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ORIGINAL ARTICLE

Oral health status and possible explanatory factors of an inner-city low-income community

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Abstract *Background/purpose:* Individuals with low income bear a number of health challenges to healthcare services. Vancouver's Downtown Eastside (DTES) is known to be a low-income community in a metropolitan city. Because it is difficult to reach, the oral health (OH) status of these residents is unknown. The objectives of this study are (1) to design a tool and strategy to collect OH information in a low-income community, (2) to characterize the OH status and related factors among low-income adults, and (3) to identify the explanatory factors for their OH status.
Materials and methods: Mobile screening clinics were established in the gathering centers of the DTES, and those of 19 years of age or older were recruited. Data were collected through survey interviews and clinical examinations. Potential explanatory factors were investigated by regression analysis.
Results: The 356 screened participants were mostly males, middle-aged, less educated, and living with low income (≤CAD$20,000/y). About 80% had dental coverage, mostly from public programs (94%). Many (86%) perceived a dental need. Among dentate participants ($n = 306$), on average, 3.8 decayed, 8.6 missing, 4.9 filled teeth, and a care index of 41.5% were observed. Social factors (barriers to care and length of DTES residence), dental hygiene (brushing/flossing), and personal (hepatitis C virus infection/methadone usage) factors contributed to their care index level.
Conclusion: This is the first time that comprehensive information regarding OH status has been collected from a low-income, inner-city community in Canada. Further investigations in the

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challenges and needs in accessing dental care may develop solutions for better OH in similar communities.

Introduction

Individuals with low income face a number of health challenges and barriers to healthcare services.[1] Vancouver's Downtown Eastside (DTES) is a neighborhood historically considered as poor, and is characterized by high crime rate and excessive use of substances.[2–4] Residents face a series of medical challenges including human immunodeficiency virus (HIV) and hepatitis C virus (HCV) infections along with high rates of hospitalization and emergency room visits compared to the General Vancouver region, a metropolitan city in Canada.[3]

Oral health (OH) is an integral component of overall health and is essential to general well-being. Serious conditions such as oral cancer were shown to have associations with OH status such as poor oral hygiene, dentition status, and chronic periodontitis.[5–8] Our previous study has indicated that DTES residents may have a high risk for oral cancer.[4] Therefore, understanding their OH status and related factors may provide insight on its impact on general health and oral cancer risk of this community.

In countries such as Canada, healthcare does not include dental care services. Individuals with financial barriers to dental care are more likely to be low income and/or without dental insurance.[9] Hence, they are more likely to have poorer OH status and are less likely to visit a dentist.[10] Although some public dental programs are available to certain underserved groups, coverage for services are often limited and barriers to dental care still persist.[11]

The overall goal of this study was to understand the OH of this community. Our objectives were: (1) to design a tool and strategy to collect OH information in a low-income community, (2) to characterize the OH status and related factors among low-income adults in the DTES community, and (3) to identify the explanatory factors for their OH status.

Materials and methods

Study design

This is a cross-sectional study using opportunistic sampling. The eligibility criteria include age of 19 years or older and currently living in the DTES for at least 3 months. This study was approved by the University of British Columbia and BC Cancer Agency Research Ethics Board (H10-02598).

Recruitment

Participants were recruited through mobile OH screenings at three main gathering centers and one community dental clinic in Oppenheimer area, the location targeting those best representing the low-income residents of the DTES.[4] Low-income status was determined in accordance with the Low Income Cut-Offs established by Statistics Canada.[12]

Information articles and posters were placed in the gathering centers 1 week prior to the screening day. Participants at the fixed dental clinic were recruited by the clinical staff prior to and on the day of the screening. The screening consisted of a structured interview with a set of survey questionnaires, as well as a dental and oral mucosal examination by a dental clinician and a specialist in oral medicine/oral pathology, respectively. The participants received an incentive package along with a small honorarium upon completion.

Survey

A survey was designed with questions adapted from the Canadian Health Measures Survey (CHMS) and categorized into five modules: demographics, risk behaviors, perceived dental health, healthcare utilization, and clinical examination (see Appendix 1 for the surveys used in this study).[10]

Demographics include assessed participant's age, sex, ethnicity, education level, annual income, housing, employment, education level, and length of residency in the DTES. Risk behaviors collected include tobacco and alcohol consumption, recreational drug use, and risk behaviors associated with human papillomavirus infection.[13] The dental health module examines the participant's perceived dental health status and OH issues including reported oral hygiene behaviors and oral cancer awareness. The healthcare utilization module assesses dental problems experienced, dental care utilization, and dental insurance status.

The clinical examination captures the participants' medical history and their dental and oral mucosal status. Oral mucosal examination was conducted under both white light and fluorescence visualization, a screening adjunct tool.[14] Tooth conditions were classified into sound, decayed (Dt), missing (Mt), or filled teeth (Ft).[10,15]

Statistical analysis

Chi-square test and Student *t* test with Welch's correction were used when comparing descriptive data among subgroups. The care index (CI) was used as the outcome measure when identifying dependent variables that explain OH, the ratio of Ft to total decayed-mising-filled teeth (DMF teeth or DMFT).[16] Considering the use of dentures and fixed prosthetics as "filled," CI in this context describes the extent of treatment of OH problems and conversely, the level of dental treatment needed.[16] Selected variables

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