Network for Canadian Oral Health Research
Réseau canadien de recherche en santé buccodentaire

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Réseau de Recherche en Santé Buccodentaire et Osseuse

Modelling the Interaction of Multidimensional Risk Factors in Caries Disparity:

NCOHR Team Building Workshop

SEPTEMBER 19-20, 2014

FINAL REPORT

Université de Montréal

This report was written under the overall supervision of Dr. Elham Emami, Associate Professor, Faculty of Dentistry, Université de Montréal. Principal authors of the report were Dr. Elham Emami, Dr. Linda Booij, Dr. Svetlana Tikhonova and Ms Elmira Ismaylova, M.Sc.

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Modelling The Interaction Of Multidimensional Risk Factors In Caries Disparity: NCOHR Team Building Workshop; Final Report/ Dr. Elham Emami, Dr. Linda Booij, Dr. Svetlana Tikhonova and Ms Elmira Ismaylova.

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AN OVERVIEW OF THE WORKSHOP

In September 2014, Drs. Elham Emami (Ph.D., Associate Professor and clinician scientist at Université de Montréal) and Linda Booij (Ph.D., Assistant Professor, Queen's University and Sainte-Justine Hospital), along with postdoctoral fellow Dr. Svetlana Tikhonova (Ph.D., Université de Montréal) led and organized a 2-day workshop to exchange knowledge and facilitate inter-disciplinary collaborative research on caries and oral health disparity. Several scientists with expertise in oral health and caries research, clinical psychology, nutrition, social work, health literacy, health policy and health services research, as well as community-oriented and Aboriginal research were invited, and were introduced to community-based oral health and primary care providers, community stakeholders, policy makers and research scholars (See appendix for the list of 40 participants and their affiliations).

Objectives

1. Exchange knowledge on multidimensional modelling of caries disparities and to identify caries disparity research gaps and needs;
2. Discuss innovative strategies and interventions targeting aspects of caries disparity that can be controlled by stakeholders, decision makers and primary health care providers and attract external funding;
3. Develop strategic national and international interdisciplinary participatory action research partnerships in the caries disparities field, which would strengthen research capacity and provide mentored training opportunities for graduate students, postdoctoral fellows and junior faculty members.

Workshop themes

1. Epidemiology, prevention and intervention of caries.
2. Bio-socio-psychological pathways contributing to risk for caries.
3. Participatory approaches in seamless integration of oral health and primary health care.
4. Challenges in conducting research, implementation of effective interventions, and knowledge transfer in rural and remote, Indigenous, poor and immigrant populations.

Day 1

Day 1 started by welcoming and opening remarks from Dr. Emami and the directors of the Network for Canadian Oral Health Research and the Quebec Network for Oral Health and Bone Research. Next, the workshop continued with oral presentations, panel discussions and round tables. During these sessions, international and national expertise from different fields highlighted research, and discussed with stakeholders the best interventions and practices addressing caries disparities.

Day 2

At Day 2, two expert research officers from the Université de Montréal provided comprehensive information on workshop theme relevant research funding opportunities. The workshop participants were then divided into groups to discuss and plan for collaborative studies, followed by a plenary group discussion with all workshop participants.

Workshop Outcomes

The feedback provided by participants on this workshop ensured that the workshop was useful and overall met its objectives. Other key short-term outcomes included partnerships between the Cree First Nation communities in Northern Quebec, stakeholders and researchers from the Université de Montréal, Université de Sherbrooke, McGill University, University of Toronto and University of Alberta, in order to collaborate in the near future on research activities to address oral health and caries disparities. Several meetings were held after the NCOHR workshop and a new inter/multidisciplinary research team was developed to work on the Cree First Nation communities' oral health disparities. Furthermore, following this workshop, the Quebec Association of Dental Public Health invited two of the workshop participants (Drs. S. Tikhonova and F. Hugo) to present their research at their upcoming annual meetings at *Journées dentaires internationales du Québec.* The leaders of the workshop as well as a group of workshop participants were invited by the Universidade Federal do Rio Grande do Sul to Brazil to exchange knowledge and to conduct an interdisciplinary workshop on dental public health and primary care in Brazil. This visit will be held in summer 2015. The workshop leaders are presently working on a scoping review entitled 'Stress-related caries disease' and they are hopeful that the knowledge transfer activities provided through this workshop will contribute to address caries disparity, especially in vulnerable populations.

SYNOPSIS DAY 1

Day 1 started with the opening message from the Dr. Emami on behalf of the workshop organisation committee, followed by representatives of the research organizations that funded this workshop.

A Message From The Director Of The Network For Canadian Oral Health Research (NCOHR)

I am delighted to welcome you to the third team building workshop funded by NCOHR.

This network was established through a catalyst grant from CIHR with partnership funding from the Association of the Canadian Faculties of Dentistry, the Canadian Dental Association and the RSBO of Quebec, and was supported by the CADR and the Chief Dental Officer of Canada.

Our mandate is to build capacity in the oral health research community through training and facilitating new partnerships.

This workshop, aiming to examine multidimensional risk factors in caries disparities, certainly fulfils this objective, with representation from a broad cross-section of stakeholders.

I anticipate great things resulting from this workshop and wish you all the best in your deliberations.

Debora Matthews

A Message From The Director Of The Quebec Oral And Bone Health Network (RSBO)

What is the Quebec Oral and Bone Health Network?

The Quebec Oral and Bone Health Network is composed of 82 researchers and clinicians in different fields, including cell biology, oral microbiology, neurosciences, mineralised tissues, biomaterials, dental caries, periodontal diseases, tooth loss and dental prostheses, oral cancer, osteoporosis, and access to health care, among other subjects. This network is mostly funded by the FRQ-S.

The Quebec Oral and Bone Health Network's mission is to develop and transmit new knowledge in oral, cranio-facial and bone health and disease. Through this mission, the Network aims to reduce health inequalities and promote the quality of life in the Quebec population.

History and Evolution:

There were difficulties in recognizing research conducted in dental faculties as opposed to medical faculties. Therefore, dental research was not financed. Moreover, there was a lack of qualified researchers bridging fundamental and clinical researchers. Thus, a group of 4 scientists in Public health, basic sciences and clinical research that lobbied the FRQ-S, decided to fund the Quebec Oral and Bone Health Network in 1994. Today, the Network includes 82 researchers (fundamental, translational, clinical, and public health research), 308 students at last count in 2010 and still growing.

Mandate:

The Quebec Oral and Bone Health Network's mandate is to develop partnerships, foster mentoring/training, rationalize the services and the infrastructures and most importantly, increase translation outside of Quebec and increase knowledge transfer and visibility of members work as well as increase partnerships. This is the main aim of today's interdisciplinary workshop.

Arlette Kolta

ORAL PRESENTATIONS

The presentations were grouped in 3 blocks: first, oral health researchers provided an overview on caries epidemiology, prevention and interventions. They discussed the latest research in terms of effective and less effective interventions, and how interventions used in other fields can be applied to dental care. The second block of presentations was focused on bio-socio-psychological pathways contributing to risk for caries. They discussed research on the impact of early life stress on mental, oral and physical health, as well as the biological underpinnings, and the challenges of assessing early life stress in vulnerable communities, and finally the third block open an interdisciplinary window to caries/oral health disparity research. These highly scientific, in-depth presentations generated information and further questions for plenary discussions.

Epidemiology of dental caries and its burden for different populations

Vita Machiulskiene, Professor, Faculty of Odontology, Lithuanian University of Health Sciences

Dr. Machiulskiene started with a brief description of dental caries as a continuous process occuring at the interface between the tooth surface and dental biofilm: caries disease is not just a metabolic activity of tooth biofilm leading to mineral dissolution, but is an ongoing dynamic process of the chemical interactions between the tooth and oral fluids. Determinants of the caries process can be biological (e.g., diet, sugar clearance rate, salivary composition, fluoride level in the oral environment) as well as social (e.g., socio-economic conditions, education, ethno-cultural behaviour) in nature. Dental caries is one of the most prevalent diseases worldwide, as 60-90% of Europeans are affected and 4th most expensive disease to treat (in 2014, 80 billion € spent annually; by 2020, we will spend 93 billion € to treat the oral health diseases). Although worldwide rate of dental caries is in decline, it does not mean that the problem is solved! There is an increase of dental caries in lower socio-economical areas. However, interpretation of the caries epidemiological data should be done with caution. It is very difficult, if not impossible, to trust the epidemiological data because of very large variations in the data that have been reported. The reasons of the variations include: obtaining data from different population samples, the timing difference between studies, different diagnostic thresholds of caries lesion detection. In fact, there is a huge underestimation of the extent of the disease if only cavitated lesions are detected.

Then Dr Machiulskiene discussed the advantages of caries lesion activity assessment and applicability in epidemiology and clinical practice. Active caries lesions require active management, while arrested lesions do not need any intervention. Thus, lesion activity assessment contributes to the decision making process, helps to estimate treatment need as well as the outcome of the treatment. Moreover, it brings new knowledge about the dynamics of the caries process. Dr. Machiulskiene concluded that "one-size-fits-all" approaches to caries prevention and management are no longer applicable in view of important differences in disease experience within and between populations. Current concepts to be addressed include: shifting from characterizing dental caries as a condition to a dynamic, progressive, lifelong behavioral disease; from treatment to management; from passive to active management; from static to dynamic understanding of pathogenesis; and from public approach to individual and family – oriented approach.

Oral health status of immigrant and refugee children in North America

Amir Azarpazhooh, Assistant Professor, Faculty of Dentistry, University of Toronto

Dr. Azarpazhooh started by saying that oral health has received low priority in public policy discussions. In Canada, immigrants represent 21% of population, 19% of which aged 14 years or younger who are at greater risk for dental caries. So, it is important to have updated knowledge on oral health status of immigrant and refugee children in North America and review the type/effectiveness of existing interventions in order to deliver effective health-promotion strategies. Dr. Azarpazhooh reported the results of recently conducted systematic review of Oral Health Status of Immigrant Children in North America:

Oral health status in immigrant children was found to be poorer and higher caries rate were identified than for the local population. Barriers preventing immigrants from achieving an adequate oral health care include cultural beliefs/attitudes in immigrant population regarding adoption of oral hygiene hygiene routines and the utilization of dental services, effect of material factors and citizenship status on the attainment of insurance coverage and access to dental services. Common characteristics among immigrant population are improper oral hygiene practices, irregular visits of dental and English illiteracy. In fact, a very small number of immigrant children use the dental services. Finding the dentist and staying with the same dentist is rare. Usually, dental service use is only done in case of an emergency. In summary, immigrant/refugee parents are more likely to be uninsured than the rest of the

population, and therefore, to be burdened by dental care costs, immigrant/refugee children have shown less utilization of dental services. Thus, providing intervention programs at early ages should promote dental care in the immigrants and refugee. We have to focus on social determinants of oral health instead of focusing on microbial aspect of dental caries by making dental care services more accessible, improving English literacy and, importantly, promote education in foreign parents.

Maryam Amin, Associate Professor, School of Dentistry, University of Alberta

Dr. Amin continued on challenges experienced in working with children and families from marginalized populations. Oral health experience of children of marginalized populations is a complex interaction of biological determinants, socio-cultural influences, family context and community variables. Low income families experience worse oral health status, exhibiting more dental caries, more untreated diseases, lower rates of dental visits and declining recommended care because of costs. Barrier for non-users of dental care comes back to "no perceived need" based on the following reasons: young age of the child, absence of emergency to make the dental visit or insufficient coverage to pay for dental visits. Similarly, children from ethnic minorities also exhibit higher rates of caries and lower rates of dental visits. The situation is even worse within the Aboriginal population. Significant oral health disparities that persist in marginalized populations show the need for deeper understanding the phenomenon: we are doing something wrong! Community-based participatory research developed in Alberta is an effective intervention program, as it addresses the population that is not easily reached by usual dental care awareness programs (majority of collaborators are non-profit organizations in public health in Edmonton). Eligible participants were children of immigrant parents who lived in Canada for up to 10 years. The idea of Phase 1 of the project was to explore the existing community resources in dental care. Based on what was learned from Phase 1, project's Phase 2 was initiated in order to make a qualitative analysis of interviews conducted with African, South Asian, and Chinese recent immigrants. Then, Phase 3 followed, that is recruitment of eligible families in the study to see how aware they were of the dental problems, and whether increasing awareness of dental problems would increase their dental visits. Results showed that 64% of children had untreated caries and 52% had no previous dental visit. The main reason of lack of dental visits was that the problem was not perceived as such (not a lack of coverage, not an English illiteracy or an inaccessibility of transport). So, the parental awareness of child oral health problems was rather low. Child's age (the younger, the worse), parental stay in Canada (the shorter, the worse), dental coverage (the smaller, the worse) were significant predictors of reduced number of dental visits. The Phase 4 included intervention program in the form of a 3-hour

oral health education workshop with PowerPoint slides, videos, hands-on interactions/training. Results showed that the intervention was effective in improving parental attitude, perceived behavior control, and oral health knowledge which resulted in their positive intention towards preventive dental visits for young children. But whether the intention will be translated into action is a whole other issue! Challenges in implementing the intervention program are the following: it is hard to reach the vulnerable population (newcomers in the country), low engagement (immigrant opinion of oral health care as a luxury, not a priority), cultural diversity (different languages, oral health literacy, cultural adaptation when tooth-brushing is a new phenomenon) and trust issues in research (research team/tool must be culturally-appropriate).

Interventions for caries control in disadvantaged populations

Herenia Lawrence, Associate Professor, Faculty of Dentistry, University of Toronto

Dr. Lawrence started with epidemiological data on prevalence and severity of Early Child Caries (ECC) among First Nations and Inuit children in Canada:

ECC is highly prevalent in vulnerable populations, including children of impoverished, minority, immigrant, migrant and homeless families whose social and economic capital is limited. There is an overwhelming dominance of social determinants on the prevalence and incidence of ECC. Early child caries have been shown to be relatively easy to prevent, but then why do we have such high prevalence of this disease? The interventions were only partly successful. Systematic reviews and meta-analyses seem to be the best evidence of effectiveness of prevention programs of ECC. Literature search 1998-2007 has revealed 22 papers. Their conclusion reinforced the use of fluoride toothpaste and fluoride varnish as the best professional method for infants at risk. Literature search 2007-2014 has revealed 63 papers from community-based reviews (not systematic reviews). Their conclusion reinforced the use of anti-bacterials. However, these interventions did not significantly reduce the EEC incidence. Only two studies report positive findings and reinforce the use of xylitol.

ECC is a multifactorial and complex disease and, therefore, needs a complex treatment. 'Talk' interventions for ECC prevention (motivational interviews, anticipatory guidance) aim to improve caregiver's knowledge in ECC. However, there is conflicting evidence for effectiveness of these interventions, as not all of them measure the incidence of caries before and after the intervention. Comprehensive community programs (e.g., gift bags, promotion of tooth-brushing) revealed a fluoride

component in all of the interventions. Fluoride varnish seems to be a 'gold standard' intervention for early childhood caries. Systematic reviews conclude that fluoride supplementation in children are effective in reducing caries incidence. Precisely, all children from 6 months to 2 years and from 2-5 years old need a fluoride supplementation. However, poor tooth-brushing compliance and few dental visits are reported in Aboriginal population. Therefore, a more comprehensive program is needed, which includes a combination of dental care during pregnancy, oral health anticipatory guidance and motivational interviews.

In conclusion: 1) lifestyle and behaviour changes are needed to reduce caries. 2) The efficacy of the interventions also depends on caregivers; professionals alone cannot do miracles! 3) It is crucial to integrate oral health care in overall medical health care of pregnant mothers, improve maternal oral health literacy and their economic security. 4) Multi-pronged intervention strategies work better than strategies employing one intervention.

Self-determination theory guided oral hygiene intervention in adolescents

Jolanta Aleksejuniene, Assistant Professor, Faculty of Dentistry, University of British Columbia

Dr. Aleksejuniene started with the question: "Why do we need theory-guided behavioral interventions?" These interventions enhance children's oral health behaviors. For a long time, there were too few of these interventions. The situation is better today, as theory-guided behavioral interventions have been shown to be successful for oral self-care in 12-13-year-old adolescents. Self-determination theory encompasses two key concepts, namely autonomy and self-regulation, which facilitate intrinsic motivation. Motivation must come from the inside, not be constantly based on the reward! In order to reduce the systematic bias, three criteria can be respected: i) controlled study, ii) random group allocation and iii) studying guided oral hygiene intervention, as it is more effective than the conventional dental education. Indeed, guided oral hygiene intervention showed larger improvement in oral self-care skills. Social support, self-determination and self-regulation are great predictors of the effectiveness of guided oral hygiene intervention.

Dr. Aleksejuniene reported the results of the recent study on self-determination theory guided oral hygiene intervention that was conducted in Lithuanian adolescents from low income areas. It was found that self-determination theory guided interventions were superior short term over conventional instruction to modify oral hygiene in 15-16 year olds. Positive oral self-care changes after discontinued

intervention decrease over time. Among best predictors of improved oral self-care were: baseline plaque levels, receiving theory guided interventions, having social support, being self-determined, employing self-regulation, being from a higher socio-economic status family.

Conceptual model of dental caries in children

Svetlana Tikhonova, Postdoctoral fellow, Faculty of Dental Medicine, Université de Montréal

Dr Tikhonova presented the conceptual model of dental caries based on her work in the field of caries research:

It is important to understand how social, cultural, environmental, and psychological factors work together for oral health outcome in early childhood. Moreover, the data-analysis of such a complex long-term process as dental caries is fruitless in the absence of clear conceptual models. More importantly, in order to develop interventions and policies to improve caries control in children we need a clear understanding of a conceptual model of caries disease. A well-known biomedical model of dental caries is composed of four main components: tooth, bacterial biofilm, fermentable carbohydrates and time. These biological determinants are directly related to caries disease and they are highly influenced by saliva and presence of fluoride in oral environment. Although the biomedical model provides us an understanding of the nature of caries disease development, it does not explain what triggers the biological pathological determinants to prevail. Thus, with a growing evidence and understanding in caries disease development and some additional knowledge, which came from social sciences, epidemiology and other disciplines we understand the importance of external factors, which shape the biological factors through behaviours. Since we are talking about conceptual caries model in children, it should emphasize the importance of role of family and community, which should always be considered together (ecological model of child development). Moreover, recently Shonkoff and co-workers introduced a bio-developmental framework. This framework suggests that environmental factors in early childhood are likely to interact with child's genes and create physiological adaptation when the experiences are positive or physiological disruptions when experiences are negative, which in turn have consequence on health-related behaviours, mental and physical health. Based on the evidence on caries determinants that exist and the caries models that were proposed in the literature the potential caries model for children can be considered as a bio-psychosocial model. According to this model, cumulative burden of several social and psychological adversities related to social circumstances (e.g.,

education, politics, economics, infrastructure) and social context (e.g., income, family, neighborhood) can lead to negative structural and functional changes in multiple physiological body systems, including central nervous system, autonomic nervous system, neuroendocrine and immune systems. The consequences of these disruptions can be poor parenting (e.g., child maltreatment, child neglect, in severe cases child abuse) and unhealthy oral health behaviours. Adverse oral health behaviors, in turn, will shape caries biological determinants and can increase risk of caries development. Furthermore, we can hypothesize that disruptions in functioning of autonomic nervous system may have direct effect on salivary composition and secretion. Further research with a solid methodology is needed to clarify the mechanisms by which environmental stress affects the biology of caries disease.

- Caries disease is a dynamic lifelong behavioral disease.
- There are large variations in reporting caries epidemiological data.
- Dental caries is highly prevalent in vulnerable populations, including children of impoverished, minority, immigrant, migrant and homeless families whose social and economic capital is limited.
- Oral health experience of children of marginalized populations is a complex interaction of biological determinants, socio-cultural influences, family context and community variables.
- Oral health has received low priority in public policy discussions.
- Barrier for non-users of dental care comes back to “no perceived need”.
- The efficacy of the oral hygiene interventions also depends on caregivers; professionals alone cannot do miracles!
- It is crucial to integrate oral health care in overall medical health care of pregnant mothers, making dental care services more accessible and improving maternal oral health literacy as well as their economic security.
- One-size-fits-all approach does not work!

Role of psychosocial factors in caries risk, US experience

Woosung Sohn, Associate Professor at School of Dental Medicine, Boston University

Dr Sohn started the second block of presentations and discussed the risk of oral health diseases in low socio-economic areas. Since the traditional caries triad composed of host, bacteria, and diet, was not detailed enough to explain the dynamic process of the formation of oral health diseases, he turned to a psychosocial model including the inter-relation of social factors and individual thoughts and behaviours. Using the psychosocial framework, Dr. Sohn conducted a large-scale study in a very segregated poverty-stricken city of Detroit by recruiting a representative sample of more than 650 low-income children less than 5 years of age and their caregivers (N > 650), 83% of whom were young unemployed low-education low-income mothers. Moreover, the majority of those mothers and their children had untreated active cavity lesions. Based on Dr. Sohn's overview of existing literature as well as on the results of his study, several important points were addressed:

- Fatalistic belief, lack of knowledge of oral health hygiene and parenting stress are among the most stable determinants of dental caries over time.
- Resilience capacity of caregivers, including high household quality, social support, absence of depressive symptoms, being religiously proactive and non-smoking enhances child's oral health care.
- Social support might actually act as a buffering effect on the link between situational stressors and psychological distress.
- Maternal psychosocial factors affect early childhood caries and behavioral outcome.

Dr. Sohn showed that, compared to a control group, the intervention group (to whom oral health care was provided) showed improved oral health practices, even after a two-year follow-up. However, oral health outcome did not change significantly, probably due to a very short-term follow-up. Further investigations are needed as data becomes available. At the end of Dr. Sohn's talk, he highlighted the need of a better measurement of oral health diseases in order to capture the latter as dynamic inter-relationships between social and psychological factors, instead of a traditional static framework.

Impact of early life stress on mental and physical health, and underlying biological mechanisms

Linda Booij, Assistant Professor at the Department of Psychology and Psychiatry at Queen's University and researcher at Sainte-Justine University Hospital Research Centre

Dr. Booij discussed the negative long-term effects of early life stress, particularly common in disadvantaged populations, on physical and mental health. Childhood adversity is one of the strongest predictors of almost any mental health outcome and physical-related problems. Regarding oral health, research has shown that people who had a history of childhood trauma exhibited bad dental health habits, thereby increasing the risk of developing oral health diseases. Based on a bio-psychosocial model, advancing that early experiences shape biological systems during sensitive developmental periods, Booij proposed a neurodevelopmental model of health and disease. This complex and dynamic model suggests that the interplay between genes and environment alters neurotrophic factors, in turn altering brain function and structure, and ultimately health outcome. For instance, brain imaging studies have found higher brain developmental trajectory in high socio-economic status children as opposed to lower developmental rate in low socio-economic status children. Dr. Booij advanced that early stress might alter brain circuits involved in emotion regulation and intrinsic motivation, thereby altering mental and physiological state. Importantly, Dr. Booij introduced epigenetic processes as a possible mechanism underlying those alterations. Simply put, dynamic epigenetic code could alter gene expression without altering the fixed genetic sequence, therefore explaining the differences in the health outcome that cannot be accounted by genes. Moreover, same genes may have different gene expressions across the genome, possibly under the influence of differential environment. Those epigenetic changes might be linked to the altered physiological state such as enamel development, potentially leading to the formation of oral health diseases. Overall, Dr. Booij proposed a biological rationale to do multidisciplinary interventions early in life in vulnerable groups due to the ongoing critical brain developmental processes.

Food literacy as sub-set of health literacy, implications for oral health

Doris Gillis, Associate Professor in the Human Nutrition Department of St-Francis, Xavier University

Dr. Gillis started her presentation by introducing the concept of health literacy, officially defined as an ability to access, understand, evaluate and communicate information in a way to promote, maintain and improve health in a variety of health contexts, including oral health literacy and food literacy. Importantly, health literacy might predict health status more accurately than educational level, income or ethnicity. Then, Dr. Gillis focused on a subset of health literacy, namely food literacy. It has gained popularity in the last few years due to a growing number of diseases related to nutrition, such as obesity and diabetes. Food literacy has been typically defined as the ability to make food-related decisions and behaviors such as purchasing food and checking for daily calories intake. However, the concept evolved and today food literacy goes beyond the generic set of skills by including socio-economic conditions. Dr. Gillis outlined the fact that food practice is never just food, but also a social practice that can lead to inequalities. Indeed, consumers' food insecurity affects their food literacy, therefore becoming a social determinant in itself. Food security exists when people give physical and economic access to sufficient, safe and nutritious food in order to meet their dietary needs and food preferences for an active and health lifestyle. However, 13% of Canadian population experience food insecurity. Here, Dr. Gillis emphasized that the blame should not be placed only on the individuals, but on a much broader social issue related to social inequity. Dr. Gillis concluded with food literacy's implications for oral health:

- Food practice plays a crucial role in dental caries development.
- Similarly to food insecurity, dental caries impacts marginalized populations.
- We need to address the role of food practices in oral health through a social equity lens.
- Multiple kinds of literacy namely food literacy and oral health literacy have to be thoroughly examined to better understand and address complex oral health inequities.

Finally, Dr. Gillis invited researchers, practitioners and policy makers to think about food literacy beyond the set of generic skills and technical knowledge in order to include broader social, economic and political contexts.

No Jordan's Principle's cases in Canada? Governmental response to disparities in access to health and social services for First Nations people

Sinha Vandna, Associate Professor at School of Social Work, McGill University

Dr. Vandna presented the tragic case of Jordan River Anderson, a child born in Winnipeg with Carey Fineman Ziter Syndrome, a rare and complex muscular disorder. After spending his first two years of life in a hospital, Jordan was discharged and assigned an intensive home care. However, the federal and provincial government could not resolve who was financially responsible for the necessary home care. Sadly, Jordan died in a hospital at 5 years of age before seeing this conflict solved. In response to his tragic death, "Jordan's principle" emerged, claiming that in case of a jurisdictional dispute between two government parties over paying for health care services, government should pay for the necessary services without delay or disruption and then work out the refunding politics. In the light of high prevalence of Jordan's Principle's cases in Canada, particularly among First Nations, an administrative response has been issued by the government in 2007 in the form of funding meant to support Jordan's Principle's cases. In order to identify those cases, the Canadian government focused on the following inclusion criteria: First Nations children, normative standard care, jurisdictional funding dispute between federal and provincial government and continuity of health care. However, as Dr. Vandna pointed out, multiple situations were left unaccounted for, including intergovernmental disputes. Moreover, Jordan's Principle was not formally recognized in absence of a jurisdictional dispute, placing the burden on First Nations who had to go through multiple stages of conferencing until the jurisdictional dispute was declared and finally ruled in. Due to these reasons, in 2010, Canadian government claimed that no Jordan's Principle's cases were identified and by 2012, Jordan's Principle's funding was eliminated. In conclusion, Dr. Vandna deplored the following issues:

- Lack of transparency in documentation about Jordan's Principle's cases due to a tremendous difficulty of acquiring agreements and documentation.
- Lack of accountability.
- Failure to specify a consistent repayment mechanism for the health care services.
- Narrow focus on federal versus provincial jurisdictional disputes, while completely ignoring the intergovernmental disputes.
- No evidence of health care service disparities.

- Great need in a concerted effort to address jurisdictional ambiguities as well as service gaps and disparities at a systemic level.

Poverty measurements and financial capability using national surveys

David Rothwell, Assistant Professor, the School of Social Work, McGill University

Dr. David Rothwell addressed the difficulty of estimating poverty as these estimations depend on what measures are used and over what period of time these measures are done. Typically, poverty is recognized if one's access to economic resources is insufficient to meet one's basic needs. Poverty is usually measured with household income. On the other hand, the operational definition of poverty proposes that one is poor when one's wealth-type resources are not enough to meet one's basic needs for a limited period of time. According to a 1999-2005 surveys, over 53% of Canadians are asset-poor. In other words, more than half of Canadian population does not have enough wealth-type resources (financial assets) to enable them to meet their basic needs for a period of 3 months. In fact, Canada presents higher asset-poverty rates than United Kingdom and United States of America, placing Canadian population in a great financial vulnerability. Financial literacy, mainly characterized by self-efficacy in one's financial capabilities, is crucial for coping with financial vulnerability. However, financial literacy is quite low in Canada and shows large gender gaps across countries. Moreover, people tend to overestimate their ability to manage their finances. Dr. Rothwell presented the results of an investigation of perceived financial capability and objective knowledge. Interestingly, people under 45 years of age tended to underestimate their financial capability; at 55 years of age, there was a significant overlap between perceived financial capability and objective knowledge; whereas at 65 year-old people overestimated their financial capabilities, partially explaining why seniors are highly financially vulnerable to exploitation. In fact, older age, status of single mother, low educational level and not speaking English or French as first languages were reported as risk factors for asset-poverty and financial asset-poverty. In his conclusion, Dr. Rothwell deplored that majority of current provincial poverty plans do not mention asset or financial capability, since these plans are limited to social assistance.

Participatory approaches addressing poverty and oral health

Christophe Bedos, Associate Professor, Faculty of Dentistry, McGill University

Dr Bedos is interested in the existing conflicts among dental professions. He noted that researchers often tended to collect the data in the population of interest and never come back with any results. Dr. Bedos deplored this tragic situation, particularly since the population of interest is often a marginalized one, including people with disabilities, people living on social assistance, poor working people and Aboriginals. Using the metaphor of "Breaking Silos", Dr. Bedos highlighted the need to bridge the gaps between dental professions, researchers and general population. To remedy the situation, Dr. Bedos suggested that several measures should be put in place, pointed out the future challenges, and emphasized that these steps should be done with the community:

- Measure: write research questions; Challenge: building partnerships, time constraints, getting a grant.
- Measure: conduct research; Challenge: lack of shared epistemology, finding balance in participation and resources, finding balance in decision-making when conducting research.
- Measure: contextualize knowledge; Challenge: prioritizing work with the general population instead of scientific publications.

Notwithstanding many challenges, Dr. Bedos ended his presentation with the optimistic words: "Courage, my friends, it is not too late to build a better world!"

Building partnerships in First Nations research

Henry Harder, Professor, School of Health Sciences, University of Northern British Columbia
Travis Holyk, Adjunct Professor, University of Northern British Columbia

Dr. Holyk and Dr. Harder introduced "Carrier Sekani Family Services". These services target the Inuit population due to the alarming statistics showing that the Inuits are 2 to 3 times more likely to have oral health disorders that the rest of the Canadian population. In combination with poor nutrition, lack of primary care and preventive advice contribute to the deterioration of the Inuit oral health. In addition, the majority of the Inuits living in Canada are in Inuit communities, where the access to

preventive dental care is very difficult and treatments are far from being appropriate. Therefore, the general idea of these services is for Inuits to take more responsibility for their own children and for their own health care. What is particular about these services is that these include indigenous way of knowing and are widespread on more than 76,000 square kilometers. Among numerous projects that Dr. Holyk and Dr. Harder conducted as part of the team of Carrier Sekani Family Services, they mentioned Youth Suicide Prevention research project, the aim of which was to gain insight of Inuit community needs in introducing and preventing suicide in Inuit youth. There were two great challenges to overcome in order to achieve this goal, namely finding financial support and bringing all the groups together for the project, particularly the youth and the elderly. First of all, Dr. Holyk and Dr. Harder made a research proposal for a project with mixed-methods design, which included quantitative and qualitative data. The core intervention was creating a winter camp where numerous activities such as hunting, canoeing and learning about clans were held in order to have youth engage in more traditional indigenous activities, thereby mingling them with the elderly. This project promoted traditional values such as respect and compassion. As a result, Inuit youngsters have shown a significant decrease in depressive symptoms and an increase in self-esteem. Now, two years later, the Youth Suicide Prevention project has still a long-lasting impact. Indeed, Inuit community felt ownership over this project and got greatly involved in it, thereby rendering interventions more beneficial. Dr. Holyk's and Dr. Harder's take-home message was that mingling with Inuit community is crucial for earning their trust and gaining mutual respect.

Integration of oral health care and primary care

Elham Emami, Associate Professor, Faculty of Dental medicine, Université de Montréal
Felix Girard, Assistant Professor, Faculty of Dental medicine, Université de Montréal

Dr. Emami took the floor to discuss the integration of oral health care and primary care. Right from the start, Dr. Emami urged everyone to confront the workforce disparity on the systemic level of the oral health care by involving dental care workforce and primary health care where they would share responsibilities with other health professionals. Dr. Emami cited World Health Organization and the work of Kodner, Lamarche and Contandriopoulos research group in order to define primary health care and integrated care. Primary health care is a set of universal first health services promoting health, preventing diseases and providing diagnostic, curative, supportive and palliative services. Integrated

care, defined as a discrete set of techniques designed to create collaboration within and between the health care, funding, administrative and provider levels, is crucial. It gives means to improve the services in relation to access, quality, user satisfaction and efficiency. However, there are many challenges that dental communities face for integration, such as dominance of a disease-oriented dental practice rather than prevention-based practice, underestimation of dental care need for vulnerable communities and lack of leadership and collaboration. To remedy to this situation, Dr. Emami suggested such solutions as building interdisciplinary teams, promoting leadership as well as inter-professional education and collaboration, improving knowledge transfer between stakeholders and reorganizing primary health care services. In addition to Dr. Emami's suggestions, Dr. Girard emphasized the importance of "patient-as-partner" care, also called partnership care, focusing on understanding patients' needs by involving them in the process. Indeed, instead of overburdening the clinician with all the decision-making and leaving the patient out of the process, the partnership care would value and use the knowledge of the patient, thereby making a patient an active agent of the health care team and building confidence and mutual trust.

- Oral health diseases are the result of dynamic inter-relationships between social and psychological factors.
- Early life stress greatly affects physical and mental health, increasing the risk of developing oral health diseases.
- Several types of literacy, including food literacy, oral health literacy and financial literacy, have to be thoroughly examined to better understand and address complex oral health inequities.
- There is a great need in a concerted effort to address jurisdictional ambiguities as well as service gaps and disparities in health care at a systemic level.
- It is important to bridge the gaps between dental professions, researchers and general population.
- In order to be more beneficial, oral health care interventions in Aboriginal populations should promote the mingling with the Inuit community.
- Integration of oral health care and primary care is crucial as it gives means to improve the services in relation to access, quality, user satisfaction and efficiency.

PANEL DISCUSSIONS

The second part of day 1 was dedicated to 3 panel discussions. For each panel discussion, specific question/s were provided. The panelist addressed the questions and discussed with workshop participants. The synopsis of the discussion is highlighted below:

Panel 1: Decision makers and stakeholders

John Wooton, Martin Chartier, Jill Torrie, Travis Holyk

How could already existing public oral health programs for caries control in vulnerable populations be improved, and what kind of research should be done to address this?

- Supporting the existing public oral health program and dental services and expansion to broader services for the vulnerable populations.
- Encourage water fluoridation.

- Integration of oral health with other chronic disease for health care planning, management and research.
- Empowerment of all actors of health systems to work on oral health, particularly social services who are among the first ones to have access to vulnerable population.
- Tackling other diseases, aside oral health diseases and building inter/multi disciplinary teams that complement each other.
- Integration of dental health in maternal health care and primary care to early identification of oral disease.
- Addressing bigger issue such as inequity, social determinants and food insecurity in oral health.
- Pressure has to come from the people: people don't complain, so nothing happens.

Panel 2: Researchers from various disciplines

Vandna Sinha, Henry Harder, Doris Gillis, Linda Booij

What are approaches/population-based interventions in your field that could help in controlling caries disease in vulnerable populations?

- Interventions and approaches that promote health literacy are multidisciplinary and interdisciplinary in nature, and can be used to empower individuals' oral health.
- Evidence-based clinical practice guidelines for nutrition support the oral health.
- Psychological strategies such as motivational interviewing and cognitive-behavioral techniques may be useful to implement in dental research and care.
- Prevention programs are more beneficial when targeted in critical sensitive time periods.
- Participatory research should be promoted because this approach is about education, learning and inducing change.
- Indigenous research methodologies should be empowered by focusing on ontology, epistemology and axiology.
- Community does not make the linkage between oral health and other kinds of health. The message about the importance of the health care has to get out!

Panel 3: Oral Public Health Researchers

Vita Machiulskiene, Woosung Sohn, Herenia Lawrence, Maryam Amin

How can the approaches/interventions as discussed in Panels 1 and 2 be integrated in oral health research?

- Knowledge exchange and transfer activities should be focused on the importance of oral health care in the vulnerable parts of the population; even within a low SES population, different parts of population might live differently than others.
- The policy is what we really lack in the dentistry domain as a whole.
- The "sugar danger" becomes increasingly important not only because of oral health care issues but other issues such obesity, diabetes, etc.
- Motivational interviewing seems to be the promising way in addressing oral health.
- One-size-does-not-fit-all approach should be promoted.

SYNOPSIS DAY 2

The theme of the Day 2 was "Planning and designing of a pilot study and writing of a collaborative grant application". The Day 2 started by the presentations of Mrs. Céline Bouvet and Mrs. Sophie Gauthier-Clerc, from the "Research, Development and Valorisation" office of the Université de Montreal. They presented and discussed various national and international funding opportunities and upcoming relevant grants (see appendix for the presentation), and answered to workshop participants' questions. Then, the participants were invited to work in small groups composed of at least one oral health researcher, one researcher from the non-dental disciplines, one stakeholder, and one research trainee. They were asked to discuss and plan for a collaborative/interdisciplinary research. Then a plenary group discussion with all workshop participants was conducted and a representative of each group opened the discussion.

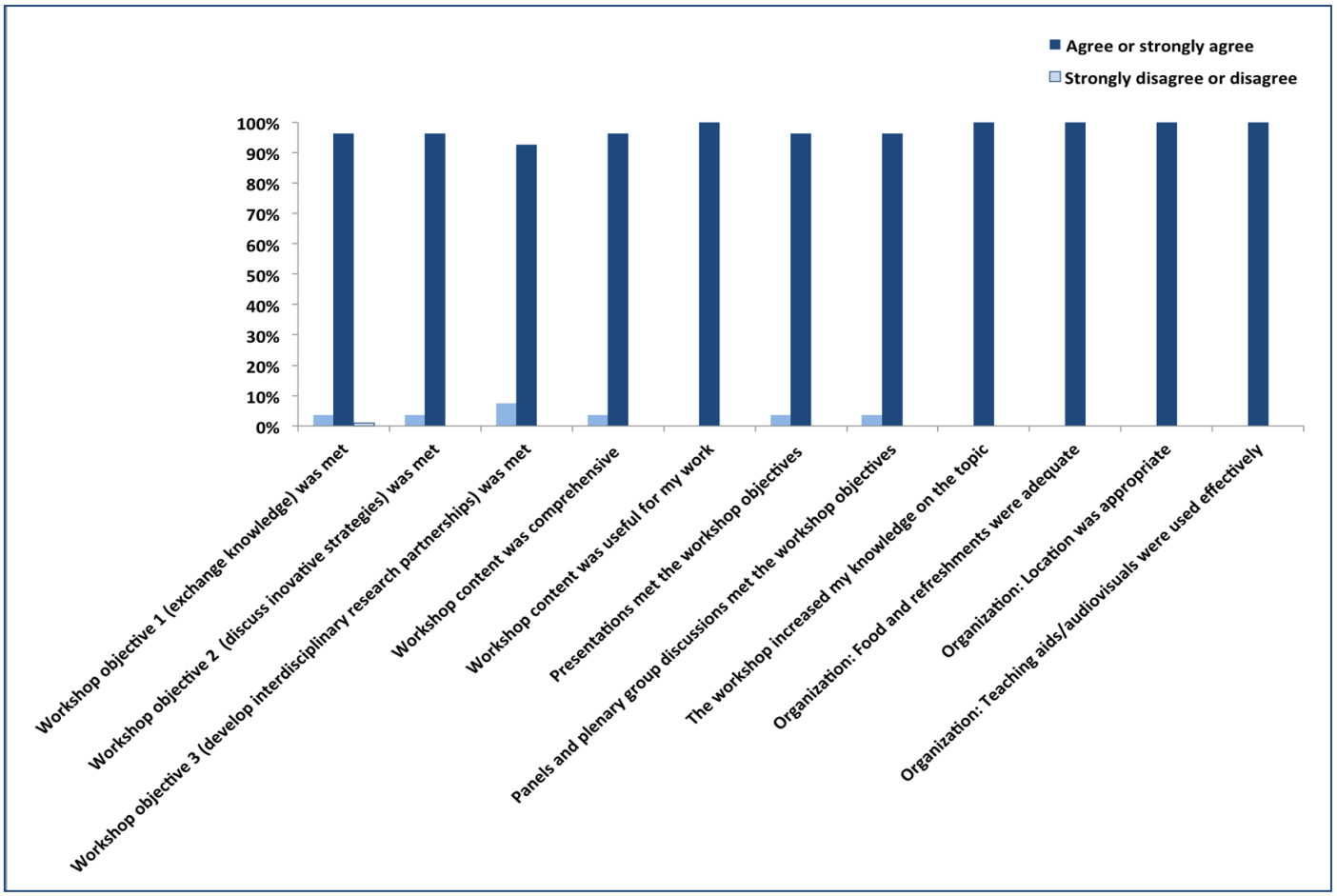
In general, the interdisciplinary research was focused on the promotion of oral health and basic strategies for caries disease prevention, especially in target population such as rural and remote communities as well as Aboriginal children.

The research objectives' priorities and approaches were summarized as:

- Investigate the impact of common health risk factors such as stress on oral health: e.g., using mixed-method research to explore and quantify how caregivers stress would affect their parenting practices regarding oral health care.
- Control the risk factors of caries disease using interdisciplinary approach: e.g., improve health/oral health/food literacy through educational interventions and programs.
- Address gap in knowledge and education using participatory action research: e.g., improve Indigenous perceptions' of dentists through story-telling about the oral health care and implementation of good oral self-care behaviors.
- Create supportive environments using cost-effective health promotion programs such as healthy food stores.
- Innovate organizational models of oral health primary care through knowledge transfer approach.

FEEDBACKS AND WORKSHOP EVALUATION

The histogram and paragraph below present the results of workshop evaluation sheets and testimonials from some of the research trainees' participants.



Khady Ka: Postdoctoral fellow, School of Public Health, Université de Montréal

'My participation in the interdisciplinary workshop on caries research was enriching for several reasons. First of all, I increased substantially my knowledge on various methodologies and collaborative research models related to caries research. Second, I extended my network and had the opportunity to meet several oral health researchers and stakeholders from not only Quebec and Canada, but also the rest of the world including from the U.S. and Europe. Lastly, and most importantly, this workshop opened the door for new research collaborations through networking and shared research interests.'

Elmira Ismaylova: Ph.D. student, Biomedical Psychiatric Sciences, Université de Montréal

'I really enjoyed the workshop. To be honest, my only awareness of the importance of oral health care came from my annual dental visits. So, I learned a lot from the presentations on the issues of dental care services, developmental models of caries and financial burden of the oral health diseases, particularly from the presentations made by the members of the Dentistry and Public Health domains.'

Daiane Cerutti: Ph.D. student, Dental Public Health, Universidade Federal do Rio Grande do Sul, Brazil and Université de Montréal

'This workshop gave me a broader perspective on what must be targeted in the caries disparity context. I really enjoyed learning about current interdisciplinary projects in oral health that include a focus on health promotion, especially in vulnerable populations. Additionally, it was great to discuss oral health intervention programs implemented at national and community levels in Canada and what has been done in Brazil. From that, we started to create collaborations for future projects on dental public health.'

Maryam Elyasi: M.Sc. student, School of Dentistry, University of Alberta

'As a graduate student, I truly benefited from this well-organized multidisciplinary workshop. Specifically, it was a very good opportunity for me to be knowledgeable about the up-to-date research in my field of interest which is the "Role of psychosocial factors in caries risk"; many thanks to Dr. Sohn for his lecture. In addition, the addressed gaps and needs identified in caries disparity research could be a guideline for future research.'

Faahim Rashid: M.Sc. student, Dental Public Health, University of Toronto

This well organized workshop was centered around bridging oral health disparities, with specific emphasis on caries, through the development of interdisciplinary research teams. Being a Dental Public Health trainee, it was wonderful to see several methods being considered and discussed including both downstream and upstream approaches. Tackling such disparities requires participation and collaboration among key stakeholders. This allows for research conducted by the academic community in institutions to be translated into evidence based public health practice in the real world. Having researchers, community based providers and policy makers at the same table allowed for a well rounded discussion on the benefits of and concerns with implementation of interventions at the community level. Of importance, interventions specific to Indigenous communities where caries prevalence is high were also discussed. This great initiative provided me with the wonderful opportunity of conversing with and learning from renowned leaders in the field of oral health for which I am very grateful.

Basem Danish: Ph.D. student, Dental Public Health, McGill University

As a dentist with an MSc in Dental Public Health, this workshop definitely aligned with my interest and goals. This was a great unique opportunity; the workshop covered a very important topic, which is inequalities in oral health. This workshop provided a perfect example of engaging professionals with different expertise and disciplines, from different parts of the globe, to create strategies to tackle oral health inequalities. As a current PhD student focusing on oral health inequalities among Aboriginal people in Canada, this workshop exposed me to different strategies and skills related to my PhD project, and introduced me to researchers and policy makers working in the same area of my PhD project, who collaborated with me after the workshop.

APPENDICES

Workshop Participants

RESEARCHERS

Amir Azarpazhooh
University of Toronto
Beatriz Ferraz
Montreal Children's Hospital
Christophe Bedos
McGill University
David Rothwell
McGill University
Doris Gillis
St. Francis Xavier University
Elham Emami
Université de Montréal
Félix Girard
Université de Montréal
Fernando Hugo
Universidade Federal do Rio Grande do Sul, Brazil
Henry Harder
University of Northern BC
Herenia Lawrence
University of Toronto
Jolanta Aleksejuniene
University of British Columbia
Linda Booij
Queen's University
Maryam Amin
University of Alberta
Travis Holyk
University of Northern BC
Vandna Sinha
McGill University
Vita Machiulskiene
Lithuanian University of Health Sciences
Woosung Sohn
Boston University
Yves Couturier
Université de Sherbrooke

STAKEHOLDERS

Arlette Kolta
Director, Quebec Network for Oral Health and Bone Health Research
Celine Bouvet
Research office, Université de Montreal
Chantal Galarneau
Quebec National Public Health Institute
Christian Fortin
Quebec Dental Pubic Health Association
Franck Giverne
ISBE-Branch Health of First Nations and Inuit, Health Canada
Jill Torrie
The Cree Board of Health and Social Services of James Bay, Quebec.
Martin Chartier
Public Health Agency of Canada
Mayamona Placide
Social Help Center for Immigrants
Sophie Gauthier-Clerc
Research office, Université de Montreal

GRADUATE STUDENTS

Basem Danish
McGill University
Daiane Cerutti
Universidade Federal do Rio Grande do Sul, Brazil
Elmira Ismaylova
Université de Montréal
Fahim Rashid
University of Toronto
Faheem Khiyani
Université de Montréal
Hermina Harnagea
Université de Montréal
Khady Ka
Université de Montréal
Maryam Elyasi
University of Alberta
Nastaran Sharifian
Université de Montréal
Parvaneh Badri
University of Alberta
Svetlana Tikhonova
Université de Montréal

Short Biography of Speakers and Panellists

Maryam Amin: Associate Professor, Faculty of Dentistry, University of Alberta. Maryam received her dentistry degree (D.M.D.) from Shiraz University of Medical Sciences in Iran. She received her M.Sc. in Dental Sciences and her Ph.D. in Oral Health Sciences from the University of British Columbia in Canada. She also completed a postdoctoral fellowship in Health Education at the University of British Columbia in Canada. The most part of her academic career, Maryam has been involved with the oral health needs of young children - as an educator, a researcher, and a practitioner. Her research interests include psychosocial determinants of children's oral health and marginalized populations and dental education.

Linda Booij: Assistant Professor at Queen's University, Researcher, CHU Sainte-Justine, Université de Montreal. She holds a Ph.D. degree in Clinical Psychology. Her research program examines how early adversity, in combination with genetic factors, could affect the serotonin system in humans and brain development and how this could lead to psychopathology. Her research is conducted in longitudinal community samples as well as in patient samples, using a combination of brain-imaging, epigenetics (DNA methylation) and cognitive-behavioral assessments. The title of her presentation was "Impact of early life stress on mental and physical health, and underlying biological mechanisms".

Martin Chartier: He holds a DMD degree from Université de Montréal. For over a decade, he has cultivated a broad range of experience in oral health care delivery by working in numerous dental clinics and hospital settings in Québec, British-Columbia, Nunavut, and the National Capital region. He also participated in volunteer work in Bolivia and Cambodia. In spring 2013, Dr. Chartier completed a Master of Public Health at Harvard School of Public Health in Boston. He has worked at the World Health Organization at the department of Nutrition for Health and Development in the Nutrition Policy & Scientific Advice division. Since September 2013, Dr. Chartier is the Assistant Chief Dental Officer at the Public Health Agency of Canada.

Doris Gillis: Associate Professor and Chair of the Department of Human Nutrition at St. Francis Xavier University. She holds a Master's of Science degree from the University of Guelph, Master's of Adult Education from St. Francis Xavier University, and a Ph.D. from the University of Nottingham. Her research focuses on three overlapping areas: the concepts of health literacy and food literacy and their integration into practice and policy, food security and policy change, as well as maternal and child

nutrition with a focus on breastfeeding. Central to Dr. Gillis's research is a concern about addressing health disparities and effecting positive change in practice and policy as it relates to food and nutrition relevant issues. Her presentation was entitled "Food literacy as a sub-set of health literacy, implications for oral health".

Elham Emami: Clinical scientist, with a postgraduate professional training in Prosthodontics, PhD in Biomedical Science and postdoctoral training in Epidemiology and Dental Public Health. She is currently the director of Public Health Axis of The Quebec Network for Oral health and Bone Research. She is also an Adjunct Professor in the Faculty of Dentistry, at McGill University and a Research associate at the CRCHUM (Centre de recherche Hospitalier l'Université de Montréal), and IRSPUM (Université de Montréal Public Health Research Institute). Dr Emami's research program is dedicated to multidisciplinary, practice-relevant research, with the ultimate goal of decreasing the burden of poor oral health in general population. In particular, her research activities focus on the following 3 themes: Intervention: The effectiveness of prosthodontic treatment modalities in edentate individual, Access: Social inequalities in oral health care access, with particular emphasis on rural and remote populations; Impact: The impact of oral health on general health.

Henry Harder: Professor and past Chair of the School of Health Sciences at the University of Northern British Columbia. He currently holds the Dr. Donald B. Rix BC Leadership Chair in Aboriginal Environmental Health. He is a registered psychologist. Dr. Harder has been in the fields of mental health, rehabilitation and disability management for over 25 years. His research interests are in Aboriginal health, disability issues, workplace mental health, and suicide prevention. He is a Canadian Institutes of Health Research funded scholar. Dr. Harder is a published author and has made presentations and conducted workshops throughout Canada, the United States, Europe and Australia. He is a member of the College of Psychologists of British Columbia, Network Environments for Aboriginal Research in BC, Canadian Psychological Association, American Association of Marriage and Family Therapy, International Society of Physical and Rehabilitation Medicine, and other professional organizations.

Travis Holyk: Executive Director of research, primary care and strategic services at Carrier Sekani family Services and adjunct professor at University of Northern British Columbia, Prince George. Dr. Holyk have been involved in Child Welfare and First Nations health and social issues for a number of years including being Director of Research and Policy Development for Carrier Sekani Family

Services, an organization responsible for health, social and legal services for First Nations people of the Carrier and Sekani territory. Responsibilities include management the Carrier Sekani Family Services Family Justice Program and development of agency policy. Research interests comprise Indigenous forms of dispute resolution, as well as social and health issues. Dr. Holyk is an Adjunct Professor at the University of Northern British Columbia. Dr. Holyk and Dr. Harder presented the topic 'Building partnerships in First Nations research'.

Herenia P. Lawrence: Associate Professor of Dental Public Health at the Faculty of Dentistry, University of Toronto and the Principal Investigator of the Baby Teeth Talk Study in Canada. Dr. Lawrence is a vocal advocate for improved oral health of Aboriginal children and has worked in partnership with Aboriginal researchers, communities and organizations across Canada evaluating oral health promotion programs and developing dental preventive interventions to reduce oral health inequalities between young Aboriginal and non-Aboriginal children. She presented the topic "Interventions for caries control in disadvantaged populations".

Vita Machiulskiene: Head of Dental and Oral Pathology at the Faculty of Odontology, Lithuanian University of Health Sciences (LUHS), Kaunas, Lithuania. Currently, she is also the President-elect of ORCA (European Organisation for Caries Research). Her research activities are related to clinical and epidemiological investigations of the disorders of hard dental tissues such as dental caries and dental fluorosis, with particular focus on diagnostic aspects of the carious lesions and lesion dynamics in response to various modes of treatment. Prof. Machiulskiene topic of presentation was "Epidemiology of dental caries and its burden for different populations".

Woosung Sohn: Dr. Sohn has received DDS, and Ph.D. in Preventive Dentistry from Yonsei University, Seoul, Korea. Dr. Sohn received a Doctor of Public Health (Dr.PH) in Epidemiology from the University of Michigan, School of Public Health. He is also a Diplomat of the American Board of Dental Public Health. Currently he works as Associate Professor in the Department of Health Policy and Health Services Research, and is Director of the Advanced Education Program in Dental Public Health at Boston University, Goldman School of Dental Medicine. Dr. Sohn's research is centred specifically at early childhood caries (ECC) and focuses at understanding and addressing psychosocial, behavioral, and environmental risk factors. The title of his presentation was "The Role of psychological factors in caries risk, US experience".

Vandna Sinha: Assistant Professor at the School of Social work of McGill University. She is the Principal Investigator of the First Nations component of the Canadian Incidence Study of Reported Child Abuse and Neglect, and works closely with a First Nations advisory committee to oversee the most comprehensive national-level study of First Nations child welfare investigations. Her presentation was entitled "No Jordan's Principle's cases in Canada? Governmental response to disparities in access to health and social services for First Nations people".

Jill Torrie: Director of the Cree Board of Health and Social Services of James Bay responsible for research as well as an Assistant Director of Public Health responsible for public health surveillance, evaluation and communications as well as clinical preventive practices.

John Wooton: General Practitioner since 1983 at the CSSS du Pontiac with a practice which includes family medicine, emergency, hospitalization and obstetrics. He is also the current Director of professional Services at his establishment. He is a member of the Society of Rural Physicians of Canada, and has been its president and is the founding editor of its journal.

Amir Azarpazhooh: He obtained his DDS form Iran in 2001, and his specialty training in Canada at the University of Toronto in Dental Public Health (2004-2007) and Endodontics (2007-2010) combined with his Ph.D. research (2007-2011). Amir is an Assistant Professor in the Faculty of Dentistry, University of Toronto in Dental Public Health and Endodontics; with a cross appointment to the Clinical Epidemiology Program of the Institute of Health Policy, Management and Evaluation of the Faculty of Medicine, and the Toronto Health Economics and Technology Assessment (THETA) Collaborative of University of Toronto, Department of Endodontics at Schulich school of Medicine & Dentistry, University of Western Ontario, London. Amir is the Head of Division of Endodontics, Department of Dentistry, Mount Sinai Hospital, Toronto and a Clinician Scientist with the Lunenfeld-Tanenbaum Research Institute of Mount Sinai Hospital. Dr. Azarpazhooh presentation was entitled Oral health status of immigrant and refugee children in North America.

Jolanta Aleksejuniene: Assistant Professor at the Faculty of Dentistry, University of British Columbia. 1994-1995, M.Sc. program: "Dental caries and caries determinants in 7-, 12-, and 15- year-old Lithuanians" at the University of Oslo, Norway. 1997-2001, Ph.D. program: "Studying oral health in populations – a Lithuanian example" at the University of Oslo, Norway. 2002-2003, postdoctoral project: "Caries risk & biological functions" at the University of Oslo, Norway. Her research interests

are centred on the theory-informed behavioural interventions tailored to vulnerable school-aged children. Dr. Aleksejuniene's topic of presentation was "Self-determination theory guided oral hygiene intervention in adolescents".

Svetlana Tikhonova: Postdoctoral fellow at the Faculty of Dentistry, Université de Montréal. Dr. Tikhonova graduated from Belarusian State Medical University as a dentist and completed speciality training in Operative Dentistry. Svetlana got a M. Sc. degree in Dentistry from the same University and recently completed her Ph.D. at McGill University, Faculty of Dentistry, in the field of dental caries diagnosis and management. She is now working as a postdoctoral fellow in the Faculty of Dentistry at University de Montréal and as a faculty lecturer at McGill University, Faculty of Dentistry. Her postdoctoral project is focusing on the role of parental psychosocial distress and early childhood life stressors along with other compositional and contextual factors on Quebec school children caries risk. Dr. Tikhonova's topic of presentation was "Conceptual model of dental caries in children".

David Rothwell: Assistant Professor at the School of Social Work of McGill University. Dr. Rothwell's research interest is in poverty and social welfare policy. He is a Principal Investigator on projects that examine asset poverty, financial capability, education savings, and homeless services. He teaches community development, policy, and research methods. His presentation was entitled "Poverty measurements and financial capability using national surveys".

Christophe Bedos: Dentist with a Ph.D. in Public Health. He is also an Associate Professor at the Faculty of Dentistry at McGill University and an Adjunct Professor at the Faculty of Medicine at Université de Montréal. He uses qualitative methodologies and participatory approaches to understand the perspectives of vulnerable populations with respect to oral health, oral illness, and access to professional services. In the last years, he has built partnerships with various groups that represent several sectors of the society. The involvement of his partners allows integrated knowledge translation, especially the implementation of actions and policies that aim at reducing oral health inequities. His presentation was titled "Participatory approaches addressing poverty and oral health".

Felix Girard: Assistant Professor at the Faculty of Dentistry, Université de Montréal. Felix is a new investigator, dentist and former dental officer at the Public Health Department of the Cree Board of Health and Social Services of James Bay for 12 years. He has conducted qualitative research with

Aboriginal communities and continues to work as a part-time clinician in these communities. Dr. Girard's presentation was entitled "Integration of oral health care and primary care".

Agenda

FRIDAY, SEPTEMBER 19th

8:00 – 8:30 Registration and breakfast

8:30 – 8:50 Introductions and welcoming remarks

Elham Emami, Associate Prof, Faculty of Dentistry, Université de Montréal

Debora Matthews, Director, Network for Canadian Oral Health Research

Arlette Kolta, Director, Quebec Network for Oral and Bone Health Research

8:50 – 9:10 Epidemiology of dental caries and its burden for different populations

Vita Machiulskiene, Professor, Faculty of Odontology, Lithuanian University of Health Sciences; President-elect, European Organisation for Caries Research

9:10 – 9:40 Oral health status of immigrant and refugee children in North America

Amir Azarpazhooh, Assistant Prof, Faculty of Dentistry, University of Toronto

Maryam Amin, Associate Prof, School of Dentistry, University of Alberta

9:40 – 10:00 Interventions for caries control in disadvantaged populations

Herenia Lawrence, Associate Prof, Faculty of Dentistry, University of Toronto

10:00 – 10:20 Self-determination theory guided oral hygiene intervention in adolescents

Jolanta Aleksejuniene, Assistant Prof, Faculty of Dentistry, University of British Columbia

10:20 – 10:40 Discussion

10:40 – 11:00 Break

11:00 – 11:15 Conceptual model of dental caries in children

Svetlana Tikhonova, Postdoctoral fellow, Faculty of Dentistry, Université de Montréal

11:15 – 11:35 Role of psychosocial factors in caries risk, US experience

Woosung Sohn, Associate Prof, School of Dental Medicine, Boston University

11:35 – 11:55 Impact of early life stress on mental and physical health, and underlying biological mechanisms

Linda Booij, Assistant Prof, Queen's University; Researcher, CHU Sainte-Justine, Université de Montréal

11:55 – 12:15 Discussion

12:15 – 13:15 Lunch

13:15 – 13:35 Food literacy as a sub-set of health literacy, implications for oral health

Doris Gillis, Associate Prof, Human Nutrition Department, St Francis Xavier University, Nova Scotia

13:35 – 13:55 No Jordan's Principle's cases in Canada? Governmental response to disparities in access to health and social services for First Nations people

Vandna Sinha, Assistant Prof, School of Social Work, McGill University

13:55 – 14:15 Poverty measurements and financial capability using national surveys

David Rothwell, Assistant Prof, School of Social Work, McGill University

14:15 – 14:35 Participatory approaches addressing poverty and oral health

Christophe Bedos, Associate Professor, Faculty of Dentistry, McGill University

14:35 – 14:55 Building partnerships in First Nations research

Travis Holyk, Director of Research and Policy Development, University of Northern BC, Prince George

Henry Harder, Professor, School of Health Sciences, University of Northern BC, Prince George

14:55 – 15:10 Break

15:10 – 15:30 Integration of oral health care and primary care

Elham Emami, Associate Prof, Faculty of Dentistry, Université de Montréal

Felix Girard, Assistant Prof, Faculty of Dentistry, Université de Montréal

15:30 – 15:50 Discussion

Panels: Building the team

The representatives of each panel will give insights into the development of an interdisciplinary research team, priorities, challenges and gaps to address caries disparities in vulnerable communities. The discussion will be encouraged by the active participation of the workshop participants.

15:50 – 16:05 Panel 1: Decision makers and stakeholders

John Wootton, Professional services, Pontiac County, Quebec

Martin Chartier, Public Health Agency of Canada

Jill Torrie, Cree Board of Health and Social Services of James Bay, Quebec

Travis Holyk, University of Northern BC

16:05 – 16:20 Panel 2: Researchers from various disciplines

Vandna Sinha, McGill University

Henry Harder, University of Northern BC

Doris Gillis, St Francis Xavier University

Linda Booij, Queen's University

16:20 – 16:35 Panel 3: Dental public health researchers

Vita Machiulskiene, Lithuanian University of Health Sciences

Woosung Sohn, Boston University

Herenia Lawrence, University of Toronto

Maryam Amin, University of Alberta

16:35 – 16:40 Workshop closure, Day 1

18:00 DINNER

SATURDAY, SEPTEMBER 20th

8:30 - 9:00 Breakfast

Theme: Planning and designing of a pilot study and writing of a collaborative grant application

9:00 – 9:20 Grants opportunities (Céline Bouvet & Sophie Gauthier-Clerc, BRDV, Université de Montréal)

9:20 – 10:20 Round tables

Drafting an abstract of a potential interdisciplinary project

10:20 - 11:20 Reports of the potential projects by each group (10 min per group)

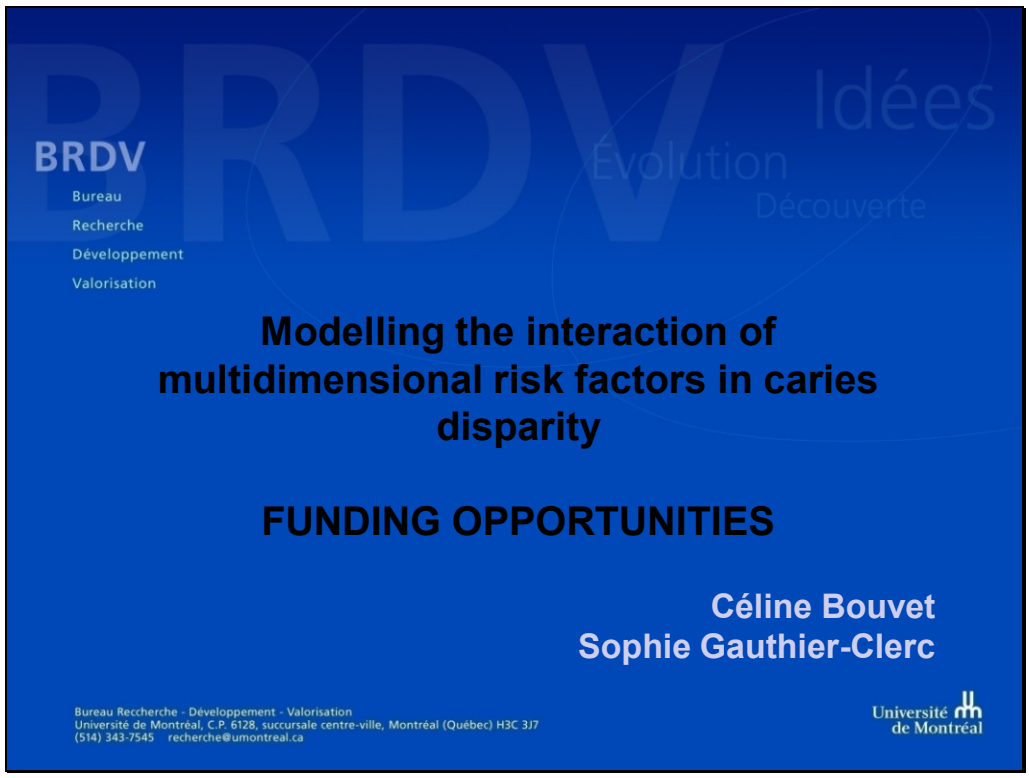
11:20 – 11:40 Discussion

11:40 – 12:00 Conclusions, evaluation of the workshop and group photos

12:00 Lunch

Funding opportunities presentation

Mrs. Céline Bouvet & Mrs. Sophie Gauthier-Clerc, Le Bureau Recherche – Développement – Valorisation (BRDV), Université de Montréal



BRDV Bureau Recherche - Développement - Valorisation

Pathways to Health Equity for Aboriginal Peoples CIHR's initiative

- Lauchned by the Canadian Gouvernment in 2012
- focus on finding ways to increase and adapt existing health research to the diverse needs of Aboriginal communities (where values, traditional knowledge, and history vary greatly).
- **The four exemplars in Pathways** - suicide, tuberculosis, diabetes/obesity and **oral health** - have been recognized as priorities by First Nations, Inuit and Métis communities and federal, provincial and territorial
- 25 million in funding support
  - Implementation Research Teams (IRTs), Applied Public Health Chairs (Chairs), and Population Health Intervention Research (PHIR).
  - Expl : Operating Grant : Pathways Implementation Research Team – Component 1 : team development grants will support research teams to identify promising or effective interventions and **build relationships with First Nations, Inuit, and/or Metis communities and Oral health** among 5 research areas (letter of intend (August 2014) + application (October 2014)

Université de Montréal

3

BRDV Bureau Recherche - Développement - Valorisation

Institute of Aboriginal People's Health

http://www.cihr.ca/e/8668.html

- **Focus** on illess and wellbeing of aboriginal people
- **Vision** : to improve the health of First Nations, Inuit and Métis people by supporting innovative research programs based on scientific excellence and aboriginal community collaboration.
- IAPH supports health research that respects aboriginal cultures, while generating new knowledge to improve the health and wellbeing of aboriginal people

- **Director scientist** :
  Malcolm King, PhD Simon Fraser University

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IAPH funding opportunities

- **IAPH sponsors numerous CIHR's continuing programs:**
  - Operating grants
  - Partnerships for health system improvement
  - Planning and dissemination grants – Institute community support
  - Population Health Intervention Research
  - Travel Awards - Institute Community Support (two competitions per year)
    - for students, postdoctoral fellows, new investigators and knowledge users to present their own research at national and international meetings and/or conferences

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Relevant CIHR's funding opportunities 1/2

- **Partnership for health system improvement**
  - One competition per year (fall)
  - Purpose : to support teams of researchers and decision makers interested in conducting applied health services and policy research that will be useful to health system managers and/or decision makers
  - Grant duration : 3 years
  - Maximum amount from CIHR per grant: $400,000 (any partnership contribution would be in addition)

- **Planning and Dissemination Grants - Institute Community Support**
  - One competition per year (winter)
  - Grant duration : 1 year
  - Maximum amount : $ 25,000

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Relevant CIHR's funding opportunities 2/2

- **Operating grant**
  - Operating Grant : Population Health Intervention Research
    - Eligible population health interventions are "natural experiments" defined as programs, policies and resource distribution approaches that have been initiated by others (e.g., policy makers) and have the potential to impact health and health equity at the population level.
    - One competition per year (fall)
    - Grant duration : 2 years
    - Maximum amount : $ 200,000
    - *Expl. Fall 2014* **:**
      - The CIHR Institute of Population and Public Health funding in partnership with the CIHR Pathways to Health Equity for Aboriginal Peoples Signature Initiative
      - Applicants interested in studying policies and policy directions are particularly encouraged to submit projects relevant provincial/territorial and/or regional level related to Aboriginal peoples' health and the Pathways exemplars (**Oral Health, ….).**

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NATIONAL INSTITUTES OF HEALTH

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Funding opportunities

- **R01 Research project grant program**
  - No budget limit
  - 3 to 5 years usually
- **R03 Small grant program**
  - Pilot study, secondary analysis etc.
  - 50 000$/ year, 2 years
- **R21 Exploratory, developmental research grant award**
  - Exploratory project: no preliminary data needed
  - 275 000$/ project, 2 years

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Understanding and promoting health literacy

- R01, PAR-13-130, R21 PAR-13-132, R03 PA-13-131
- Non-US eligible
- Methodological, intervention and dissemination research for understanding and promoting health literacy
- Expiration : May, 8 2016
- Due dates :

R01	R03, R21
February 5	February 16
June 5	June 16
October 5	October 16

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Behavioral and Social Science research on understanding and reducing health disparities

- R01, PAR-13-292, R21 PAR-13-288
- Non-US eligible
- Research on the causes and solutions to health and disabilities disparities. 3 broad areas of action : public policy, health care, disease/disability prevention
- Expiration : September, 8 2016
- Due dates :

R01	R21
February 5	February 16
June 5	June 16
October 5	October 16

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Establishing Behavioral and Social Measures for causal pathway research in dental, oral and craniofacial health

- R01, PAR-14-143, R21 PAR-14-144
- Non-US eligible
- Establishment of measures of specific behavioral or social phenomena that can be used to test causal hypotheses about behavioural and social contributors to dental, oral or craniofacial diseases
- Expiration : May, 8 2017
- Due dates :

R01	R21
February 5	February 16
June 5	June 16
October 5	October 16

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Informations

- Table of page limits

  http://www.grants.nih.gov/grants/forms_page_limits.htm
- NIH Standard due dates

  http://grants.nih.gov/grants/funding/submissionschedule.htm

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OTHER RESSOURCES

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International Association for Dental Research

- IADR Colgate Community-based research award for caries prevention
- IADR GlaxoSmithKline Innovation in oral care awards
- IADR Regional Development Program
  - need to be a member of IADR
  - small amounts available

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