

Understanding the Oral Health Needs of Government Assisted Refugees

**by
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Abstract

This research examines the oral health needs of Government Assisted Refugees (GARs) living in the communities of Burnaby, Langley and Surrey British Columbia. This secondary data analysis examined access and barriers to dental care, utilization of dental services, dental health practices, self-report and professional assessment of treatment needs and oral health outcomes, by refugee camp status and gender. Interview questions and clinical protocol were those utilized in the Canadian Health Measures Survey, the Inuit Oral Health Survey and the First Nations Oral Health Survey. Results indicate that GARs have high debris, calculus, gingivitis scores and a DMFT score that all suggest a significant unmet oral health need and lack of access to dental services. With limited dental insurance through the Interim Federal Health Program, these findings suggest that an inequality in oral health needs for GARs may exist. Future research should seek to further examine this important public health issue.

Keywords: Oral Health; Government Assisted Refugees; Interim Federal Health; Dental Services; Refugee Camp; Dental Health

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1. Introduction

Oral health has a significant impact on the general health and well-being of the population. The US Surgeon General described poor oral health as a silent epidemic that effects quality of life and restricts activities of school, work and daily living in many population groups (U.S. Department of Health and Human Services, 2000). Dental caries is the number one chronic disease in Canada (Health Canada, 2010), and early childhood dental caries is the most common chronic disease of childhood (Canadian Dental Association, 2010; Kagihara, Niederhauser & Stark, 2009). As an infectious and transmissible disease, dental caries can cause severe pain, loss of time at work and substantial financial burden to Canadians and also to the health care system. Further, poor oral health may also contribute to systemic diseases such as diabetes, heart problems and respiratory diseases (Health Canada, 2010). Although preventable, 96 percent of Canadian adults have a history of tooth decay (Health Canada, 2010).

In British Columbia, tooth decay continues to be particularly prevalent among those with low socioeconomic status, people with disabilities, aboriginal people, and the elderly (BC Ministry of Health, 2006). For new immigrants from less affluent countries high levels of tooth decay have been reported (BC Ministry of Health, 2006; Poon, Hertzman, Holley & Louie, 2011). In Canada, the prevalence of tooth decay in immigrant adolescents was reported to be amongst the highest in this age category in the findings from the oral health component of the Canadian Health Measures Survey (Health Canada, 2010). Severe periodontal disease in adults was also reported to be higher among those born outside of Canada (Health Canada, 2010).

Although oral health conditions were recently listed as the 5th health priority (Pottie et al., 2011) for refugees arriving in Canada, there is sparse literature surrounding their oral health needs. The majority of reports categorise refugees as immigrants and consequently overlook their unique health and social concerns (Alberta Health Services, 2008). As such, there is no representative data that profiles the oral health status of refugees as distinct from newly arriving immigrants to Canada. While,

some studies have shown a higher prevalence of oral health disease in immigrants (Clarke, Locker, Murray & Payne, 1996; Locker, Clarke & Murray, 1998) and others have noted a limited awareness or use of professional and preventive dental care among immigrants (Bedos, Brodeur, Benigeri & Olivier, 2004; Harrison, Wong, Ewan, Contreras & Phung, 1997), there is no research that speaks specifically to the oral health needs of refugees.

Although little is known about the oral health of refugees it is widely recognised that social and structural forces play a key role in determining oral health outcomes (WHO, 2008). Government Assisted Refugees (GARs) often come from refugee camps where they may have been born or lived for several years. The conditions in the camps are often overcrowded, violent and stressful which could contribute to unique health care needs (Singh et al., 2008). Refugees may have different perceptions of health, illness and healthcare based on their experiences and cultural norms (Singh et al., 2008). Further, refugees who have lived in refugee camps face many challenges such as low literacy in their original language, little to no education and physical and mental health concerns (Immigrant Services Society of BC, 2010). This confluence of factors poses significant challenges to local service providers including dental care practitioners and public health dental staff who are often the first dental health professional interacting with the GARs.

Recent evidence has found there is no representative data that profiles the oral health status of newly arriving immigrants and refugees to Canada (McNally et al., 2011). A recent evaluation report on the resettlement process of GARs has however identified access to dental care services as an unmet need (Citizenship and Immigration Canada, 2011b). This gap in dental care services for GARs has also been identified by Immigrant Services Society in British Columbia in a review and evaluation of the services provided for GARs (Cube, 2006). Unfortunately, this gap in service has not yet been quantified or described.

This study seeks to address this gap in the literature. Through a better understanding of the oral health status of refugees, the health authorities and province will be better equipped to develop appropriate dental care programs for refugees and provide preventive interventions (McNally et al., 2011).

2. Background Information

The United Nations High Commissioner for Refugees (UNHCR) reported in 2010 that 10.5 million persons globally fit the definition of a convention refugee (United Nations High Commission for Refugees, 2012). The definition of a convention refugee is "a person who by reason of a well-founded fear of persecution for reasons of race, religion, nationality, membership in a particular social group or political opinion, has left her or his country of nationality or is stateless and is unable or unwilling to enjoy the protection of his or her country" (Immigration and Refugee Protection Act, 2001).

Every year Canada welcomes 10,600 to 12,000 refugees, with more than 780,000 refugees resettled here since the Second World War (Citizenship and Immigration Canada, 2012b). As part of the international community, Canada protects refugees in two ways: the Domestic Asylum Program for persons making a claim for refugee protection from within Canada and the Refugee Humanitarian Resettlement Program for people seeking protection from outside of Canada (Citizenship and Immigration, 2012b). Refugees living overseas in refugee camps or in a country where they cannot live permanently are sponsored for resettlement to Canada. They can be sponsored by either the Canadian Government and are titled Government-Assistant Refugees (GARs), or they are sponsored privately and titled Privately Sponsored Refugees (Citizenship and Immigration Canada, 2012b).

Protracted refugees are at the top of the international agenda. These are refugees who have spent many years in exile living in refugee camps. A protracted refugee situation is defined when 25,000 or more refugees originating from the same country have sought refuge in another country for a least five consecutive years (United Nations High Commission for Refugees, 2012). Canada works closely with the United Nations High Commission for Refugees and settles many refugees who have lived in refugee camps for prolonged periods of time. In 2006, Canada began settling Karen refugees from some of the most remote refugee camps in Thailand and has now settled

more than 3,900 Karen refugees (Citizenship and Immigration Canada, 2012a). Over the next few years Canada is expected to resettle up to 5,000 Bhutanese refugees living in large refugee camps in Nepal (Citizenship and Immigration Canada, 2012a). Refugee camps tend to be located in remote areas, are poorly accessible by road and have a limited power supply, all of which contribute to poor living conditions (United Nations High Commission for Refugees, 2012). Basic resources such as food and water are limited. Further, the camps have growing populations that create substantial strain on basic resources as well as living conditions. Providing healthcare to refugee camps is, thus, challenging due to the extreme poverty, limited resources, over crowdedness and the remote settings of the camps.

From January 1, 2011 through December 31, 2011, 711 GARs were resettled in British Columbia with the majority settling in the Fraser Region. The top five countries of origin were Iraq, Iran, Bhutan, Myanmar (Burma) and Somalia (Immigrant Services Society, 2012). The most common destination municipalities include Coquitlam, Surrey, Burnaby, Vancouver and Richmond (Immigrant Settlement Services, 2012). As part of the new Balanced Refugee Reform Act, the number of GARs in British Columbia will be increasing annually. By 2013, it is expected that British Columbia will resettle 875 refugees per year (Immigrant Services Society of BC, 2012).

2.1 Unique Circumstances that Impact the Health of Refugees

While there is literature that speaks to the unique circumstances that impact the health of refugees, it does not directly address oral health. However, many of these same factors may also impact the oral health of refugees. The health of refugees is influenced by "factors intrinsic to the migration process: pre-migration, migration and post-migration settlement, as well as the social determinants of health" (Gushulak, Pottie, Roberts Hatcher, Torres & DesMeules, 2011). Health status of refugees is an important determinant of their successful resettlement in Canada (Maximova & Krahn, 2010). The diseases that refugees present with can be varied depending on migration, living conditions and genetic predispositions (Pottie et al., 2011). Access to health care services can be impaired by language and cultural differences, lack of familiarity with

preventive care as well as fear and distrust of a new health care system (Maximova & Krahn, 2010). Further, refugees may present with complex conditions or concerns that are unfamiliar to health care practitioners (Gushulak et al, 2011).

Immigrants face a myriad of complex health problems that vary depending on many circumstances in their original country of origin including economic, environmental and socio-cultural factors (Gushulak et al., 2011). With limited access to health care in their country of origin, refugees may resettle in Canada with advanced health problems. Infectious disease, mental health and chronic disease have all been identified as health priorities (Gushulak et al., 2011). Resettled refugees are also likely to be survivors of torture and may also experience additional trauma through separation from family and loss of most of their material possessions, wealth and status (Alberta Health Services, 2008). In addition, refugees' health may be influenced by how they settle into their new place of residence, whether they find employment, access further education and if they live in poverty (Gushulak & MacPherson, 2006).

These complex circumstances indicate a high level of health care need among refugees. Accessibility to health practitioners and an effective health care system will be necessary to meet the health needs and improve the health of migrants to Canada (Gushulak & MacPherson, 2006).

2.2 Oral Health of Refugees

As pointed out above, there is no literature that specifically addresses the oral health needs of refugees. However, one can only expect that refugees will have oral health burdens similar to those of other immigrants (Petersen, Bourgeois, Ogawa, Estupinan-Day & Ndiaye, 2005). Immigrant adolescents in Ontario have been found to have five times the rate of dental caries than children born in Canada as well as higher plaque levels and rates of gingivitis (Locker et al., 1998). Another Ontario study showed that disadvantaged immigrant adolescents had higher rates of untreated decay and gingivitis compared to Canadian born children (Clarke et al., 1996). In BC, early childhood caries has been reported as severe in a study looking at feeding practices and dental caries of preschool Vietnamese living in British Columbia (Harrison et al., 1997).

These studies speak to a high level of need among immigrants in Canada. Further, in 2005, The World Health Organization reported that dental caries rates are on the rise in developing countries (Petersen et al., 2005) indicating that this level of need is likely to increase among new immigrants. The Canadian Health Measures Survey reported more severe periodontal conditions in adults born outside of Canada and higher rates of tooth decay in adolescents born outside of Canada compared to their survey participants (Health Canada, 2010).

2.3 Treatment and Service Barriers for Refugees

Despite having complex oral health needs it has been suggested that refugees may not be accessing health care due to systemic barriers (McKeary & Newbold, 2010). The refugee population may be unfamiliar with the health care system in Canada and may be unable to navigate the system in order to meet their needs (Lawrence & Kearns, 2005). A major obstacle reported is the lack of access to insurance and the organization of health care (Lawrence & Kearns, 2005). Other barriers to care include language spoken and the availability of interpretive services (Lawrence & Kearns, 2005). Some refugees may be reluctant to utilize health care services due to social unease or fear of being deported (Wahoush, 2009). Having a third party interpreter may also lead to privacy and confidentiality issues in small refugee communities (Lawrence & Kearns, 2005).

2.4 Study Context

In response to concerns about GARs presenting with poor oral health and experiencing barriers to access dental care, the Fraser Health Authority's Public Health Dental Program conducted an oral health needs assessment. The assessment protocol used both an interview and in intraoral assessment based on the Oral Health Component of the Canadian Health Measures Survey (CHMS) (Health Canada, 2010). Support in the use of this assessment protocol was provided by the Office of the Chief Dental Officer, Health Canada. This assessment was performed among a sample of 115 GARs.

This descriptive study draws on secondary data analysis of primary data collected under the auspices of the Fraser Health Authority for purposes of program improvement for the Public Health Dental Program.

2.5 Study Objectives

Given the lack of knowledge and understanding of their oral health care needs, the primary objective of this study is to describe and quantify the dental health care status and service needs for GARs upon their arrival in Canada. This study will document the oral health status and dental health service utilisation of GARs overall and by refugee camp status. By comparing the oral health needs of GARs who previously lived in a refugee camp to those that did not live in a camp, this study can contribute important new knowledge about how environmental situations and conditions of risk impact diseases of the oral cavity. A contextual comparison with other Canadian oral health survey data will provide a gauge for the severity of any oral health concerns.

The present study aims to address five primary objectives:

- 1) To determine the oral health status of Government Assisted Refugees upon arrival in British Columbia.
- 2) To examine access to dental care services and oral health treatment needs among Government Assisted Refugees.
- 3) To examine the association between a history of living in a refugee camp and the oral health needs of Government Assisted Refugees.
- 4) To quantify the debris, calculus, gingivitis and DMFT scores of Government Assisted Refugees and to compare these findings to other Canadian data drawn from the Canadian Health Measures Survey, the Inuit Oral Health Survey, and the First Nations Oral Health Survey.
- 5) To determine whether Government Assisted Refugees' oral health needs are being met with the Interim Federal Health dental insurance available to them.

3. Methods

3.1 Data Source

This secondary analyses draws from a primary data source from the Fraser Health Public Health Dental Programs Oral Health Needs Assessment of Government Assisted Refugees gathered from January 2009 - March 2009. Public Health Dental Hygienists were calibrated and trained by the Office of the Chief Dental Officer, Health Canada to ensure consistent data collection techniques. Calibration consisted of both a classroom and a clinical component. For the clinical component the dental hygienists completed a series of assessments to ensure the oral conditions were measured in the same way. Inter and intra examiner tests were done to ensure a high level of reliability for the findings (Health Canada, 2010).

The interview questionnaires were administered with the assistance of trained interpreters as required. Demographic characteristics were collected including age, highest education level, whether they had lived in a refugee camp and length of time in Canada. Questions addressed satisfaction with their oral health, oral symptoms, missed days from work/school, dental care habits, visiting a dental professional, ability to pay for dental care and dental insurance coverage (Health Canada, 2010). Additionally, a question was asked whether or not language translation services were a barrier to accessing dental care. Further questions asked about any symptom in their mouths such as pain, bleeding, dry mouth and bad breathe. A medical screening questionnaire was reviewed to ensure there were no medical conditions preventing the oral examination.

The clinical data included edentulism and prosthetic wearing, mucosal lesions, dental fluorosis, occlusion, debris and calculus, gingivitis, incisor trauma, caries status of each tooth, crown and root, and treatment recommendations needed (Health Canada, 2010). Participants received oral hygiene supplies upon completion of the assessment as an honorarium for their participation.

The debris, calculus, gingivitis and DMFT scores from the Oral Health Component of the Canadian Health Measures Survey (CHMS), the Inuit Oral Health Survey Report, and the First Nations Oral Health Survey were utilized to provide a contextual comparison (Ames, 2011; Health Canada, 2010; Health Canada, 2011).

3.2 Study Population

This study drew from a convenience sample of 115 GARs participating in the oral health needs assessment conducted by Fraser Health. Recruitment of the refugees was done in several ways. Refugees attending the New Canadian Primary Care Health Clinics in Fraser Health were recruited to participate by the nurse practitioners at the clinics. In addition, school districts and community agencies working with refugee families referred families for participation and public health dental staff referred refugees they encountered in their practice. All of the 115 participants enrolled in the needs assessment completed the interview questionnaire while 3 participants declined the clinical assessment. As a result, 112 participants completed the clinical assessment. The participants were GARs living in the Fraser Health communities of Burnaby, Surrey and Langley. The GARs ranged in age from 3 to 67 years with a relatively even distribution of males and females. Fourteen countries of origin were represented including: Afghanistan, Burma/Thailand, Burundi, Ethiopia, Iraq, Kenya, Nigeria Palestine Somalia Sudan Tanzania and Uganda Languages spoken were Arabic, Burmese, Farsi, Karen, Kirundi, Lao, Somali and English. Education levels were recorded for each participant with 21 (18.3%) reporting no formal education.

3.3 Measures

To understand the oral health needs of the GARs in this sample, characteristics from the sample were utilized such as the participants satisfaction with their oral health, self-report of oral health discomfort, access to dental care, last time participants saw a dental professional, dental health practices, self-report of oral health needs, professional assessment of oral health needs and debris, calculus, gingivitis and DMFT scores. These were based on both self-report and professional assessment.

3.3.1. Socio-demographic Characteristics

The socio-demographic questionnaire elicited responses from participants and included age, gender, highest level of education completed, length of time in Canada and history of living in a refugee camp (yes vs. no). For purposes of this analysis, length of time in Canada was measured by the mean number of months and ≤ 1 year and > 1 year.

3.3.2. Access to Dental Care

Access to dental care was captured by asking the participants if they had insurance that covers part or all of their dental expenses, have they avoided going to the dentist because of cost or have they avoided any recommended dental treatment because of the cost. Whether they avoided dental treatment because translation services were not available was also elicited. Responses to the above questions were measured dichotomously as: yes/no. The last time participants saw a dental professional was elicited in the interview. Response options were: never, 1 year to less than 2 years ago, 2 years to less than 3 years ago, 3 years to less than 4 years ago, 4 years to less than 5 years ago, 5 or more years ago. Due to limited sample size, for purposes of this analysis, categories were collapsed to: never, less than or equal to one year or greater than one year ago.

3.3.3. Dental Health Practices

Dental health practices such as brushing and flossing were asked of the participants. They were asked if they brushed their teeth at least two times per day (yes vs. no) and flossed their teeth at least five times per week (yes vs. no).

3.3.4. Self-Report of Oral Health Discomfort

Participants were asked: In the past 12 months, how often have you (your child) found it uncomfortable to eat any food because of problems with your (your child's) mouth? In the past 12 months, how often have you (your child) avoided eating particular foods because of problems with your (your child's) mouth? Persistent or ongoing pain was elicited by asking: In the past 12 months, how often have you (your child) had any other persistent or ongoing pain anywhere in your mouth? Response categories were: often, sometimes, rarely and never.

3.3.5. Debris, Calculus, Gingivitis

Based on World Health Organization oral health measures, the clinical protocol sought to measure debris, calculus and gingivitis scores (WHO, 1997). These indices are designed to measure objectively and quantitatively the oral health status of individuals or groups. Debris scores were recorded by using the worst score on any of the indicator teeth with the following options: no soft debris or stain, less than 1/3 of the surface covered, 1/3 to 2/3 of the surface covered. Calculus scores were recorded by using the worst score on any of the indicator teeth with the following options: no calculus, less than 1/3 of surface covered, 1/3 to 2/3 of surface covered and/or some sub gingival calculus is present, more that 2/3 of surface covered and/or a continuous band of sub gingival calculus is present. Gingivitis scores were recorded using the worst score on the indicator teeth and were recorded as: no inflammation, mild inflammation, moderate inflammation or severe inflammation.

3.3.6. DMFT Scores

The severity and prevalence of coronal caries is measured by the mean numbers of decayed (D), missing (M), and filled (F) and D+M+F teeth (DMFT). The convention that was used in the CHMS to include all teeth lost due to caries or periodontal disease for the missing score was followed (Health Canada, 2010).

3.3.7. Self-Report of Oral Health Needs

The participants were asked what untreated dental conditions do you think you have? Interviewers classified their responses into the following categories: prevention, fillings, temporomandibular joint disorder, surgery, periodontics, esthetics, endodontics, orthodontics, soft tissue, prosthetics and other. For reporting purposes the following categories were collapsed due to small numbers in some cells into the other category: temporomandibular joint disorder, orthodontics, prosthetics, endodontics, esthetics and soft tissue concerns.

3.3.8. Professional Assessment of Oral Health Needs

Examiners classified their professional assessment of oral health needs for each participant. The categories were: no treatment needed, prevention, fillings, temporomandibular joint disorders, surgery, periodontics, esthetics, endodontics,

orthodontics, soft tissue, prosthetics and other. For reporting purposes the following categories were collapsed due to small numbers in some cells into the other category: temporomandibular joint disorder, orthodontics, prosthetics, endodontics, esthetics and soft tissue concerns.

3.4. Data Analyses

The statistical software SPSS Version 18.0 was used for the analysis in this project. Based upon the objectives of this study, frequencies describing the socio-demographic characteristics, access to dental care, dental health practices and both self-reported and professionally assessed oral health treatment needs were calculated. Bi-variate analyses were conducted to examine the association between socio-demographic characteristics, access to dental care, dental health practices, self reported and professionally assessed oral health treatment needs and history of refugee camp status. Chi-square statistics were calculated to test for the statistical significance between the variables. The Wilcoxon Rank sum test was conducted for the non parametric data. A p -value of < 0.05 was considered statistically significant.

4. Results

4.1 Descriptive Analyses of the Oral Health Needs of Government Assisted Refugees

This analysis sought to describe the oral health needs and barriers to dental services among a sample of GARs residing within the Fraser Health Authority. Statistical testing was used to examine if there were any differences among those who had a history of living in a refugee camp compared to those that did not live in a refugee camp.

4.1.1. *Socio-demographic Characteristics*

Table 1 presents the socio-demographic characteristics of the GARs who participated in the study. Overall, the sample contained a relatively even distribution of males and females (48 percent and 52 percent, respectively). Seven of 10 participants were 12 years of age or older and the mean number of months that participants had lived in Canada was 11 months. The vast majority of participants (90 percent) required translators to facilitate their participation with the study protocol and most (74 percent) reported a history of living in a refugee camp.

Table 1 also points to whether or not the demographic profile of participants varied by whether or not they had lived in a refugee camp. A statistically significant difference was found by gender with more females reporting a history of living in a refugee camp compared to males. Here, 58 percent of females had lived in a refugee camp compared to 42 percent of males. A significant difference was also found in the length of time that participants had lived in Canada. Participants that reported no history of having lived in a refugee camp were more recent to Canada with an average of 7 months in Canada compared to 12 months among those who reported a refugee camp history. No significant differences were found by age or translation requirements.

4.1.2. Access to Dental Care

Table 2 presents characteristics related to access to dental care. The majority of participants (78 percent) had dental insurance that covered part or all of their dental expenses. More than half (53 percent) reported never seeing a dentist and 30 percent reported seeing the dentist \leq 1 year ago with 16 percent reporting seeing a dentist $>$ 1 year ago. Here, 40 percent reported avoiding the dentist due to cost and 24 percent avoided any recommended treatment because of the cost. Of the participants, 29 percent reported avoiding dental treatment because translation services were not available.

Table 2 also points to whether or not the characteristics of access to dental care varied by whether or not participants had lived in a refugee camp. A statistically significant difference was found for those who had never visited a dentist. Here, 62 percent of those who had lived in a refugee camp had never seen a dentist compared to 27 percent of those who reported no refugee camp history. A significant difference was also found in avoiding the dentist due to the cost. Sixty nine percent of participants with no history of having lived in a refugee camp reported avoiding the dentist due to the cost compared to those who lived in a refugee camp (29 percent). Similarly, a significant difference was found in avoiding any recommended dental treatment because of the cost. Here, 62 percent of those that had lived in a refugee camp reported avoiding any recommended treatment because of the cost compared to those who had lived in a refugee camp (10.6 percent). No significant differences were found by insurance coverage or avoiding treatment because translation services were not available. Given that gender has been associated with access to care (Wilkins et al., 2008), differences in access to dental care were also examined by gender. However, no statistically significant differences were found.

4.1.3. Dental Health Practices

Table 3 presents the dental health practices of brushing and flossing. Overall, 59 percent of the sample reported brushing their teeth at least two times per day. For the practice of flossing, none of the participants reported flossing their teeth at least five times per week.

Table 3 also points to whether the dental health practices varied for those that had lived in a refugee camp compared to those that had no history of living in a refugee camp. No statistically significant difference was found.

4.1.4. Self Report of Oral Health Discomfort

Table 4 presents the participants self report of oral health discomfort in the last 12 months. Overall, 28 percent of the GARs in this study reported avoiding particular foods because of problems with their mouth. Forty eight percent found it uncomfortable to eat food and 42 percent reported persistent pain or ongoing pain anywhere in their mouth.

Table 4 also points to whether the self reported oral health discomfort varied by a history of living in a refugee camp. There was no statistically significant difference found for oral health discomfort.

4.1.5. Debris, Calculus and Gingivitis Scores

Table 5 presents the debris, calculus and gingivitis scores. Overall, 99 percent of the participants had 1/3 or more of their tooth surface covered with debris. For the calculus score, 66 percent of the participants had 1/3 or more of their tooth surface covered with calculus . Eighty two percent of the GARS in this study had moderate to severe gingival inflammation.

Table 5 also points to whether the debris, calculus and gingivitis scores varied by whether or not they lived in a refugee camp. There was no statistically significant difference found for the debris, calculus and gingivitis scores by refugee camp status.

4.1.6. DMFT Scores

Table 6 presents the mean DMFT scores (Decayed, Missing, Filled teeth scores) and the mean D, mean M and mean F scores. Overall, the mean DMFT score for all of the participants is 5.51. The overall mean D score is 3.58, the overall mean M score is 1.26 and the overall mean F score is 0.67.

Table 6 also presents the mean DMFT scores and the mean D, mean M and mean F scores by whether or not participants had lived in a refugee camp. A statistically significant difference was found for the mean F (filled) score. Participants who had not lived in a refugee camp had a higher F score (2.39) compared to participants who had lived in a refugee camp (0.11). There was no statistically significant difference for the mean DMFT score and the mean D and mean M scores.

4.1.7. Self Report of Treatment Needs and Professional Assessment of Treatment Needs

Table 7 presents both the GARs self-report of their treatment needs and the professional assessment of their treatment needs. Among the self reported treatment needs, none of the participants (0%) reported the option of no treatment needed. Overall, 8 percent of the GARs reported needing prevention services, 35 percent reported requiring restorative treatment, 20 percent reported requiring periodontics, 16 percent reported requiring surgery and 50 percent reported the other category. (As noted earlier, the other category includes temporomandibular joint disorders, orthodontics, prosthetics, endodontics, esthetics and soft tissue concerns.)

Table 7 also presents whether or not the self report of treatment needs varied by refugee camp status. Among the self reported treatment needs, there was a statistically significant difference for the prevention category. For those that had not lived in a refugee camp, 17 percent reported requiring prevention services compared to 5 percent of those who had lived in a refugee camp. A significant difference was also found for the category of other. Here, among GARs that had not lived in a refugee camp, 72 percent reported requiring treatment in the other category compared to 42 percent of those who did not live in a refugee camp. There was no statistically significant difference for the categories of restorative, periodontics and surgery in the self-reported treatment needs.

With regard to the professional assessment, overall, 9 percent of the GARs required no treatment. However, the professional assessment also determined that, 92 percent required prevention, 65 percent required restorative treatment, 59 percent required periodontics, 30 percent required surgery and 33 percent required treatment in the other category. .

Table 7 also presents whether or not the professional assessment varied by refugee camp status. There was a statistically significant difference for the professional assessment in the category of periodontics. Here, 65 percent of those who had lived in a refugee camp required periodontics compared to 41 percent of those that did not live in a refugee camp. A significant difference was also found in the category of surgery. Here, 37 percent of those who lived in a refugee camp required surgery compared to 11 percent of those who did not live in a refugee camp. There was no significant difference in the categories of no treatment needed, prevention, restorative and other for those that had lived in a refugee camp compared to those who had not for the professional assessment.

4.1.8. Dental Health Outcomes for GARs by Gender

Given that dental health has been shown to vary by gender (Health Canada, 2010), Table 8 presents debris, calculus and DMFT scores by gender. A statistically significant difference was found in calculus scores by gender. Females had significantly higher calculus scores. Here, 78 percent of females had 1/3 or more of their tooth surface covered with calculus compared to 51 percent of males. There was no significant difference by gender for the debris, gingivitis or DMFT scores.

4.1.9. Debris, Calculus, Gingivitis and Mean DMFT Scores for GAR, Canadians, Inuit and First Nations

Table 9 presents debris, calculus, gingivitis and mean DMFT scores in comparison to the results from the CHMS, Inuit Oral Health Survey and First Nations Oral Health Survey (Ames, 2011; Health Canada, 2010; Health Canada, 2011). The GARs show very high debris, calculus and gingivitis scores. The debris scores for GARs are twice as high as First Nations scores and over 3 times higher than the Inuit and Canadians. The calculus scores for the GARs are twice as high as the First Nations scores, 5 times that of the Inuit and 9 times that of Canadians. The gingivitis scores for the GARs are again twice that of the First Nations and almost 3 times that of the Inuit and Canadians.

The mean DMFT score for 6-11 year old GARs was more than double that of Canadians although close to the First Nations score and less than the Inuit score (Ames,

2011; Health Canada, 2010; Health Canada, 2011). The mean DMFT score for 12-19 year old GARs was higher than Canadians but lower than the Inuit (Health Canada, 2010; Health Canada, 2011). For the age category of 20+ years, the mean DMFT score for GARs was 6.50 which is considerably lower than that of Canadians and of the Inuit (Health Canada, 2010; Health Canada, 2011). There is no available data for the First Nations population for the age categories of 12-19 years and 20 + years to date (Ames, 2011).

Table 1: Socio-demographic Characteristics of Government Assisted Refugees (GARs) in the Sample by Refugee Camp Status

Characteristic	Total n (%)	Lived in a Refugee Camp n (%)	Did Not Live in a Refugee Camp n (%)	p-value
Gender				
- Female	60(52.1)	49 (57.6)	11 (36.7)	0.048
- Male	55(47.8)	36 (42.4)	19 (63.3)	
Age				
- 0-11 years	31(27.0)	21 (24.7)	9 (30.0)	0.570
- 12+ years	84(73.0)	64 (75.4)	21 (70.0)	
Length of Time in Canada				
- Mean # of months	10.7	12.01	7.10	0.004
- ≤1 year	66(57.4)	42 (49.4)	24 (80.0)	
- >1 year	49(42.6)	43 (50.6)	6 (20.0)	
Translation Required				
- Yes	104(90.4)	78 (91.8)	26 (86.7)	0.414
- No	11(9.6)	7 (8.2)	4 (13.3)	
n	115 (100.0)	85 (73.9)	30 (26.1)	

Refugee Camp Status was asked at the baseline interview. Have you ever lived in a refugee camp? (Yes/No)

Table 2: Characteristics of Access to Dental Care by Refugee Camp Status

Characteristic	Total n (%)	Lived in a Refugee Camp n (%)	Did Not Live in a Refugee Camp n (%)	p-value
Insurance				
Has insurance that covers part or all of dental expenses	89 (78.1)	70 (82.4)	19 (65.5)	0.058
Last Dental Visit				
Never	61 (53.0)	53 (62.4)	8 (26.7)	<0.001
≤1 year ago	35 (30.4)	17 (20.0)	18 (60.0)	
>1 year ago	19 (16.5)	15 (17.6)	4 (13.3)	
Financial Barriers				
Has avoided going to the dentist because of cost	45 (39.5)	25 (29.4)	20 (69.0)	<0.001
Has avoided any recommended dental treatment because of the cost	27 (23.7)	9 (10.6)	18 (62.1)	<0.001
Language Barriers				
Has avoided dental treatment because translation services were not available	33 (28.9)	25 (29.4)	8 (27.6)	0.852
n	115 (100.0)	85 (73.9)	30 (26.1)	

Refugee Camp Status was asked at the baseline interview. Have you ever lived in a refugee camp? (Yes/No)

Table 3: Dental Health Practices by Refugee Camp Status

Characteristic	Total <i>n</i> (%)	Lived in a Refugee Camp <i>n</i> (%)	Did Not Live in a Refugee Camp <i>n</i> (%)	<i>p</i> -value
Brush their teeth at least two times per day	68 (59.1)	54 (63.5)	14 (46.7)	0.106
Floss their teeth at least five times per week	0 (0.0)	0 (0.0)	0 (0.0)	
n	115 (100.0)	85 (73.9)	30 (26.1)	

Refugee Camp Status was asked at the baseline interview. Have you ever lived in a refugee camp? (Yes/No)

Table 4: Self Report of Oral Health Discomfort by Refugee Camp Status

Characteristic	Total	Lived in a Refugee Camp	Did Not Live in a Refugee Camp	<i>p-value</i>
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	
Respondents who in the past 12 months often/sometimes avoided particular foods because of problems with their mouth	32(27.8)	20 (23.5)	12 (40.0)	0.084
Respondents who in the past 12 months have often/sometimes found it uncomfortable to eat food because of problems with their mouth	55(47.9)	41 (48.2)	14 (46.7)	0.882
Respondents who in the past 12 months often/sometimes reported persistent pain or ongoing pain anywhere in their mouth	48(41.8)	34 (40.0)	14 (46.7)	0.524
n	115 (100.0)	85 (73.9)	30 (26.1)	

Refugee Camp Status was asked at the baseline interview. Have you ever lived in a refugee camp? (Yes/No)

Table 5: Debris, Calculus and Gingivitis Scores for GARs by Refugee Camp Status

Characteristic	Total <i>n</i> (%)	Lived in a Refugee Camp <i>n</i> (%)	Did Not Live in a Refugee Camp <i>n</i> (%)	<i>p</i>-value
Debris 1/3 or more of tooth surface covered with debris for the worst tooth	109 (99.1)	83 (98.8)	26 (100.0)	0.576
Calculus Score 1/3 or more of tooth surface covered with calculus for the worst tooth	72 (65.5)	58 (69.0)	14 (53.8)	0.348
Gingivitis Score Moderate to Severe Inflammation for the worst score	90 (81.8)	69 (82.1)	21 (80.8)	0.874
n	110 (100.0%)	84 (76.4)	26 (23.6)	

Refugee Camp Status was asked at the baseline interview. Have you ever lived in a refugee camp? (Yes/No)

Table 6: DMFT Scores for GARs by Refugee Camp Status

Characteristic	Total	Lived in a Refugee Camp	Did Not Live in a Refugee Camp	<i>p-value</i>
Mean DMFT Score	5.51	5.08	6.82	0.117
Mean D Score (Decay)	3.58	3.95	2.46	0.501
Mean M Score (Missing)	1.26	1.02	1.96	0.560
Mean F Score (Filled)	0.67	0.11	2.39	<0.001
n (%)	113 (100.0%)	85 (75.2)	28 (24.8)	

Refugee Camp Status was asked at the baseline interview. Have you ever lived in a refugee camp? (Yes/No)

Table 7: Participants' Self Report of Treatment Needs and Professional Assessment of Treatment Needs by Refugee Camp Status

Characteristic	Self-Reported Treatment Needs				Professional Assessment of Treatment Needs			
	Total <i>n</i> (%)	Lived in a Refugee Camp <i>n</i> (%)	Did Not Live in a Refugee Camp <i>n</i> (%)	<i>p-value</i>	Total <i>n</i> (%)	Lived in a Refugee Camp <i>n</i> (%)	Did Not Live in a Refugee Camp <i>n</i> (%)	<i>p-value</i>
No Treatment Needed	0 (0.0)	0 (0.0)	0 (0.0)	N/A	10 (8.9)	8 (9.4)	2 (7.4)	0.750
Prevention	9 (7.9)	4 (4.7)	5 (17.2)	0.031	103 (92.0)	78 (91.8)	25 (92.6)	0.890
Restorative	40 (35.1)	27 (31.8)	13 (44.8)	0.203	73 (65.2)	55 (64.7)	18 (66.7)	0.852
Periodontics	23 (20.2)	20 (23.5)	3 (10.3)	0.144	66 (58.9)	55 (64.7)	11 (40.7)	0.027
Surgery	18 (15.8)	14 (16.5)	4 (13.8)	0.733	34 (30.4)	31 (36.5)	3 (11.1)	0.013
Other	57 (50.0)	36 (42.4)	21 (72.4)	0.009	38 (33.0)	27 (31.8)	11 (40.7)	0.624
n	114 (100.0)	85 (74.6)	29 (25.4)		112 (100.0)	85 (75.9)	27 (24.1)	

Other category includes TMD, orthodontics, prosthetics, endodontics, esthetics, soft tissue concerns, and "other" treatment needs

Refugee Camp Status was asked at the baseline interview. Have you ever lived in a refugee camp? (Yes/No)

Table 8: Debris, Calculus, Gingivitis and DMFT Scores for GARs by Gender

Characteristic	Total n (%)	Male n (%)	Female n (%)	<i>p-value</i>
Debris 1/3 or more of tooth surface covered with debris for the worst tooth	109 (99.1)	51 (100.0)	58 (98.3)	0.350
Calculus Score 1/3 or more of tooth surface covered with calculus for the worst tooth	72 (65.5)	26 (51.0)	46 (78.0)	0.003
Gingivitis Score Moderate to Severe Inflammation for the worst score	90 (81.8)	41 (80.4)	49 (83.1)	0.718
n	110 (100.0)	51 (46.4)	59 (53.6)	
Mean DMFT Score	5.51 n=113	5.43 n=54	5.59 n=59	0.682

Table 9: Debris, Calculus, Gingivitis and DMFT Scores for GARs, CHMS, Inuit and First Nations

Characteristic	GARs	CHMS	Inuit	First Nations
Debris Score (20+ years) 1/3 or more of tooth surface covered with debris for the worst tooth	98.3% (n=58)	27.0%	27.0%*	45.0%
Calculus Score (20+ years) 1/3 or more of tooth surface covered with calculus for the worst tooth	94.8% (n=58)	10.7%	19.9%	45.0%
Gingivitis Score (20+ years) Moderate to Severe Inflammation for the worst score	84.5% (n=58)	32.3%	30.6%	44.0%
Mean DMFT Score				
- GAR total	5.51 (n=113)			
- 6-11 years	6.26 (n=19)	2.48	7.08	6.58
- 12-19 years	3.32 (n=25)	2.49	9.49	N/A
- 20+ years	6.50 (n=58)	10.67	16.77	N/A

GARs - Government Assisted Refugee Survey Population 2009

CHMS - Oral Health Component of the Canadian Health Measures Survey 2007-2009

Inuit - Inuit Oral Health Survey 2008-2009

First Nations Oral Health Survey - Preliminary results presented by Dr. Harry Ames at the Canadian Association of Public Health Dentistry Conference October 21, 2011.

* Approximated score reported in Inuit Oral Health Report by subtraction.

N/A = not available.

5. Discussion

This study described the oral health needs of Government Assisted Refugees within their early settlement period to British Columbia. Barriers for GARs in accessing dental care services were measured and their treatment needs were categorized. The association between a history of living in a refugee camp and their oral health needs were examined. Debris, calculus, gingivitis and DMFT scores were determined and compared by refugee camp status and gender. These scores were also compared to the Inuit, the First Nations and Canadians.

The GARs arriving in British Columbia have limited experience with dental care. Refugees, especially those who have lived in camps, have had limited experience with dental care. In this sample, the majority have never seen a dental professional even though more than 80 percent of the GARs who had lived in a refugee camp have dental insurance that covers all or part of their expenses. Despite having dental insurance, seventy percent of those who did not live in a refugee camp have avoided going to the dentist because of cost and the majority have avoided recommended treatment because of cost. It is interesting to note the significant difference between the refugee groups for avoiding the dentist because of cost. The majority of refugees who did not have a history of living in a camp have avoided going to the dentist because of the cost and avoided recommended treatment due to the cost. Refugees who have lived in camps have minimal experience with dental care and therefore have limited knowledge of the cost of dental care. Only 10 percent of GARs who have lived in a refugee camp reported avoiding treatment because of the cost. Once settled in Canada, refugees that did not live in a camp may be more inclined to avoid dental care due to the cost and refugees who have lived in camps will require education about dental care in Canada.

The oral health status of GARs in this study is very poor. Almost half of the GARs who did not live in a refugee camp reported persistent or ongoing pain in their mouth and close to fifty percent of GARs living in a refugee camp reported it uncomfortable to eat

food because of problems with their teeth. These findings were consistent between the two groups with the exception that more refugees who did not live in camps avoided particular foods because of problems with their mouth (40 percent) compared to 24 percent who lived in a camp. This difference may be explained by the limited choices of food in the refugee camps. Thirty seven percent of the GARs in this study were Karen refugees from the Mae La Oon Refugee Camp and Mae Ra Moo Refugee Camp located on the Burma/Thailand border (Immigrant Services Society of BC, 2012). In these camps, food rations consist of rice, fortified flour, fish paste, iodised salt, mung beans, vegetable oil, sugar and dry chillies (Thai Burma Border Consortium, 2012). Refugees who do not live in camps would have access to more food choices with varying textures and temperatures.

The limited experience with dental care and severity of poor oral health was also confirmed with the GARs self report of treatment needs in comparison to the professional assessment of treatment needs. The highest self-reported untreated dental condition was in the category of other, which included temporomandibular joint disorder, orthodontics, prosthetics, endodontics, esthetics and soft tissue concerns. Seventy percent of those who did not live in a refugee camp self-reported requiring services in the other category. There was a significant difference in this self-reported need of other services for those who had lived in a refugee camp compared to those that did not live in a camp. As previously mentioned, this may be an indication that those who have lived in the refugee camp have limited experience and knowledge of dental care. Participants who did not live in a refugee camp may have had the opportunity to learn about various dental services through dental visits, media and educational materials. The second highest self-reported untreated dental condition the participants reported was for restorative dental care. Nearly fifty percent of those who did not live in a refugee camp reported a need for restorative dental care. It is interesting to note that the participants self-report of need was under-reported in each category compared to the professional assessment except for in the category of other where it was greater than the professional assessment. The GARs self report of treatment needs in all categories did not match the needs assessed and reported by the dental professionals.

The professional assessment recorded the greatest oral health need of the participants to be in the category of prevention. Over ninety percent of the GARs

required prevention services. This aligns with other results found such as less than 60 percent of the participants brush their teeth at least twice/day and none of the participants in this study floss their teeth at least 5 times per week. These self-reports of low daily preventive dental health behaviours indicate that dental health education is an area for improvement and should be incorporated into health education for GARs when they arrive in Canada.

The second highest category of need from the professional assessment was for restorative dental care. Sixty five percent of the participants required restorative treatment. Restorative treatment includes the need for fillings and repairing broken teeth. Fifty three percent of the participants in this study have never seen a dentist and sixty two percent of those who had not lived in a refugee camp have avoided dental treatment because of cost. The high mean D score (decay score) of 3.58 in the DMFT score also reflects many decayed surfaces requiring restorations.

The professional assessment also determined that GARs who have lived in a refugee camp have more severe oral health conditions. Refugees who had lived in a refugee camp had a higher need for periodontics and surgery compared to those that did not live in a refugee camp. This finding supports the previous result that living in a refugee camp provides minimal access to dental care and suggests that the social, physical and political conditions in a refugee camp could be impacting the oral health status of GARs.

The debris score for the GARs was very high indicating the need for prevention services. These high scores align with the low preventive dental health behaviours reported and the low utilization of dental services by GARs. One hundred percent of the participants had 1/3 or more of their tooth surface covered with debris. Although not captured in the data, the examiners reported seeing heavy dark staining on the teeth and soft tissues coming from the habit of betel quid chewing. The betel quid is not only a stimulant but a known carcinogen for oral cancer and a multi-site carcinogen when combined with smoking (Wen et al., 2010). Ten percent of participants, (data not shown) presented with leukoplakia, a type of mucosal white patch which is often a reaction to chronic irritation of the mucous membranes of the mouth. Due to the sample size the numbers were too small to report on. However, dental professionals should be aware of

this habit of chewing betel quid, a known carcinogen when working with refugee populations.

Almost seventy percent of the participants had more than a 1/3 or more of their tooth surface covered with calculus. This confirms the need for prevention services such as brushing and flossing instruction and dental hygiene services to remove the hardened calculus formed on the teeth. This can lead to inflammation of the gum tissue which is reflected in the high gingivitis scores of the GARS in this study.

Over 80 percent of the participants had moderate to severe gingivitis. Over 50 percent of the participants reported having bleeding gums when brushing their teeth (data not shown). Gingivitis can be prevented through daily brushing and flossing practices. Gingivitis can also be reversed by removal of the calculus by a dental professional and through daily removal of the bacterial plaque.

It is worth noting that the periodontal assessments of pocket depth or loss of attachment were not measured in the original needs assessment. As a result of regulatory conditions, registered dental hygienists in British Columbia cannot perform sub-gingival measurements without a dentist examination in the previous 365 days.

The mean DMFT score for GARs in this study is 5.51 with the score being lower for those who had lived in a refugee camp at 5.08 compared to 6.82 for those that had not lived in a refugee camp. This difference in score can be explained when the different components of the DMFT score are examined. For the GARs in this sample, the mean D (decay) score was 3.58. The decay score is lower for those who had not lived in a refugee camp but the missing and filled scores were higher for those who had not lived in a refugee camp. This shows that those who had not lived in a refugee camp had some previous experiences with dental care to have teeth removed or decayed teeth filled. This mirrors the findings from those who had lived in a refugee camp where the decay score is higher and the missing and filled scores are lower. This suggests that those who had lived in a refugee camp have more decayed tooth surfaces but they have not had the opportunity for dental care for the teeth to become removed or filled. There was a significant difference observed in the F (filled) score between the groups. Those who had not lived in a refugee camp had a higher filled score (2.39) compared to those who

had lived in a refugee camp (0.11). This supports the findings that those who have lived in a refugee camp have not had access to dental services compared to refugees who have not lived in camps.

A comparison of oral health outcomes for the GARs, Canadians, the Inuit and First Nations provided a context of the severity of the oral health needs for GARs. The debris, calculus and gingivitis scores for the GARs in this sample are very high in comparison to Canadians, the Inuit and First Nations populations. These high scores reflect limited access to prevention dental services. The professional assessment identified prevention services as the GARs greatest need. These high scores also reflect the low brushing frequency reported and no flossing by the participants. These scores can be improved through dental health education and access to prevention dental services.

The DMFT score is presented by age group as reported in concurrent oral health surveys. The DMFT score reflects the lack of access to dental care for the GARs. In the 6-11 year age category it is similar to the Inuit and the First Nations score. However, in the 20+ years category the score drops due to very few filled or missing teeth in the mouths of the GARs. The GARs lack of access to dental care and limited exposure to dental services is reflected in this low DMFT score.

The gender analyses showed females had significantly more calculus on their teeth. This is in contrast to what The Canadian Health Measures Survey and the Inuit Oral Health Survey reported (Health Canada, 2010; Health Canada, 2011). Previous surveys report males have more calculus on their teeth. However, despite females having more calculus than males, in this sample of GARS both males and females had high calculus scores compared to the Canadians, the Inuit and the First Nations populations.

5.1 Convergence: Insurance Coverage and Oral Health Needs

Dental insurance is the most significant predictor of accessing dental care (Health Canada, 2010). Those with the highest income are more likely to have dental

insurance and go to the dentist more frequently than those with low income and no dental insurance (Health Canada, 2010). Those from low income households also suffer the most from dental disease and pain (Health Canada, 2010). In Canada, those who can afford dental care or have dental insurance have access to dental services. However, how dental insurance is structured is very important. Providing dental insurance with lower fee guides or restricting services insured can lead to the notion of being under-insured which leaves individuals who are most likely to need dental services with an out of pocket expense.

Government Assisted Refugees are provided health insurance through the Interim Federal Health Program (IFHP) which is funded by Citizenship and Immigration Canada (Citizenship and Immigration Canada, 2011a). It provides basic coverage for medical services such as doctors visits, immunization, prenatal and obstetrical care, lab tests and x-rays (Citizenship and Immigration Canada, 2011a). Hospital services covered are medical and surgical care, anaesthesia, psychiatric care, dialysis, blood transfusion, chemotherapy, radiotherapy, diagnostic imaging (Citizenship and Immigration Canada, 2011a). Supplemental coverage includes vision care which consists of one pair of eyewear every two years, and one vision test (Citizenship and Immigration Canada, 2011a). Essential prescription medications are covered (Citizenship and Immigration Canada, 2011a). Although the coverage for medical services appears quite comprehensive, the dental component is limited.

The dental care component of the Interim Federal Health Program covers emergency examinations, x-rays, extraction and anaesthesia (Citizenship and Immigration Canada, 2011a). Supplemental coverage may include dentures and certain fillings but only with prior approval. The IFHP lists dental care services that are not covered; cleanings, orthodontics, root canals, cosmetic services, crowns, veneers and implants (Citizenship and Immigration Canada, 2011a). There is no mention of a variety of other prevention services such as fluoride treatments or fissure sealants. The dental care component of the IFHP is limited to receiving a diagnosis and an extraction, possibly a denture and certain fillings after a pre-approval process (Citizenship and Immigration Canada, 2011a).

In this study, the greatest oral health needs for the GARs reported by professional assessment was for prevention (ninety two percent). The participants have very high debris, calculus and gingivitis scores. The IFHP does not provide coverage for cleanings (Citizenship and Immigration Canada, 2011a).

The second oral health treatment need reported by professional assessment was for restorative dental services such as fillings. Under the IFHP supplemental coverage may include fillings but only with prior approval (Citizenship and Immigration Canada, 2011a). Of the participants who did not live in a refugee camp almost fifty percent reported having persistent or ongoing pain in their mouth. Teeth with ongoing or persistent pain may require endodontic services (a root canal) one of the services that the IFHP states are not covered (Citizenship and Immigration Canada, 2011a).

Supplemental coverage with the IFHP may include dentures with prior approval. It is interesting to note that less than 3 percent (data not shown) of GARs required a denture.

Less than 16 percent of the participants self-reported requiring surgery, the only procedure covered by the IFHP. Self-identified need for a service is the first step in accessing health care. This could partially explain the low utilization of visiting a dental professional despite having insurance. This could also explain that seventy percent of those who did not live in a refugee camp reported avoiding the dentist because of the cost of dental care despite that 66 percent have insurance.

These findings point to an insurance coverage that does not match the oral health needs of the GARs. A recent evaluation of Government Assisted Refugees and the Resettlement Assistance Program reported a gap in dental services for GARs (Citizenship and Immigration Canada, 2011b). This evaluation report by Citizenship and Immigration Canada stressed the need to adapt health care services to better meet the needs of GARs and prevent treatable conditions being neglected in refugees (Citizenship and Immigration Canada, 2011b).

The findings from this study identify the gap in dental insurance coverage for GARs and what their treatment needs are. Despite the high need for dental care services, GARs are not accessing dental care as the Interim Federal Health Program

does not match both their self-reported oral health need and the professionally assessed treatment needs.

5.2 Implications

This study has measured a health inequality for Government Assisted Refugees. Once a health inequality has been acknowledged and measured it is time to establish a platform for action (WHO, 2008). To address this inequality for GARs and to meet their dental care needs there must be a shift in how dental services are provided to vulnerable populations such as GARs. The shift needs to be away from fee for service treatment in private dental practices to public health services. Vulnerable populations such as GARs are not having their dental health needs met by the private fee for service system or through their existing dental insurance coverage through the IFHP.

Primary health care has responded to refugees and immigrants' complex general health care needs by providing clinics and programs that address language, cultural and information barriers. National evidence-based guidelines have been developed for newly arriving immigrants and refugees for primary health care practitioners (McNally et al., 2011). Health clinics for new Canadians are staffed with primary care practitioners who are familiar with working with immigrants and refugees and are aware of their complex health needs. They are funded under the public medical care system.

Health policies should be reoriented to incorporate oral health into primary care to utilize the common risk factor approach (Petersen et al., 2005). The determinants of oral disease are risk factors common to a number of chronic conditions: diet, hygiene, smoking, alcohol, injuries and stress (Petersen et al., 2005). Oral health diseases are an important public health problem as they are the most common chronic disease, they impact both individuals and society and they are very expensive to treat (Petersen et al., 2005; Health Canada, 2010). Intersectoral collaboration and integration was noted in the Dental Model Core Program as a future approach to take in dental public health (BC Ministry of Health, 2006). Integrating oral health care into primary care for vulnerable populations such as GARs will focus on improving both oral health and general health conditions by utilizing a common risk factor approach. Integration of oral health care into

primary care will start to move away from the notion of separating the mouth from the rest of the body.

5.3. Limitations

The present study has several important limitations that should be considered. As in all cross sectional studies this study is only a snapshot in time. The study population was recruited by a sample of convenience from those attending the New Canadian Health clinics in Fraser Health. No data was kept on the numbers who refused to participate in the needs assessment. Therefore, there could be participant bias for those who consented to participate. The interview questionnaire was conducted ninety percent through interpreters which could lead to interpreter bias. Participants' responses may be subject to social desirability bias with the use of an interpreter. The study gathered both self-report and professionally assessed data. With all self-report data, especially data requiring recall over an extended period, there is the potential for recall bias. The sample size of 115 for the interview questionnaire and 112 for the clinical assessment limited some cell sizes for analyses. There was representation from several countries but limited numbers from each country. Despite its limitations, this research contributes to new knowledge. There is limited data on oral health in British Columbia. This study captured the oral health needs of a vulnerable population group settling in the Fraser Region in BC and identified a gap in dental services for GARs. A health inequality has been quantified and described in this study.

5.4. Future Research

The results of this study highlight several areas for future research. Continual monitoring of GARs' oral health needs upon arrival in Canada will add to our knowledge and understanding. A larger sample size would allow further research about the differences or similarities in oral health status for refugees from various countries of origin. Future research could examine how the social, physical and political conditions in a refugee camp impact the oral health status. In addition, future studies could examine any change in oral health status of GARs over the length of time they reside in Canada.

This could include access to dental care, dental health practices and oral health outcomes.

6. Conclusion

This study contributes important new knowledge to understand the oral health needs of Government Assisted Refugees that are settling in the Fraser Region in British Columbia. It quantifies their oral health needs, examines oral health differences between refugees that had or had not lived in a refugee camp and identified the gap in available dental health services.

The results from this study indicate the oral health needs of GARs are greater and more complex than the general Canadian population, the Inuit, and First Nations populations. Further, GARs access to services is very limited. Although oral health is an integral part of general health, Canadian health care services are funded to cover all parts of the body except the mouth. Although more than half of Canadians have supplemental dental insurance benefits through their employment (Health Canada, 2010), many Canadians do not have dental insurance coverage at all. In addition, almost one-third of Canadians pay for dental care completely out-of-pocket (Health Canada, 2010). For GARs, dental insurance coverage is provided for up to 12 months through Interim Federal Health. However, the current program is clearly inadequate and does not meet their oral health needs. Despite the fact that the majority of the participants had dental insurance, almost three quarters of participants in this study avoided dental care due to the cost. This is even more concerning when we consider that 42 percent of GARs reported persistent or ongoing pain in their mouth. An alternative to an expansion of the Interim Federal Health dental program would be to provide comprehensive dental care services at New Canadian Health Clinics, where GARs receive their general health care upon arrival in Canada. Integrating health services and utilizing a common risk factor approach will not only improve oral health but will also improve the general health of the GARs. This integration will also provide an efficient one stop shop for health service delivery and reduce the systemic barriers for GARs trying to navigate the system. This study begins to touch on the issues at hand and has sought to shed light on future research and programs dedicated to dental health care for Government

Assisted Refugees. Overall, if Canada seeks to provide dental health care services to a vulnerable and growing population of refugees, dental health policy must change.

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Appendices

Appendix A.



Oral Health Needs Assessment Survey for Government Assisted Refugees

Participant Survey # _____ Interview Questionnaire

Thank you for participating in this survey. We are going to begin with some questions about the health of your mouth, including the teeth and/or dentures, tongue, gums, lips and jaw joints.

1. In general, would you say the health of your (your child's) mouth is:

- 1 excellent
- 2 very good
- 3 good
- 4 fair
- 5 poor

2. How satisfied are you with the appearance of your (your child's) teeth and/or dentures?

- 1 very satisfied
- 2 satisfied
- 3 neither satisfied nor dissatisfied
- 4 dissatisfied
- 5 very dissatisfied

3. In the past 12 months, how often have you (your child) found it uncomfortable to eat any food because of problems with your (your child's) mouth?

- 1 Often
- 2 Sometimes
- 3 Rarely
- 4 Never

4. In the past 12 months, How often have you (your child) avoided eating particular foods because of problems with your (your child's) mouth?

- 1 Often
- 2 Sometimes
- 3 Rarely
- 4 Never

5. In the past 12 months, how often have you (your child) had any other persistent or ongoing pain anywhere in your mouth?

- 1 Often
- 2 Sometimes
- 3 Rarely
- 4 Never

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6. In the past 12 months, have you (your child) taken time away from work, school or normal activities for dental check-ups or treatments or because of problems with your mouth?

- 1 Yes
- 2 No

7. In the past 12 months, how many hours were you (your child) taken away from your normal activities?

Record to the nearest ½ hour _____ Hours

8. Now a few questions about your (your child's) regular dental care habits; how often do you (your child) usually brush your teeth and/or dentures? (For example: twice a day, three times a week, once a month)

Enter amount of times only per time frame i.e. per day, week, month or year or it could be never

_____ / _____

9. How often do you (your child) usually floss your teeth?

Enter amount of times only per time frame i.e. per day, week, month or year or it could be never

_____ / _____

10. Do you (your child) usually see a dental professional?

- 1 ... more than once a year for check-ups or treatment
- 2 ... about once a year for check-ups or treatment
- 3 ... less than once a year for check-ups or treatment
- 4 ... only for emergency care
- 5 ... never

11. When was the last time you (your child) saw a dental professional?

- 1 ... Less than 1 year ago
- 2 ... 1 year to less than 2 years ago
- 3 ... 2 years to less than 3 years ago
- 4 ... 3 years to less than 4 years ago
- 5 ... 4 years to less than 5 years ago
- 6 ... 5 or more years ago

12. Now a few questions about the cost of your (your child's) dental care.

In the past 12 months, have you (your child) avoided going to a dental professional because of the cost of dental care?

- 1 Yes
- 2 No

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13. In the past 12 months, have you (your child) avoided having all the dental treatment that was recommended because of the cost?

- 1 Yes
- 2 No

14. In the past 12 months, have you avoided having dental treatment because of language barriers? For example there were no interpretation services were available.*

- 1 Yes
- 2 No

15. Do you (your child) have insurance or a government program that covers all or part of your (your child's) dental expenses?

- 1 Yes
- 2 No

16. Is it:
Mark all that apply.

- 1 ... an employer-sponsored plan
- 2 ... a provincial program for children
- 3 ... a private plan
- 4 ... a government program for social service (welfare) clients
- 5 ... a government program for Refugees

17. Do you think you (your child) have any untreated dental conditions?

- 1 Yes
- 2 No

18. What untreated dental condition(s) do you think you have?

Mark all that apply

- 1 Prevention (example: fluoride treatment or fissure sealants)
- 2 Fillings
- 3 Temporomandibular joint disorder (TMD) (example: jaw joint discomfort)
- 4 Surgery (example: extraction)
- 5 Periodontics (example: dental cleaning)
- 6 Esthetics (example: treatment to improve the appearance of the teeth)
- 7 Endodontics (example: root canal)
- 8 Orthodontics (example: braces)
- 9 Soft tissue (example: problems with the tissue inside your mouth)
- 10 Prosthetics – partial or full denture
- 11 Prosthetics – implant, bridge or crown
- 12 Other - Specify _____

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19. In the past month, that is, from [date last month] to yesterday, have you had a toothache?

- 1 Yes
- 2 No

20. In the past month, have you had pain in your teeth when consuming hot or cold foods or drinks?

- 1 Yes
- 2 No

21. In the past month, have you had... severe tooth or mouth pain at night?

- 1 Yes
- 2 No

22. In the past month, have you had: ... pain in or around your jaw joints?

- 1 Yes
- 2 No

23. In the past month, have you had:... other pain in your mouth?

- 1 Yes
- 2 No

24. In the past month, have you had bleeding gums when brushing your teeth?

- 1 Yes
- 2 No

25. In the past month, have you had... persistent dry mouth?

- 1 Yes
- 2 No

26. In the past month, have you had: ... persistent bad breath?

- 1 Yes
- 2 No

Thank you for answering these questions.

* Note: Question # 14 is unique to the Fraser Health Oral health Needs Assessment Survey and does not appear on the original Canadian Health Measures Survey.

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Appendix B.



Oral Health Needs Assessment Survey for Government Assisted Refugees

Oral Health Assessment (OHE)

OHE_R11 **Now I'm going to do a simple dental assessment. The only instruments I will use to look at your mouth and teeth are a hand mirror and this explorer. You should not feel any pain and no x-rays will be taken. I just want to get a sense of the health of your teeth and mouth.**

OHE_N11 **INSTRUCTION:** Record the dental status of the respondent.

- 1 Dentate – both arches
- 2 Dentate – upper arch only
- 3 Dentate – lower arch only
- 4 Edentulous with one or more implants
- 5 Edentulous

OHE_C11 If respondent refuses, go to OHE_END.

OHE_N12 **INSTRUCTION:** Record the prosthetic status of the upper arch of the respondent. Mark all that apply.

- 1 No prosthetics
- 2 Fixed bridge
- 3 Implant
- 4 Partial denture – acrylic
- 5 Partial denture – cast chrome
- 6 Full denture

OHE_N13 **INSTRUCTION:** Record the prosthetic status of the lower arch of the respondent. Mark all that apply.

- 1 No prosthetics
- 2 Fixed bridge
- 3 Implant
- 4 Partial denture – acrylic
- 5 Partial denture – cast chrome
- 6 Full denture

OHE_N14 **INSTRUCTION:** Record the mucosal status of the respondent. Mark all that apply.

- 1 No mucosal abnormalities
- 2 Angular cheilitis
- 3 Mucosal white patches
- 4 Denture stomatitis
- 5 Denture induced hyperplasia (epulis)
- 6 Glossitis
- 7 Sinus or fistula
- 8 Aphthous ulcer
- 9 Traumatic or unspecified ulcer
- 10 Other - Specify _____

OHE_C15 If OHE_N14 = 3, go to OHE_N15. Otherwise go to OHE_C20.

Page 3 of 11

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Oral Health Needs Assessment Survey for Government Assisted Refugees

OHE_N15 **INSTRUCTION:** Record the type of mucosal white patches.

- 1 Leukoplakia
- 2 Lichen planus
- 3 Candidiasis

OHE_C20 If OHE_N11 = 4 or 5, go to OHE_N51. If respondent is older than 12, go to OHE_N21.

OHE_N20 **INSTRUCTION:** Record the fluorosis score for the most affected pair of teeth for teeth 12, 11, 21 or 22. If the two teeth are not equally affected, record the score for the less affected of the two.

- 1 Normal
- 2 Questionable
- 3 Very mild
- 4 Mild
- 5 Moderate
- 6 Severe
- 7 All 4 anterior teeth absent

OHE_C21 If OHE_N11 > 1, go to OHE_C22.

OHE_N21 **INSTRUCTION:** Record all occlusal conditions that are present. Mark all that apply.

- 1 Acceptable occlusion
- 2 Anterior crossbite
- 3 Severe crowding
- 4 Severe spacing
- 5 Posterior crossbite
- 6 Anterior open bite (> 1 mm)
- 7 Excessive overbite (100% or more)
- 8 Excessive overjet (> 9 mm)
- 9 Midline shift (> 4 mm)

OHE_C22 If OHE_N12 = 6 (Upper arch full denture) and OHE_N13 = 6 (Lower arch full denture), go to OHE_N23.

OHE_N22 **INSTRUCTION:** Record the current orthodontic treatment status of the respondent.

- 1 No orthodontic treatment
- 2 Removable appliances
- 3 Fixed appliances
- 4 Both fixed and removable appliances
- 5 Retainer – post completion

OHE_C23 If OHE_N22 > 1, go to OHE_C31.

OHE_N23 **INSTRUCTION:** Record whether the respondent has received orthodontic treatment in the past.

Oral Health Needs Assessment Survey for Government Assisted Refugees

- 1 Yes
- 2 No

OHE_C31 If OHE_N12 = 6 (Upper arch full denture) and OHE_N13 = 6 (Lower arch full denture), go to OHE_N51.

OHE_N31 **INSTRUCTION:** Record the **worst** score for each tooth.

- Gingivitis:
- 1 No inflammation
 - 2 Mild inflammation
 - 3 Moderate inflammation
 - 4 Severe inflammation
 - 5 Tooth missing

	Tooth 16 (55)	Tooth 12 (52)	Tooth 24 (64)
Gingivitis	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Tooth 36 (75)	Tooth 32 (72)	Tooth 44 (84)
Gingivitis	<input type="text"/>	<input type="text"/>	<input type="text"/>

Note: Teeth numbered in brackets indicate primary (baby) teeth and all other teeth numbers indicate permanent teeth.

Oral Health Needs Assessment Survey for Government Assisted Refugees

OHE_N32 **INSTRUCTION:** Record the **worst** score for each condition for each sextant (by tooth or pair of teeth).

- Debris:**
- 1 No soft debris or stain
 - 2 Less than 1/3 of surface covered
 - 3 1/3 to 2/3 of surface covered
 - 4 More than 2/3 of surface covered
 - 5 Teeth missing
 6. Tooth missing for debris and calculus ie all crowned
- Calculus:**
- 1 No calculus
 - 2 Less than 1/3 of surface covered
 - 3 1/3 to 2/3 of surface covered &/or some subgingival calculus is present
 - 4 More than 2/3 of surface covered &/or a continuous band of subgingival calculus is present
- Attachment Loss:** Distance in millimetres
(MIN: 0) (MAX: 12)
- Probing score:** Depth in millimetres
(MIN: 0) (MAX: 9)

	Teeth 17 & 18 (55)	Tooth 11 (51)	Teeth 26 & 27 (65)
Debris	<input type="text"/>	<input type="text"/>	<input type="text"/>
Calculus	<input type="text"/>	<input type="text"/>	<input type="text"/>
Attachment Loss *	<input type="text"/>	<input type="text"/>	<input type="text"/>
Probing score *	<input type="text"/>	<input type="text"/>	<input type="text"/>
	Teeth 37 & 38 (75)	Tooth 31 (71)	Teeth 46 & 47 (85)
Debris	<input type="text"/>	<input type="text"/>	<input type="text"/>
Calculus	<input type="text"/>	<input type="text"/>	<input type="text"/>
Attachment Loss*	<input type="text"/>	<input type="text"/>	<input type="text"/>
Probing score *	<input type="text"/>	<input type="text"/>	<input type="text"/>

* If a participant has answered YES to any of the medical related questions or has not been seen by a dentist in the preceding 365 days then draw an "X" through the attachment loss and probing depths charts located in clinical question #32 as this assessment will not be conducted.

Oral Health Needs Assessment Survey for Government Assisted Refugees

OHE_N41 For baby teeth and the crowns of adult teeth display the following list of categories:

INSTRUCTION: Record the condition of each tooth in the appropriate box.

- 1 Sound – never decayed or restored
- 2 Sound – crown sealed, never decayed or otherwise restored
- 3 Missing – due to orthodontic treatment
- 4 Missing – due to trauma
- 5 Missing – due to caries or periodontal disease
- 6 Unerupted tooth, congenitally missing or unexposed root
- 7 Decayed severely
- 8 Decayed – pit and fissure caries
- 9 Decayed – smooth surface caries
- 10 Decayed – both smooth surface and pit and fissure caries
- 12 Filled with amalgam, no other decay
- 13 Filled with other material (resin, GIC, inlay, crown), no other decay
- 14 Filled with amalgam and other material (resin, GIC, inlay, crown), no other decay
- 15 Filled with amalgam, no other decay, but filling is defective and needs replacement
- 16 Filled with other material (resin, GIC, inlay, crown) but filling is defective and needs replacement
- 17 Filled with amalgam and other material (resin, GIC, inlay, crown) but filling is defective and needs replacement
- 18 Implant
- 20 Fractured due to trauma
- 21 Other

OHE_N41

OHE_N41 For roots of adult teeth, display the following list of categories. **Data entry for respondents younger than 18 is not possible.**

INSTRUCTION: Record the condition of each tooth in the appropriate box.

- 1 Sound – never decayed or restored
- 3 Missing – due to orthodontic treatment
- 4 Missing – due to trauma
- 5 Missing – due to caries or periodontal disease
- 6 Unerupted tooth, congenitally missing or unexposed root
- 7 Decayed severely
- 11 Decayed – smooth surface caries
- 12 Filled with amalgam, no other decay
- 13 Filled with other material (resin, GIC, inlay, crown), no other decay
- 14 Filled with amalgam and other material (resin, GIC, inlay, crown), no other decay
- 15 Filled with amalgam, no other decay, but filling is defective and needs replacement
- 16 Filled with other material (resin, GIC, inlay, crown) but filling is defective and needs replacement
- 17 Filled with amalgam and other material (resin, GIC, inlay, crown) but filling is defective and needs replacement
- 19 Implant
- 20 Fractured due to trauma
- 21 Other

Oral Health Needs Assessment Survey for Government Assisted Refugees

Tooth Chart

		55	54	53	52	51	81	82	83	84	85			
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		
	17	16	15	14	13	12	11	21	22	23	24	25	26	27
CROWN	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
ROOT	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

		75	74	73	72	71	81	82	83	84	85			
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		
	37	36	35	34	33	32	31	41	42	43	44	45	46	47
CROWN	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
ROOT	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

NOTE: Data are recorded for each tooth whether or not present.

OHE_N42 **INSTRUCTION:** Count and record the number of tooth surfaces with amalgam fillings.

Count
(MIN: 0) (MAX: 95)

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OHE_N43 **INSTRUCTION:** Record the condition of each tooth in the appropriate box.

- 1 No evidence of traumatic injury
- 2 Unrestored enamel fracture – does not involve dentin
- 3 Unrestored enamel fracture – involves dentin
- 4 Untreated damage – dark discolouration, swelling, fistula
- 5 Restored fracture – full crown
- 6 Restored fracture – other restoration
- 7 Lingual restoration plus history of root canal treatment
- 8 Other

12	11	21	22
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
32	31	41	42
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

OHE_N51 **INSTRUCTION:** Record the prosthetic needs of the upper arch of the respondent. Mark all that apply.

- 1 No prosthetics needed
- 2 Fixed bridge
- 3 Implant
- 4 Denture repair or reline
- 5 New partial denture
- 6 New full denture

OHE_N52 **INSTRUCTION:** Record the prosthetic status of the lower arch of the respondent. Mark all that apply.

- 1 No prosthetics needed
- 2 Fixed bridge
- 3 Implant
- 4 Denture repair or reline
- 5 New partial denture
- 6 New full denture

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OHE_N53 **INSTRUCTION:** Record the treatment currently needed by the respondent. Mark all that apply.

- 1 No treatment needed
- 2 Prevention
- 3 Fillings
- 4 Temporomandibular joint disorder (TMD)
- 5 Surgery
- 6 Periodontics
- 7 Esthetics
- 8 Endodontics
- 9 Orthodontics
- 10 Soft tissue
- 11 Other - Specify _____

OHE_R60 Examiner complete the sections below as necessary

OHE_C61 If OHE_N53 = 1, go to OHE_N71. If OHE_N53 = 3, go to OHE_N61. Otherwise go to OHE_C62.

OHE_N61 **INSTRUCTION:** Record whether the respondent needs fillings urgently (i.e., within a week).

- 1 Yes
- 2 No

OHE_N62 **INSTRUCTION:** Record whether the respondent needs treatment for Temporomandibular joint disorder (TMD) urgently (i.e., within a week).

- 1 Yes
- 2 No

OHE_N63 **INSTRUCTION:** Record whether the respondent needs surgery urgently (i.e., within a week).

- 1 Yes
- 2 No

OHE_N64 **INSTRUCTION:** Record whether the respondent needs periodontics urgently (i.e., within a week).

- 1 Yes
- 2 No

OHE_N65 **INSTRUCTION:** Record whether the respondent needs endodontics urgently (i.e., within a week).

- 1 Yes
- 2 No

OHE_N66 **INSTRUCTION:** Record whether the respondent needs orthodontics urgently (i.e., within a week).

- 1 Yes
- 2 No

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OHE_N67 **INSTRUCTION:** Record whether the respondent needs soft tissue treatment urgently (i.e., within a week).

- 1 Yes
- 2 No

OHE_N68 **INSTRUCTION:** Record whether the respondent needs other treatment urgently (i.e., within a week).

- 1 Yes
- 2 No

OHE_N71 **INSTRUCTION:** Was a serious medical condition that requires immediate attention discovered during the dental assessment?

- 1 Yes
- 2 No (Go to OHE_END)

OHE_N72 **INSTRUCTION:** Record the serious medical condition discovered during the dental assessment.

- 1 Oral lesion
- 2 Severe acute infection
- 3 Other - Specify _____

OHE_N73 **INSTRUCTION:** Was Participant given An Oral Health Status Report coded:

- 1. Green (no obvious dental problems observed)
- 2. Yellow (some dental problems observed)
- 3. Red (serious concerns observed)

Assessor will discuss general findings with the participant, give green, yellow or pink highlighted sheet and advise participant to seek assistance as needed to access dental care.

We have now completed the assessment. Thank you for your participation.

OHE_END