Nigerian Journal of Health Promotion
ISSN: 0995-3895
HEPRAN
Vol 18, No1, 2025

Knowledge of Preventive Measures of Periodontal Diseases in a sample of Secondary Schools Teachers in Awka South Local Government Area, Anambra State

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Abstract

Oral health is still a neglected and ignored social issue because most of the people are unaware of the relationship between oral health and systemic diseases. This study focused on knowledge of preventive measures of periodontal diseases among Secondary School Teachers in Awka South Local Government Area, Anambra state. The descriptive survey research design was adopted for the study. The population for the study comprised 850 secondary school teachers in Awka South Local Government Area, Anambra State. Three specific objectives were formulated with three corresponding research questions and two null hypotheses were posed to guide the study. A simple random sampling technique was used to draw the sample of 278 secondary school teachers for the study. The instrument used for data collection was a researcher-designed questionnaire titled Knowledge on Preventive Measures of Periodontal Diseases (KPMPQ).The Split-half (Spearman-Brown Correlation Coefficient) method was used to establish the reliability(internal consistency) of the instrument with reliability coefficient of 0.76. Frequencies and percentages were used to answer the research questions while Pearson's chi-square was used to test the null hypotheses at 0.05 level of significance. The findings revealed that the overall Knowledge on preventive measures of periodontal diseases was moderate (58.4%). Secondary school teachers had low knowledge based on age and gender respectively; 20-35(16.0%), 36 – 45(20.3%), 46 – 65 (12.0%), male (20.2%), and female (28.5%). Also, there is no significant difference on the knowledge on preventive measures of periodontal diseases among secondary schools teachers in Awka south, LGA based on age and gender. The authors recommended that seminars and workshop should be organized by the government to impact knowledge on preventive measure of periodontal disease.

Keywords: Knowledge, preventive measures, Periodontal diseases, Secondary school teachers

Introduction

Oral health plays a vital role to maintain the general health. Therefore, preventing periodontal diseases may have a profound health effect. The importance of oral health is still a neglected and ignored social issue because most of the people are unaware of the relationship between oral health and systemic diseases (Alzammam, & Almalki, 2019). It is widely accepted that the most common and important diseases of the oral cavity; gingivitis and periodontitis, dental caries, and oral cancer are preventable (Scannapieco & Gershovich, 2020). Poor oral health is often characterized as experiencing dental caries, periodontal disease, or complete tooth loss, and recent estimates suggest that more than 3.5 billion people worldwide are affected (Marcenes et al., 2013) . Yet a significant contributor to poor oral health periodontal disease, has not received the level of attention that has been applied towards dental caries with regards to public health approaches for disease control and prevention. Periodontal disease as a chronic disease is a growing health burden to people, healthcare systems, and societies across the world (Watt & Petersen, 2012). It constitutes one of the major global oral health burdens and it is a significant cause of tooth loss, representing full and partial edentulism in 5-20 per cent of the

adult population worldwide (Jin, et.al, 2011). Periodontal disease is highly prevalent and costly to treat condition that impacts on quality of life (Watt & Petersen, 2012). More than 10 per cent of the adult population worldwide may be affected by severe periodontitis, making it the 11th most prevalent disease globally, more prevalent than cardiovascular disease (Kassebaum et al., 2017; Jin et al., 2016; Jin et al., 2016; Vos et al., 2016). Within this global rate there are significant disparities by country. Like cardiovascular disease, periodontal disease is a chronic disease marked by an inflammatory process that typically increases in prevalence with age. Unlike cardiovascular disease, the implementation of public health models directed at prevention and control of periodontal disease has been almost non-existent, hence the need to assess the knowledge of preventive measures of periodontal diseases.

Periodontal diseases including gingivitis and periodontitis are infectious diseases that result from bacterial infection where the causative bacteria are found in dental plaque. However, gingivitis is usually the early phase of the inflammatory process and if changed to periodontitis, will lead to periodontal tissue destruction. Therefore, controlling gingivitis may have a profound health effect when it may result in a lower prevalence of destructive periodontitis (National Institute of Dental and Craniofacial Research 2023, Centers for Disease Control and Prevention, 2023). Plaque-induced periodontitis is a group of diseases of the periodontium that is manifested as progressive destruction of periodontal ligament and alveolar bone, with periodontal pocket formation or gingival recession or both that may become one of the major causes of tooth loss in adult life (Alzammam, & Almalki, 2019).Periodontal disease, manifests as gingival bleeding, swelling, food packing, pains, irritations, and discomfort, can affect any individual irrespective of age, gender, race, and place of residence to a variable extent and severity. It is known to be the more common and more severe in older individual especially those over 40 years, males, Negroid race, rural dwellers and residents of developing countries (Varenne et al., 2004; Gökalp et al., 2010). Most children and adolescents exhibit signs of mild periodontal disease in the form of gingivitis, while 5 to 20 per cent of adult populations experience severe periodontal disease in the form of severe periodontitis (Jin et.al., 2011). Oral conditions exist worldwide, and are related with astounding morbidity. Disparity on oral care is the major reason for poor oral hygiene (Genco & Sanz, 2020). Periodontal conditions should be investigated in an extensive manner as there is a firm indication on association of various systemic diseases such as diabetes, cardiovascular conditions, and metabolic syndrome with periodontal disease (Selvaraj et al., 2021).

Poor oral health is a global public health concern that is linked to social inequalities and high-risk behaviors such as smoking and unhealthy diet. Many of these high-risk behaviors are considered common risk factors for other chronic, non-communicable diseases, such as diabetes and cardiovascular disease. The burden of poor oral health is high, with substantial social, psychological, and economic impacts that affect individuals, communities and health services (Alzammam, & Almalki, 2019). The main etiological agent of periodontal disease is plaque, which is a biofilm that contains bacteria. Periodontal disease is driven by exposure of the host periodontal tissues to the microflora that adheres to teeth in the form of a biofilm, long referred to as dental plaque (Hajishengallis et al., 2020). Bacteria and other microbes, including viruses, fungi, and parasites interact with each other and with the host, with time, a resulting dysbiotic microbiome, together with dysregulated host inflammation, fosters the growth of selected microbes within the biofilm to produce substances that exacerbate inflammation, which may results in tissue destruction and tooth loss. Hence, prevention of periodontal diseases is predicated primarily on removing and preventing the formation of biofilm, and secondarily on tempering inflammation.

Gingivitis and periodontitis are a continuum of the same inflammatory process (Kinane & Attstrom, 2005), and while gingivitis is the presence of gingival inflammation without loss of connective tissue attachment, periodontitis is the presence of gingival inflammation at sites where there has been apical migration of the epithelial attachment onto the root surfaces accompanied by loss of connective tissue and the alveolar bone (Armitage, 2004). Periodontal disease has been associated with self-reported signs and symptoms-like ; swollen gums, sore gums, receding gums, loose teeth, drifting teeth, bad breath, and toothache (Needleman et al., 2004). American Academy of Periodontology, 2023). As periodontitis progresses to advanced disease it has a major impact on the patient including issues with masticatory function resulting in dietary changes, esthetic concerns, speech difficulties, and self-esteem issues which may result in social exclusion (Ferreira et al., 2017; Tonetti et al., 2017). However, such consequences could easily be prevented by early to knowledge on oral hygiene (Han & Park, 2017; Lertpimonchai, et al., 2017).

Preventive measures means any reasonable measures taken by any person after an incident has occurred to prevent or minimize damage. Preventive measures are those strategies that will help curb the outcome of an illness or unhealthy situation (Enemuo & Obayi, 2021). Oral health prevention involved all the necessary and vital actions aimed at preventing oral diseases which include brushing and flossing of the teeth, use of fluoridated toothpaste, proper diet, regular dental maintenance and continuity care appointments (Saul, 2014). Preventive efforts should therefore focus on Knowledge level of periodontitis. Such knowledge includes; having brushing twice a day with fluoride tooth- paste is the most effective preventive measure in all age groups. Flossing between teeth daily, use an antibacterial mouthwash, brushing teeth two to three times every day, avoid smoking and other tobacco (Centers for Disease Control and Prevention, 2023).Reducing consumption of sugars and carbohydrates might also be important, as is giving up or never starting to use tobacco products. With regular visits to dental clinic, as well as the common sense behaviours of brushing and flossing, brushing teeth for at least 2 minutes every morning and night, flossing regularly, and visiting dentist at less twice yearly are the simple habits that can help to avoid not only respiratory disease, but other related diseases. According to Azodo and Umoh, (2015), the school system is considered a major stakeholder in preventive oral health because of the tremendous supportive capacity of schools on health programs. Thus, this study wants to identify whether secondary schools teachers in Awka south, LGA have the knowledge of preventive measures of periodontal diseases.

Knowledge on Periodontal disease is vital in ensuring preventive measures. World Health Organization (2022) opined that knowledge is a pre-requisite to practice of any preventive measures. Knowledge is the possession of information, skill and understanding gained through learning and experience (Oparah, Fidelis & Nwankwo, 2019).Knowledge on periodontal disease is the fact of being aware and having vital information about periodontal disease. Periodontal disease is usually painless, especially in the early stages. It is important to know the warning signs and symptom so as to get appropriate treatment before the disease worsens. Left untreated, gum disease can take a toll on the oral and overall health. The infection can spread to other areas of the mouth and other parts of the body, increasing the risk for several health conditions, including heart disease, stroke and diabetes (American Academy of Periodontology, 2023). Knowledge of some factors that can increase the risk of periodontitis is vital in prevention; which include: Gingivitis, Poor oral health care habits, Smoking or chewing tobacco, Hormonal changes, such as those related to pregnancy or menopause, Recreational drug use, such as smoking marijuana or vaping, Obesity, Poor nutrition, including a low vitamin C level, Genetics, Certain medicines that cause dry mouth or gum changes, Conditions that lower immunity, such as leukemia, HIV/AIDS and cancer treatment, Certain diseases, such

as diabetes, rheumatoid arthritis and Crohn's disease(Centers for Disease Control and Prevention, 2023). Knowledge of Symptoms of periodontitis is also vital in prevention, which include; Swollen gums, dark purple gums, tender gums, gums that easily bleed, Bad breath, Pus between teeth and gums, Loose teeth or loss of teeth, Painful chewing, Gums that pull away making the teeth look longer than usual, called receding gums. A change in the way the teeth fit together when bite (National Institute of Dental and Craniofacial Research (2023).The role of teachers in oral health education, which is a veritable tool in preventing oral disease, can only be harnessed if they are properly trained.

Secondary school teachers are those teachers that are teaching mainly adolescents in the secondary schools which are the middle school between primary and territory education. Education plays a pivotal role in shaping the lives of children and young adults. Schools have proven effective in helping young people learn positive and healthy models of behavior. According to Haleem (2012) dentist-led, teacher-led, and peer-led strategies of oral health education are equally effective in improving the oral health knowledge and oral hygiene status of adolescents. The outcome of school health programs depend on the teachers as active participation of teachers contribute to the successful implementation of oral health education program, while limited instructions on dental health education among teachers or non-motivated teachers result in unsuccessful oral health education programs (Petersen et al., 2004).The opportunity of teacher to instruct all children, uniquely position them in an advantageous way in preventive healthcare delivery. The role of teachers in oral health education, which is a veritable tool in preventing oral disease, can only be harnessed if they are properly trained (Azodo, & Umoh, 2015). A study had shown a significant effect on the periodontal profiles of participants with high school and university level of education had lesser risk of periodontal severity than participants who were illiterate (Wahengbam et al., 2016). Having primary, high school, and university education progressively decreases the risk of periodontal severities (Selvaraj et al., 2021). This specifies the importance and role of education in oral health. Similar findings were reported in several other studies, Ide, 2021; Selvaraj et al., 2022). Furthermore, prevalence of periodontal disease in a population is dependent on risk characteristics like age, sex, education, geographic and environmental status, oral hygiene practices, and social characteristics (Aljehani, 2014) and the link between periodontal disease and socioeconomic status has been reported (Kadtane, 2014).

Levels of knowledge about Periodontal Disease seem to be affected by a range of factors including gender, age, profession, educational level, systemic conditions, and smoking (Ehizele et al., 2011; Nyorobi et al., 2018; Oberoi et al., 2014; Peltzer & Pengpid, 2014; Umeizudike et al., 2015). This study determined the influence of age and gender on the knowledge of preventive measure of periodontal diseases.

Age can have influence on knowledge on preventive measure of periodontal diseases. Age is an important factor for maintaining oral hygiene, as younger children can realize the importance of care of teeth and they emphasize on oral hygiene maintenance (E-Saud et al., 2016). Age is considered a critical factor in the utilization of Oral Health Services (Enabulele & Chukwumah, 2015). Age was the most strongly associated factor with periodontal profiles of participants. In a different study, multiple logistic regression models found significant increased association between the socioeconomic factors such as smoking, primary education, male gender, and age (Assiry et al., 2021). In the current study, the age groups of 25–34 years and ≥45 years showed higher association with periodontal disease (Almerich-Silla et al., 2017).

Gender refers to the socially constructed definitions of men and women in society. Gender is capable of influencing the knowledge on preventive measure of periodontal diseases. Zwiri

(2015) reported that males were more likely to develop periodontal diseases than females. Study by Quadri et al. (2018) showed that in terms of gender, the mean plaque score in male school children (mean 0.69; SD 0.50) was slightly higher than the female school children (mean 0.66; SD 0.46). Kaur et al. (2015) observed that the males had higher oral health knowledge score than the females but females brushed more frequently than the males. Though, the difference was not statistically significant. A study by Alzammam and Almalki, (2019) revealed that a high proportion of students were aware that long-standing periodontal diseases will cause teeth mobility leading to early loss of teeth as a consequence of advanced bone loss resulting from the inflammatory process. In addition, female students were significantly more aware of this fact compared to males.

The location of the study is Awka South Local Government Area in Anambra State. Anambra State is a State in southeastern Nigeria. The main cities in the state are Awka, Nnewi, Ekwuluobia, Oko and Onitsha. Awka South is one of the LGA in Awka. There are eighteen public secondary schools in Awka South Local Government area out of which seven schools was used for the study. Through research reports, oral health has been a neglected area because, many people, if they have any challenge with their dentition, they will plug the tooth, hence reducing their quality of life. Secondary school teachers allow and patronize sugar-coated snacks, too spicy and fast fried food. These could lead to oral problems such as periodontitis, halitosis, gingivitis and dental caries. The knowledge of teachers is paramount because if teachers are knowledgeable, they will instruct, guide and teach the students under their care. Hence, this study determines knowledge of preventive measure of periodontal diseases among Secondary Schools Teachers in Awka South Local Government Area, Anambra State.

Purpose of the Study

This study focused on knowledge of preventive measures of periodontal disease among Secondary Schools Teachers in Awka South Local Government Area, Anambra State. Specifically the study examined:

1. Knowledge of preventive measures of periodontal disease among Secondary Schools Teachers in Awka South Local Government Area, Anambra State;
2. knowledge of preventive measures of periodontal disease among Secondary Schools Teachers in Awka South Local Government Area, Anambra State based on ag; and
3. Knowledge of preventive measures of periodontal disease among Secondary Schools Teachers in Awka South Local Government Area, Anambra State based on gender.

Research Questions

The following research questions guided the study:

1. What is the level knowledge of preventive measures of periodontal disease among Secondary Schools Teachers in Awka South Local Government Area, Anambra State?
2. What is the level knowledge of preventive measures of periodontal disease among Secondary Schools Teachers in Awka South Local Government Area, Anambra State based on age?
3. What is the level knowledge of preventive measures of periodontal disease among Secondary Schools Teachers in Awka South Local Government Area, Anambra State based on gender?

Research Hypotheses

The following null hypotheses were formulated for the study and were tested at .05 level of significance.

1. There is no significant difference in level of knowledge on preventive measures of periodontal disease among Secondary Schools Teachers in Awka South Local Government Area, Anambra State based on age.
2. There is no significant difference in level of knowledge on preventive measures of periodontal disease among Secondary Schools Teachers in Awka South Local Government Area, Anambra State based on gender.

Methods

The study employed a descriptive survey research design. The descriptive survey research design is a type of study that analyses data from a population, or from a representative subset. Descriptive survey research design according to Cohen, Manion and Morrrison (2011) is a research design that produces a snapshot of the population in a given period of time.

The study was conducted in public secondary schools in Awka South. The researcher observes that food vendors allowed into the schools are mainly those with sugar coated foods, too spicy and fast fried foods are on sale. Most teachers as well as the students are patronizing them. Thus, the researcher deemed the area suitable for the study.

The population for the study consists of all the teachers in secondary schools in Awka South, Anambra state. The population for the study comprised 850 secondary school teachers in the 18 public secondary schools in Awka South Local Government Area, Anambra State.

The sample size for this study comprised 278 secondary school teachers. A simple random sampling technique was used to draw seven schools for the sample. All the teachers in the schools selected were all-inclusive in the study. This process yielded 278 secondary school teachers for the study.

The instrument for data collection was a structured questionnaire on Knowledge of Preventive Measures of Periodontal Disease Questionnaire (KPMPDQ). The instrument has two sections; section A and section B. Section A contain the socio-demographic variables of the respondent, while section B contain ten relevant questions to ascertain response on level of knowledge of preventive measures among secondary school teachers in Awka South Local Government Area, Anambra State. The responses option of “Yes” for the correct option and “No” for the wrong option.

The reliability of the instruments was established using split-half method to establish the internal consistency of the instrument with a reliability coefficient of .76. According to Cohen et al. (2018) maintained that if a correlation coefficient index obtained is 0.70 and above, the instrument will be considered reliable for the study.
The face validity of the instrument was established by three experts from the Department of Human Kinetics and Health Education, University of Nigeria Nsukka. Frequencies and percentages were used to answer the research questions. The level of knowledge is determined, according to Okafor (1998) low knowledge (LK) is 0-39%, moderate knowledge (MK) is 40-69%, and high knowledge (HK) is 70% and above, while Chi-square statistic was used to test the null hypotheses at 0.05 level of significance.

Results

Table 1
Socio-demographics characteristic of respondents (n=278)

1.	**Gender**	**F**	**%**
	Male	108	38.85
	Female	170	61.15
2	Age		
	20 – 35	98	35.25
	36 – 45	127	45.68
	46 – 65	53	19.07

Table 2: **Proportion Responses of Secondary School Teachers on Level of Knowledge of Preventive Measures of Periodontal Disease (n=278)**

		Yes		No		
S/N	**Preventive measures of periodontal disease**	**f**	**%**	**f**	**%**	**Decision**
1.	Reduced sugars consumption	180	65.0	98	35.3	MK
2.	Regular Brushing teeth	250	89.9	28	10.1	HK
A	after breakfast and	75	27.0	203	73.0	LK
B	before bed time at night	110	39.6	168	60.4	LK
3	Regular flossing of the teeth	157	56.5	121	43.5	MK
4	Use of fluoridated toothpaste	107	38.5	171	61.5	LK
5	Increase intake of vegetables	151	54.3	127	45.6	MK
6	Increase intake of fruit	143	51.4	135	48.6	MK
7	Frequent intake of water	99	35.6	179	64.4	LK
8	Cessation of Alcohol	98	35.3	180	64.7	LK
9	Cessation of smoking	116	41.7	162	58.3	MK
10	Visiting dentist at less twice yearly	138	49.6	140	50.4	MK
	Overall Percentage		**58.4**		**41.6**	

Key *0–39%=Low knowledge (LK); 40%-69%=Moderate knowledge (MK); 70% and above=High knowledge (HK)*

Results in Table 2 show moderate knowledge (58.4%) on preventive measure of periodontal disease. Some of the respondent have low knowledge on; time for brushing (27.0%, 39.6%), use of fluoridated toothpaste (38.5%), Frequent intake of water (35.6%), Cessation of Alcohol(35.3%), while, majority have moderate knowledge except in regular brushing teeth which they have high knowledge (89.9%).

Table 3: **Proportion Responses of Secondary Schools Teachers on Level of Knowledge of Preventive Measures of Periodontal Disease Based on Age (n=278)**

		Age					
		20 – 35		**36 – 45**		**46 - 65**	
		Yes	**No**	**Yes**	**No**	**Yes**	**No**
S/N	**Preventive measures**	**f %**	**f %**	**f %**	**f %**	**f %**	**f %**
1.	Reduced sugars consumption	65(23.4)	33(11.9)	80(28.8)	47(16.9)	35(12.6)	18(6.4)
2.	Regular Brushing teeth	85(30.6)	13(4.6)	115(41.4)	12(4.3)	50(18.0)	3(1.1)
a.	after breakfast and	25(9.0)	73(26.2)	35 (12.6)	92(33.1)	15(5.4)	38(13.7)
b	night before bed time	35(12.6)	63(22.7)	52(18.7)	75(27.0)	23(8.8)	30(10.8)
3	Regular flossing of the teeth	58(20.9)	40(14.4)	67(24.1)	60(21.6)	32(11.5)	21(7.6)
4	Use of fluoridated toothpaste	44(15.8)	54(19.4)	37(13.3)	90(32.4)	26(9.4)	27(9.7)
5	Increase intake of vegetables	67(24.1)	31(11.2)	53(19.1)	74(26.6)	31(11.2)	22(7.9)

6.	Increase intake of fruit	25(9.0)	73(26.2)	71(25.4)	56(20.1)	47(16.8)	6(2.1)
7.	Frequent intake water	32(11.5)	66(23.7)	30(10.8)	97(34.9)	37(13.3)	16(5.8)
8	Cessation of Alcohol	25(9.0)	75(27.0)	43(15.5)	84(30.2)	30(10.8)	23(8.3)
9	Cessation of smoking	37(13.3)	61(21.9)	45(16.2)	82(29.5)	34(12.2)	19(6.8)
10	Visiting dentist twice yearly	52(18.7)	46(16.5)	48(17.3)	79(28.4)	38(13.7)	15(5.4)
Overall Percentage		**16.5**	**18.8**	**20.32**	**5.4**	**12.0**	**7.0**

Key *0–39%=Low knowledge (LK); 40%-69%=Moderate knowledge (MK); 70% and above=High knowledge (HK)*

Results in Table 3 showed low knowledge on preventive measure of periodontal disease in all the age brackets respectively; 20-35(16.5%), 36-44(24.3%), 45-65 (14.4%). This table also indicated that the age bracket, 36-44years (24.3%) had the highest percentage, followed by the 20-35 years (16.5%) and finally, the age bracket 45-65years (14.4%) had the lowest percentage, which is unexpected because age ought to have enable them to know more.

Table 4: **Proportion Responses of Secondary Schools Teachers on Level of Knowledge of Preventive Measures of Periodontal Disease Based on Gender (n=278)**

		Gender			
		Male		**Female**	
		Yes	**No**	**Yes**	**No**
S/N	**Preventive measures**	**f %**	**f %**	**f %**	**f %**
1.	Reduced sugars consumption	80 (28.8)	28 (10.0)	100(36.0)	70(25.2)
2.	Regular Brushing teeth	95(34.2)	13 (4.7)	155(55.7)	15 (5.4)
a.	after breakfast and	25 (9.0)	83 (29.8)	50 (18.0)	120(43.2)
b	night before bed time	47 (16.9)	56 (20.1)	63 (22.7)	107(38.5)
3	Regular flossing of the teeth	62 (22.3)	46 (16.5)	95 (34.2)	75 (27.0)
4	Use of fluoridated toothpaste	42 (15.1)	66 (23.7)	65(23.4)	105(37.8)
5	Increase intake of vegetables	85(30.6)	23(8.3)	66 (23.7)	104(37.4)
6.	Increase intake of fruit	77 (27.7)	31(11.2)	66 (23.7)	104(37.4)
7.	Frequent intake water	52 (18.7)	56 (20.1)	47 (16.9)	123(44.2)
8	Cessation of Alcohol	28 (10.1)	80 (28.8)	70 (25.2)	100(36.0)
9	Cessation of smoking	34 (12.2)	74 (26.6)	82 (29.5)	88 (31.6)
10	Visiting dentist twice yearly	48 (17.3)	60 (21.6)	90 (32.4)	80 (28.8)
Overall Percentage		**20.2**	**18.5**	**28.5**	**32.8**

Key *0–39%=Low knowledge (LK); 40%-69%=Moderate knowledge (MK); 70% and above=High knowledge (HK)*

Results in table 4 showed low knowledge on preventive measure of periodontal diseases in both gender; male (20.3%) and female (28.4%). The gender female (28.4%) had a higher percentage than the gender male (20.3%).

Table 5
Summary of Chi-square Analysis on the Knowledge of Preventive Measures of Periodontal Diseases among Secondary Schools Teachers in Awka South Local Government Area, Anambra State Based on Age (n=278)

		true	**False**				
Age	**N**	**O (E)**	**O (E)**	χ^{2cal}	**df**	χ^{2crit}	**Decision**
20-35Years	98	57(58.2)	41(39.8)				

36-45years	127	75(75.4)	52(51.6)	3.02	2	5.99	Not rejected
46-65 years	53	33(31.5)	20(21.5)				

level of significance = 0.05

Table 5 shows that there is no significant difference in the Knowledge on preventive measure of periodontal diseases among Secondary Schools Teachers in Awka South Local Government Area, Anambra State Based on age(χ^{2cal}=3.02; χ^{2crit}= 5.99). Since, χ^{2crit} is greater than χ^{2cal} at .05 level of significance; the null hypothesis was not rejected. Therefore, there is no significant difference in Knowledge on preventive measure of periodontal diseases among Secondary Schools Teachers in Awka South Local Government Area, Anambra State Based on age status.

Table 6

Summary of Chi-square Analysis on the Knowledge of Preventive Measures of Periodontal Diseases among Secondary Schools Teachers in Awka South Local Government Area, Anambra State Based on Gender (n=278)

Gender	**N**	**True O (E)**	**False O (E)**	χ^{2cal}	**df**	χ^{2crit}	**Decision**
Male	108	65(60.99)	43(47.01)				
Female	170	92(96.01)	78(73.99)	0.98	1	3.84	Not rejected

level of significance = 0.05

Table 6 shows that there is no significant difference in the Knowledge on preventive measure of periodontal diseases among Secondary Schools Teachers in Awka South Local Government Area, Anambra State Based on gender (χ^{2cal}=0.98; χ^{2crit} = 3.84). Since χ^{2cal} is less than χ^{2crit} at .05 level of significance; the null hypothesis was not rejected. Therefore, there is a significant difference in Knowledge on preventive measure of periodontal diseases among Secondary Schools Teachers in Awka South Local Government Area, Anambra State Based on gender .

Discussion

Results in Table 2 showed moderate knowledge (58.4%) on preventive measure of periodontal disease. The finding is not expected, because teacher should have in-debt knowledge in areas like this, so that they will be healthy and also guild students under their care to maintain healthy life style. To improve their knowledge, seminars and workshop should be organized to impact knowledge on preventive measure of periodontal disease. According to Scannapieco and Gershovich (2020) indicated that despite the availability of information on how to prevent periodontal diseases, many people still struggle to maintain oral hygiene at a level sufficient to prevent such diseases. Patients' lack of knowledge or skill with the proper use of an oral hygiene device, a lack of appreciation of the time needed to perform thorough cleaning, and in some cases downright apathy and no oral hygiene at all, as well as the lack of knowledge or ambivalence of providers to recommend evidence-based oral hygiene aids to patients, all contribute to the persistence of these preventable diseases in a substantial proportion of the population**.** The finding according to Alammam and Almalki, (2019) on Knowledge and awareness of periodontal diseases among Jordanian University students, majority (89.5% and

88.5%) of students believed that smoking could not only increase the probability of occurrence of periodontal diseases but can also be a major risk factor. While, in this study, less than, half of the population (41.7%) knew that cessation of smoking is a preventive measure for periodontal disease.

Results, in Table 3 showed low knowledge on preventive measure of periodontal disease in all the age brackets respectively; 20-35(16.5%), 36-44(24.3%), and 45-65 (14.4%). Also, Table 5, indicated that there is no significant difference in Knowledge on preventive measure of periodontal diseases of sampled Secondary Schools Teachers in Awka South Local Government Area, Anambra State Based on age status, which is unexpected because age ought to have enable them to know more. Conversely, findings from study by Bansal et al. (2015) revealed that healthy periodontium was found in 19 (3.9%) subjects with the highest percentage in 15-19 years age group and after 44 years no person had healthy teeth. Periodontal diseases in the early stages were more prevalent in the younger age groups as compared to advanced stages that were more prevalent in older age groups. Overall, prevalence and severity of periodontal disease increases with age that is similar with other published studies which have shown that increasing severity of periodontal diseases is due to the untreated cumulative effect of disease process over a period of time instead of ageing process.

Results, in table 4 showed low knowledge on preventive measure of periodontal diseases in both gender; male (20.3%) and female (28.4%). The gender female (28.4%) had a higher percentage than the gender male (20.3%). Also, Table 6, there is no significant difference in Knowledge on preventive measure of periodontal diseases of sampled Secondary Schools Teachers in Awka South Local Government Area, Anambra State Based on gender status. In agreement, Females were significantly more aware regarding those issues (93.3% and 92.4%, respectively) compared to males (83.1% and 81.9%, respectively) ($p < 0.000$)(Alzammam & Almalki, 2019). In other study, the periodontal knowledge score was significantly higher among women, a finding also reported among Japanese young adults (Tada & Hanada, 2004). This implies that women value dental health more than do men and are more willing to improve their health status and receive relevant information (Galdas et al., 2005). But in contrast to the results, Tanzanian males were significantly more knowledgeable about periodontal disease than their female counterpart, which is in agreement with the findings of a study conducted in India (Gallagher, 2009). However, males were more affected with moderate and severe periodontitis as compared to females that is also consistent with the other reported studies. The factors responsible for this finding may be that males are less health conscious and have poorer oral hygiene than females due to heavy deposition of plaque (Bansal, Mittal, & Singh, 2015).

Conclusion

Based on the findings, the knowledge of preventive measure of periodontal disease among the teachers was moderate knowledge. Secondary school teacher within age bracket, 36-44years had the highest percentage, though the entire age bracket had low knowledge of preventive measure of periodontal disease. Female secondary school teachers had higher percentage of knowledge of preventive measure of periodontal disease compared to male secondary school teachers Teachers had moderate knowledge, to improve their knowledge, seminars and workshop should be organized by the government to impact knowledge on preventive measure of periodontal disease. Government and non-governmental body will support a wide campaign to enlighten the teachers, because when the teachers are taught, they can dispense the knowledge, starting from the students under their care. Health sectors should come up with strategies that will enable male to step up their concern on preventive measures.

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