life (Mikkonen & Raphael, 2010).

There are some considerations of social exclusion, such as denial of participation in civil affairs as a result of legal sanctions and other institutional mechanisms. Denial of social goods such as health care, education, housing income security, and language services is common (Mikkonen & Raphael, 2010; Silver, 2007). Socially excluded groups earn lower incomes than non-excluded Canadians. They lack affordable housing and experience less access to services (Mikkonen & Raphael, 2010). Exclusion from social production means there is a lack of opportunity to participate and contribute to social and cultural activities (Mikkonen & Raphael, 2010; Silver, 2007).

Economic exclusion is when individuals cannot access economic resources and opportunities such as participation in paid work. All of these forms of exclusion are common to aboriginal Canadians, Canadians of colour, recent immigrants, women and people with disabilities (Mikkonen & Raphael, 2010). Social exclusion creates living conditions and personal experiences that endanger health. Social exclusion creates a sense of powerlessness, hopelessness, and depression that further diminish the possibilities of inclusion in society (Mikkonen & Raphael, 2010). The reality is that marginalization and exclusion of individuals and communities from mainstream society constitute a primary factor leading to adult-onset diabetes and a range of other chronic diseases such as respiratory and cardiovascular disease (Mikkonen & Raphael, 2010). On the other hand, Canada's economy and labour market have been restructured to make them more flexible; this endeavour has served to accelerate social exclusion processes. The quality of jobs is increasingly being stratified along racial lines, with a

disproportionate proportion of low-income sector employment being taken by Canadians of colour and recent immigrants. The same population is less represented in high-income sectors and occupations (Mikkonen & Raphael, 2010).

Theories to explain social determinants of health

Several theories that have attempted to explain the influence of SDH on general health. These theories have also highlighted the need to focus action on the underlying social, economic and environmental determinants of health (Watt, 2002).

The *life-course theory* is based upon an analysis of the complex ways in which biological risk interacts with economic, social, and psychological factors in the whole life course. In other words, a person's past social experiences become written into the physiology and pathology of their body (Watt, 2002). For example, the relevance between low birth weight and later socioeconomic circumstances has been demonstrated (Watt, 2002). This perspective places particular emphasis upon the social context and the interaction between people and their environments in the passage through life (Moen, 1996; Watt, 2002). Thus, a person who is long-term unemployed is likely to live in relatively poor-quality accommodations, have restricted access to a healthy diet, and smoke as a means of coping with stress and boredom (Watt, 2002).

Another theory is the *salutogenic model*. Rather than focus attention on understanding the nature of diseases and its associated risk behaviours, this approach considers the factors responsible for creating and maintaining good health, in other words, the origins of health or salutogenesis (Watt, 2002, 2007). The salutogenic model proposes that stressors are a standard feature of human existence and that individuals and communities with a stronger sense of

coherence are better equipped to deal with them and maintain good health and well-being (Watt, 2002). This model focuses attention on identifying and modifying the social structure: factors that influence the health status of populations (Watt, 2002). Promoting this approach aims to move the population towards a healthier status (Lindström & Eriksson, 2009; Watt, 2002, 2007).

Social capital is a theory defined as a feature of social organization, such as civic participation and the impact of this on local governance (Watt, 2002). On the other hand, social capital is essential to assess the level of social trust that operates within a community (Watt, 2002). This construct indicates how safe people feel together, how to help people give each other for their own and collective benefit, and the degree of involvement in social and community issues such as voting and participation in community groups (Poortinga, 2006; Watt, 2002).

Watt (2002) highlighted the importance of relative poverty research by demonstrating the relationship between income distribution and life expectancy in a selection of developed countries. Thus, in egalitarian countries in which there is less difference between poor and rich population, life expectancy is much higher than countries with greater economic inequalities (Watt, 2002). Hence, the growing gap between the rich and the poor affects the social organization of communities, a phenomenon that has implications for public health (Veenstra, 2000; Watt, 2002).

These theories have emphasized the importance of a change in the approach of healthcare professionals and have highlighted the value of an upstream approach. There are potential implications of these theories in oral health promotion. Specifically, interventions on oral determinants of health should be promoted, and communities should be empowered and

involved by promoting the participation of the target population and working in partnership with a multidisciplinary collaboration (Hamissi, 2012; Watt, 2002).

2.4. Social determinants of health in medical education

New approaches in healthcare professions are implemented to enhance the learning process. Mezirow (1981) developed a theory of adult learning based on his idea of the process of making from pure experiences through reflection, critical reflection and critical self-reflection (Mezirow, 2000). Perspectives comprise sets of benefits, values, and assumptions that we come to perceive and understand ourselves. These viewpoints serve as a lens through which we come to perceive and understand ourselves and the world we inhabit. "Transformative learning is learning that transform problematic frames of reference to make them more inclusive, discriminating, open, reflective and emotionally able to change." (Mezirow, 2000)

The core of the learning may be a way of understanding adult learning as a process fostering a vision of society and the self-actualization of individuals (Mezirow, 2000). With new approaches in medical and dental education, future clinicians would be socially accountable and engaged with societal needs, and they could be educated to address dental as well as psychosocial history. This shifting to integrating a person-centred care (PCC) approach has required the dental profession change so as to stay updated (Braveman & Gottlieb, 2014; Mezirow, 2000). Knowledge of how psychosocial factors impact oral health would improve patients' diagnosis and treatment and stimulate future dentists to work collaboratively (Mezirow, 2000).

In the same line, another educational approach, the concept of *critical consciousness*, focuses on achieving a deep understanding of the world, allowing for the perception and exposure of social and political contradictions (Freire, 1985). "*Conscientozaçâ*" is a popular term in Portuguese education; it was developed by Paulo Freire and defines critical consciousness as the ability to "intervene in reality in order to change it" (Freire, 1985; Kumagai, 2014; Kumagai & Lypson, 2009).

The ultimate goal of critical consciousness is an "intergenerational equity" between students and teachers in which both learn, both reflect, and both participate in meaning-making, based on Freire (1985). He believed education could not be divorced from politics: the act of teaching and learning are political acts themselves (Freire, 1985, 2018). He then established that "education makes sense because women and men learn that through learning. They can make and remake themselves because women and men are able to take responsibility for themselves as being capable of knowing, that they know and that they do not know" (Freire, 1985, 2018).

Based on the approaches described above, medical schools have begun incorporating new strategies in medical education in order to respond to the increasingly loud call to include social responsibility in their mandates (Sharma, Pinto, & Kumagai, 2018). SDH are now considered key drivers in the health patients and communities they serve (Sharma et al., 2017). Nevertheless, the old and current approaches to teaching SDH are made as "facts to be known" rather than "conditions to be addressed and changed (Sharma et al., 2017). That approach does not allow practitioners to integrally help their patients by tackling their social conditions (Sharma et al., 2017). Therefore, several authors (Boelen, 2011; Boelen, Heck, & WHO, 1995; Sharma et al., 2017) have suggested doing something about providing a transformational

reorientation of medical education with a reflection of overall purpose. Indeed, in several medical curricula, SDH courses have been limited to deal with specific determinants, such as poverty, homelessness, or race, and do not consider the broad umbrella (Sharma et al., 2017). Given that medical educators are interested in incorporating SDH into medical curricula, several newer educational initiatives include didactic training, mentorship, collaborative longitudinal, service, and advocacy projects with community partners, career seminars, and research (Embrett & Randall, 2014; Sharma et al., 2017).

Several studies have demonstrated increased awareness of and reflexivity around SDH among students (Beagan, 2003; Landy et al., 2016; Sharma et al., 2017). Medical education can play a role in addressing health inequities by addressing the structural role that medical schools play in maintaining societal inequities and providing trainees with the knowledge and skills to work toward social change (Beagan, 2003; Sharma et al., 2017). As a result, several models have been incorporated into medical curricula. Consider as an example the *structural competency* model. Structural competency is the ability of a trainee to discern among clinical symptoms, attitudes or disease and how these downstream conditions have implications of some upstream decisions about such matters as health care and food delivery systems, zoning laws, urban and rural infrastructures, medicalization, or even about the very definitions of illness and health (Donald, DasGupta, Metzl, & Eckstrand, 2017; Hansen & Metzl, 2016; Metzl & Hansen. 2014). Structural competency requires specific skills, such as the recognition that structures shape clinical interactions, development of an extra-clinical language of structure, re-articulation of "cultural" formations in structural terms, the ability to observe and imagine structural interventions, and cultivation of structural humility (Donald et al., 2017). Thus, cultural competency indicates the trained ability to identify and address cultural manifestations

of illness and health (Donald et al., 2017). Therefore, professionals learn approaches to communication, diagnosis, and treatment that consider culturally specific sources of stigma within clinical encounters. Hence, it is important to integrate training that includes the health needs of diverse communities into the provision of medicine (Donald et al., 2017; Hansen & Metzl, 2016).

Another model is *social medicine*, which is based on the idea that SDH are conceptualized as biosocial phenomena in which health and disease emerge through the interaction between biology and social environment (Westerhaus et al., 2015). Through this lens, this model believes that undergraduate and graduate medical education must thoughtfully and intentionally incorporate the social context into all aspects of biomedical education (Westerhaus et al., 2015). This endeavour requires the incorporation of a comprehensive biosocial curriculum that spans the preclinical and clinical years of medical school as well as residency training in both domestic and global settings (Gelberg, Andersen, & Leake, 2000; Westerhaus et al., 2015). For example, there is an organization that promotes social medicine curricula (SocMed), which is a nonprofit organization that advocates for and implements social medicine curricula. It offers annual courses in northern Uganda and Haiti for health professionals interested in global health. This model applies the reflection and action approach to make the link between the trainees, who are deeply interested in addressing SDH, and partnership with the community (Westerhaus et al., 2015). Students participate as both learners and teachers to advance the entire class's understanding of biosocial interactions that influence illness presentation and social experience of the disease. Half of the class participants are local students and the other half are students from elsewhere in the world (Westerhaus et al., 2015).

In an attempt to move towards a necessary change in medical education, it is necessary to establish principles to guide the successful implementation of biosocial medical education. Teaching social, economic, cultural, and behavioural determinants of health must be integrated into the basic science, epidemiological, pathophysiologic, and clinic topics already in place (Bowers, Eisenberg, Montbriand, Jaskolka, & Roche-Nagle, 2015; Eisenberg & Kleinman, 2012; Westerhaus et al., 2015). Effective biosocial education requires building institutional support by highlighting credible research that demonstrates the importance of SDH as well as networking with curriculum committees and developing a community of individuals, departments, and organizations that are involved further than an approach to health (Westerhaus et al., 2015). However, teaching social medicine requires the application of diverse pedagogies, rigorous self-reflection, and integral emphasis on building partnerships to achieve a sound biosocial approach (Westerhaus et al., 2015).

Another initiative from the Lebanese American University proposed a *four-year curriculum that fully integrates social medicine* into all aspects of its four-year curriculum to create socially oriented physicians. Thus, social medicine is one of 12 science disciplines that are taught and assessed simultaneously in an integrated and problem-based curriculum (Westerhaus et al., 2015). This approach is implemented weekly in system-based modules. For example, dialogue on individual and social responsibility for smoking is fostered during the pulmonary module, and a critical analysis of social determinants of diarrhea is covered in the gastroenterology module (Westerhaus et al., 2015). Moreover, in the clinical years, social medicine remains central through a longitudinal primary care clerkship focused on following a patient or family for two years and weekly social medicine rounds during inpatient clerkships.

This model aims to promote students' understanding of social medicine as equally integrated to their physician formation as other topics (Westerhaus et al., 2015).

2.5. Social determinants of health in dental education

2.5.1. Origin of the dental program

Dental education formally started in the USA in 1840 at the Baltimore College of Dental Surgery, after rejecting the dental program from the medical department at the University of Maryland. With the consistent question of whether dentistry should be part of the medical curriculum, the dental curriculum has evolved through complex pathways. The American Dental Association (ADA) was created in 1860. Among other functions, this association has been in charge of producing an annual dental education report to regulate formal education in dentistry (DePaola & Slavkin, 2004).

Since dentistry had emerged as a specialized branch from surgery, it developed a similar scientific knowledge. Therefore, at the time, dental students' preparation was equivalent to that of physicians. With a strong basic science education, the medical profession is derived predominantly from the concept of "technical rationality." This establishes that clinicians should apply scientific evidence to solve the problems (Berg, 2001; DePaola & Slavkin, 2004).

From the 19th century and into the early 20th century, the dental profession was focused mostly on oral rehabilitation and the pathogenesis of oral diseases, with little attention to chronic diseases. However, at the end of the 20th century, dentistry started a reform process (Pyle, 2012), a revolution that followed the need to adjust the profession to challenges of the 21st century. Hence, multiple reports from different institutions, such as the Institution of

Medicine's *Dental Education at the Crossroads*, the ADA, and others have established a compelling case for change in dental education.

Nowadays, more than 70 years of surveys and reports have shown that dental curriculum problems persist. With an emphasis on a biomedical program and overcrowded curriculum, the study, and awareness of the impact of social context, income, discrimination, and others social determinants of people's health have been neglected. This deficiency underscores why the current curriculum in dentistry is incomplete. As a result, future dentists should be trained to know how to address patients' and communities' oral health problems. There are new approaches to healthcare professions; they have emerged to understand and to address disease-related behaviours in society and they have moved from an individual perspective to social and environmental factors. These models could be considered to inspire the dental curriculum.

2.5.2. The Association of Canadian Faculties of Dentistry educational framework

The ACFD educational framework is a conceptual tool to guide Canadian undergraduate dental curricula. It identifies five areas or competences to best ensure that Canadian dental school graduates are well prepared for general practice (ACFD, 2016). This framework distinguishes competency from competence. It interprets competency as "a global statement of complex knowledge, skills and attitudes required of the beginning general dentist," and defines competence as "the behaviour expected of a beginning practitioner, which incorporates understanding, skill, and values in an integrated response to the full range of requirements presented in practice". These competencies are (1) PCC, (2) professionalism, (3) communication and collaboration, (4) practice and information management, and (5) health promotion (ACFD, 2016). Each competency is described below.

Future dentists should be formed to apply professional knowledge, skills, and values in the provision of *PCC*. Future dentists must know how to utilize the expertise of the clinical, socio-behavioural, and fundamental biomedical sciences relevant to dentistry. Dental professionals should develop capacities to interpret findings from patients' chief complaint, medical psychosocial, and dentist histories along with the complete evaluation. Furthermore, dental schools should train students to understand and manage SDH and keep them motivated in their future practice (ACFD, 2016).

Professionalism refers to the commitment to promote the oral health and well-being of individuals and the society through ethical practice, reflective learning, self-regulation, and high personal standards of behaviour. The dentist should apply best practices and adhere to high ethical standards.

Communication and collaboration foster patient trust and autonomy, with a dental care approach that is characterized by empathy, respect, and compassion. Effective communication would allow clinicians to obtain patients' chief complaint; medical, psychosocial, and dental histories; and at the same time engage patients in the discussion of findings, diagnoses, aetiology, risks, benefits, time requirements, costs, responsibilities, and prognoses of the treatment options.

Practice and information management refer to the assessment of information and management of a general dental practice to facilitate PCC. This competency will be achieved by the implementation of processes to improve professional practice. Dental professionals will employ technology in a manner appropriate for patient care and apply the principles of evidence-based decision making into their practice.

Health promotion highlights that dentists have to work with patients to address SDH that affect them. This endeavour requires recognition of influencing factors of oral health and descriptions of the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity, and idealism. A competent dentist should be able to promote measures to prevent oral disease. At the same time, she or he must recognize the relationship between general health and oral health and advocate health promotion and disease prevention within the community. Furthermore, dentists should be able to serve and know how the policies impact the health of populations served.

2.5.3. Dental courses on social determinants of health recently added to the McGill University undergraduate dental program

2.5.3.1. Dental Public Health course (DENT305)

This course is designed to teach and reinforce third-year dental students about PCC, the dentist-patient relationship, and social dentistry. The educational objectives of the course ask the students to reflect on: (a) the social determinants of health, illness, and access to care; (b) the needs of several underprivileged groups in our society; c) person-centred clinical approaches; c) social dentistry approaches; and d) social dentistry approaches.

Students are evaluated through a weekly log and a final essay. The weekly logs describe students' reflections and thoughts after each course session. These logs should (but do not necessarily) focus on:

- Students' experience with the guests representing various communities: What insights did the student gain through these encounters? What lessons did the student learn? What challenges did the student see for the dental profession and the health care system?

- Students' own clinical approaches: What kind of reflection has the course elicited? What kind of challenges does the student face in terms of relationships with patients?
- Students' reflections on the McGill University dental clinic level of person-centredness and social accountability, on the challenges to implementing such approaches.

In addition to these logs, students have to submit a final essay in which they will conceive and describe their own person-centred model. This model should comprise the pathway of the patients from the first contact to the eventual follow-ups and the potential ways to address patients' social determinants of oral health. This essay must contemplate the potential challenges related to this approach that must be overcome. The evaluation is based on the content, i.e. the depth of the reflection, what the student learned, and what insights did student gain.

The course topics include a myriad of SDH, such as poverty, people using wheelchairs, aboriginal people, and people living with human immunodeficiency virus (HIV). Students also have to provide reflections on what is person-centred dentistry, what is social dentistry, and how they can respond to the needs of the community as mobile dentistry. Students also give insights into the courses on advocacy, lessons from activists and engaged physicians, and how to respond to the needs of the population, such as people living with autism, and alternative pathways and careers.

2.5.3.2. Clinical Decision-making course (DENT 337)

Through cases and other activities, students will be sensitized to the human and social dimensions of critical decision-making and treatment planning. The course aims to develop students' sensitivity to the human and social dimensions on top of biomedical dimensions of

health and clinical decision-making. Small groups allow frank conversations about clinical cases and other activities. This course explores the complexities of health and individualized healthcare and emphasizes a person-centred approach, including communication skills, interpretation of patient motivations and expectations, and a holistic approach to disease management. In this course, students reflect on SDH and on the pathway(s) by which these determinants influence oral health and access to oral health care.

The intended learning outcomes allow students to find common ground between their medical and patient-centred exploratory models and expectations by understanding the whole patient. To achieve this understanding, students should (a) understand a person's individual health-related knowledge, attitudes, and behaviours; (b) understand a person's cultural, social, and familial background; (c) understand how that person's cultural, social, and familial background could influence the individual health-related knowledge, attitudes and behaviours (SDH); and (d) explore the disease as well as the illness experience.

In addition, students should identify patients' perception of her or his oral health problems, her or his feelings (concerns/worries), her or his ideas about the causes of the problems, and her or his expectations. They should also identify any additional information or tests required with respect to the whole patient, illness, and disease, the aetiology of that person's problem. Students should describe the aetiology of that individual's oral health problems, explain the aetiology of that person's problems using a "medical model" of health, and explain the aetiology of that person's problems using a "social model" of health (risk factors and social determinants of a person's oral health)

At the same time, students should be able to describe a plan to manage that individual's oral health problems. This should be discussed at each step of the plan to identify issues likely

to require "negotiation" between the dentist and patient—explicitly noting the differences of opinion and providing solutions to find common ground. The student should explain and justify a plan to manage that person's risk for current and future oral ill-health (and address that person's SDH), explain and justify a plan to treat that person's current oral health problems, and explain and justify a plan to re-evaluate the progress of the plan in terms of its process (i.e. treatment/management strategies) and outcomes (i.e. the results of those strategies)

2.6. Summary of the literature review

Health inequalities still exist, even in developed countries such as Canada. Beyond biological conditions, there are sorts of forces that shape people's health, namely SDH. These determinants could also impact access to healthcare. Healthcare practitioners should be trained so that they can address patients' SDH and adapt treatment(s) as necessary. Clinicians should be able to address the health inequalities to respond to societal needs.

In medicine, there have been several initiatives implemented to educate competent clinicians to address this topic. Furthermore, the ACFD educational framework promotes the education of future "competent dentists." This endeavour refers to the preparation of dental professionals who can address societal needs. To respond to this mandate, some dental schools have recently incorporated new courses, such as the Dental public health and Clinical Decision-making courses at McGill University. Despite the importance of addressing SDH in dentistry, it is still unknown to what extent students are ready to address SDH in their clinical practice. The influence of the courses implemented at dental schools on future practice is also unknown.

3. Purpose and research questions

In order to fulfil the aforementioned knowledge gap, I decided to undertake an empirical investigation with the following twofold purpose:

(1) Describe dental students' perceptions of undergraduate education about SDH; and

(2) Explore how prepared they feel to address SDH in their future practice.

Focusing on students' readiness, the following research question guided this study: How do dentistry students enrolled in undergraduate education courses on SDH think about and feel prepared and willing to incorporate SDH in their future clinical practice?

4. Methodology

4.1. Research design

This study employed a qualitative descriptive design. Using a qualitative methodology allowed me to get insights on students' perceptions of SDH and their experiences learning about this topic. Qualitative descriptive studies summarize events in everyday terms and everyday language (Green & Thorogood, 2018; Sandelowski, 2000; Schwandt, 2014). By using this approach, researchers seek an accurate accounting of events. This means that most people agree to observe the same event (Sandelowski, 2010). In this methodology, the data collection is typically directed towards discovering the who/what/where of events or experiences, or their basic nature and shape. The data collection techniques generally include open-ended individual and/or group interviews. Some cases could include observations of events and the examination of documents (Sandelowski, 2010).

4.2. Participants and sampling strategy

According to a purposeful sampling approach, eligible participants in this investigation were all third-year undergraduate students enrolled in McGill University's Faculty of Dentistry. This cohort comprised 40 students. The rationale for selecting this particular group was: (1) they all take a course on SDH (DENT337) during the third year, and (2) clinical training and interaction with patients also begins in the third year. Students who agreed to participate were recruited for the interviews (Sandelowski, 1995). For recruitment purposes, I attended the DENT 337 course as an observer, interacted with the students, and later invited them to participate in the study. Fifteen out of 40 students voluntarily accepted to participate in this investigation.

The third-year dental curriculum at McGill University mostly involves courses related to dentistry. At this point, students have completed all preparatory courses, such as the fundamentals of medicine and dentistry. They have completed all the preclinical lab courses, and they are ready to start their clinical rotations. In addition, students have been exposed to different courses in which they have been taught about SDH. Indeed, this endeavour starts from the first year in the Fundaments of Medicine and Dentistry and the Community Oral Health Service courses and rotations in mobile dental clinics. During the first and second years, they have also been exposed to outreach clinics; they assist senior students in providing dental care in underserved communities.

Once they reach the third year, these dental students take the Dental Public Health (DENT 305) and Clinical Decision-making (DENT337) courses, which comprise didactic lectures and small group discussions (see chapters 2.5.3.1 and 2.5.3.2). The lectures are conducted by Dr. Christophe Bedos as well as pertinent guests, all of whom discuss SDH. These lectures are designed to teach the concept and notions of SDH. In the interactive part of the course, students split into groups of 10 to discuss a patient case. The observations of classes and small group discussions allowed me to understand the concepts that students have been trained.

Once the entire course was completed, including the evaluations, I started the recruitment process. I invited students and provided an overview of my project. I used my detailed consent form to explain the objective of the project, the character of anonymity and confusability, and the low risk of participation. With each interested student, I arranged the place and time for the interview. I invited students to reach me by phone or email in case they needed more information about the project before the interview.

4.3. Research ethics consideration

It is widely known that qualitative research should be ethical, important, clearly and coherently articulated, and use appropriate and rigorous methods (Cohen & Crabtree, 2008). Therefore, to conduct an ethical research project, it is necessary to conduct it in a respectful, humane, and honest way, specifically by embodying the values of empathy, collaboration, and service (Cohen & Crabtree, 2008). Any research project will be considered important as long as it is pragmatically and theoretically useful and will advanced the current knowledge base. The clarity and coherence of the research report emphasize that the report itself should be concise and provide a clear and adequate description of the research question, background and contextual material, study design, and rationale for methodological choices. The data description should be unexaggerated, and the relationship between data and interpretation should be understandable (Cohen & Crabtree, 2008).

I obtained ethics approval from the institutional review board, Faculty of Medicine, McGill University, on 18 January 2019 (Appendix 3). The consent forms described the aim of the research and rights of participants. I conducted, recorded, and transcribed all interviews by identifying participants by numbers instead of their names to protect their anonymity. To follow the protocol, I coded all the interview material and stored it directly without any names. The signed consent forms were stored in a secure cabinet to which only I had access. All research data was stored on McGill University's OneDrive network. Although the supervisor from this project is the coordinator of the course, the data were collected after the course was complete. Therefore, there was no conflict of interest.

4.4. Data collection

I conducted individual semi-structured interviews. The qualitative research interview is a particular kind of conversation that is the most common source of qualitative data for health researchers (Taylor, 2005). In a semi-structured interview, the researcher sets the agenda in terms of topics covered, but the interviewees can also direct the conversation towards what they consider important or meaningful (Green & Thorogood, 2018). In this approach, the qualitative research interviewer does not assume that there is one version of the truth that can be uncovered; instead, the interviewee's story will be valid as their account of events (Kvale & Brinkmann, 2009). Thus, I used some open-ended questions to encourage students to express their perspectives and describe their experiences within the ambience of confidentiality and comfort.

I conducted the interviews in a cafeteria close to the Faculty of Dentistry. When I invited the students to participate, I explained what the interview was about, the aim, duration, and so on. However, before reading the consent form, I again explained the interview process and meaning. Once the participants read and sign the consent form (Appendix 2), they introduced themselves and provided personal information. The interviews lasted between 20 and 50 minutes and were conducted in English. The interview process started during the summer and finished in the fall of the same year.

The interview guide was divided into different segments that directly or indirectly correspond to the research question (Appendix 1). The flow during the interviews was the driver of the discussion. Specifically, even though all the aspects from the guideline were covered, this was not necessarily in the same order. The interview guide was structured as follows:

a) The first component involved collecting the participants' demographic information, such as age, origin, and previous studies before starting the dental program.

b) Carrier's perspective and career perspectives: I wanted to explore how students perceive dentistry. I also wanted to examine their motivations to become a dentist. In this segment, I also asked about their initial motivation to become a dentist and how they picture their future practice (e.g. specialization, residence, etc.).

c) Dental education: In this segment of the interview, I wanted to know about experiences and perspectives during their journey in the Faculty of Dentistry. I also wished to know what are the elements that engage more students in the learning process. Therefore, I asked about students' preferences for courses, classes, and/or rotations, as well as methods or approaches that they considered more useful when they are learning.

d) Dental education and SDH: In this section, I wanted to explore students' knowledge about SDH and determine whether they consider them pertinent to their practice. Then we came across my main interest in the interview. I asked about what they knew regarding SDH, when they started to learn about them, and whether they considered these determinants important to consider during the clinical practice and why. I also asked how they could identify them. We discussed cases and patients, highlighting the importance of the identification of patients' SDH. Moreover, we discussed the tools, resources, and strategies to offer to patients in order to address SDH.

e) The ACFD educational framework: In this section, I aimed to determine how ready the students were to employ the ACFD framework.

f) Finally, I closed the interviews asking the participants for their recommendations in their learning process, including their experience learning how to address SDH and if they have any other general recommendation.

After each interview, I completed a reflection report. The objective of this report was to summarize information about the interview as well as highlight the main themes. I digitally audio-recorded these interviews, transcribed them verbatim, and distributed the transcripts to members of my committee, using a password-protected method for each transcript. As noted above, I conducted interviews with 15 participants, a congruent sample size regarding the adopted research design, and sufficient to reach data saturation (Patton, 1990; Sandelowski, 2010).

4.5. Data analysis

I employed thematic analysis in this study. This method allows one to identify, analyze, and report patterns within data. It is a dynamic process that is generally characterized by simultaneous data collection and analysis, and both processes mutually shape each other (Sandelowski, 2000). The analysis is carried out by organizing the data into themes and categories to allow for the interpretation (Clarke & Braun, 2013).

Consistent with the study research design, I adopted an inductive approach when analyzing empirical material. An inductive or "bottom-up" approach means that the identified themes are strongly linked to the data itself. In this approach, if the data has been collected specifically for the research, the themes identified may bear little relation to the questions the participants were asked. This approach is not driven by the researcher's theoretical interest in the area or topic. Inductive analysis is therefore a process of coding the data without trying to fit it into a pre-

existing coding frame or the researcher's analytic preconceptions. In this sense, this form of thematic analysis is data-driven (Clarke & Braun, 2013).

Furthermore, the analysis in this study utilized a semantic or explicit level: I identified the themes within the meanings of the data, and the analysis was not looking for anything beyond what a participant said. The analysis involved the progression from the description, where the data were organized to show the patterns and summarized to prepare for interpretation, which attempts to theorize the significance of these patterns, the meaning, and their implications (Clarke & Braun, 2013; Patton, 1990). At this stage, I examined the patterns, the underlying ideas, assumptions, and conceptualizations that were shaping the themes and subthemes.

The analytical process is not linear. Rather, it is recursive: it moves back and forth as needed. That said, the researcher typically follows several steps in qualitative descriptive analysis. First, in order to familiarize myself with the data, I engaged in transcription, reading, and re-reading the data to start identifying initial ideas. Then, I started generating initial codes. This means coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code. During the third phase, I searched for themes. This phase refers to collating codes into potential themes and gathering all data relevant to each potential theme. The next step involved reviewing themes by checking whether they work in relation to the coded extracts and the entire data set; this process generates a thematic map of the analysis. The fifth phase involved defining and naming themes. During the analysis, this phase refines the specifics of each theme and the overall story the analysis tells, an endeavour that generates clear definitions and names for each theme – see map of codes and themes in Appendix #5

4.6. Methodological rigour

In qualitative research, rigour concepts, such as *credibility*, *transferability*, *dependability*, and *conformability*, have been described with the attempt to provide a guide to assess the quality of research studies (Shenton, 2004). Compared with quantitative concepts, credibility corresponds to internal validity; transferability and dependability replace external validity and reliability, respectively; and instead of objectivity we seek conformability (Angen, 2000; Cohen & Crabtree, 2008; Shenton, 2004). In the following paragraphs, I will explain how these concepts of rigour in qualitative research as they apply to my study.

The concept of validity is always linked to quantitative research. In this context, it refers to the "best available approximation to the truth or falsity of propositions." Hence, internal validity refers to the truth about claims made regarding the relationship between two variables. In qualitative research the definition used is credibility, which promotes confidence that the phenomena were recorded accurately (Angen, 2000; Shenton, 2004). In the case of qualitative research, the quality of the study involves a rich and substantive account with strong evidence for inferences and conclusions. Thus, the report will present the lived experiences of those observed and their perspective on social reality, recognizing that the interpretation could be manifold and complex (Cohen & Crabtree, 2008). The ultimate goal is to understand and to provide a meaningful account of the complex perspective and realities investigated (Cohen & Crabtree, 2008). In this study, I described participants' insights and perceptions from learning SDH and their readiness to tackle SDH in clinical practice. I used the participants' words from the transcribed audio-recorded interviews to substantiate the codes, patterns, themes, and subthemes and ensure that the participants' voice was expressed.

External validity refers to the extent to which we can generalize findings (Cohen & Crabtree, 2008), often to demonstrate that the results of the work can be applied to a wider population. The results from qualitative research must be understood within a context, and the particular characteristics of each environment must be considered. Therefore, the term used in qualitative studies is transferability*,* which indicates that the findings from one study in a specific field could be true in people from other settings when applying similar projects and employing the same methods. In that case, a phenomenon could provide a baseline of understanding with which results of subsequent work should be compared (Shenton, 2004). When results are different, they represent multiple realities and provide richness with regard to the reasons behind the variations (Mays & Pope, 2000; Shenton, 2004).

Moreover, there is a divergent perspective on the appropriateness of applying the concept of verifiability or reliability when evaluating qualitative research. Similar to the concept of validity, reliability is rooted in quantitative methods, indicating standardization and control to reduce errors and decrease the chance of excessive variability (Cohen & Crabtree, 2008). This concept implies that if the work were repeated in the same context with the same methods and with the same participants, similar results would be obtained (Shenton, 2004). In the case of qualitative research, the term dependability refers to verification negotiated between researchers and readers. In this process, the researcher is responsible for reporting information (Cohen & Crabtree, 2008). In some cases, special techniques, such as member checking, peer review, debriefing, and external audits to achieve reliability, are recommended and posited as hallmarks of quality in qualitative research (Cohen & Crabtree, 2008).

The concept of confirmability refers to the qualitative definition of objectivity (Shenton, 2004). This concept helps to ensure that the findings are the result of the experiences and ideas

of the informants, rather than the characteristics and preferences of the researcher. Triangulation will promote this confirmability (Shenton, 2004). Triangulation compares the results from two or more methods of data collection. The researcher looking for patterns of convergence corroborates an overall interpretation (Mays & Pope, 2000). Therefore, triangulation ensures comprehension and promotes a reflexive analysis of the data (Mays & Pope, 2000). The respondent's validity is another technique in which the interpretation and/or findings can be compared with the participants. With respondent validation, we can reduce errors during the process, and by doing so, generate more original data (Mays & Pope, 2000).

A clear account of how early, simpler systems of classifications for the collected data will allow us to increase the robustness of a qualitative inquiry (Mays & Pope, 2000). Another element essential in a strong qualitative study is reflexivity, which ensures sensitivity from the researcher and the research process. This concept considers how the data collection has been carried out, including the role of prior assumptions and experience. The effects of personal characteristics, such as age, sex, social class, and professional status, on the data collected and on the distance between the researcher and participants also needs to be discussed (Mays & Pope, 2000).

In an attempt to ensure the quality of the study, the research design explicitly incorporates a wide range of perspectives (Mays & Pope, 2000). For example, the reason for favouring one approach over others must be fully explained. Finally, the beliefs underpinning decisions made and methods adopted should be acknowledged within the research report (Shenton, 2004).

5. Results

In this chapter, I will first describe the profile of the participants in this study, followed by a detailed description of the three major overarching themes that emerged from the analysis of the empirical material, namely: (1) feeling competent in *identifying* patients' SDH; (2) feeling competent in *addressing* patients' SDH; and (3) perceived effects of undergraduate dental education in developing competency in patients' SDH.

5.1. Participants' demographics

Fifteen students participated in this investigation; Table 1 presents their demographics. Their age ranged from 22 to 40 years, with a median of 26 years. Ten of them (66%) were women, and nine (60%) were born outside of Canada. Whether born in or outside Canada, the majority of the participants (n = 12, 80%) had an immigrant background, being either first or second-generation immigrants.

The participants held different educational background before starting the undergraduate dental program at McGill University: most of them (8/15, 53%) held a Bachelor of Science, four (27%) had already completed a professional degree; and two (13%) held a master's or a specialized diploma. Four (27%) students undertook the DentP program, a 1-year training that qualifies students from the province of Quebec to register in the four-year McGill Undergraduate Dental Education Program; to enrol in this previous year, students must complete the two-year General and Vocational College (CEGEP) program after high school. Regarding their plans for future practice, six (40%) participants wanted to do a residency and/or enrol in a specialist program, three (20%) were already working for a government institution, and eight (53%) wanted to work in the private sector, with or without specialization.

Table 1 Description of participants

No.	Age	Gender	Born in Canada	Immigrant	School	Prior academic background	Future practice interest
1	28	F	No	Yes	Public	Bachelor of Science	General practitioner
2	30-40 (*)	F	No	Yes	Public	Professional and graduate degrees	General practitioner or specialization
3	32	F	No	Yes	Public	Professional and graduate degrees	General practitioner or specialization
4	25	F	Yes	No	Private	Bachelor of Science	General practitioner or specialization
5	26	M	Yes	Yes	Public	Bachelor of Science	General practitioner
6	24	F	No	Yes	Public	DentP (**) CEGEP (***)	Unsure
7	25	M	Yes	Yes	Public	Bachelor of Science	Governmental institution
8	25	F	Yes	No	Public	Bachelor of Science	General practitioner
9 (****)	25	F	No	Yes	Private	Professional degree	General practitioner
10	24	M	Yes	No	Private	Bachelor of Science	Residency program or specialization
11	23	F	No	Yes	Private	DentP (**) CEGEP (***)	General practitioner
12	25	F	No	Yes	Private	Bachelor of Science	Residency program or practice in an under-developed country
13	22	F	Yes	No	Private	DentP (**) CEGEP (***)	Specialization
14	23	M	No	Yes	Public	DentP (**) CEGEP (***)	Governmental institution
15	29	M	No	Yes	Private/ public	Bachelor of Science	Governmental institution

Note.

(*) Participant did not want to give her age.

(**) DENTP: Dent P Program, McGill University five-year undergraduate dental program for Quebec students (https://www.mcgill.ca/dentistry/dent-p-program).

(***) CEGEP: French acronym for *Collège d'enseignement général et professionnel*, or General and Vocational College in English.

(****) The interview was not recorded.

5.2. Overarching themes

5.2.1 Theme #1: Feeling competent in identifying patients' social determinants of health

Throughout the interviews, participants pointed out a strong understanding of how to recognize their patients' SDH. They highlighted that, to provide a comprehensive dental care, it was important to collect as much information as possible from their patients. A clear pattern about the paramount importance of higher education in future dentists' awareness of SDH emerged from the analysis of the interviews. Some of the participants began to hear about these determinants prior to the dental program, while others heard about them in undergraduate dental courses. Several students indicated that they were exposed to classes based on sociology during their bachelor's studies. These courses facilitated their consciousness about people's social context. Those who had obtained a previous professional degree said that they had learned about SDH during those professional programs. These students recognized that this previous learning influenced their comprehension of this topic.

The *influence of higher education on students' awareness of SDH* before beginning the McGill University dental program seemed to be critical. In effect, as described above, experience prior to the dental program influenced participants' sensitivity towards SDH. For instance, some of them commented on how they became aware of human and societal levels of care delivery, as illustrated in the excepts below:

I am a bit biased in that regard, because, in my first Bachelor it was a Major in Physiology but a Minor in social studies in medicine and I took anthropology, sociology […] it was really helpful in to understand [pause] about social determinants of health. (Participant #1)

Yes! A hundred percent I believe that, because my background! I know that before started my bachelor's degree in […], I was thinking in that way, but my bachelor's degree emphasized that, like sensitize to others. No, for sure, I am sure that this bachelor's in X did this to me. (Participant #12)

For these participants, the relationships among people's social condition, health status, and ability to seek health care when needed was clear. These students highlighted how having this previous education made them aware of how diseases must be addressed moving from an individual perspective towards considering social and environmental factors. They added that considering these connections were necessary to address specific dental problems as well as patients' ability to afford the cost of dental treatments and their capacity to adhere to recommendations on oral hygiene and diet.

In this regard, participants stressed the value for them to feel competent in adequately identifying patients' SDH. They commented on what factors enabled them to recognize these determinants. All of them discussed how to apply their abilities, such as empathy, communication, or cultural respect, and they felt prepared to gather as much information from their patients as possible to offer adequate dental care. In addition, the majority of the participants recognized the worth of having comprehensive knowledge of people's cultures, values, and beliefs. The understanding of the diversity of populations facilitated students' ability to identify their patients' SDH. All these elements of the patient-dentist relationship are preconized by PCC, which is included in the dentistry practice in the model proposed by Apelian, Vergnes, and Bedos (2014). This model is grounded in three pillars—understanding, decision-making, and intervention—and encourages dental trainees to explore and discuss patients' experiences, expectations, values, and beliefs (Apelian et al., 2014; Noushi, Bedos, Apelian, Vergnes, & Rodriguez, 2018). This model has been taught to McGill University dental students since its publication.

All interviewees mentioned that communication with their patients was essential. They highlighted the importance of investing time during the first appointment to collect as much

information as possible from each patient. This would not only help them achieve an adequate diagnosis, but would also support them in establishing a feasible dental treatment, a realistic prognosis, and to plan future appointments and dental procedures:

In a private traditional clinic, what inspired me is the latest family dentist. He takes 10/15 minute minutes from the first initial appointment out of the dental chair into an office, where is just a desk, face to face and if you would describe as a consultation […] that is the perfect opportunity to go over some of these limitations for example as a sort financial restraints of procedures success of the treatments and just being open minded to what the health conditions that they have. (Participant #1)

All participants discussed how it was clear for them that each patient's reality was different. They mentioned that by using the PPC approach, they were able to empathize with their patients' situation and understood the circumstances that brought them to have those dental problems. This approach allowed them to provide adapted dental care to patients' situations:

Oh god floss your teeth for god sake, you say right and you don't know maybe that person, have like three people disable to take care of, and the last of the importance is the flossing […] it makes you judgmental but at the same time, the other side of the coin, you have to be aware of which are the determinants of health to be able to provide benefits. (Participant #2)

You have to know what the problem is to be able to address the problem instead to put bandages […]. And from the beginning upstream modification, I guess it helps me in not be a sub-judgmental and not be where I have to put more emphasis or where our government should put more emphasis on where and who will take care of their needs.[…] Someone has to take care of it. (Participant #1)

Participants mentioned that through a respectful approach they could understand patients' beliefs and values. Therefore, they recognized and considered that sometimes dental care is not a patients' priority. The majority of students provided examples in which they highlighted how patients' economic situation, lifestyle, and needs could prevent them from taking care of their own oral health. Therefore, they understood the reasons why, in some cases, patients only sought emergency dental care caused by pain or compromised functionality. In addition, they

were also aware that if these socioeconomic conditions continued, despite how the dental treatment was performed, the dental problems would persist:

If a person is jobless and he's always constantly stressed and binge eating, or he doesn't have money to buy a toothbrush or toothpaste you know, that eventually leads to caries and no matter how good of fillings you do, yeah it will eventually fail, you would get more caries. So, I think it's important to be aware of the social context of your patient. (Participant #14)

The interviews with participants also unveiled a crucial element in dental care, i.e. the importance of understanding patients' cultural backgrounds. Given that most of participants were first- or second-generation immigrants in Canada, they stressed that their immigrant condition provided them with the sensitivity necessary to better understand other cultures or socioeconomic realities. Canada values and supports immigration, and as such is a society composed of people who come from many countries, with various cultures and religions. The McGill University student population reflect this diversity:

I feel like giving that, coming from an immigrant background, I can see how hard it is when people like, immigrated recently here and find a dentist or like three four years after they move, they are like ok, well my life is settled now, I can get take care of my teeth. (Participant #6)

Furthermore, the majority of students recounted how their families and/or themselves could relate to new immigrants and the difficulties they faced in a new country. These include the impact that immigration could have on socio-economic stability, which could affect the and oral health conditions, particularly considering how complicated it is the access to dental care for this population:

I didn't get so much exposure to dentists growing up […] ah, my parents are first generation immigrants here. So, haven't dental care, taking care it was not their priority […] Personally, for me, I feel like, because of my background I do understand it. I think the program is sufficient for myself, in terms of the classes. (Participant #5)

In general, most of participants mentioned how important it was for them to be exposed to different cultures to understand the diversity of point of views and realities. They appreciated

the opportunity to learn from other cultures and at the same time were willing to keep learning about it. That said, some students had never been directly exposed to different cultures; this was due, for example, to the fact that they were living in small villages with a few immigrants or very few people from other cultures. These participants confessed that they knew about the diversity in terms of culture and socio-economic status, but they had never had the opportunity to interact directly with a diverse range of communities. They described how through exposure in dental school they could fully understand what a different culture and socioeconomic background really meant, the differences and commonalities it presented. These students also expressed their appreciation for the exposure to diversity through both clinical and community rotations, as well as being a member of such a varied and welcoming faculty. At the same time, these experiences made them feel engaged to help all communities with respect and empathy, and to keep learning from different cultures:

I really like it, specially, the class and stuff I feel like everyone is very diverse where they come from, and different cultures. So, it's nice to learn difference about that, and also, I guess that will help when you will treat other patients' different cultures, different background as our classmates. (Participant #4)

So, people do a lot of community work, maybe for the resume, at the beginning, but then people actually become interested in do in it, because they like doing it, you know, and we started maybe for, like, these things to get into the program, and they ended liking. (Participant #5)

Some of the students mentioned that they had been in contact with underserved communities, for example, through volunteering activities, prior to starting the dental program, and they felt the commitment to work with these communities. They added that they had wanted to work with these underserved communities in some capacity since they started the dental program:

I think I will do that, because, um, even before dentistry, I was doing that, being part of community groups, um, my dad was a demo at an adults school, and hem, in Montreal, and he

was part of that for so many years, like 10 years and plus, and I always enjoyed being part of this kind of environment, and I always think like, how can involve my profession to help within the community, things like I could go back there and teach. (Participant #5)

Another common pattern among the interviewees was the experience in working with patients with disabilities. For example, they really appreciated the opportunity to work with people with mobility impairments. The first experience they had in the program was during the Dental Public Health classes, in which people with these disabilities were invited as speakers, and they recounted their experience in seeking dental care. Later in the program, they had the opportunity to work with patients who had mental and physical impairments during the summer clinics. Although in some cases it was challenging to work with a patient with disabilities, they felt that this experience provided invaluable learning and experience and built their confidence. They highlighted how this exposure made them motivated to treat this population in their future clinical practice. However, they commented about the variability in disabilities. Their experience involved populations with mobility impairment, blindness, deafness, and cognitive disorders, among others. Therefore, treating disabled patients could be very stressful and challenging. As a result, some students expressed that they would like to have more lectures and practical courses to fully be prepared to treat these particular patients:

I thought it was really good, I thought I was great to be exposed to that a little bit because, if you don't know how to treat those cases, like other cases seems look easier, um, and also, we will get patients like that when we will be working, so it's good to be exposed before actually do it. (Participant #4).

Hem … I had a few that had Down syndrome, had one with a trauma in his head, so, had intellectual disability. There's also someone who was blind. There were a few different cases. And I don't know, it was easy to interact with them and give. (Participant #13).

Overall, the importance of exposure to patients from different cultures and with varied life experiences was a recurrent message throughout the interviews. This contact was crucial for the

students to gain insight into people's different realities. This exposure facilitated students to acquire the ability to offer dental treatment adapted to different populations' needs. As explained above, this sensitivity was developed through life experiences as well as during the program. However, all of them mentioned that this sensitivity had been reinforced throughout the courses, rotations, and community projects. This exposure supports future dentists in becoming more comfortable with these cases and possibly preparing them to maintain their motivation to work with these communities in their future practice.

5.2.2 Theme #2: Feeling competent in addressing patients' social determinants of health

The perceived students' level of preparedness in *addressing* patients' SDH modulates the possibilities for them to tackle these issues in their future clinical practice. Through my conversations with participants, I identified elements that supported students' feeling of competency in actively addressing their future patients' SDH as well as some shortcomings.

At the *individual level*, participants felt well prepared and confident to provide preventive dental care and made some recommendations on diet and oral hygiene instructions as a complement to the dental treatment. They often highlighted prevention as an essential component of dental treatment. They mentioned that they felt comfortable in making recommendations to help their patients with more than just dental procedures. They also expressed that they had to consider patients' context and lifestyle to make proper recommendations about diet, oral hygiene instructions, etc.:

First of all, I think for me prevention is very more important than treatment. So, if I can like treat a cavity as a first step so I can prevent further as easier like a further pain for my patient. So, because I do care about like individual about my patient, so I want to try to prevent for further discomfort as my patient. (Participant #3)

Although operative procedures were an important component of their training, students also understood that these procedures had to be combined with education. Indeed, no operative treatments, such as fluoride application, diet, and oral hygiene instructions, can achieve high quality and sustainable treatment:

Like simple, like yeah, junky food could be cheaper, more accessible McDonalds and things like that, but like some small things we can do, like I can recommend things like, limiting juices and having more water is not too expensive, or, you know, like getting into changing the tooth-brush every couple of months, so they can have more better brushing, you know, or adding night time brushing into their, you know, their sequence events to go to bed, you know. I think those things, it's not expensive to do, you know. (Participant #5)

At the *community level*, the majority of the participants indicated their willingness to work in the future in oral health promotion activities at the community level. They indicated that they believed in the worth and benefits of these activities for the targeted population. Moreover, they expressed that they felt confident and prepared to some extent to participate in such projects in the future. There are courses and rotations throughout the four-year McGill University undergraduate dental program that support community involvement. Hence, students had to be involved at different levels of oral health promotion activities in different community centres of Montreal. These activities provided dental students with the opportunity of actively working with different populations, which exposed them to another facet of dentistry, such as mobile dental care and oral health promotion activities within the communities.

As previously mentioned, students commented on how they enjoyed the outreach clinic rotations. They started assisting senior students at the mobile portable equipment. They indicated that, during these rotations, they had to develop their communication skills and an ability to offer alternatives in dental treatment and preventive health recommendations adapted to each situation. All participants emphasized that this exposure in working within different

communities fostered understanding and respect for other cultures. In addition, they indicated on multiple occasions how they learned soft skills, such as how to overcome language barriers, how to understand body language, and how to be respectful of patients with other values and beliefs. This learning process complemented the courses and classes about patients' special needs, particular situations, and socio-economic conditions.

The interviewees commented that they had to organize and perform oral health promotion activities at various community centres in Montreal. I found that the majority of them enjoyed these activities and appreciated having the opportunity to work promoting oral health at these community centres. Most of them indicated that after this experience, they felt comfortable enough to perform these activities again. Furthermore, they would be willing to work on oral health promotion activities as part of their future practice. These activities might promote students' interest in working with underserved communities:

I see myself I would love it, whenever I have … yes! I always have the idea … Like why the people didn't get the idea of instead of paying hygienists to or an assistant to show people how to brush and just get of your population. Like, one Saturday morning and you just seat them there and give them fruits or something not cariogenic. (Participant #2)

Some students said that they had to do these sessions as mandatory assignments, and they had few or even no expectations. However, when they began to organize these activities, they were positively surprised to see how the people reacted to them. They commented on how people were engaged, paying attention and asking interesting questions. They mentioned that they felt satisfaction from how, in a couple of sessions, they were able to provide an abundance of information regarding diet and oral health instructions and showing the community members how dentists could be approachable:

I guess, honestly the community oral health project that we have with Dr. […], that was, even though it was a mandatory thing […] I was like, oh wow, I was impressed. I'm not going to lie, I had some pre- like pre-conceptions in my mind, ok we are going go and probably they

will be on their phone and no listening, and what going to do? And then we are going to leave, but, like I was really surprised in how they took and get questions like I was like, I don't know I have look up at… So, I feel like, even though the mandatory if you start those things that may spark something. (Participant #6)

Finally, several participants pointed out that the work within the community could be a great strategy in integrating within the neighbourhood where they will practice. One participant commented on how a senior dentist remarked on how this community work was a key element in the success of his practice. The integration with the community could help dentists to build a sustainable practice. This interaction could likely increase people's trust in the dental profession and hopefully make them more comfortable being in a dental chair. This strategy could motivate future dentists to take care of the communities where they would practice:

Absolutely! And like one thing that […] told me many times is like […] has a very successful practice, he is very, very busy, and like, the reason for his success also is because he has been so involved with the community over the years and so, of course, you are doing service with the community and also in building the own practice at the same time. (Participant #8)

Students' pathway through rotations and oral health promotion activities well complemented lectures and classes that they had regarding patients' SDH. Through these experiences, they could see patients' realities, which then reinforces their knowledge about SDH. The combination of theory and practice should prepare future dentists to address SDH in their practice.

The participants had many different thoughts and opinions regarding *advocacy*. Some of the students commented on how they are interested in being actively involved in different groups and/or organizations. For example, some of these students were passionate about political actions towards equal access to dental care and water fluoridation, among other topics. As a result, they saw themselves allocating their time advocating for their patients in their

future practice: *But also, just like as an advocate, that's massive, that speaks volumes. Just for like, for audition for example of water, is like that, like, as a dentist, if you have a group of dentists advocating for that then.* (Participant #7)

Of note, one participant expressed that, as a dentist, she had a sense of responsibility to the community. This student explained how she feels committed and responsible to help patients beyond the dental treatment at the individual level. This sense of social responsibility could demonstrate how future dentists prepared in this regard could be willing to work in matters of advocacy:

I feel that you have a social responsibility, outside of your appointment, just have the situation that you have this particular patient seat in your chair, of course you will do the best to provide them the treatment and resources that you can, to get the best treatment and that given moment. But I think that you have the responsibility to really like, um engage with the government and policies and everything to try to to reach this upstream level that you can, to get that what they can either afford or beat all the changes to be on the care plans or like how children here are covered until 10 or whatever you want, like you have to be the voice of the people, to make, to make those changes happen, because people don't necessarily know themselves. (Participant # 8)

However, I found that there were some participants who, even though they said that they understood the value of advocacy, did not know how to advocate and they said that did not feel comfortable in doing so. They commented that they did not have an interest in or the personality for political activities, and they did not see themselves as being actively part of this endeavour. Increasing knowledge about how to support patients with financial difficulties and improving understanding about how to advocate will facilitate future dentists to be ready to tackle their patients' SDH in their practice.

Although some participants commented on how comfortable they felt advocating for those who did not have access to dental care. There were other students who said they did not feel comfortable in working in advocacy because of their personality or because they did not feel

prepared to do it so: *Right now, I would not see myself doing that type of stuff, I guess it's just a personality thing.* (Participant #14).

They mentioned that they expected to focus more on clinical activities and working on oral health promotion at the community level. Even though these students did not feel comfortable performing advocacy work, they recognized the value and the impact of these strategies. Therefore, despite not directly advocating, they could remain supportive of these causes, like voting or spreading information throughout their own community:

Ah, I know that these kinds of things are important, but I don't feel like I'm the right person for this. Like I don't see myself as someone who's going to advocate and make change. That's not my goal, I guess. But I know it's really important to do it, but I don't think that it's going to be one of my focuses. (Participant #13)

Other students expressed their willingness to advocate for their patients and the community, but they felt unprepared to do so and they did not know how and at what level to be involved: *But I definitely see myself advocating. But to what level? I don't know. Being realistic, I don't know.* (Participant #7)

Participants also pointed out some other aspects that prevented dental students from tackling patients' SDH. As previously mentioned, I found that participants seemed to have solid knowledge about SDH and how to identify them. They explained the importance of the relationship between SDH and oral health, as well as the value in considering them when offering proper dental treatment. Furthermore, the majority expressed how willing they were to work in oral health promotion activities at the community level. Nevertheless, on some occasions (e.g. financial constraints, particular life conditions, etc.), participants highlighted that they felt restricted to support and guide their patients.

One key challenge they faced was related to the financial component of SDH: students did not know how to assist their patients. They explained they did not know where they should refer patients with financial difficulties. They also commented that they ignored what kind of institutions and organizations may help these cases. They indicated that they did not know how other professionals like social workers could help. All participants indicated that they considered the McGill University outreach clinics as the first resource to refer these patients. Some participants who lived in other provinces or cities did not know if there were clinics like that in their hometown.

I found that all participants would have a hard time helping or even guiding patients with financial difficulties. Nevertheless, at the undergraduate dental clinic, on multiple occasions their patients could not afford the price of the faculty dental treatment. On such occasions, they all commented that they felt the limitation just to make recommendations regarding diet and oral hygiene. All highlighted that they felt frustrated in not being able to help or at least guide their patients in terms of the cost of these dental procedures and how to offer affordable dental care:

So, you address, try to do, cause like, for example, toothbrush, like those are simple things that can be used that are cheap and that many times you will be provided for free, then you can then provide to patients receive. So that's one way. But in terms of like if they need a surgery right now and then and what to do or who do I have to talk to try to get a cover to sound like. I don't know. (Participant #7)

They indicated that they would like to know more about potential institutions, organizations, or places where patients with financial difficulties could find a solution to increase their access to and to afford dental care. At the time of the interview, the majority of students did not know what and who was covered by the Canadian Healthcare System. They would like to have this information to be able to properly inform their patients: *I wish we have*

more resources to how we can guide them, in terms of like, having treatments covered. I don't know what is covered and what is not yet. (Participant #5)

Like maybe like, learning more about, how we can make it more accessible to people, like, what links they can go online to, you know, like people on wealth-fare, I hear like, they can get things like, one free check of the year. But I don't know where to go to guide them in that direction. So, I heard about in one of the classes, maybe they went over briefly. But, like, if I want to start practicing now, I will not know what to do it and I know that there is a way and go search it up or I have to do my own research. (Participant #5)

The other common response was the fact that the McGill University Outreach Dental Clinics were the first, if not the only, option to refer patients with financial difficulties. Given that these clinics have a limited capacity, they feel frustrated when patients had to be on a long waiting list. At the same time, the majority of the students commented on how they would not know where to refer these patients once they graduate: *We have outreach and summer clinic and we are able to refer our patients as students, dentists to be these different services. Sometimes, I wonder once I graduated, mmm, how that will work, because, we don't have these exact tools.* (Participant #10)

I mean coming from the McGill program and doing all these outreach things obviously, you will know that McGill has the students clinic, and maybe you can apply for the outreach program, maybe you can go to JLDC like you will have all those resources but I think, I think, wherever, like wherever community located in the west-island, for example, you should know few areas where, they are someone to work and not just say hey sorry it's 500$ for this filling and I can't help you otherwise. (Participant #6)

I mean the best that I give them the thing, maybe the best is to refer to McGill clinic. But already I saw so many patients come here and are at the wait list and it's busy. I think it will be nice, if some of the solutions. (Participant 10)

Moreover, some participants were from other cities or provinces and did not know if there are outreach dental clinics where they will practice. Other participants also indicated that they recognized that it was perhaps not feasible to know all institutions or resources to support

patients with financial difficulties around the entire country. However, they emphasized that they felt that they needed to be able at least some form of information to address their patients' needs:

I'm not familiar with the resources and I feel like it's different in every not just country, different Pro, different provinces, different cities they have a different name for the resource and it's very complicated for[…] even for me, I grew up here, I still don't know what their names are and what their number is. (Participant #14)

I mean of course, it's great in this faculty is trying to provide these kinds of resources, but then this is the only so far, because, they cannot know every resource in every town across Canada […] you know. (Participant #8)

In addition to supporting patients with financial difficulties, students commented on how they would like to know how to work in interdisciplinary teams. They said that they would like to work with other professionals, such as social workers and psychologists, to fully support their patients. They would like to know how these professionals could intervene and work together to find a way to address patients' needs. In most cases, participants understood that if they do not treat patients with a holistic approach, they could likely not improve their oral health status. Therefore, they would like to be able to confer and work with other professionals to treat their patients as whole people. For example, one participant commented on the importance of diet and how he would like to know how to work with to nutritionists to address further the topic: *So, I, I, I feel like right now, I would have no, I would not be competent enough to know, let's say the patient is looking for a job, like where to refer him; the resources.* (Participant #14)

Other participants made the following comments:

Resources, yeah, maybe that will involve work interprofessional teams, because, I think at the end of the day as a dentist we trained to do certain things and if I will want to go upstream always that is always good, but we are limited as dentist because we are trained as dentists, we are not trained as psychologist, or trained as social workers. (Participant #10)

I feel we can have more of that, um we had one speaker in one of social classes with Dr. […], but was very generally, like we could have a situation to refer to a nutritionist, but I don't actually have a list of specific names for nutritionists. (Participant #2)

Reach this upstream level that you can, to get that what they can either afford or beat all the changes to be on the care plans or like how children here are covered until 10 or whatever you want, like you have to be the voice of the people, to make, to make those changes happen, because people don't necessarily know themselves. (Participant # 8)

5.2.3. Theme #3: Perceived effects of undergraduate dental education in developing students' competency in patients' social determinants of health

All participants stated that the classes on SDH in the McGill Undergraduate dental program influenced their awareness on this subject, either informing them for the first time or reinforced prior knowledge about SDH. During my interviews, I inquired about when students learned for the first time about SDH in the dental program. All responded that it was during the first year of the program, in the first block of the Fundamentals of Medicine and Dentistry course, which includes dental and medical students. These lectures about SDH served as a way to highlight the link between a person's social context with general health, but not specifically related to oral health. They students mentioned that they started learning about the definitions of health and diseases from the WHO. They commented on how these classes addressed concepts of health and disease, and how these were not just defined biomedical conditions, but also included the emotional psychological and social aspects of the patients. This learning experience allowed students to understand health and disease as more than just the absence or presence of a pathological condition. They could visualize how the socio-economic environment plays an essential role in people's lifestyles and, therefore, in their health status. They learned how these determinants, such as income, housing, education, or access to healthcare, could determine people's good state of health or perpetuated a medical condition:

The first time we heard about not specifically social determinants, but just the determinants of health, was in FMD [Fundamentals of Medicine and Dentistry] *and block A section; taught by doctor […], I believe that was her name. So, she, I think the first class, we talked about what is health and what is disease and the answer of that was given from WHO and they talk, I remember she mentioned like different aspect of emotional health, physical health, mental health and all that, but she also mentioned all the determinants of health; so the social, economic or and you know."[…] well, we started learning about it like in FMD, and was describing population and people and their social class and so.* (Participant # 14)

The interviewees considered that they had started early the understanding of how suffering from social and material living conditions had strong effects on health. The majority of them thought that this correlation made enabled them to visualize that diseases, pathologies, and disorders were much more than the specific biomolecular process. Moreover, this learning gave to them an upstream perspective to any condition in order to be able to address properly a solution:

We actually started here in the block A, right when we started the program, as part of the medical curriculum. So, the first block was on SDH, and the addressing in upstream factors, that can lead, you know, precarity of health, precarity of live. So, I think, yeah, we started very early on that. (Participant #6)

The Fundamentals of Medicine and Dentistry lectures focused on how SDH shape general health. Some students pointed out that they began to further understand the relevance of SDH in dentistry once they had dental public health and community oral health service classes. They also better understood how they could intervene as a dentist in this respect and be mindful of how oral health cannot be improved just with extractions or drilling teeth.

As previously mentioned, third-year McGill University undergraduate dental program students take the Dental Public Health course (DENT305) in which they are taught about PPC, the dentist–patient relationship, and social dentistry (Apelian et al., 2014; Bedos et al., 2003). Participants commented on how this course helped to consolidate the importance of the understanding SDH in dental practice. In this regard, students stressed how not having just

lectures but also guest speakers and discussions enabled them to further understand some situations and be more empathetic. *Those discussions were actually very, very helpful to me and same with Dr. […] guest lecture bringing actual stories and life stories of people from different background and work experiences. This really help me to interpret patients have lived along.* (Participant #1)

This variety of educational strategies during the four-year program highlighted different perspectives on SDH; hence, dental students could make a connection between what they learned in the classroom and what were many people's realities:

So, it was literally just social determinants of health, everything about that. In dentistry we learned more about it with, um the Dr. […] in dental public health. Um, but also later on with Dr. […], and classes with Dr. […] during the 4 years. (Participant #7)

Participants also commented that during the entire undergraduate program, they had courses combining lectures, community oral health promotion, and outreach clinic rotations. These combinations of lectures and practical activities allowed them to understand in the field the concepts of social determinants by visualizing people's realities. Students commented on how during the rotations they developed communication skills and became more empathetic and respectful towards other cultures. All interviewees agreed that they enjoyed the outreach clinic rotations starting as assistants from the first year. They mentioned that these kinds of activities opened their mind to see other alternatives in dental clinical practice. The majority of the students commented on how they appreciated this experience, and they felt that they will be motivated to continue working with such communities in the future:

Yeah I think, like, work experiences as a dentist in a mobile, and yeah for students, like to be exposed in different communities and being exposed of differ types of some population and thigs like that definitely helps want to get involved. (Participant #4)

I never before I started […] never thought about it in public health, but now when you see patients coming with these kinds of problems that can be preventive, and you want to do something about it […] I will figure out how the future how I could be involved, but currently I don't know yet. (Participant #4)

Besides disclosing the perceived effects of undergraduate dental education on SDH, participants made recommendations or *suggestions* on several aspects of their education with the aim to improve their learning process. These recommendations could facilitate and help future students to consolidate their comprehension of how to tackle patients' SDH.

One recommendation was to participate in longer community service rotations and implement mandatory humanitarian field trips. Some students pointed out that, for them, it was important to be exposed to different settings during long periods or from humanitarian trips because these activities reinforced their clinical and soft skills. The participants who had the opportunity to travel and work with other communities highly recommended this learning experience to other students. Some students noted that humanitarian trips were very interesting and helpful in practicing dentistry differently from a typical private dental office. Although they would like to be involved in these activities or other oral health promotion activities, they did not know how to organize them or whom to contact to do so. Therefore, if these field trips, residencies, or rotations were already pre-established, it could be easy to have more students prompted and motivated to participate. Moreover, they could take advantage of these experiences, and in the future, they might be better prepared to keep working with any community addressing their oral health problems: *Where I don't feel prepared on is how to get myself in that position in the first place, who I contact to set it up, maybe who I will work with.* (Participant #10).

I think the biggest thing that stop people, it's the unsure how to get themselves in that position [...] Sounds, like it's a hassle to organize humanitarian trip let's say. So, maybe the

best way to get people involved and interested, would be to work on battle the barrier and make to very simple for them to make it really fun and easy to sign out and participate. (Participant #10)

The majority of students stressed how they enjoyed treating patients in the context of the McGill Service to the Community rotations, such as the Jim Lund dental clinic, mobile dental clinic, summer clinic, etc. They really enjoyed this experience and mentioned how these opportunities were educational and positively influenced their confidence and willingness to keep working with underserved communities. In some cases, they faced various difficulties, such as language barriers and cultural differences, but these obstacles provided them with the chance to be creative and to think differently about how to support these communities. In particular, some noted that their exposure with the mobile dental clinic showed them a new way to practice dentistry and made them think about a new approach to their future practice, such as work in a mobile dental clinic, among others. In other words, some participants thought that if such activities were part of a longer educational timeframe and the humanitarian field trips were mandatory, then all students could be motivated towards this kind of dental practice. Furthermore, others noted that if they were required to be involved in these activities as part of the curriculum, they could feel prepared and interested to work with different communities:

We could do like "journée dentaire" or like or things like just like why no every six every six of seven dentists have like a place an hotel like a room and give to the population from time to time or like, for people that have children why they can get and explain together instead of one by one how they to brush and give them talk, or like videos in how to brush and then you keep them there, and just provide it […] In a one shot you protect so many people. (Participant #2)

Oh, well, more like … For example, like I said, I'm going to talking about humanitarian trip and so like, because already apparently there's a lot of resistance with the faculty to do that. But there was one humanitarian trip that was supposed to be done, but that got canceled. So, and that is one way that could have been given access to certain people that would have never done it. (Participant #7)

Finally, the majority of students highlighted how stressed they are throughout the dental program. They were conscious that this program is condensed and loaded and that it could be difficult to reduce the workload over the four years. They mentioned the wide spectrum of information they had to learn, in addition to their time spent in the preclinic laboratory and various other clinics. They also said that one of their big challenges was to organize their time in order to accomplish all that they had to do, including preparation for exams, assignments, covering the clinical requirements, and the time needed for rotations and community activities. As a result, they sometimes felt quite overwhelmed. Some of them mentioned that the fact that some activities or classes were scheduled on busy days (e.g. closer to starting clinics or after a long day at the faculty) prevented their complete engagement with said activities. They understood that it may not be feasible to re-schedule classes and rotations. However, they would appreciate if these classes or community services activities were scheduled on days that are not that saturated. The additional time gained through this shift could help them in being more deeply involved within these classes and on community activities. If these changes were possible, perhaps the students would be more prepared to understand, identify, and address patients' SDH:

I think sometimes, dental students, we feel overwhelmed how much work we have to do, and how many classes, exams, boarder exam, and whatever, mm, maybe if dental school programs needed sold, like every student, let's say has a week of time when they will be allow to miss classes or not have classes or whatever, and everyone does a rotation, like and extra ship and it's part of the curriculum or you got credits for it. (Participant #10)

Nonetheless, they all explained that despite the stressful, busy days, they were satisfied with their pathway in the Faculty of Dentistry. The majority felt that the McGill University undergraduate dental program was very complete and included many more rotations compared with family and friends from other faculties of dentistry.

6. Discussion

6.1 Study contribution

There is consensus about the need for dentists to integrate not only up-to-date biomedical but also social and economic features of their patients. Therefore, dentistry schools have progressively incorporated training in SDH to help future dentists to face these issues and be able to offer the high-quality dental care their patients, and the society, expect from them.

The students who participated in this study all enrolled in mandatary courses on SDH during their undergraduate program. Generally speaking, all participants were sensitive and felt confident enough to identify SDH adequately. They believed in the value of incorporating patients' social context in their dental evaluation. Given that they were trained to treat their patients through a PCC approach, it was necessary to identify patients' SDH. Indeed, this phenomenon reflected what had been described by Appelian et al. (2014), in which the PCC model aims to sensitize practitioners to be prepared to have effective communication, listening, emotional validation, and cultural competency to provide a feasible dental treatment, adapted to the patients' needs. Dentists who use this model could be able to identify societal needs.

Whereas participants became aware of the importance of SDH for their future clinical practice, they all felt much less competent to address their patients' SDH effectively. Besides volunteering in free dental clinics or providing educational sessions in their community, they did not know how to proceed once those SDH were identified but did not express much interest in developing actions in this regard. These findings are in line with the Reis, Rodriguez, Macaulay, and Bedos (2014), conducted in the same academic context, upon how dental students perceived poverty. As these authors state, poverty was perceived as "a distant issue and the responsibility of the government or the poor individuals themselves." In the present study, students were willing to help low-income individuals but felt powerless and finally

considered that introducing structural changes was beyond their reach. Future dentists must be concerned with SDH and skilled to act effectively in this regard. Hence, “something” else must be done in dentistry schools to prepare their students better.

As the fact of the matter, such a lack of competency has been highlighted by several dental researchers and clinicians. They have also considered that dental professionals need to be better trained in these issues. Watt (2007) was among the first to call for a shift from “biomedical/behavioural downstream” approaches to “upstream” approaches. These results have been found in dental professionals. Of note, the students' perspective on this issue is unknown. Furthermore, there have been some new initiatives implemented in dental programs to teach dental students about SDH, such as the Dental Public Health and Clinical Decision-making courses. Therefore, I examined how students feel about tackling their patients’ SDH after taking these classes.

More recently, Bedos et al. (2009) invited the dental profession to “develop competency frameworks describing how clinicians can address the social determinants of health the individual, community and societal levels.” These authors also proposed original approaches, such as the Montreal–Toulouse biopsychosocial model, to guide clinicians and dental educators willing to tackle the SDH (Bedos, Apelian, & Vergnes, 2020).

We currently lack examples of dental schools that have substantially changed their curricula to better train students to tackle SDH. The social dentistry approaches described above constitute a first step in the development of dental curricula that will train dental students to address their patients’ SDH. However, the results of this study show that this endeavour is not enough. While necessary, changing curricula is challenging. On the one hand, dental programs are already extremely dense, usually four years in North America, which gives little

room to introduce new courses. On the other hand, there is a lack of dental educators and clinicians who are competent enough to promote these new approaches. Nonetheless, it must be noted that this movement towards social dentistry echoes the work of physicians advocating for social medicine (Hansen & Metzl, 2016). Therefore, several lessons can be adapted from social medicine to benefit social dentistry. In this regard, the concept of "structural competency" could be important. This concept refers to the ability of healthcare providers to highlight how SDH can influence populations' diseases. Scholars in social medicine emphasize the necessity of training future clinicians to be "structurally competent" and address the "fundamental" causes of their patients' diseases. Hansen and Metzl (2016) actually noticed that "some of medical schools and teaching hospitals are adopting conferences in 2012 and 2013 on structural competency attended by clinical professionals." This competency framework has been applied to racial disparities by Metzl and Hansen (2014), but also to gender identity by Donald et al. (2017). Structural competency aims to prepare clinical trainees to act on systemic causes of health inequalities. This model attempts to change the individual perspective of the clinicians to treat their patients, towards reducing health inequalities at the level of neighbourhoods, institutions, and policies (Donald et al., 2017).

6.2. Study limitations and strengths

6.2.1. Limitations

This study was conducted in a particular context, a Canadian dental school, located in Montreal, Quebec. Therefore, one must be cautious when transferring its results to dissimilar academic contexts. To have maximal variation, the sample of this study was diverse in gender, origin, culture, previous studies, and interest in future practice. However, students who

volunteered to participate in this study had common responses in terms of their willingness to help people as the main motivation to become a dentist. The majority of them responded that they felt confident they could identify SDH and would do as much as they can to address patients' SDH. They are also willing to participate in oral health promotion activities. These positive responses towards patients' social conditions could imply that these students may are interested in the topic before to start learning about it. Thus, one of the limitations of this study is that it is unknown whether these students' predispositions were generated, developed, or reinforced at the classes or courses about SDH.

Although students have classes about social context during the entire dental program, another limitation of this study is the fact that interviews were conducted right after students finished the Dental Public Health and Clinical Decision-making courses. The content of these courses was thus fresh in their mind and could positively influence their willingness to address SDH. If that was the case, their responses would not necessarily mean they would keep the same views over the years, especially if they work in private practice.

I am aware that my own experience as a dental student produces an impact on the interpretation of the results. However, the elements collected from the individual interviews in this research could validate my point of view, for example, the notes from the observation in the classroom, informal conversations with students, etc. These elements complement each other to better understand students' perspectives regarding the research question. Finally, the findings from this study might not be transferable to another context, keeping in mind that the responses could be different in other dental schools.

6.2.2. Strengths

The quality criteria used for the assessment of the qualitative approach underscores the rigour of this study. For example, one of these criteria is transferability, as it was mentioned at the limitations. This term states that the research's findings could be applicable in other studies within a similar context, population, and methods (Krefting, 1991). From these semi-structured interviews, I obtained rich data from students' perceptions of their readiness to identify and to address SDH. Throughout the interviews, students could reflect and share experiences that shape their preparedness on the topic.

Throughout the interviews, students expressed how they feel confident to understand patients' conditions because they had been exposed to similar scenarios. Thus, even though students had previous interest on this topic, their classes, rotations, and community projects at the Faculty of Dentistry have reinforced this interest.

The sample of this research had appropriate variation and represented 15 participants from a cohort population of 40. Therefore, these results represent an important portion of the population and the findings could contribute to curriculum reform.

The participants looked pleased with the interview and apparently, they enjoyed having the opportunity to reflect and to discuss their pathway at the Faculty of Dentistry. Indeed, some of the participants mentioned their appreciation during the interview. They had the time to think about their past, present, and future.

Finally, another strength of this study is the fact that I have been working as a teaching assistant in several courses administered by the Faculty of Dentistry. Moreover, I have been in contact with and collaborating with undergraduates. Thus, I had the opportunity to observe how students approach and engage with patients at the McGill University mobile dental clinic.

Overall, to an extent, I had the opportunity to validate what participants commented on the interviews.

6.3. Recommendations to improve future dentistry education on social determinants of health

Based on the ACFD educational framework, the reform of the dental curricula in Canada should aim to make dental students "structurally competent." A competent dentist would be trained to identify and then tackle their patients' SDH. These future dentists would shift the individual approach to treat their patients so that they can address health inequalities in an upstream manner.

Dental schools should consider learning from medical faculties that have already worked on this subject. For example, Coria et al. (2013) described a medical school social justice curriculum, designed by the multidisciplinary Social Justice Vertical School of Medicine at Dartmouth College, Hanover, New Hampshire, USA. This program has five main objectives: define core competencies in social justice education, identify the key topics that should be covered in a social justice curriculum, assess social justice curricula at other institutions, catalogue the institutions affiliated at the community outreach sites that could be paired the teaching and hands-on service, and provide examples of integration of social justice teaching. This model aims to cover the scope of health disparities, recommending competency-based student evaluations and assessing the impact of medical students' social justice work in communities. This approach emphasizes the importance of a mandatory, longitudinal, immersive, and mentored community outreach practicum. A well-designed medical school

curriculum should improve student recognition and rectification of adverse social determinants of disease (Coria et al., 2013).

Bedos et al. (2020) described the Montreal–Toulouse biopsychosocial model for dentistry, which is another initiative to consider for adoption in dental schools. Two frameworks inspire this model. One framework describes the main principles of person-centred dental care and focuses on the dentist-patient relationship at an individual level. The other framework describes actions that dentists must consider at the individual, community, and societal levels to address SDH. This model presents three types of dentists' actions at the individual, community, and society levels. In this approach, a *Q-list* is proposed as a checklist tool to guide clinicians to assess the bio-psycho-social-spiritual orientation of generalist practice. This Q-list includes questions to guide clinicians to recall and to examine concepts that are key to the exploration and management of routine and challenging situations with patients. This approach could also support dental professors to reflect on their educational approaches and dental schools to reinforce their undergraduate, graduate, and continuing education programs (Bedos et al., 2020).

6.4. Directions for future research

New research would ideally be carried out in a similar manner as this study but with different student populations, such as students who are almost finishing their schooling. It will also be interesting to determine alumni's perspectives and experiences in identifying and addressing their patients' SDH. Furthermore, it would be ideal to understand professors' perspectives about SDH, especially clinical instructors. Future studies with perspectives from diverse populations will illustrate better approaches to teach SDH in dentistry. Foreigners'

experiences with different political and economic systems could produce new approaches to be adapted into the Canadian context. Additionally, it would be interesting to examine to what extent and how notions of SDH are present in the dental curriculum. Finally, after the incorporation of new strategies in dental education, such as new models, courses, classes, and/or rotations in the McGill University dental program, it would be ideal to conduct new research to determine the impact of these new classes on future dentists.

7. Conclusion

My purpose in this study was to examine dental students' readiness to identify and address their patients' SDH. To achieve this aim, I conducted a qualitative descriptive study that included 15 individual, semi-structured interviews with third-year dental students at the McGill University Faculty of Dentistry. The findings showed that students had good knowledge about SDH and felt able to identify them when dialoguing with their patients. However, they also expressed their lack of competency to tackle these determinants and conduct upstream actions; they considered that they were not sufficiently trained for that endeavour and thought it was beyond their reach. All participants understood the value and relevance in identifying the social components of their patients. However, they felt they had deficient skills to address them properly. Learning from initiatives inspired by social medicine, the concept of structural competency could be introduced into formal dental curricula in the future.

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Appendices

Appendix 1: Interview Guide

Semi-structured individual interview preliminary guide:

Dear student,

I would like to thank you for having taken the time to participate in this interview for a research project regarding dental education. It is very important to us because this may help dental faculties to reform their curriculum.

- Introductory information:

To start, I would like to ask you a few socio-demographic questions.

o Age:
o City of birth Residence:
o Secondary education: Private school___ Public school___
o Last degree: Where?
o Parents' occupation:
o Dentist in the family: Yes___ No___

-Carrier Perspective.

By exploring students' career perspective, my goal is to explore how studentsperceive dentistry. At the same time, I would like to examine their motivations to become a dentist.

o Could you describe your motivations to become a dentist? Expectations
o How do you see your future practice? (e.g. Hospitals setting, rural, private practice)

In case that I cannot reach what I am exploring, I will ask the following questions:

 What kind of dentist would you like to become?
 Are you interested in any specialization?

- Dental education.

In this section, I want to examine how has been students journey in the faculty of dentistry. I wish to know what are the elements that engage more students in the learning process.

o Could you briefly describe your experience as a dental student?
o What are the topics/courses/ classes that you have liked the most?
o What are the educational approaches/methods used by your professors that you have found
the most appropriate/enjoyable? (could you give me an example and explain why you appreciated this approach?)

- Dental education and Social determinants of health.

In this section I want to explore students' knowledge about social determinants of health and know if they consider them pertinent or relevant in their practice.

o What have you been taught about SDH along the curriculum? (which classes/profs/etc.?)
o What do you think about these courses on SDH?

In case that I need it, I would ask:

• Why do you think that they are taught?
• How useful do you think there are? (or will be for your clinical practice?)

- The Association of Canadian Faculties of Dentistry (ACFD) educational framework.
In this section Iwould like to know the readiness of dental students to
a) identify the SDH at individual and collective levels;
b) to tackle the SDH at individual and collective levels.
The ACFD educational framework defines competencies that beginning dental practitioners in
Canada should have acquired. The competency 5 (Oral health promotion) mentions that dentists should be able to identify the determinants of oral health of their patients.
o How do you interpret this statement?
In case that I need it, I would ask:
 According to you, how pertinent is it to identify patients' SDH? Why or why isn't it pertinent?
o Yourself, how do you recognize / identify your patient's SDH?
In case that I need it, I would ask:
 How feasible is it to do so?
 How do you think dentists/you could identify their/your patients' social determinants of health?

The competency 5 (Oral health promotion) also suggests that dentists should be able to tackle the social determinants of their patients' oral health.
o How do you interpret this statement?
In case that I need it, I would ask:
 According to you, how pertinent is it to tackle patients' SDH?
o How do you think that you could, in your clinical practice, tackle your patients' SDH?
In case that I need it, I would ask:
 How feasible is it to do so?

In the same competency, it is also mentioned that dentists should "respond to the oral health promotion
needs of a community or population"
o How do you interpret this phrase?
o How would you identify SDH of the community?
In case that I need it, I would ask:
 Why do you think that this could impact your patient oral health?
 How do you engage with the community that you will serve?
o How would you do in order to address SDH on the community where you will work?
In case that I need it, I would ask:
 What activities would you promote?
 Why do you think that it is important to address them?
o How would you do in order to advocate the promotion of oral health at individual level and a
community level?
In case that I need it, I would ask:

 How will you do so?
 What resources would you use for the advocacy, social media maybe?

We are almost done with interview.
o Could you explain briefly in your own words what are SDH, and their relevance in dental practice?
o Could you explain why (or why not) will you be willing to tackle SDH in your future clinical
practice?
o Anything else to add?

This is the end of the interview. Thank you again for participating in this interview. If you would like to add anything in the future, something you think of later, please feel free to contact me.

Ninoska Enriquez. Graduate Student
Faculty of Dentistry, McGill University
ninoska.enriquez@mail.mcgill.ca

Appendix 2: Consent Form

November 6th, 2018

McGill

Faculty of Dentistry
McGill University,
2001 Ave. McGill College
Montreal, QC H#A 1G1

PARTICIPANT CONSENT FORM

Title of Project:
"Dental students' readiness to tackle social determinants of health: a descriptive qualitative study"

Researchers:

Principal Investigator: Dr. Christophe Bedos. Oral Health and Society, Faculty of Dentistry
Phone #: 514-398-7203 ext. 0129 Email: christophe.bedos1@mcgill.ca

Student Investigator: Ninoska Enriquez. Oral Health and Society, Faculty of Dentistry
Phone #: (514) 566 055 Email: ninoska.enriquez@mail.mcgill.ca

Co- Investigators/Other Researchers:
Dr. Charo Rodriguez. Co-Supervisor. Family Medicine. charo.rodriguez@mcgill.ca
Dr. Richard Hovey. Internal Committee member. Faculty of Dentistry. richard.hovey@mcgill.ca
Dr. Steven Jordan, External Committee member. Faculty of Education. steven.jordan@mcgill.ca

Introduction
We invite you to be part of our research. Please read the consent form completely and carefully before signing it. The form describes the purpose of this study, the nature of your participation and your rights. If you have any additional questions, please discuss with one of our researchers. Your participation in this study is voluntary: you can refuse to participate of withdraw at any time without any consequences.

Purpose of the Study:
The purpose of this project is to examine the readiness of dental students to integrate notions and principles of social determinants of health (SDH) in their future clinical practice.

Study Procedures:
Your participation is voluntary. If you agree, we will ask you to take part in a face-to-face,

semi-structured interview with Ninoska Enriquez. This interview will take place either at a coffee shop or in a public place of your preference, as long it is quiet and let us to be discrete. It will be last approximately 1 hour. If the discussion is not finished after one hour, we may invite you to a second interview.

The interviewer, Ninoska Enriquez, will discuss with you about your perspectives on social determinants of health and your future professional pathway. This interview will be audio recorded with your permission. We expect to conduct around 12 to 15 individual interviews with 3rd year dental students at McGill university. During the interview, you will be free to stop the discussion at any time, or take a break if you want to.

Possible risks:

There is no particular risk involved in this study. However, it is possible that participants might face some emotional distress during the interview. If this happens to you, you will have the possibility to not answer to questions that you are not at ease with. You will also have all rights to discontinue the interview and retrieve from the study without any consequences. Our ultimate goal is to understand students' perspectives regarding to the learning process of SDH.

Potential Benefits:

Your participation in this study is voluntary and you will not receive any financial benefit from your participation. However, by participating you will express your point of view in the learning process about SDH and contribute to the improvement of dental education in Canada.

Confidentiality:

The information that you will provide will be confidential. This means that the recorded data, and your information will be stored in the secure way. The researcher will store this material in her password-secure computer, and only Christophe Bedos, her supervisor and professor at McGill University, will access to those files. When Ninoska will graduate, she will transfer the entire data to Dr. Christophe Bedos' One Drive account, which will be remain password-secured. The stored data will be destroyed after seven years as per University policy. All the paper documents such as consent forms, interview transcriptions, etc. will be stored in a locked filing cabinet at McGill University. They will be accessible only to Dr. Christophe Bedos.

The results from this study will be published in Ninoska Enriquez's thesis, and also in a scientific journals and conferences; they could be also be used in dental schools, to better prepare future dentists in addressing SDH in their practice. You might be quoted in these documents, but we will ensure that these quotations will remain anonymous. Consequently, the readers will not be able to identify you or the people that you may mention during the interview. Your name will not be mentioned in the publications nor any information that would permit the readers to recognize any individual's identity. A representative of the McGill Institutional Review Board, or a person designated by the Board, may access the study data to verify the ethical conduct of this study.

Compensation: you will not receive any compensation for taking part in this study.

Contact Information:

- Ninoska Enriquez: Student, McGill University, Faculty of Dentistry, 2001 Ave McGill College, Montreal, QC, H3A 1G1. Tel: (514) 566-0550. Email: ninoska.enriquez@mail.mcgill.ca

- Christophe Bedos: Associate Professor, McGill University, Faculty of Dentistry, 2001 Ave McGill College, Montreal, QC, H3A 1G1. Tel: 514-398-7203 ext. 0129
Email: christophe.bedos@mcgill.ca

- Charo Rodríguez: Associate Professor, McGill University, Faculty of Medicine, 3605 Rue de la Montagne, Montréal, QC H3G 2M1. Email: charo.rodriguez@mcgill.ca

If you have any ethical concerns or complaints about your participation in this study, and want to speak with someone not on the research team, please contact the McGill Ethics Manager at 514-398-6831 or lynda.mcneil@mcgill.ca.

CONSENT

I agree to be interviewed □ **YES** □ **NO**

I agree to be audio-recorded □ **YES** □ **NO**

I have read the information in this consent form. I am aware of the purpose of this study and what I am asked to do. I have asked my questions, and my questions have been answered. I was given enough time to decide. I am free to withdraw from this study at any time. I was informed that my name will not appear on any publications associated with this study. I do not give up any of my legal rights by signing this consent form. I will be given a copy of this signed consent form.

Name of the participant: ……. Date: ……

Signature of the participant: ……

Name of the researcher: …… Date: ……

Signature of the researcher: ……

Appendix 3: Ethical Approval

McGill

Faculty of Medicine
3655 Promenade Sir William Osler #633
Montreal, QC H3G 1Y6

Faculté de médecine
3655, Promenade Sir William Osler #633
Montréal, QC H3G 1Y6

Fax/Télécopieur: (514) 398-3870
Tél/Tel: (514) 398-3124

CERTIFICATION OF ETHICAL ACCEPTABILITY FOR RESEARCH INVOLVING HUMAN SUBJECTS

The Faculty of Medicine Institutional Review Board (IRB) is a registered University IRB working under the published guidelines of the Tri-Council Policy Statement, in compliance with the Plan d'action ministériel en éthique de la recherche et en intégrité scientifique (MSSS, 1998), and the Food and Drugs Act (17 June 2001); and acts in accordance with the U.S. Code of Federal Regulations that govern research on human subjects. The IRB working procedures are consistent with internationally accepted principles of Good Clinical Practices.

At a full Board meeting on 11 February 2019, the Faculty of Medicine Institutional Review Board, consisting of:

Alain Brunet, PhD	Joséane Chrétien, MJur
Patricia Dobkin, PhD	Frank Elgar, PhD
Anathasios Katsarkas, MD	Kathleen Montpetit, M.Sc.
Roberta Palmour, PhD	Lucille Panet-Raymond, BA

Blossom Shaffer, MBA

Examined the research project **A01-B03-19B** titled: *Dental students' readiness to tackle social determinants of health: a descriptive qualitative study*

As proposed by: Dr. Christophe Bedos (Applicant) to _____ (Granting Agency, if any)

And consider the experimental procedures to be acceptable on ethical grounds for research involving human subjects.

11 February 2019 (Date) — Chair, IRB — Dean/Associate Dean

Institutional Review Board Assurance Number: FWA 00004545

Appendix 4: Ethics Review Amendment Request form

McGill University

ETHICS REVIEW
AMENDMENT REQUEST FORM

This form can be used to submit any changes/updates to be made to a currently approved research project. Changes must be reviewed and approved by the REB before they can be implemented.

Significant or numerous changes to study methods, participant populations, location of research or the research question or where the amendment will change the overall purpose or objective of the originally approved study will require the submission of a complete new application.

REB File #: A01-B03-19B
Project Title: *"Dental students' readiness to tackle social determinants of health: a descriptive qualitative study"*
Principal Investigator: Ninoska ENRIQUEZ
Email: Ninoska.enriquez@mail.mcgill.ca
Faculty Supervisor (for student PI): Dr. Christophe BEDOS christophe.bedos1@mcgill.ca

1) Explain what these changes are, why they are needed, and if the risks or benefits to participants will change.

We are adding a research assistant to this project, Eliya FARAH, to help us with the transcriptions. His task will be to transcribe the audio-recorded interviews on word documents. We will give him the audio files on a USB key that will be password protected. He will save the transcriptions on the same USB key and give the latter back to us when finished. Eliya FARAH will then delete all the documents (audio-files and MS Word files) related to the interviews that he may have saved on his computer. Prior to this process, Eliya FARAH will sign a confidentiality form that we attached to our submission.
We believe that these procedures are rigorous enough to protect the participants and the confidentiality of their information.

2) Attach relevant additional or revised documents such as questionnaires, consent forms, recruitment ads.

Confidentiality form signed by the assistant and P.I

Principal Investigator Signature: _____ Date: 02/10/2019

Faculty Supervisor Signature: Date: 02/10/2019
(for student PI)

Submit by email to lynda.mcneil@mcgill.ca. REB Office: James Administration Building, 845 Sherbrooke Street West suite 429, fax: 398-4644 tel: 398-6831/6193; www.mcgill.ca/research/researchers/compliance/human
(August 2014)

Date: October, 2nd 2019

To: Eliya Farah

From: Dr. Christophe Bedos
Faculty Supervisor, Faculty of Dentistry

Subject: Confidentiality Expectations

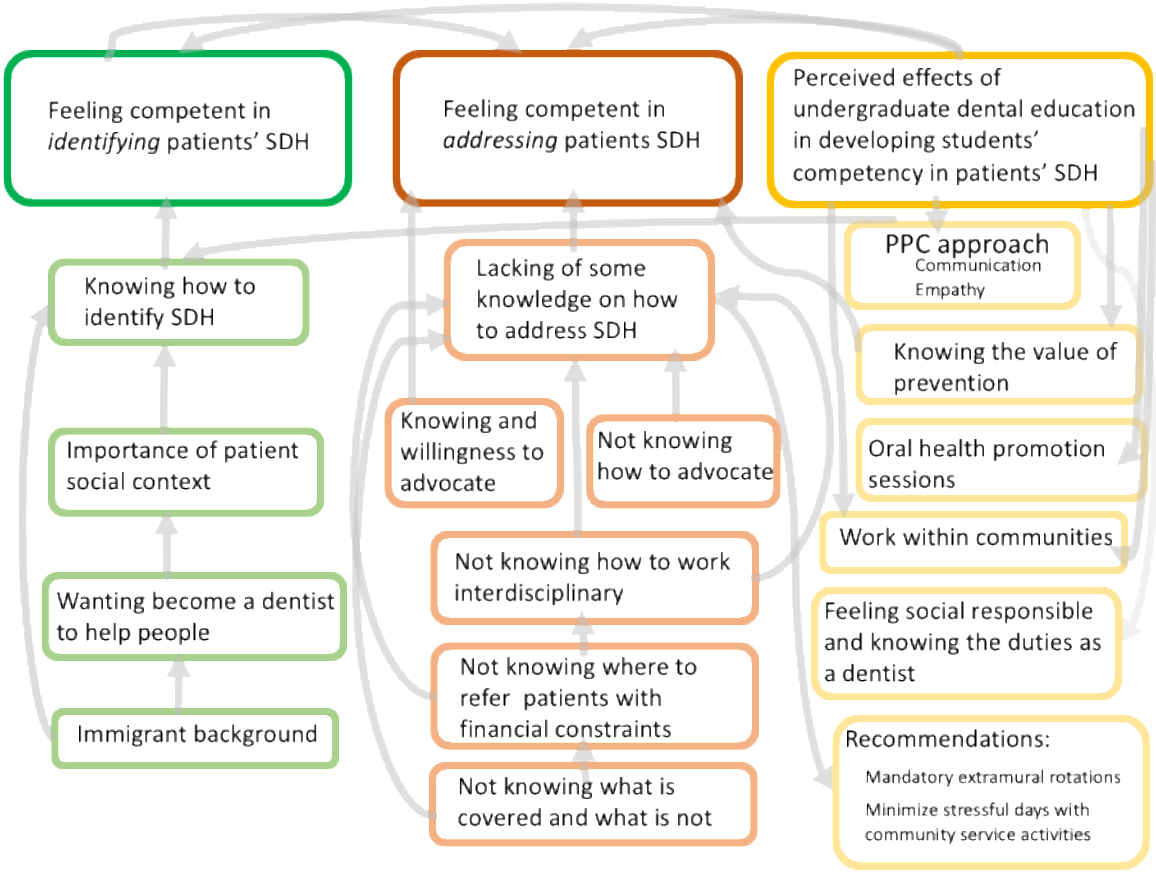
As a research assistant to the project: *"Dental students' readiness to tackle social determinants of health: a descriptive qualitative study"*. The IRB Study Number is: A01-B03-19B Conducted at the Faculty of Dentistry (McGill University) your participation as assistant in this study is subject to the strictest rules for confidentiality.

It is essential that you safeguard the anonymity and confidentiality of any person (Investigator, interviewer, interviewees) discussed or encountered during the course of your tasks.

Your role as assistant is limited to transcribe the audio-recorded interviews on word documents. Once you have done with the transcript, you will delete all documents (audio, words, etc.) in order to protect the data. We will give to you the audio files on a USB key that will be password protected. You will save the transcriptions on the same USB key and give the latter back to us when finished. Then, you have the commitment to delete all the documents (audio-files and MS Word files) related to the interviews that he may have saved on his computer

Your signature below acknowledges that you have read and fully understand the importance of these instructions and agree to follow them.

Appendix 5: Map of Codes and Themes



Appendix 6: Emerging Themes

THEME #1:	**THEME #2:**	**THEME #3:**
Feeling competent in *identifying* patients' SDH	**Feeling competent in *addressing* patients' SDH**	**Perceived effects of undergraduate dental education in developing students' competency in patients' SDH**