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Oral Health Preventive Measures and Barriers Among Patients Attending Remera Campus Teaching Dental Clinic

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Abstract

Oral diseases, especially dental caries and gum disease, are among the top ten causes of disease in Rwanda, with 64.9% of Rwandans suffering from dental caries and 54.3% untreated. Practising preventive oral health measures is very essential for maintaining good oral health and preventing oral diseases (8). However, despite the availability of preventive measures, many individuals, including patients attending dental teaching clinics like the Remera campus dental teaching clinic, encounter barriers that hinder their ability to practice these measures effectively.

Objective of the Study

The main objective of the study was to identify Oral Health Preventive measures and Barriers among Remera Campus Dental Teaching Clinic patients.

Methodology

The study design was a cross-sectional prospective study where the target population were all patients aged between 18 and 60 years old attending Remera campus dental teaching clinic and who agreed to consent during the project period. The convenience sampling technique was used with a sample size of 158, as calculated using the formula. An adopted and modified structured questionnaire was used as the data collection instrument with close-ended questions, and the collected data were entered into Microsoft Excel and later analysed using computer software, Statistical Package for the Social Sciences (SPSS) version 25.

Results

Among 158 participants, 85 were females whereas 73 were male. The study findings showed the majority (93.7%) of the participants had poor practice while 6.3% had good practice of oral health preventive measures. A significant association was found between oral health preventive measure practice and the level of knowledge ($p=0.036$), while it had no significant association with access to oral health information, cost and affordability, or motivation of the patients.

Conclusion

Based on the results of this study, patients with good knowledge are more likely to engage in good practice of oral health preventive measures.

Keywords

Oral Health Preventive; Remera Campus; Barrier; Poor Oral Health

Introduction

Definition of Key Terms

Oral health preventive measures are approaches based on common protective factors such as brushing, flossing, fluoride rinse, healthy nutrition, reduction of sugar consumption, cessation of tobacco use and limiting the consumption of alcohol to maintain good oral health [1]. Barrier is something such as a rule,

law, or policy that makes it difficult or impossible for something to happen or be achieved [2]. Oral diseases, particularly dental caries and periodontal disease, are, among Rwanda's top 10 causes of morbidity whereby, 64.9% of the Rwandan population is affected by dental caries with 54.3% going untreated [3]. Improving preventive oral health measures through community-based approach will aid in the reduction of the burden of oral diseases [4]. Taking preventive oral measures is essential to maintaining dental health and preventing oral diseases [5].

Cost is a major factor that hampers the sustainability of preventive measures all over the world. According to a study conducted in Tehran, Iran, the high cost of dental services including travel costs when going for dental appointments and lack of oral preventive service insurance coverage all contribute to cost being a barrier [6]. However, decision-makers, administrative authorities and insurance organizations have an important role to play in improving access to preventive dental services by providing the necessary financial resources, directing available resources to preventive treatment and regular check-ups [7].

Accessibility to information on preventive oral health measures remains also a potential barrier to practicing preventive oral health measures as reported by a study done in Cairo Egypt with the purpose of analyzing the efficiency of video and posters training programs in prevention of dental caries. It was found that audio-visual aids such as films and posters are useful instruments in boosting patient curiosity and engagement in oral health education. This could be improved by encouraging the use of dental posters in patient-friendly languages [8]. Lack of knowledge and motivation towards practicing preventive dentistry is a basic barrier as reported in a study from Greece where patient's unwillingness to pay for dental sealants was related to the lack of knowledge on fissure sealants [9]. Knowledge on preventive dentistry should be enhanced through oral health promotion and patient's motivation through oral campaigns. This study will be the first to examine the barriers faced by patients in practicing preventive dental measures in Rwanda. Many oral diseases are preventable through preventive measures including dental sealants, early and routine dental visits, good home care practices (brushing and flossing) [10]. Even though these measures are well known there are potential barriers faced by patients all over the world in practicing these measures. A study done in India found that oral health care and hygiene information provided by media tends to focus on general health rather than oral health trends which impacts accessibility to oral health information [11]. The lack of patient knowledge about caries prevention and lack of information about dental visits are the biggest patient-related barriers to preventive dentistry [12]. When socioeconomic status (SES) and oral health care affordability are coupled, it indicates that people from lower socioeconomic status access oral health care less frequently [13].

In Rwanda, no studies have been conducted yet to investigate the barriers faced by patients in adopting preventive oral health measures. This study aims to identify and analyze the barriers faced by patients attending Remera campus dental teaching clinic in adopting recommended oral health preventive measures. By understanding these barriers, the research intends to provide insights that can inform targeted interventions and strategies to enhance patient's adherence to oral health preventive practices.

Aim and Objectives

To identify barriers faced by patients attending Remera campus dental teaching clinic in practicing

preventive oral health measures.

Specific objective

1. To determine the level of practice of oral preventive oral health measures in patients attending Remera Campus Dental Teaching Clinic.
2. To identify barriers faced by patients attending Remera Campus Dental Teaching Clinic in practicing oral health preventive measures.

Methodology

Sample size Determination Exclusion Criteria

1. Patients who could neither communicate in neither English nor Kinyarwanda.
2. Individuals whose age didn't fall into 18-65 years category.
3. Patient who didn't sign the consent.
4. Patient who could not complete the survey.
5. Patient who had mental disability.

Sampling Strategy

A convenience sampling technique was used, where all patients who satisfy the inclusion criteria and who agreed to sign consent of participation in the study during data collection period were recruited.

Data Collection Methods

Research data were collected using a structured questionnaire then did a pilot study on 10% of respondents. The data for this study was collected through Google forms, where we assisted the patients in filling out the forms.

The questionnaire will be written in Kinyarwanda and English, the language that is convenient to all the respondents. The final version of the questionnaire consisted of three parts; part one assessed socio demographic data, which includes age, gender, educational level, place of residence, socio economic status, education level, medical insurance and type of medical insurance. Part two assessed the level practice of oral health preventive measures; options in this item include "yes" "No" and multiple choices questions. Part three assessed the barriers faced by patients in practicing oral health preventive measures; options in this item include "yes" "no" and multiple-choice questions.

Data Analysis

All data responses of 158 participants were collected entered in Microsoft excel and analyzed using computer software; Statistical package of science (SPSS) version25. Descriptive statistics such as frequencies and percentages were calculated. Frequency distribution tables with percentages were used. Data were analyzed according to specific objectives of the study which are to assess the level of practice of oral preventive measures and identifying barriers faced by patients attending Remera campus dental teaching clinic in practicing oral health preventive measures and each correct responses was given a score.

Variable Scoring System

The place of residence was classified into urban and rural where all respondents who scored one for “Kigali city” were considered urban residence while respondents who scored one in southern, eastern, northern or western province corresponded to rural residence.

Poor Oral Health Preventive Measures Practice

There were 9 items to assess oral health preventive measure practices. Questions from behavioral practice were summed up by providing a ‘one’ score for good and a ‘zero’ for poor practices for calculation of poor and good oral health preventive measure practices. The total score was obtained from 9 practice questions. Cut-off scores below average/mean (mean=5.5) were categorized as poor practice [37].

Good Oral Health Preventive Measures Practice

Cut-off scores equal to and more than the mean were categorized as good oral hygiene practice [37]. Each question answered correctly, scored to one mark. On the level of practice, the overall score of each participant was calculated and converted into percentage. And the results were classified as good practice and poor practice corresponding.

Barriers to oral health preventive measures were listed and grouped into knowledge, access to oral health information, motivation, cost and affordability barriers. Each barrier the participant faced was scored “one” and “zero” when the participant has not faced the barrier [38]. The group's individual scores were added together to produce a composite score. In the data, the respondents were divided into good and bad knowledge groups in the research results. Participants who scored 50% or more in the knowledge questions were classified as the good knowledge group, and those who scored 40% or less were considered the poor knowledge group [33]. Respondents were divided into two groups according to whether or not they had access to oral health information: those with a score of one or more reported receiving the information, while those with a score of zero reported no information. Based on the level of motivation, the respondents were divided into two groups: 0% motivated and 100% unmotivated.

Limitation of the Study

The study was done in a single dental clinic where only representatives of the population were seen. The participant's memory to recall, social desirability bias might happen due to false response by the time with regard to the moment of filling the form.

Ethical Consideration

This study was approved by ethics and research committee of school of dentistry UR CMHS. Ethical clearance provided by UR CMHS Institutional Review Board (IRB). Prior to data collection, the permission from Remera campus dental teaching clinic was granted. Participation with in the study was voluntary and no money was provided to participants. The information given by participants was kept with confidentiality.

Results

This chapter presents the results of the study done at Remera campus dental teaching clinic to identify barriers faced by patients in practicing oral health preventive measures.

Sociodemographic Data of Patients

This study's participants were 158 respondents of which 53.8% were females and 46.2% were males. Also 26.6% of these participants were aged between 18-25 years; 37.3% were aged between 26-35 years old; 26.6% were aged between 36-50 years old while 9.5% were aged between 51-60 years old. Regarding the residence of participants 57.6% live in urban area while 42.2% live in rural areas as shown in (Table 1).

Items	Variables	Frequency (N)	Percentage (%)
Gender	Female	85	53.8
	Male	73	46.2
	Total	158	100
Age group	18-25	42	26.6
	26-35	59	37.3
	36-50	42	26.6
	51-60	15	9.5
	Total	158	100
Residence	Urban	91	57.6
	Rural	67	42.4
	Total	158	100

Table 1: Shows socio-demographic data of participants who participated in the study.

The Level of Practice of Oral Health Preventive Measures

Most of the respondents, i.e., 96.2%, practiced brushing their teeth and 88.6% uses toothpaste. Among them, 50.6% of respondents brushed teeth for three minutes. Surprisingly, only 24.7% of participants responded that they use dental floss clean their teeth. The respondents reported use oral care aids like mouthwash 29.7%, charcoal 25.9%, chew stick 20.9%, wooden toothpick 53.2%, plastic toothpicks 82.3% and thread 25.9%. In addition, 36.1% respondents have visited a dentist in a period of less than six months and 8.9% of respondents never visited a dentist (Table 2).

	Variable	Frequency (n=158)	Percent (%)
Gender	Female	85	53.8
	Male	73	46.2
Age group	18-25	42	26.6
	26-35	59	37.3
	36-50	42	26.6

	51-60	15	9.5
Residence	Urban	91	57.6
	Rural	67	42.4

Table 2: The Practice of Oral Health Preventive Measures.

Variable	Frequency (n=158)	Percent (%)
Good practice	10	6.3
Poor practice	148	93.7

Table 3: Result of Level of Practice of Oral Health Preventive Measures.

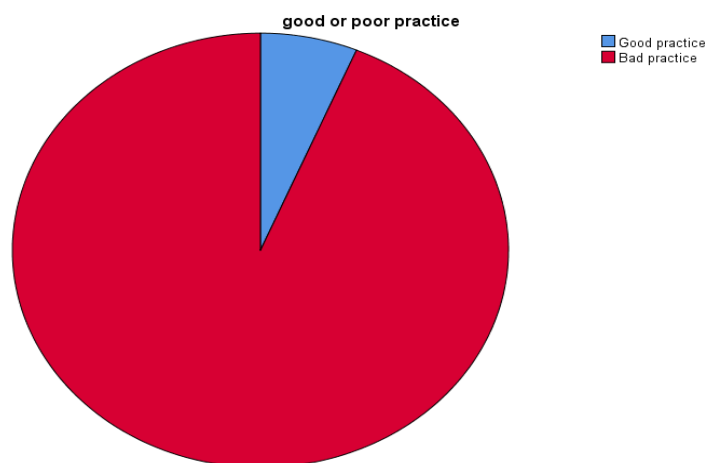


Figure 1: Good practice versus poor practice.

Barriers Faced Patients in Practising Oral Health Preventive Measures

Knowledge barrier

The findings indicate that the majority of the studied population (70.9%) has poor knowledge, while a smaller proportion (29.1%) possesses good knowledge about oral health preventive measures. (Table 4).

Variable	Frequency (n=158)	Percent (%)
Good practice	10	6.3
Poor practice	148	93.7

Table 4: Good knowledge and poor knowledge of oral health preventive measures.

The findings showed for individuals with good practice. Those with good knowledge, none of the individual's exhibit good practice, representing 0% of this subgroup. In contrast, among those with poor knowledge, all 10 individuals display poor practice, accounting for 100% of this subgroup.

For individuals with poor practice; within the group with good knowledge, 46 out of 148 individuals demonstrate poor practice, constituting 31.1% of this subgroup. Similarly, among those with poor knowledge, 102 out of 148 individuals exhibit poor practice, representing 68.9% of this subgroup, (Table 5).

Variable	Good knowledge frequency (%)	Poor knowledge frequency (%)
Good practice	10 (100%)	0 (0.00%)
Poor practice	102 (68.90%)	46 (68.90%)

Table 5: Good and poor practice relationship to knowledge about oral health preventive measures

Access to Oral Health Information Barrier

The findings showed Only 1 individual, representing 0.6% of the total, lacks access to oral health information. The vast majority, 157 individuals, which is 99.4% of the total population, have access to oral health information, (Table 6).

Variable	Frequency (n)	Percentage (%)
Lack of access to oral information	1	0.6
access to oral health information	157	99.4

Table 6: Access and lack of access to oral health knowledge.

For individuals with good practice; Among those who lack access to oral health information, none of the individuals exhibit good practice, representing 0% of this subgroup. In contrast, among those with access to oral health information, all 10 individuals display good practice, accounting for 100% of this subgroup.

For individuals with poor practice; within the group lacking access to oral health information, only 1 out of 148 individuals demonstrate poor practice, constituting 0.7% of this subgroup. Similarly, among those with access to oral health information, 147 out of 148 individuals exhibit poor practice, representing 99.3% of this subgroup, (Table 7).

	Non affording Frequency n (%)	Affording Frequency n (%)
Good practice	9 (90.0%)	1 (10.0%)
Poor practice	140 (94.59%)	8 (5.40%)

Table 7: Good and poor practice relationship to access to oral health information.

Motivation Barrier

The findings indicate the distribution of individuals based on their motivation levels. With 94.3% of the total population categorized as non-motivated and only 5.1% classified as motivated, it suggests that a significant majority of the studied population lacks motivation to practice oral health preventive measures, (Table 8).

Variable	Frequency	Percentage%
Non motivated	150	94.3%%
Motivated	8	5.10%
Total	158	100%

Table 8: Motivated and non-motivated patients.

The findings showed for individuals with good practice; among the non-motivated group, all 10 individuals exhibit good practice, representing 100% of this subgroup. In contrast, among the motivated group, none of the individuals display good practice, accounting for 0% of this subgroup.

For individuals with poor practice; within the non-motivated group, 140 out of 148 individuals demonstrate poor practice, constituting 94.6% of this subgroup. Similarly, among the motivated.

Relationship Between Good or Poor Practice and Accessibility to Oral Health Information	
Variable	Lack of access to oral health information Frequency (%)
Good practice	0(0%)
Poor practice	1(0.7%)

Table 9: Group, 8 out of 148 individuals exhibit poor practice, representing 5.4% of this subgroup.

Variable	Non motivated frequency %	Motivated frequency (%)
Good practice	10(6.32%)	0(0%)
Poor practice	140(88.6%)	8(5.06%)

Table 10: Good and poor practice relationship to motivation of patients.

Cost and Affordability Barrier

The results indicate that the majority of individuals (94.3%) are classified as non-affording, meaning they do not have the financial means to afford certain costs. Conversely, a small proportion of individuals (5.7%) are classified as affording, indicating they have the financial capacity to cover these costs. (Table 11).

Affording and Non-Affording Patients		
	Frequency	Percentage (%)
Non affording	149	94.30%
Affording	9	5.70%
Total	158	100%

Table 11: Affording and non-affording patients.

The findings showed that among the non-affording group, 9 out of 10 individuals exhibit good practice, representing 90% of this subgroup. In contrast, among the affording group, only 1 out of 10 individuals demonstrate good practice, accounting for 10% of this subgroup.

For individuals with poor practice, within the non-affording group, 140 out of 148 individuals display poor practice, constituting 94.6% of this subgroup. Similarly, among the affording group, 8 out of 148 individuals exhibit poor practice, representing 5.4% of this subgroup, (Table 12).

Relationship between good or poor practice and affordability		
Good practice	9	1
	90.00%	10.00%
Poor practice	140	8
	94.60%	5.40%

Table 12: Good and poor practice relationship to cost and affordability.

Discussion

This study's participants were 158 respondents of which 53.8% were females and 46.2% were males. Unlike the study done in Nepal, where 52% are males and 48% are female [37]. Also 26.6% of these participants were aged between 18-25 years; 37.3% were aged between 26-35 years old; 26.6% were aged between 36-50 years old while 9.5% were aged between 51-60 years old. Unlike the study done in Nigeria, where 61.3%, 30.8%, 8% were aged between 16-39 years, 40-64 years and above 65 years respectively [38].

Regarding the residence of participants 57.6% live in urban area while 42.2% live in rural areas. Unlike the study done by Okubai, where participants in urban area were 93.4%, and those in rural areas were 6.6% [39]. There was no significant association between level practice and gender $P=0.120$, age $P=0.510$ or residence $P=0.415$ of the participants this may be due to smaller sample size. The study done by Okubai, found a significant association between gender and practice oral preventive measures but no significant association with other socio-demographic characteristics was found [39]. Which is similar to the association reported [40]. Good oral hygiene practice (OHP) keeps the oral cavity clean and prevents most oral and systemic diseases [39]. In this research practice of tooth brushing was the most common

practiced oral preventive measures by (95.6%) of the respondents Unlike a study by R. chinousi, which reported about 43% brush their teeth not more than once a day [41]. Use of dental floss (24.7%) and most of participants didn't know about dental floss as oral health preventive measure similar to a study done by R.Chinousi, who reported approximately (28%) used dental floss [42] and use of mouthwash (29.7%) similar to a study done by M.Ahmed, which reported The majority of the participants, 181 (69.6%), do not use antimicrobial mouthwash [43]. Being the least utilized mean of practising preventive oral health. Respondents who had dental visits in less than 6 months were (36.1%), while (8.9%) have never visited a dentist which is different from a study done in Saudi Arabia where (24%) have never visited a dentist [15].

In this study, almost all of the participants had access to oral preventive information (99.4%), while only 0.6% had no access to oral preventive health care information. The participants of this research selected the dentist (83.5%) as the leading source of oral health information, followed by TV and radio (84.2%), the internet (58.2%), family and friends (55.7%), and brochures and pamphlets (48.7%) as the least reliable sources of preventive oral health information, putting into consideration that the participants could choose more than one option that is convenient. This is different from a study done in Romania, where family and friends (41.8%) are the leading sources of oral health information, followed by dentists (25.5%), TV and radio, and school programs (13.9%), being the least of all the sources [2]. This study showed there is no relationship between good or poor practices and accessibility to information (p value = 0.796), which is not in the range of $p \leq 0.05$. Information is essential for patients to change their behavior [27]. In a study conducted in Libya, patients' low knowledge of caries prevention and lack of knowledge about dental visits were rated as the highest patient-related barriers to preventive dentistry [15]. In this study, 70.9% of the participants have knowledge about oral health preventive measures, while 29.1% of the participants had poor knowledge. The general knowledge scores of the participants in this study were 96.8%, 46.8%, 60.8%, corresponding to knowledge about brushing teeth, swimming and visiting the dentist every 6 months.

This study showed statistically significant association between knowledge levels and practice, $p=0.036$. The overall result of participants' knowledge relationship to poor or good practice of oral health preventive measures; Participants with good knowledge showed good practice at 100%. Similarly to the study done in Croatia, where students with higher knowledge scores used oral hygiene aids more often [5]. While participants with poor knowledge showed poor practice at 31.1%, good knowledge with poor practice 68.9%. Participants with good knowledge within the group exhibiting bad practice indicates that knowledge alone may not always translate into good practice and while knowledge is a significant factor influencing oral health preventive measure practice, it is not the sole determinant.

Indeed, cost and affordability are substantial hindrances to implementing preventive oral health treatments. The result of this study revealed that transportation issues, financial constraints, and insurance coverage are among those hindrances. In this study, affording preventive oral health measures is impacted most commonly by financial constraints (69%) or the inability to afford toothbrushes and mouthwashes. The cost of regular dental visits and dental floss was the leading factor with transportation issues (69%) and the least being insurance coverage (51.9%), which is different from a study conducted in

the USA at the University of Walden in which participants reported cost (8.13%), lack of insurance (4.65%), and transportation (5.85%) as factors impeding accessibility to preventive oral health [9]. The p-value for the correlation between "good or poor practice" and "Cost and Affordability" is 0.547 suggesting correlation is not statistically significant. Further investigation may be needed to understand these relationships better.

In this study barrier including lack of time, fear and anxiety and having trouble accessing to preventive oral health care were identified as barriers that reduce patient's motivation toward accessing preventive oral health care. About 94.9% aren't motivated while the remaining percentage of (5.1%) are motivated there is a weak positive p value of 0.454 correlation between motivation and good or poor practice of oral health behaviours, this correlation is not statistically significant. Other factors beyond motivation may have a stronger influence on individuals' oral health practices, and further investigation may be needed to understand these relationships better.

Conclusion

This study found that knowledge of oral preventive measures was statistically proven to be a barrier to practicing preventive oral health. However, cost and affordability, accessibility to oral health information, and patients' motivation were not statistically proven to be correlating with practicing of preventive oral health measures. In future studies, the researcher should have different study areas to investigate these barriers, since our study focused on one clinic. They should focus on investigating other barriers that our research didn't look into. In future studies, the researcher should look into other preventive measures that we didn't focus on in this study, including pit and fissure sealants, topical fluoride applications, and regular professional tooth cleaning. It is crucial to ensure that preventive oral health information is effectively communicated and understandable to promote behaviour change. Focus on making preventive oral health services more affordable and accessible to all individuals, irrespective of their financial status. Adding insurance schemes, which are used by the majority of participants (*mutuelle de santé*), to promote regular and cost-effective preventive dental care. Emphasise educational campaigns to improve oral health knowledge, targeting those with lower knowledge levels, to enhance preventive oral health behaviours.

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