



# Anthropo-Social Impact of Oral Hygiene on People in Rural Areas of Rwanda: Case of Nyamabuye Sector, Muhanga District, 2015-2017

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**Abstract:** This research entitled “Anthropo-social impact of oral hygiene on people in rural areas of Rwanda: Case of Nyamabuye Sector, Muhanga District, from 2015 to 2017”, highlights how oral hygiene plays a big role in providing quality of life to people with oral diseases in Nyamabuye Sector.

This research intended to investigate problems aiming at achieving following objectives: to assess indicators of oral hygiene among people in Nyamabuye Sector, to examine impacts of oral health on people in Nyamabuye Sector and to identify the preventive strategies of oral health care among people in Nyamabuye Sector

This research to be successful, different methods and techniques were used. As methods we sorted to analytical and exploratory methods. As techniques, we used the interview and questionnaire. The data have been collected and interpreted basing on quantitative and qualitative approaches. As results of our research, concerning diseases that affect oral health, 77 % of respondents are infected by dental caries, 21 % of respondents show periodontal diseases while 2% of respondents demonstrate oral cancer.

According to indicators of oral health in anthropo-social development in Nyamabuye Sector, 100% of respondents demonstrate the impacts of oral hygiene on daily life activities and anthropo-social economic benefits while 66% of respondents demonstrate environmental impacts of oral hygiene.

According to the impacts of oral hygiene in rural area, 100% showed quality of life and 75% showed a good health status based on oral hygiene while 66% of respondents confirmed oral health wellbeing.

As shown by different respondents 100% of respondents confirmed the necessity of oral diseases prevention by brushing regularly their teeth and diseases control, 98% of respondents showed provision of dental services while 75% confirmed food and beverages control.

**Keywords:** Anthropo-Social, Oral Health, Oral Hygiene, Adult People, Nyamabuye Sector, Dental Disease, Preventive Strategies, Rural Areas.

**List of Abbreviations:** %: Percentage, ED: Electable Dysfunction, HIV/AIDS: Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome, WHO: World Health Organization, VTC: Vocational Training Centers, e.g.: Example

## 1. INTRODUCTION

Oral hygiene is the practice of keeping one's mouth clean and free of diseases and other problems (e.g. bad breath) by regular brushing and cleaning among teeth. Oral hygiene can be defined as “a standard of health of oral and related tissues which enables an individual to eat, speak, and socialize without active disease, discomfort or embarrassment and contributes to a general well-being<sup>1</sup>.”

It is important that oral hygiene be carried out on a regular basis to enable prevention of dental diseases. The most common types of dental diseases are tooth decay (cavities, dental caries) and gum diseases, including gingivitis, and periodontitis. Regular brushing consists of brushing twice a day: after breakfast and before going to bed<sup>2</sup>.

<sup>1</sup> F. Polit, B. Cherly, (2004). Nursing Research: Principles and Methods, 7<sup>th</sup> Edition, Lippincott Williams and Wilkins.

<sup>2</sup>[https://en.wikipedia.org/wiki/Oral\\_hygiene](https://en.wikipedia.org/wiki/Oral_hygiene), retrieved on 22 March 2018.

Poor oral health has a negative impact on the physical, social, and psychological health and decreases the quality of life. Studies have reported that the increase in knowledge on oral health promotes good oral health practice. It was reported that those who have acquired good knowledge show good oral health behavior<sup>3</sup>.

Poor oral health may also be especially bad for a person's social life. Unpleasant breath otherwise known as halitosis is primarily caused by tiny food particles that are trapped between teeth and these accumulate bacteria and give off chemicals like hydrogen sulfide. This refers to the same compound that provides decayed eggs.<sup>4</sup>

A poor oral hygiene regimen can be a bacterial breeding ground and when oral hygiene is neglected or ignored it will eventually cause periodontal disease.<sup>2</sup> Bacterium associated with periodontitis can enter the bloodstream via bleeding gums which is what links the two together.<sup>4</sup>

The balanced development of oral health services should provide for the full implementation of recent achievement in oral health, but primary attention should be given to the prevention, control, and finally the reduction of barriers to achieving optimum oral health for underserved and marginalized communities<sup>5</sup>. Oral health as an integral part of total health includes all the components of complete physical, mental, and social wellbeing.

In this context, to face the problem of anthropo-social wellbeing, helped by Ministry of health, Muhanga District has emerged as a unique model that undertook oral health promotion, being an infrastructure to improving the community's oral health, breaking down barriers and reducing inequities that hinder the community from enjoying from benefits of optimum oral health<sup>6</sup>.

Oral hygiene is an essential part of staying healthy. Good oral health allows a person to smile, smell, taste, chew, swallow, and make facial expressions to show feelings and emotions. Poor oral health results in serious consequences, including painful, disabling, and costly oral diseases<sup>7</sup>. The prevalence of oral diseases in Nyamabuye sector is 67%, and this pushed us to carry out our research in this sector in order to be aware of the situation of oral hygiene in rural areas especially in Nyamabuye sector<sup>8</sup>. This research has been limited on adult people.

The overall objective of this study consists of assessing the anthropo-social impact of oral hygiene on people in rural areas in Rwanda. More specifically the study attempts to assess indicators of oral health among people in Nyamabuye Sector, to examine impacts of oral health among people in Nyamabuye Sector and to identify preventive strategies of oral health care among people in Nyamabuye Sector.

## **2. LITERATURE REVIEW**

### **2.1. Indicators of Oral Hygiene**

When most people think of brushing and flossing, they think about keeping a healthy smile, preventing dental carries and gum diseases, and keeping breath fresh and minty. Proper oral hygiene is about more than clean teeth and fresh breath; it is one of the best ways to help maintain good overall health<sup>9</sup>.

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<sup>3</sup>A. Rafi Togoo, Syed Mohammed Yaseen, M Zakirulla, VS Nasim, Mohammad Al Zamzami (2012). Oral hygiene knowledge and practices among school children in a rural area of southern Saudi Arabia.

<sup>4</sup>C. Clement Azodo, Osarobo Pius Amenaghawon (2013). Oral hygiene status and practices among rural dwellers. Benin City, Edo State.

<sup>5</sup> S. Muhammad, M. Lawal (2010). Oral hygiene and the use of plants. *Sci Res Essays* : 88–95.

<sup>6</sup>SL Tomar, S. Asma (2000). Smoking attributable periodontitis in the United States: findings from NHANES III. *Journal of Periodontology*; U.S. Department of Health and Human Services. Oral Health in America. 43-51.

<sup>7</sup>C. Mukashyaka, B. Uzabakiriho, C. L. Amoroso, T. Mpunga, J. Odhiambo, P. Mukashema, B. A. Seymour J. de D. Sindayigaya, B. L. Hedt-Gauthier (2015). Dental caries management at a rural district hospital in northern Rwanda: a neglected disease: 5.

<sup>8</sup>J. Mutumuliza, F. Rwema, S. Rulisa, J. Ntaganira, Prevalence and associated risk factors of periodontal disease among adults attending dental department in Rwanda Military Hospital (Rwanda): a cross sectional study. *Dent Open J.* 2015; 2(4): 105- 111.

<sup>9</sup>Andreasen JO, Andreasen FM. (2002). Dental trauma: In *Community Oral Health*: London: Elsevier Science Limited: 4-9.

### *2.1.1. Nutrition and Oral Health*

Proper nutrition means eating a well-balanced diet so that your body can get nutrients needed for good health and wellness. If your diet is low in nutrients, your mouth may have a more difficult time resisting infection. This may contribute to periodontal disease, a major cause of tooth loss in adults<sup>10</sup>.

Keeping teeth healthy depends on several factors. To maintain a balanced diet, people should eat a variety of foods from each of the five major food groups and limit the number of snacks you eat. If they do snack, they should choose nutritious foods such as cheese, raw vegetables, plain yogurt or a piece of fruit. Foods eaten as part of a meal cause less harm because the saliva released helps wash foods from the mouth and lessen the effects of acids<sup>11</sup>.

### *2.1.2. Oral Health: A Window of Overall Health*

Understanding how the mouth can affect the body helps to understand what can go wrong in the first place. Oral health is more important than you might realize. Get the facts about how the health of your mouth, teeth and gums can affect your general health. Like many areas of the body, the mouth is teeming with bacteria most of them harmless. Normally the body natural defenses and good oral health care, such as daily brushing and flossing, can keep these bacteria under control. However, without proper oral hygiene, bacteria can reach at the levels of overall health<sup>12</sup>.

### *2.1.3. Adult Oral Health*

The life-stage of older adulthood has considerable variations depending on the age and underlying genetic and medical conditions. Frailty, both physical and neurological, in older people represents the move from independence to dependence. This can impact on oral health as well as reduced capacity to perform oral hygiene on a daily basis. The risk of periodontal diseases also increases with age. Reduced income and affordability in retirement also increases the risk of oral disease<sup>13</sup>.

### *2.1.4. Total Body Health*

It's not an easy jump to make between having clean, well-cared for teeth and being healthy overall, however science continues to find links between oral and general health. For example women with gum disease show a greater incidence of pre-term, low-birth-weight babies. People with poor oral hygiene show an increased risk of developing heart disease, while infections of the mouth pose serious risks to other major organs and chewing problems can lead to intestinal failure, irritable bowel syndrome and other digestive disorders<sup>14</sup>:

## **2.2. Oral Disease among Adults People**

Oral disease is largely preventable. Many older adults, however, experience poor oral health. Oral diseases can have an impact on many aspects of general health and health conditions can in turn have an impact on oral health<sup>15</sup>.

### *2.2.1. Dental caries*

Caries remains a major oral health problem among the elderly for various reasons: the increase in treatment and maintenance of teeth rather than their extraction, age-related salivary changes, a poor diet, exposure of the root surface by gingival recession, and a greater likelihood of drug treatment with xerostomia as a side effect.

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<sup>10</sup>Andreasen JO, Andreasen FM. (2002). Dental trauma: in *Community Oral Health*: London: Elsevier Science Limited: 4-9.

<sup>11</sup>Shaw W. (2002). Dentofacial irregularities: in *Community Oral Health*: London: Elsevier Science Limited: 11.

<sup>12</sup>World Health Organization. (2002). Global Strategies to Reduce the Health Care Burden of Craniofacial Anomalies. Geneva: World Health Organization.

<sup>13</sup>The World Oral Health Report. Yee R, Sheiham A. (2003) The burden of restorative dental treatment for children in third world countries. *International Dental Journal* : 9.

<sup>14</sup>World Health Organization. Oral Health Surveys. (2000).World Health Federation Dentaire Internationale/World Health Organization. Global goals for oral health in the year. Basic Methods. 4th ed. Geneva: 7.

<sup>15</sup>Kasusu Klint Nyamuryekung'e (2012). Health and oral health related knowledge, attitudes and behaviors – a study of secondary school students in Dar es Salaam, Tanzania: 13.

### *2.2.2. Edentulism*

When not treated, the final stage of caries and periodontal disease is tooth loss and eventually edentulism, which is highly frequent but represents a failure of the dental care system. Edentulism is directly related to mastication and nutritional problems. Some authors proposed that it may be a good mortality predictor, and others associated it with a substantive quality of life impairment<sup>16</sup>. The problem of edentulism is accentuated when mastication function is not reestablished with dental prostheses.

### *2.2.3. Dry Mouth in the Adult People*

The greater life expectancy of populations has also increased the importance of dry mouth as a health issue. A high prevalence of xerostomia and salivary gland hypofunction has been found in vulnerable elderly people. Etiologic factors include polymedication (especially with antihypertensives, antidepressants, and antipsychotics), poor general health, female sex, and older age<sup>17</sup>.

### *2.2.4. Oral Cancer*

Oral cancer represents a major threat to the health of adults and the elderly in both high- and low-income countries. It includes lips, oral cavity, and pharyngeal cancer, and is the eighth most common cancer worldwide. Incidence and mortality rates are higher in men than in women. The prevalence increases with older age, and oral cancer is of particular concern among over-65-year-olds.<sup>18</sup>

## **2.3. Anthropo-Social Impact of Oral Diseases to Adult People**

For many people, the mouth is usually the most overlooked body part in terms of wellness, yet oral hygiene can be crucial to one's overall health<sup>19</sup>.

### *2.3.1. Anthropo-Social Impact on General Health*

Oral disease places a considerable burden on older people, their families and the community. It affects individuals, their general health, functioning and quality of life, and the community through health system and economic costs.

Poor oral health is linked to increased risk of cardiovascular disease, stroke and aspiration pneumonia. Chronic oral infection can complicate the medical management of health illnesses, such as diabetes, chronic heart failure, and respiratory diseases. If a person has any signs of oral disease or dysfunction that impact on their general health and wellbeing they should be referred to their oral health service provider.

Dental problems in adult people are a common cause of speech impairment, eating difficulties, pain when eating, and/or signs of mouth discomfort, tooth loss and poorly fitting dentures. Oral infections can result in poor nutrition and persistent mouth pain. They can affect appetite, food enjoyment and ability to chew, which impacts on food intake and food selection. Poor oral hygiene significantly increases the risk of patients with swallowing impairments (dysphagia) developing pneumonia<sup>20</sup>.

### *2.3.2. Anthropo-Social Impact on Daily Living Activities*

At the individual level, poor oral health can go beyond infection and tooth loss and can include destruction and degeneration of the tissues of the mouth. Poor oral health affects people's everyday lives by causing pain and suffering, disrupting sleep patterns, and affecting the ability to eat and speak, sleep well, socialize and feel happy with their appearance. This in turn affects self-esteem, social interaction, the ability to work, and reduced quality of life.

### *2.3.3. Economic Impact*

Economic impact of oral health assesses direct and indirect costs associated with dental treatment from the perspectives of the patient, practitioner, purchaser, and society. Because a large proportion of dental expenditures are out-of-pocket, even among those persons with private dental insurance, the

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<sup>16</sup>Walmsley, A. Damien; Robinson, Peter G.; Glenny, Anne-Marie (2014). "Powered versus manual toothbrushing for oral health". *The Cochrane Database of Systematic Reviews*: 21-22.

<sup>17</sup>Muhammad S, Lawal M. (2010). Oral hygiene and the use of plants. *Sci Res Essays* :88-95.

<sup>18</sup> <https://www.medicalnewstoday.com/articles/165331.php> (Retrieved on 14th February 2018).

<sup>19</sup>Reibel J. (2003). Tobacco and oral diseases: an update on the evidence, with recommendations. *Med PrincPract*, 22-32.

<sup>20</sup> <https://www.absolutedental.com/10-health-issues-caused-by-bad-oral-health/> (Retrieved on 18th May 2018).

cost of dental care can often be an important patient benefits. Balancing multiple dimensions of dental care outcomes, such as freedom from pain, aesthetics, positive self-image, function, and tooth longevity, against cost is a serious issue for most patients<sup>21</sup>.

#### **2.4. Anthropo-Social Impacts of Oral Health on the Community**

The way in which you care for your teeth and gums has a powerful impact on your overall anthropo-socio economic, anthropo-cultural and anthropo-environmental conditions. With the mouth being a major gateway into the body, oral health impacts on the general wellbeing and quality of life of the body in general<sup>22</sup>.

##### *2.4.1. Anthropo-Socio-Economic Status*

The link between the general health and anthropo-socio-economic status is well established. There is also a body of evidence showing that poor oral health is associated with low anthropo-socio-economic status or deprivation<sup>23</sup>. In both high and lower income countries around the world, low anthropo-socio-economic status was significantly associated with increased oral cancer risk, even after adjusting for potential behavioural confounders.

##### *2.4.2. Anthropo-Cultural Oral Health Condition*

Anthropo-cultural oral health condition influences overlap with dental health literacy, anthropo-socio-economic status, and personal experience in complicated ways, but it is possible to identify some common beliefs and care-seeking practices around oral health that are anthropo-culturally-based and significantly different from the western dental medicine model<sup>24</sup>. Four domains shape people's anthropo-cultural beliefs and practices related to oral health: help-seeking and preventive care, oral hygiene practices, beliefs about teeth and the oral cavity, the use of folk remedies.

##### *2.4.3. Anthropo-Environmental Condition*

New settlement, moving from new place to another can be a very stressful experience, and there are quite a lot of stress-related dental health problems. The change in environment affects your oral health for a number of reasons. First of all, it can put a real strain on your immune system. A tired immune system can lead to the appearance of canker sores or cold sores. It can also lead to teeth grinding, also known as bruxism. While there are some medical treatments for the first two, the only way to get rid of bruxism is to reduce stress levels<sup>25</sup>.

Changes in diet can also affect your oral health. When you move to a different country, ingredients you're going to find there, and even the balance of nutrients in basic ingredients, can be different. It can take a while for your body to adjust to these changes, even if they seem insignificant at first. If you've already had problems due to sensitive teeth and gums, you probably know how easy it is to trigger them. You'll also probably encounter different eating habits when you move to a new location. If you want to get settled in the country you've moved to, you are going to adopt the local habits as well. But you should do this in stages. If customs are very different from the ones you're used to, your body might not be ready for the switch<sup>26</sup>.

#### **2.5. Preventive Strategies for Oral Health Care**

The community improves the oral health and quality of life through enabling its members to have control over factors that affect their oral health, and providing them with the opportunity to participate actively in making decisions that may affect their oral health and well being<sup>27</sup>.

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<sup>21</sup> <http://jdh.adha.org/content/jdenthyg/79/1/11.full.pdf> (Retrieved on 21 June 2018)

<sup>22</sup>Shay K, Berkey D, Beck J, et al. (2001).The First International Conference on rural Ageing: A Global Challenge: Proceedings of the oral health component. Charleston, West Virginia, USA, 2000. *International Dental Journal*; 51:177-264.

<sup>23</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3285522/> (Retrieved on 20th May 2018).

<sup>24</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3285522/> (Retrieved on 20th May 2018).

<sup>25</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3285522/> (Retrieved on 20th May 2018).

<sup>26</sup>Shay K, Berkey D, Beck J, et al. (2001).The First International Conference on rural Ageing: A Global Challenge. Proceedings of the oral health component. Charleston, West Virginia, USA: *International Dental Journal*; 51:177-264.

<sup>27</sup>Slade GD et al.( 2006). Conference summary: assessing oral health outcomes – measuring health status and quality of life: *Community Dental Health* :3-7.

### *2.5.1. Oral Health Policy*

As emphasized in the World Oral Health Report 2003 (14), WHO sees oral health as integral to general health and as a determinant for quality of life. The interrelationship between oral health and general health is particularly pronounced among older people primarily because several oral diseases have risk factors in common with chronic diseases. Today, few countries have clearly stated policies and goals specifically for oral health promotion and oral health care for older people<sup>28</sup>.

Generally speaking, oral health policies and programmes constitute an integral part of national and community health programmes. Thus, in many countries – developing and developed – strengthened analysis for policy and analysis of policy are urgently needed for advocacy, legislation, goal setting, and design of public oral health programmes for old-age persons.

Public health programmes apply the appropriate strategies to older people; this group includes the physically and economically vulnerable, the homebound, the institutionalized as well as the active. Where active older people are concerned, outreach activities may target social environments such as clubs, recreational centres, libraries, health care centres and pharmacies<sup>29</sup>.

### *2.5.2. Oral Health Care*

The industrialized oral health services were established and most oral health care providers were educated, before geriatric dentistry was developed as an academic discipline. It is now necessary to reorient these services towards prevention and to deliver the appropriate care to meet the diversified needs of the large and growing heterogeneous adult people<sup>30</sup>.

Affordable oral health care organized may ensure adequate early detection, prevention and treatment for all seniors as well as other aged groups. It remains a challenge to health authorities in several developing countries to establish prevention-oriented oral health systems based on the Primary Health Care Approach. Community models for outreach service and provision of essential oral health care must be implemented urgently, particularly in poor community.

#### *a) Preventive Visits*

Maintaining good oral health takes repeated efforts on the part of the individual, caregivers, and health care providers. Daily oral hygiene routines and healthy lifestyle behaviors play an important role in preventing oral diseases. Regular preventive dental care can reduce the development of disease and facilitate early diagnosis and treatment. One measure of preventive care that is being tracked is the percentage of adults who had their teeth cleaned in the past year<sup>31</sup>.

#### *b) Screening for Oral Cancer*

Oral cancer detection is accomplished by a thorough examination of the head and neck; an examination of the mouth including the tongue, the entire oral and pharyngeal mucosal tissues, and the lips; and palpation of the lymph nodes. Although the sensitivity and specificity of the oral cancer examination have not been established in clinical studies, most experts consider early detection and treatment of precancerous lesions and diagnosis of oral cancer at localized stages to be the major approaches for secondary prevention of these cancers<sup>32</sup>.

#### *c) Tobacco Control*

Tobacco use has a devastating effect on the health and well-being of the public. The use of any form of tobacco-including cigarettes, cigars, pipes, chewing tobacco, and snuff-has been established as a

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<sup>28</sup> [http://www.who.int/oral\\_health/media/en/orh\\_report03\\_en.pdf](http://www.who.int/oral_health/media/en/orh_report03_en.pdf) (Retrieved on 25th May 2018).

<sup>29</sup> Strydonck D.A., Slot D.E., Velden U., Weijden F., (2012) “Effect of a chlorhexidinemouthrinse on plaque, gingival inflammation and staining in gingivitis patients: a systematic review”. *Journal of Clinical Periodontology.*, 39(11):1042–1055.

<sup>30</sup> Van Leeuwen M, Slot D, Van der Weijden G. (2011). “Essential oils compared to chlorhexidine with respect to plaque and parameters of gingival inflammation: a systematic review”. *Journal of Periodontology*; 82(2):174–194.

<sup>31</sup> Harrison Z, Johnson A, Douglas C. (2004). “An in vitro study into the effect of a limited range of denture cleaners on surface roughness and removal of *Candida albicans* from conventional heat-cured acrylic resin denture base material”. *Journal of Oral Rehabilitation*, 31(5):460–467.

<sup>32</sup> [http://www.who.int/oral\\_health/media/en/orh\\_report03\\_en.pdf](http://www.who.int/oral_health/media/en/orh_report03_en.pdf) (Retrieved on 25th May 2018).

major cause of oral and pharyngeal cancer<sup>33</sup>. The evidence is sufficient to consider smoking a causal factor for adult periodontitis one-half of the cases of periodontal disease in people may be attributable to cigarette smoking. The goal of comprehensive tobacco control programs is to reduce disease, disability, and death related to tobacco use by preventing the initiation of tobacco use among young people, promoting quitting smoking among young people and adults, eliminating nonsmokers' exposure to second hand tobacco smoke, identifying and eliminating the disparities related to tobacco use and its effects among different population groups<sup>34</sup>.

*d) Oral Health Education*

Oral health education for the community is a process that informs, motivates, and helps people to adopt and maintain beneficial health practices and lifestyles; advocates environmental changes as needed to facilitate this goal; and conducts professional training and research to the same end. Although health information or knowledge alone does not necessarily lead to desirable health behaviors, knowledge may help empower people and communities to take action to protect their health.

*e) Provision of Dental Services*

The oral health care workforce is critical to society's ability to deliver high-quality dental care. Effective health policies intended to expand access, improve quality, or constrain costs may take into consideration the supply, distribution, preparation, and utilization of the health care workforce. Medicaid is the primary source of health care for low-income families, the elderly and disabled people. Dental services are a required service for most medicaid-eligible individuals. Services include, at a minimum, relief of pain and infections, restoration of teeth, and maintenance of dental health.

*f) Community and Health Centers Programs*

Government may provide financial access to care, comprehensive primary care, culturally competent primary and preventive emergency dental care, pharmacy, and assure access to behavioral health services and to medically underserved populations and vulnerable populations in rural and urban underserved communities<sup>35</sup>.

*g) Research for Oral Health Of Adult People*

There is no doubt that oral health professionals and researchers in recent years have become more aware of and pay more attention to adult people as a group<sup>36</sup>. Epidemiological research of oral health status among older people has been carried out in several industrialized countries, but it is hardly undertaken in most developing countries.

### **3. RESEARCH METHODOLOGY**

In this research, the size of population stands at 21835 inhabitants. From the target population of 132 adult people we withdrew a sample of 56 respondents.

#### **3.1. Sampling Procedure and Techniques**

According to A. Bouchard when the universe of a survey is inferior or equal to 10,000 of individuals that correspond to the sample of 96 within a marginal error of 10% and a precision of 95% times out of 100, he uses the below formula:

Given N=the height of finished universe

n=the height of sampling for the finished universe 96

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<sup>33</sup>Inuma T, Arai Y, Abe Y, Takayama M, Fukumoto M, Fukui Y, et al.(2015). "Denture wearing during sleep doubles the risk of pneumonia in the very elderly". *Journal of Dental Research*: 36.

<sup>34</sup>Stafford GD, Arendorf T, Huggett R. (1986) "The effect of overnight drying and water immersion on candidal colonization and properties of complete dentures". *Journal of Dentistry*, 14(2):52-56.

<sup>35</sup>Akrebs, W. A.(2006). "Effects of dental flossing and tooth brushing on gingival bleeding" *Journal of Periodontology*, 86-91.

<sup>36</sup>Haas AN, Wagner TP, Muniz FWMG, Fiorini T, Cavagni J, Celeste R.K. (2016) "Essential oils-containing mouthwashes for gingivitis and plaque: Meta-analyses and meta-regression". *Journal of Dentistry*: 7-15.

nc= The corrected sampling

Note that 96 is a number used by A. Bouchard which represents the height of a sample for finished universe. As we work on the finished universe, the formula is applicable to our study as developed below<sup>37</sup>:

$$nc = \frac{N \times n}{N + n}$$

$$nc = \frac{132 \times 96}{132 + 96} = 56.07 \cong 56$$

Fifty-six (56) equals to the sample of our study that represents our respondents.

### **3.2. Selection Criteria of Respondents**

Respondents must be at least 25 years old. Respondents are the population of Nyamabuye Sector living with poor oral health. Those who met the criteria above were selected to participate in this study through questionnaire and focus group discussion.

During the study three (3) key informants have been selected for interview including Executive Secretary of Sector, Sector Social Affairs Officer and one community health worker. In our research both qualitative and quantitative methods were used. Finally, as techniques, we used the questionnaire, interview, and the documents review.

The questionnaire has been administrated to 56 respondents. Hennink, M., Hutter, I., and Bailey, A. say that questionnaire is a formal list of questions formed to get the facts<sup>38</sup>. Through the meeting headed by Secretary Executive of Sector people who were eligible in this research were selected in order to give their contribution on this research.

In this work the interview has been addressed to our key informants mentioned above. As says Korthari the interview is a systematic conversation between the researcher and respondents initiated for obtaining information relevant to a specific research<sup>39</sup>. It reveals the feelings and determines the attitudes and reactions of the people to a particular event or object in a planed manner<sup>40</sup>.

After data collection, we resorted to the analytical method which helped us to analyze collected data in order to achieve objectives of the study.

## **4. DATA ANALYSIS AND INTERPRETATION OF FINDINGS**

The profile of respondents repose on their age, sex, marital status, educational background and occupation.

The age of respondents helps to know different categories of the people of Nyamabuye Sector. As it was noticed in this research, the big number of people affected with oral diseases is adult people where 36% of respondents are 45-54 years old. Another category of respondents is estimated at 20% with 35-44 years old. Another significant category of respondents is situated in 55 years old indexed with 23%. The youngest group of respondents is estimated with 21% with 25-34 years old.

From these findings, the problem of oral diseases to people of Nyamabuye Setor is concentrated in adult people the reason why our research was carried out to know how adult people in Nyamabuye Sector live and cope with oral diseases caused by bad or neglected oral health in their everyday life.

The marital status of respondents determines the life model they live. It allows analyzing different problems they meet according to their status. 61% respondents are married or living in couple, 29% are widows and single are quoted to 11% of respondents. The big number of respondents affected

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<sup>37</sup>Bouchard A. (1992). *Applied statistics to Geography*.Legonette, Paris, 47.

<sup>38</sup>Hennink, M., Hutter, I., and Bailey, A. (2011). *Qualitative research methods*. Los Angeles, CA: Sage,79.

<sup>39</sup>Korthari.(2010). *An introduction to qualitative research synthesis: Managing the information explosion in social science research*. New York, NY: Routledge, 62.

<sup>40</sup>Hill, C. E. (2012). *Consensual qualitative research: A practical resource for investigating social science phenomena*. Washington, DC: American Psychological Association, 62.



with oral diseases is married or living in couple. The insufficient hygiene oral cavity is a big issue for themselves and the community in general. Some symptoms caused by bad hygiene and their effects among adult people in Nyamabuye Sector were identified.

Concerning educational background of respondents, the results show that a big number of respondents are in the category of illiterate people. 8% are illiterates, 57% have only a primary school level, 11% are ranged among people who attended VTC while 24 % attended secondary school. In fact, this means that people who have a low level of education seems to be more likely to be vulnerable.

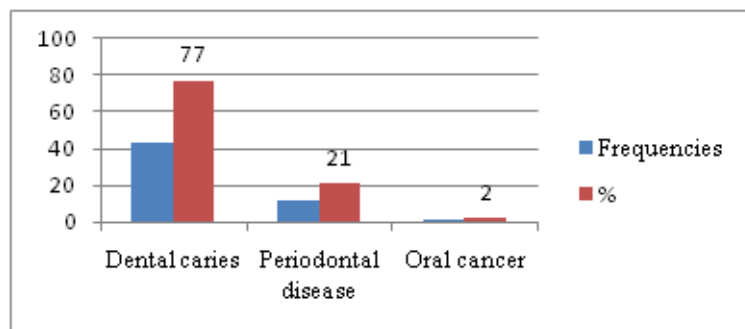
Regarding occupation of respondents, 84% are farmers; 9% are employees in private and public sector while 7% of respondents don't have any occupation. In fact, Nyamabuye Sector is in rural area where main activities of the population are the subsistence farming.

**4.1. Questions Regarding the Topic of the Research**

The following are the data collected from the questionnaire administrated to 56 respondents.

*4.1.1. What are the Diseases which Affect People with Inadequate Oral Hygiene?*

The graph below shows views of respondents on oral diseases that affect adult people in Nyamabuye Sector.



**Graph1.** Diseases affecting people with inadequate oral hygiene

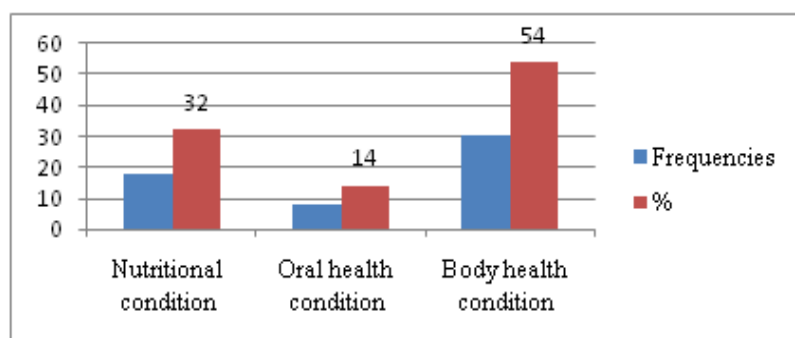
*Source: Primary Source May, 2018*

As illustrated by this graph, 77 % of respondents are infected with dental caries. As illustrated by this graph, 21 % of respondents showed periodontal diseases while 2% of respondents demonstrated oral cancer.

Respondents said that different social economic and daily life problems are the big issue due to bad oral hygiene. As said by in charge of social affairs and the selected executive secretary of cell in Nyamabuye Sector both confirmed dental caries being the big issue of community development among adult people affected by oral diseases.

*4.1.2. What are Indicators of Oral Hygiene among People in Nyamabuye Sector?*

According to the views of our respondents, some indicators of oral health due to the hygiene of teeth, tongue and month in general are identified:



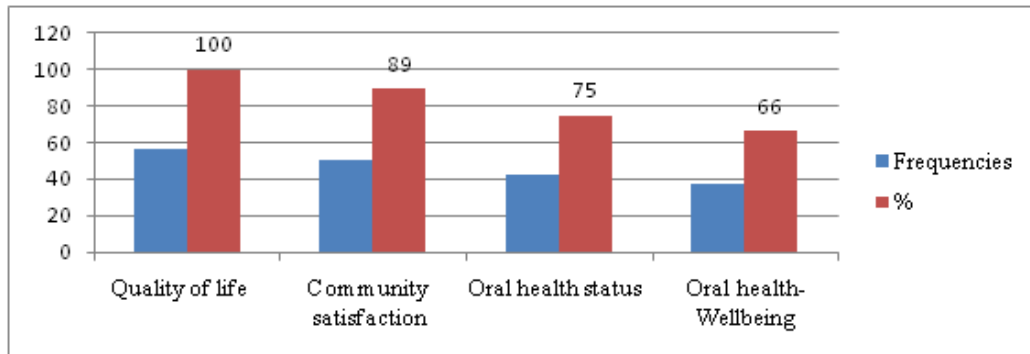
*Graph 2.* Indicators of oral hygiene among people in Nyamabuye Sector

*Source: Primary data May, 2018*

According to the above graph, 54% showed body health condition, 32% of the respondents demonstrated nutrition condition while 14% of respondents confirmed oral health condition.

**4.1.3. What are Anthropo-Social Impacts of Oral Hygiene among People of Nyamabuye Sector?**

Some impacts of oral health were identified due to the hygiene of teeth, tongue and month hygiene in general on adult people in Nyamabuye Sector.



**Graph3.** Anthropo-social impacts of oral hygiene among people of Nyamabuye Sector

*Source: Primary data May, 2018*

According to this graph concerning impacts of oral hygiene among people of Nyamabuye Sector, 100% showed quality of life, 89 % of respondent demonstrated community satisfaction (contentment of taking care of teeth) and 75% showed oral health status while 66% of respondents confirmed oral health wellbeing.

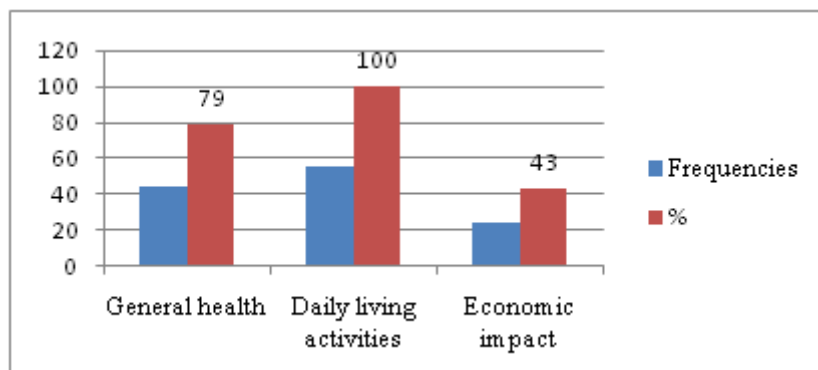
In this research to maintain and keep care of oral hygiene is the measure taken for adult people of Nyamabuye Sector to protect their life from different diseases due to the bad or neglected oral hygiene in their daily life.

**4.1.4. What are Anthropo-Social Impacts of Bad Hygiene among People in Nyamabuye Sector?**

Oral disease constitutes a considerable burden on older people, their families and the community as shown in graph bellow.

*a) Anthropo-Social Impact of Bad Oral Hygiene on People in Nyamabuye Sector*

For many people especially to people of Nyamabuye Sector, the hygiene of the mouth is integral part of our body and helps to protect our body and our life in general. To adult people it is the special cases where people are invited to care and protect their life through oral health strategies.



**Graph4.** Anthropo-social impact of oral hygiene on people in Nyamabuye Sector

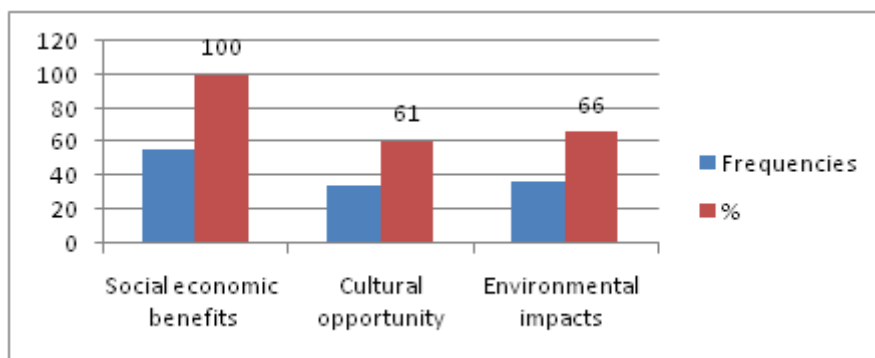
*Source: Primary data May, 2018*

As shown by the above graph, 100% of respondents demonstrated the impacts of oral hygiene on daily life activities, 79% showed general health while 43% demonstrated economic impact.

As said the social affairs officer and executive secretaries of cells, oral diseases could impact the whole community in terms of general health, daily living activities and economic conditions.

*b) Anthropo-Social Impact of Oral Hygiene on Community*

The way in which you care for your teeth and gums has a powerful impact on your overall anthropo-socio-economic, cultural and environmental condition within the community.



**Graph5.** Anthropo-social impact of oral hygiene on community

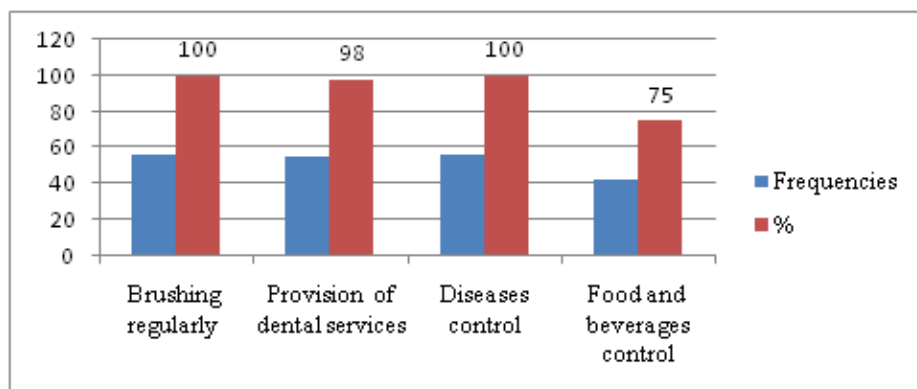
*Source: Primary data May, 2018*

In the graph above oral health benefits of people of Nyamabuye Sector are identified during this research: 100% of respondents showed anthropo-social economic benefits, 66% of respondents demonstrated environmental impacts while 61% of respondents confirmed cultural opportunity.

As said during the interview by social affairs officer and executive secretary of Nyamabuye Sector anthropo-social economic benefits are results of oral health practice because this leads the people to the wellbeing and quality of life.

*4.1.5. What are Preventive Strategies for Oral Health Care in Nyamabuye Sector?*

To improve the oral health and quality of life of the people require different strategies and in order to help people to prevent some negative impacts that may be caused by bad practices of oral hygiene, the graph bellow shows some of those strategies.



**Graph6.** Preventive strategies for oral health care in Nyamabuye Sector

*Source: Primary data May, 2018*

As illustrated by this graph, 100% of respondents in order to prevent some oral diseases confirmed brushing regularly their teeth and diseases control, 98% of respondents showed provision of dental services while 75% confirmed food and beverages control.

In this research executive secretaries and social affairs officers of Nyamabuye sector confirmed brushing regularly their teeth and diseases control as preventive strategies for oral health.

**5. CONCLUSION**

Concerning the first objective that was to assess indicators of oral health among people in Nyamabuye Sector, we found indicators of oral health where by 54% of our respondents showed body health condition, 32% demonstrated nutrition condition while 14% of respondents confirmed oral health condition.

The second objective was to examine the impacts of oral health among people in Nyamabuye Sector. Results showed that 100% of respondents demonstrate the impacts of oral hygiene on daily living activities, 79% showed general health while 43% demonstrate anthropo-socio-economic impact.

The third objective was to identify preventive strategies of oral health care among adult people in Nyamabuye Sector. As preventive strategies, results from respondents showed that 100% of respondents confirmed brushing regularly their teeth and diseases control, 98% of respondents showed provision of dental services while 75% confirmed food and beverages control.

According to results found during data collection, the strategies should be adopted to reduce-problems of oral diseases in Nyamabuye Sector. In order to prevent some oral diseases 100% of respondents confirmed that they brush regularly. 98% of respondents showed provision of dental services while 75% confirmed food and beverages control. As noticed, 77 % of respondents are infected with dental caries, 21 % of respondents showed periodontal diseases while 2% of respondents demonstrated oral cancer.

According to results, anthropo-social impact of oral health was identified; 100% of respondents demonstrated impacts of oral hygiene on daily living activities, 79% showed general health while 43% demonstrated economic impact. And some indicators of oral diseases were body health condition with 54% and, 32% of respondents demonstrated nutrition condition while 14% of respondents confirmed oral health condition.

Finally, the results collected and presented confirm that oral health care reinforce the anthropo-social wellbeing of citizens of Nyamabuye Sector.

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