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Factors contributing to the increased prevalence of dental caries among residents of Nabweru South Ward in Nansana Municipality, Wakiso District. A cross-sectional study.

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Abstract

Background:

Dental caries is one of the oral health problems that causes the destruction of the hard parts of a tooth by the interaction of bacteria and fermentable carbohydrates. The aim of the study is to determine the factors contributing to the increased prevalence of dental caries among residents of Nabweru Southward in Nansana municipality, Wakiso district.

Methodology:

A descriptive cross-sectional research design. The study included both male and female residents of Nabweru South Ward. A simple random technique was used to select respondents from the population.

Results:

2(64%) of the respondents were males, 18(36%) were females. 30(60%) were single, 80% do brush their teeth, (60%) brushed their teeth twice in a day, 87.5% use a toothbrush and tooth paste to brush their tooth, (60.52%) change their tooth brush after 6 months, (84%) do not smoke cigarette, (75%) were current smokers, (56%) do not take alcohol, (60%) eat meals containing sugary foods, (86%) had never gone for a dental checkup while (14%), **(**71.4%) who go for dental checkup go there once in a year, (40%) were un employed, 56% earn less than 100,000 Ugandan shillings.

Conclusion:

Failure to do dental checkups, alcohol intake, and consumption of sugary meals were the factors that contributed to dental caries.

Recommendation

The government, through the Ministry of Health, should educate the general public about dental caries and proper oral hygiene practices in order to reduce their occurrence and prevalence.

***Keywords*:** *Dental caries, Prevalence, Oral hygiene practices*
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Background.

Dental caries is one of the oral health problems that causes the destruction of the hard parts of a tooth by the interaction of bacteria and fermentable carbohydrates (Tafere, 2018). According to the World Health Organization report, approximately 60% to 90% of school-aged children and nearly all adults have dental caries at some point in their lifespan. Demographic factors and social gradients have been reported for caries prevalence and severity worldwide (Chickte et al, 20202). Globally, on the epidemiology of dental caries and severe periodontitis, results showed that the age-standardised prevalence of dentine carious lesions in the primary dentition in the global population remained static over the two decades at about 9% (Franken et al, 2017).

The problem related to dental caries leads to a decrease in the quality of life of the affected individual and high economic cost for the individual and society, with disparities related to well-known issues of social economics, immigration, lack of preventive efforts, and dietary changes. The pain from dental caries can affect school attendance, eating and speaking, and impaired growth and development (Tafere Y, 2018). In Africa, the prevalence of dental caries varies according to the population and socioeconomic status; the prevalence rates were 40.98% in Ethiopia, 52.4% in Sudan, 50.3 in Kenya, and 40.2% in Tanzania. Prevalence of dental caries is thought to be on the increase in developing countries because of reduced levels of awareness about dental caries, growing consumption of sugary foods, and poor tooth brushing habits (Teshome A et al, 2021).

In Uganda, the government has had to deal with several pressing health issues, which have led to giving limited priority to less life-threatening conditions, such as oral health (Ndagire B et al, 2020). The available data show that there is a rise in dental caries prevalence and experience among adults over the years. The recent survey reported a prevalence rate of over 75% among adults in four out of seven districts surveyed (Ndagire B et al, 2020). In Uganda, a study which was carried out in districts of Gulu, Soroti, Jinja, Masaka, Kabarole, and Hoima using a DMFT formula showed a score of 0.73 for children and 4.71 for adults, and a mean DMFT of 2.19 in rural and 1.97 in urban areas. The aim of the study is to determine the factors contributing to the increased

prevalence of dental caries among residents of Nabweru Southward in Nansana municipality, Wakiso district.

Methodology

Study design.

The study employed a descriptive cross-sectional research design. This study design was preferred because it helped the researcher collect data in the shortest period of time.

Study area.

Nabweru South Ward is located in Nansana division in Nansana municipality, Wakiso district of central Uganda. It consists of three villages. It is approximately 6.2 kilometres from Kampala, the capital city of Uganda.

Study population.

The study included both male and female residents of Nabweru South Ward. The study targeted this population due to the prevalence of dental caries in the area.

Sample size determination.

The Kish and Leis lie formula (1965) was used.

$$n = \frac{Z^2 pq}{d^2}$$

where n =number of respondents.

d =precision of the study; the precision of 10% was used due to the limitation of resources and time of the study.

Z =represents the standard normal deviation corresponding to a 95% confidence interval, which is 1.96.

P =represents proportional characteristics where no reasonable estimate is given; therefore, 50% was used.

q =represents (1-p), which is (1-50%) =0.5

$$n=\frac{1.96^2\times0.5\times0.5}{0.1^2}$$

n=96 respondents.

The target population would have been 96, but the researcher considered 50 respondents due to time and financial constraints.

sampling technique

A simple random technique was used to select respondents from the population. To avoid bias, the findings can be generalised since each respondent had an equal chance of being chosen.

Sampling procedure

Each participant was assigned a number. The numbers were written on a similar piece of paper, folded and placed in a bowl, and thoroughly mixed. Then the researcher selected randomly without replacing until the required number of samples was obtained.

Data collection method.

Data was collected by a quantitative method. This will include the use of questionnaires.

Data collection tool.

Data was collected using questionnaires comprised of closed and open questions written in the English language and later translated into Luganda based on specific objectives. This method was used because data was collected in a short period of time and was also suitable for a large population.

Data collection procedure.

After approval of the research proposal, an introductory letter from Kampala School of Health Sciences' research committee to the study area was obtained. When permission was granted, the researcher and the trained research assistants administered the questionnaire to the respondents. The purpose of the study was explained to the participants, and data collection was achieved by signing a consent form by the respondents, then questionnaires were administered to those who had been sampled. To some, the questionnaire had to be translated into their local language.

Study variables.

Dependent variables

The dependent variable was the prevalence of dental caries among residents of Nabweru South Ward.

Independent variables.

The independent variables were factors contributing to the increased prevalence of dental caries among residents of Nabweru South Ward in Nansana Municipality, Wakiso District.

Quality control.

In this study, the researcher ensured the validity of the research tools by employing strategies that would deal with threats to validity, like the appropriate selection of study design and use of a pilot study to pretest the research among 10 respondents. The results from the pretested questionnaires were not considered in the main study; in addition to that, the same questions were clearly constructed to avoid ambiguity, and data were thoroughly checked and validated for accuracy.

Data analysis and presentation.

Data was analysed manually. Data analysis involved summarising key findings, explanations, and thematic analysis involving data according to study objectives and was later presented in frequency distribution tables, bar graphs, and pie charts using Microsoft Word for easy interpretation of findings.

Ethical consideration

Ethics is a system of moral values that is concerned with the degree to which research procedures adhere to professional, legal, and social obligations to the study participants. After approval of the proposal by the supervisor, permission to collect data was obtained with the help of an introductory letter from the Kampala School of Health Sciences administration. A written consent form was presented and signed for each respondent before collecting data, and only those who voluntarily signed were recruited to participate in the study. Information obtained from the respondents was handled with utmost confidentiality.

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Demographic data

Results

Table 1 shows the distribution of respondents according to their demographic data. (N=50)

Variables	Frequency (f)	Percentage (%)
Age of respondents		
10-24 years	16	32
26-45 years	24	48
46-< years	10	20
Total	**50**	**100**
Sex of respondents		
Male	32	64
Female	18	36
Total	**50**	**100**
Respondents' religion		
Christian	35	70
Moslem	15	30
Others	0	0
Total	**50**	**100**
Variables	**Frequency (f)**	**Percentage (%)**
Marital status		
Single	30	60
Married	15	30
Divorced	5	10
Total	**50**	**100**
Tribe		
Muganda	30	60
Others	20	40
Total	**50**	**100**
Respondents' level of education		
No education	9	18

Primary level	18	36
Secondary level	14	28
College /university	15	30
Total	**50**	**100**

Table 1, the majority of the respondents, 24(48%), were within the age bracket of 26-45, followed by 16(32%) in the age bracket 10-25 years, and lastly 10(20%) in the age bracket of 46 years and above. 32(64%) were males and minority 18(36%) were females. 35(70%) were Christians and 30% belong to Islamic religion. 30(60%) were single and the least number 5(10%). 18(36%) had stopped in at primary level and the minority 9(18%) never went to school at all. 20(40%) were un employed whereas the least 12(24%) were self-employed.

Determination of behavioural factors contributing to increased prevalence of dental caries among residents of Nabweru South Ward.

Figure 1 shows the distribution of respondents according to whether they practice brushing of teeth. (N=50)

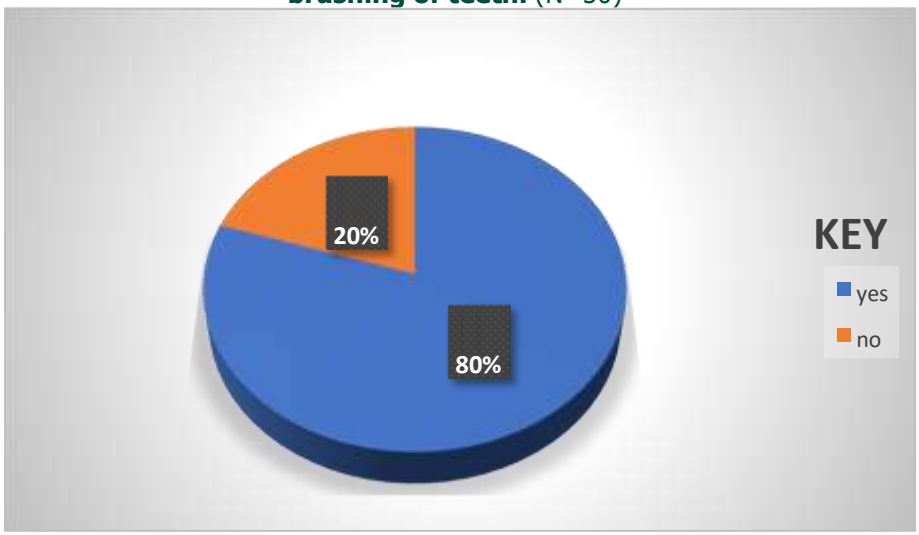

Figure 1, the majority of the respondents 80% do brush their teeth, but the least 20% do not brush their teeth.

Table 2 shows the distribution of respondents according to how often they brush their teeth in a day. (N=40)

Response	**Frequency (f)**	**Percentage (%)**
Once a day	24	60
Twice a day	8	20
Thrice	4	10
Every time after a meal	4	10
Other	0	0
Total	**40**	**100**

Table 2, the majority of the respondents (60%) brushed their teeth twice a day, whereas the least (10%) brushed their teeth thrice or after a meal.

Table 3shows the distribution of respondents according to what they use for brushing their teeth. (N=40)

Response	Frequency (f)	Percentage (%)
Toothbrush and paste	35	87.5
Tooth brush only	3	7.5
Stick	2	5
Total	**40**	**100**

Table 3, most of the respondents, 87.5%, use a toothbrush and toothpaste to brush their teeth, and the least, 5%, brush their teeth using a stick.

Figure 2shows the distribution of respondents according to how often they change their toothbrush.

(N=40)

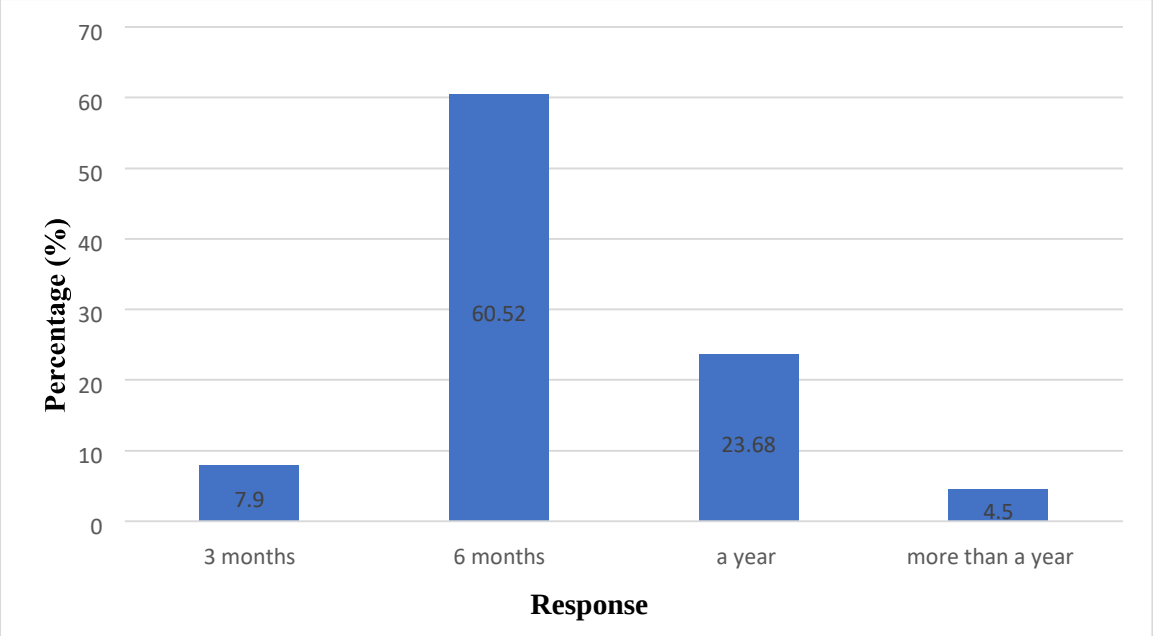

Figure 2, the majority of respondents (60.52%) change their toothbrush after 6 months, whereas the least number (7.89%) after three months or more than one year.

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Figure 3 shows the distribution of respondents according to whether they smoke or not. (N=50)

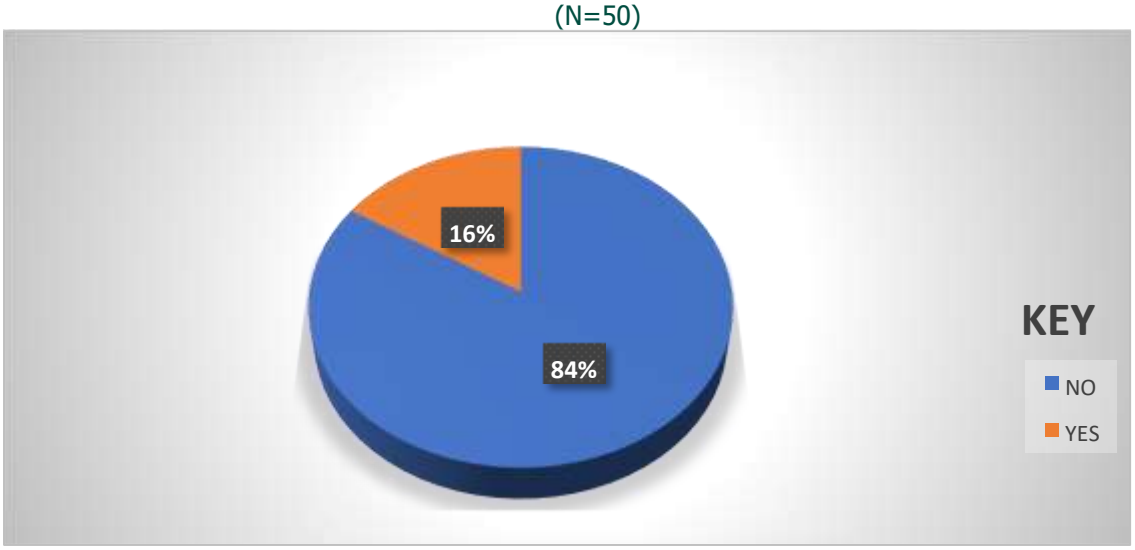

Figure 3: The majority (84%) do not smoke cigarettes, but the least (16%) do smoke cigarettes.

Figure 4 shows the distribution of respondents according to whether they are current smokers of smoked cigarettes or previously smoked cigarettes. (N=10)

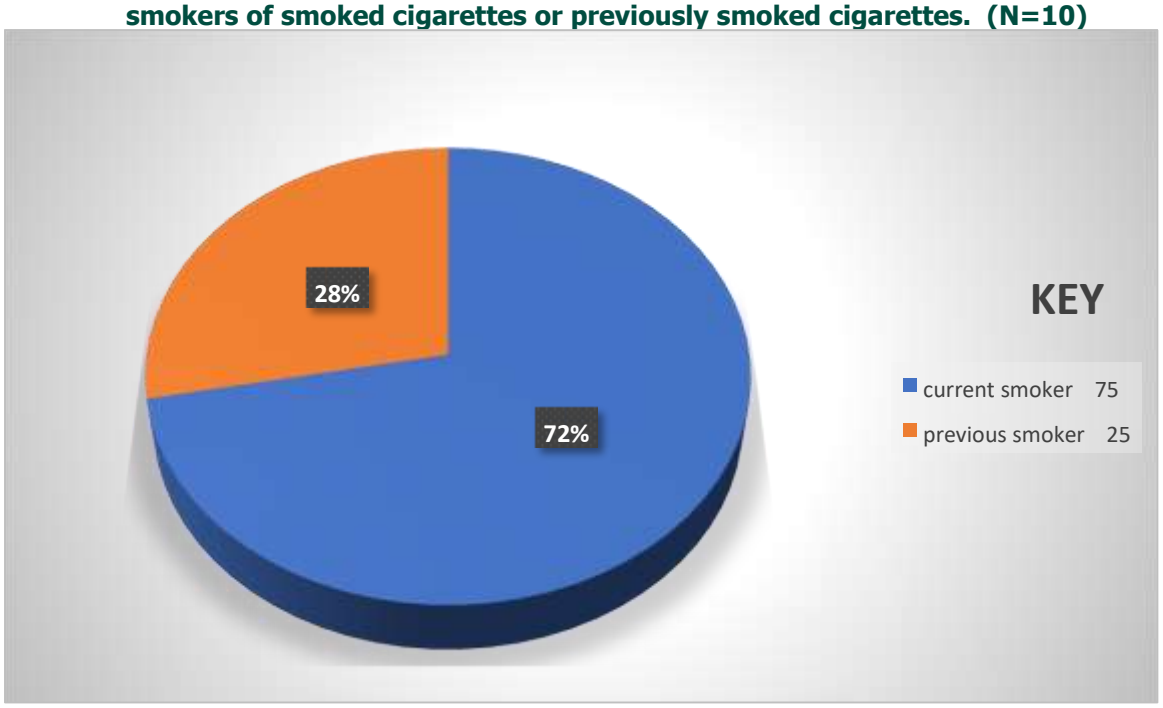

Figure 4, the majority (72%) were current smokers, but the least (28%) were previous smokers.

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Figure 5 shows the distribution of respondents according to whether they smoke alcohol or not. (N=50)

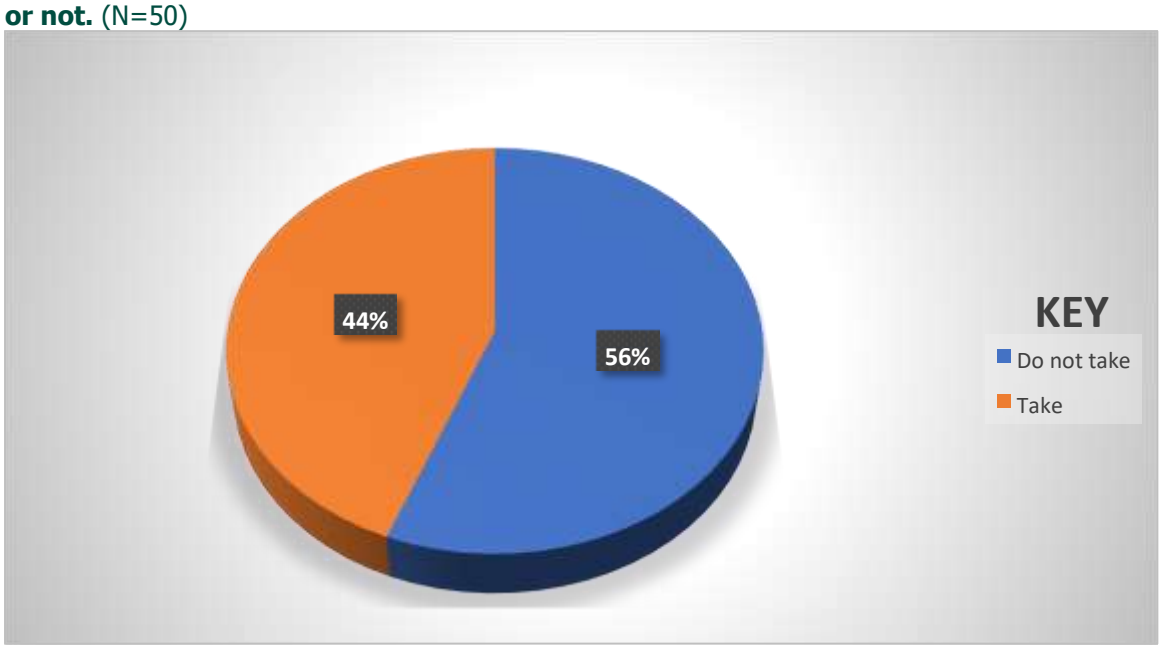

Figure 5: The majority of the respondents (56%) do not take alcohol, the least (44%) do take alcohol.

Table 4 shows the distribution of respondents according to how many meals they take in a day. (N=50)

Response	**Frequency (f)**	**Percentage (%)**
Once	2	4
Twice	24	48
Thrice	18	36
Others	6	12
Total	**50**	**100**

Table 4, the majority of the respondents (48%) eat twice a day, whereas the least (4%) eat once a day.

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Figure 6 shows the distribution of respondents on whether they take sugary foods or not. (N=50)

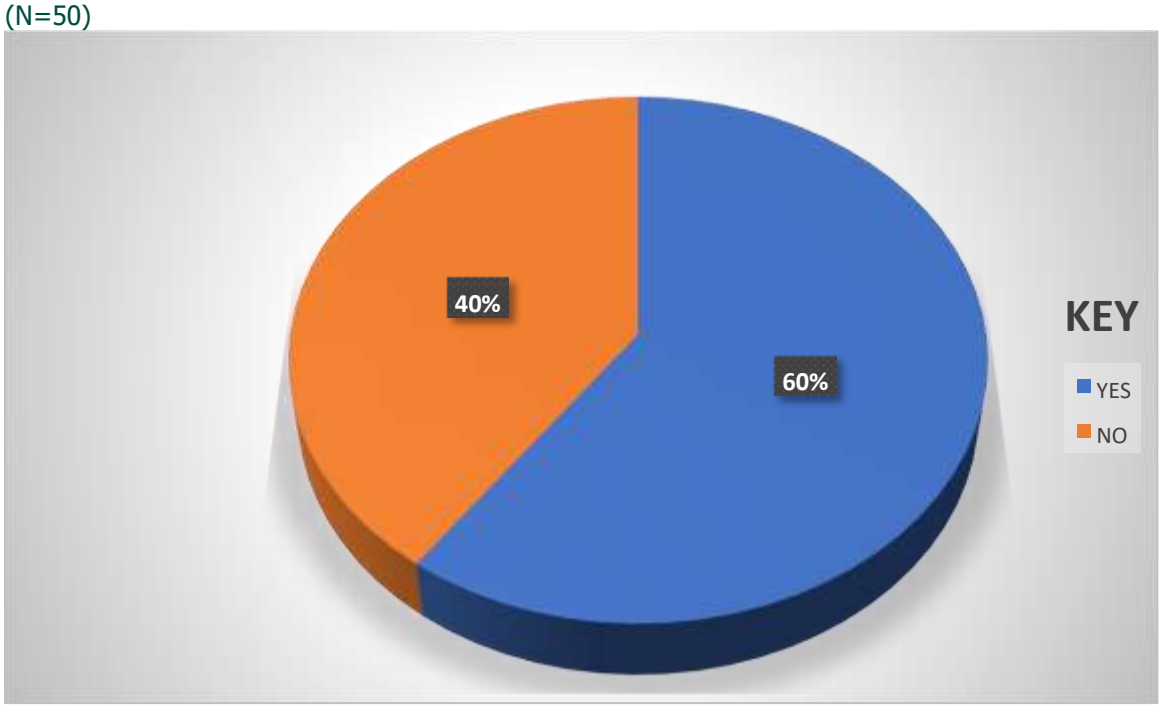

Figure 6: The majority of the respondents (60%) eat meals containing sugary foods, while the minority (40%) take meals not containing sugary foods.

Figure 7 shows the distribution of respondents according to whether they have ever gone for a dental checkup or not. (N=50)

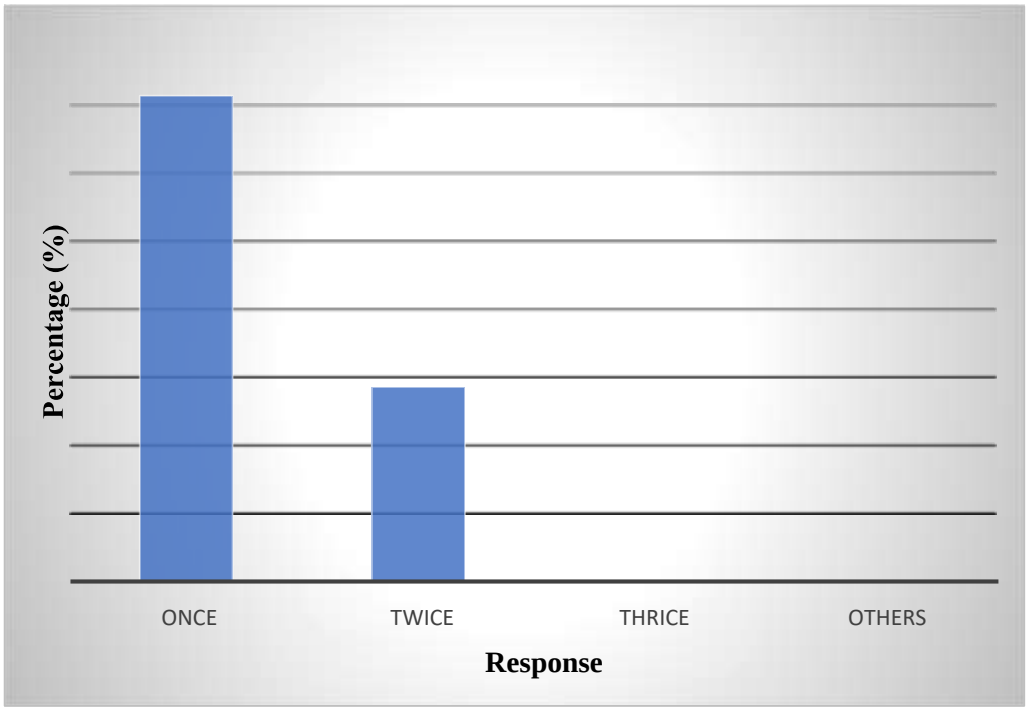

Figure 6 above majority of the respondents (86%) had never gone for a dental checkup, while 14% had ever gone for a dental checkup in the hospital.

Table 5 shows the distribution of respondents according to how often they go for a dental Check up in a year. (N=7)

Response	Frequency (f)	Percentage (%)
Once	5	71.4
Twice	2	28.57
Thrice	0	0
Others	0	0
Total	**7**	**100**

Table 5, the majority **(**71.4%) who go for a dental checkup go there once a year, but the least (28.77% go there twice a day.

Identification of socioeconomic factors contributing to increased prevalence of dental caries among residents of Nabweru South Ward, Nansana municipality, Wakiso district.

Table 6 shows the distribution of respondents according to whether they are employed or not (employment status) (N=50)

Response	Frequency (f)	Percentage (%)
Employed	18	36
Un employed	20	40
Self employed	12	24
Total	**50**	**100**

Table 6, the majority of the respondents (40%) were unemployed, whereas the minority of the respondents (24%) were self-employed.

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Figure 8 shows the distribution of respondents according to whether the salary they receive is enough for them to acquire the dental health services they need. (N=50)

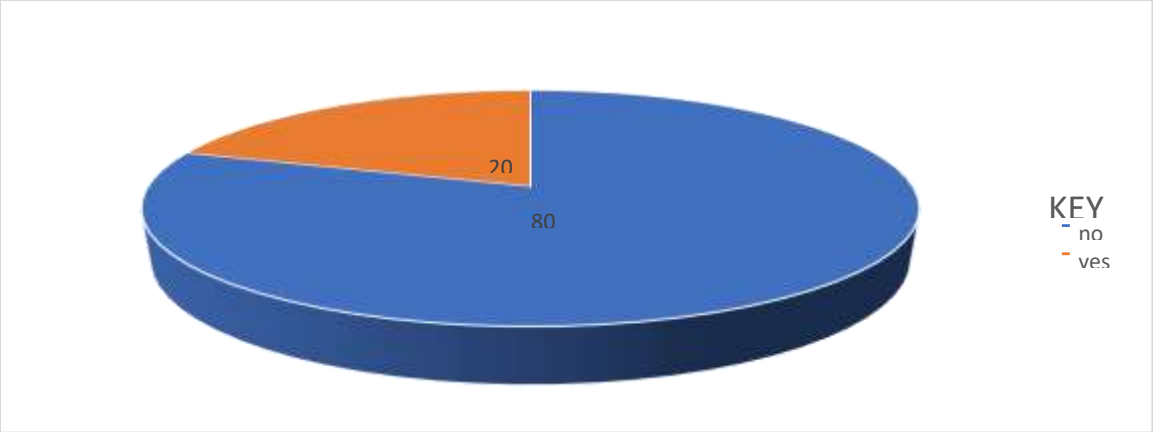

Figure 9shows the distribution of respondents according to their monthly earnings. (N=50)

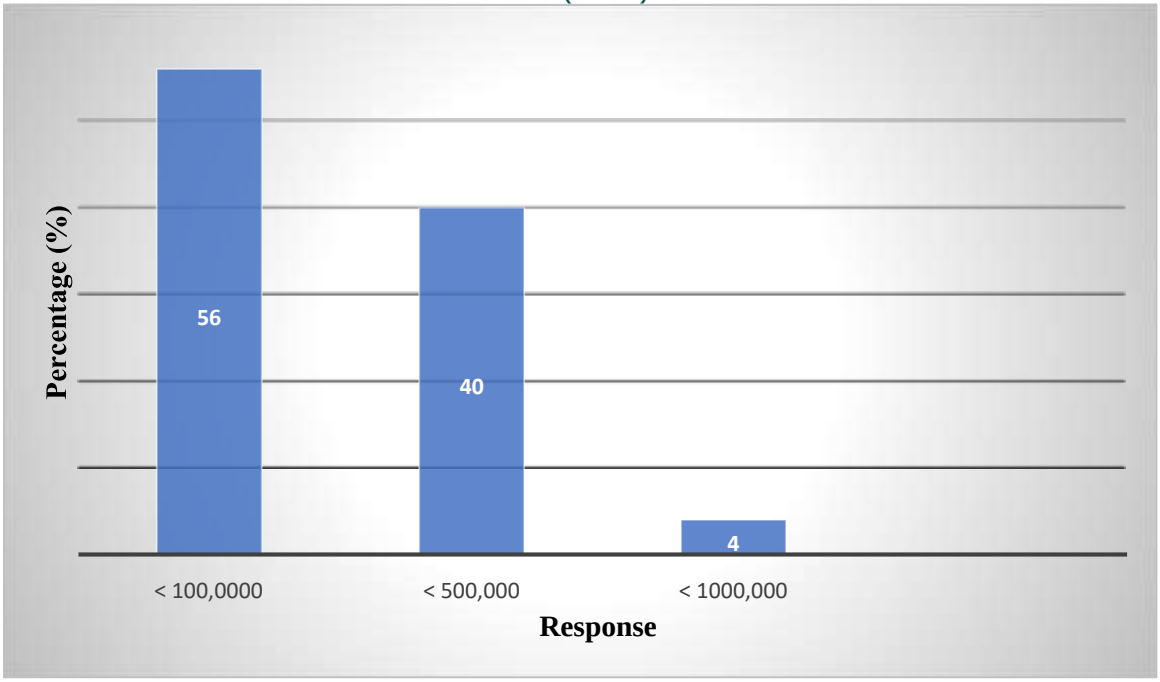

Figure 9, the majority of the respondents 56% earn less than 100,000 Ugandan shillings, whereas the least number, 4%, earn less than one million.

Discussion

Behavioural factors contributing to increased prevalence of dental caries among residents of Nabweru South Ward in Nansana municipality, Wakiso district.

According to the findings, the majority of the respondents (60%) brush their teeth once a day. This could probably be because respondents brush in the morning as they leave for work and come back in the evening, and they do not carry their toothbrush and toothpaste to their workplace. This is in agreement with those from the study that was conducted on social behavioural factors associated with dental caries prevalence and DMFT index in adolescent and young adults in developing countries, whose results revealed that 81.5% of the participants brush their teeth only once a day. This further implies that tooth brushing frequency was strongly associated with the prevalence of dental caries.

From the findings, most of the respondents (85.5%) use a toothbrush and toothpaste to brush their teeth. The study also showed that the majority of the respondents (60%)

take meals containing sugar. This could probably be because they want to make meals sweeter, and the lack of knowledge about its effect. This is in agreement with Guo A et al (2022), where the majority of the participants reported a high frequency of sugary intake (>2.5/day) of sweet foods and drinks. This happens probably because the bacteria in the mouth metabolise the sugars to produce acids that demineralise the hard tissues of the tooth (enamel and dentine).

Furthermore, most of the respondents (86%) reported that they have never gone for a dental checkup in the hospital. This could be because they do not have the money to seek dental health, or even a lack of knowledge about the need for regular dental visits to the dentist.

Socioeconomic factors contributing to the increased prevalence of dental caries.

They showed that the majority of the respondents (40%) were unemployed. This implies that the majority of the respondents don't earn money to enable them to seek dental health because they are jobless. This is in agreement with the study that was carried out on the association between current unemployment and clinically determined poor oral health, which revealed that the majority of the respondents (56%) were unemployed with a higher number of missing teeth, decayed teeth, and teeth with periodontal pockets than the employed ones. This further implies that employment status is strongly associated with dental caries experience because residents lack the money to seek dental care.

Conclusion

Failure to do dental checkups, alcohol intake, and consumption of sugary meals were the factors that contributed to dental caries.

Recommendation

The government, through the Ministry of Health, should educate the general public about dental caries and proper oral hygiene practices in order to reduce their occurrence and prevalence.

The researcher recommends that the community leaders of Nabweru South Ward encourage residents to attend dental checkups at the hospital to reduce the risk of dental caries occurrence.

The government, through the Ministry of Health, should train more dental specialists/dental surgeons and deploy more of them in hospitals, and also provide enough equipment for dental health care services.

The study further recommends more studies on the factors contributing to the increasing prevalence of dental caries over a wider geographical area, so as to identify more solutions.

Acknowledgement

I am sincerely very grateful to all those who helped me to complete this research write-up. A special mention goes to my supervisor, Mr Atukuuma Cliffe, who guided me throughout the entire research process. I also wish in a special way to thank my friends Diana, Cathy, and Martin for their social and psychological support, even when I thought of giving up on research work.

A lot of thanks to my father who has paid for my tuition since I started school up to this course.

List of Abbreviations

DMFT : Decayed, Missing, and Filled tooth

Source of funding

The study was not funded.

Conflict of interest

There's no conflict of interest declared.

Data availability

Data is available upon request.

Author contribution

Flugensio Kabuubi collected data and drafted the manuscript of the study

Cliffe Atukuuma supervised the study

Author Biography

Flugensio Kabuubi, a student undertaking a diploma in Clinical Medicine and Community Health at Kampala School of Health Sciences

Cliffe Atukuuma, a lecturer at Kampala School of Health Sciences.

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