

Dental Fear And Anxiety And Oral Health Seeking Behaviour Among Adolescents In Some Selected Senior High Schools

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Abstract

Background:

Positive oral health-seeking behaviour among adolescents is essential in enhancing healthy oral health. This is because it leads to early seeking of health information, engaging in self-care, and utilizing healthcare services, which eventually reduces dental anxiety and fear among adolescents and can result in a positive health-seeking attitude in adulthood.

Aim:

This study evaluated dental fear and anxiety among adolescents in selected Senior High Schools and determined their association with their oral health-seeking behaviour.

Methodology

A survey with a cross-sectional approach was carried out among 386 students selected via stratified random sampling based on their academic programmes. A validated Modified Dental Anxiety Scale (MDAS), Dental Fear Survey (DFS), and oral health-seeking behaviour questionnaire were employed in data collection. The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26 and Microsoft Excel 2016.

Results:

Fear was reported as the commonest barrier to seeking oral health care, with a percentage of 50.8 among the adolescent cohort, followed by the high cost of dental care, 23.1%. Of the participants, 21.5% admitted to a lack of knowledge about dental health and did not see the importance of dental health. Upon conducting a linear regression analysis, it was determined that fear, anxiety, and schools were significant predictors of good oral health-seeking behaviour. Fear and type of schools were noted to be positive predictors of good oral health-seeking behaviours, while anxiety negatively influenced oral health-seeking behaviour.

Conclusion:

The findings reveal barriers to seeking oral health care, mainly due to fear, high cost, and lack of knowledge. While positive health-seeking behaviour is very important for developing positive attitudes among adolescents, it is essential to expand oral health education among the young population

INTRODUCTION

Oral health is essential to overall well-being and the establishment of good oral hygiene practices and health-seeking behaviours during adolescence.¹ Health-seeking behaviour, which include obtaining health information, engaging in self-care, and utilizing healthcare services, are significant predictors of

population health and social development.² As noted by Mboweni and Sumbane,³ health-seeking behaviours are assets for exploring how individuals engage with healthcare systems; they are therefore regarded as a predictive tool of a healthy population, social progress, and economic development.⁴

Adolescents, due to their unique developmental needs, require tailored approaches to foster effective health-seeking behaviours.⁵ Despite the importance of oral health, many adolescents exhibit a low motivation to seek dental care, even when prompted by acute pain. This may be due to their dental fear and anxiety (DFA). DFA, which is particularly prevalent among adolescents, creates a detrimental cycle of avoidance and escalating anxiety, thus adversely affecting oral health-seeking behaviours and practices. According to McGorry et al.,⁶ adolescents are satisfied with the course of their lives and this is manifested in their unwillingness to seek medical attention, while some go right away, others wait until a health issue arises.^{7,3}

Some adolescents may develop healthy behavioural habits or acquire bad habits that could be detrimental to them and others⁸ hence it is important to determine factors that may influence such behaviour choices. This study explores the association of DFA on oral health-seeking behaviours among adolescents in senior high schools, to enhance understanding and develop targeted strategies to foster proactive dental health among the adolescents.

Dental fear and anxiety (DFA) can serve as major barriers that influence oral health-seeking behaviours resulting in detrimental oral health challenges, affecting all ages.⁹ DFA has been reported to decline with age¹⁰ and is significantly more prevalent among adolescents and children globally.¹¹ According to Grisolia et al.,¹² there are no significant differences between adolescent females and males regarding the prevalence of dental anxiety, despite multiple studies suggesting that dental anxiety was more prevalent in female adolescents than males.

Dental fear and anxiety have diverse manifestations, effects and etiologies and are of major concern as they negatively impact oral health habits and oral health-seeking behaviours of children and adolescents.¹³ A significant predictor of dental anxiety identified in children and adolescents in a study by Bajrić et al.¹⁴ was fear of pain. Adolescents usually perceive dental treatment as unpleasant and painful, hence project it on future treatment appointments (anticipatory pain), which ultimately results in dental anxiety.¹⁵ Anxiety can also be induced in any person by syringes, the sound of rotary devices, and other sharp dental instruments.¹⁶ Notably, prevention-oriented cultural beliefs toward dental care and daily oral health maintenance were attributed to less fear at the first dental visit and subsequently fewer negative dental experiences, and lower dental anxiety.¹⁷

Dental anxiety and fear have become major barriers that might prevent adolescents from receiving necessary dental care, notwithstanding the importance of maintaining good oral health. This study therefore evaluated dental fear and anxiety among adolescents in selected Senior High Schools and determined its association with their oral health-seeking behaviour.

MATERIALS AND METHODS

Study design

A survey with cross-sectional approach was adopted for this study to evaluate dental fear and anxiety among adolescents and its association with their oral health-seeking behaviour.

Study site

The study was conducted in three senior high schools in Accra, Ghana namely; St. Mary's Senior High School, St. Thomas Aquinas Senior High School and Labone Senior High School.

Study population

The study involved adolescent boys and girls aged 13–19 attending St. Mary's Senior High School, St. Thomas Aquinas Senior High School, and Labone Senior High School.

Sampling strategy and data collection

This cross-sectional study was conducted in three senior high schools in Accra, Ghana namely; St. Mary's Senior High School, St. Thomas Aquinas Senior High School and Labone Senior High School. Selection of these second-cycle schools was done purposively, based on gender: St. Mary's Senior High School and St. Thomas Aquinas Senior High School (SHS) being single-sex schools, and Labone Senior High School, mixed-sex. The study population involved adolescent boys and girls with ages ranging from 13 years to 19 years old in the selected senior high schools.

Using stratified random sampling, participants were categorized according to their academic level (SHS 1 to SHS 3). A total of 386 participants were selected; 126 from St. Thomas Aquinas SHS, 128 from Labone SHS, and 132 from St. Mary's SHS. A minimum of 10 students from different courses of study were randomly selected from each academic level. A validated Modified Dental Anxiety Scale (MDAS) by Dailey et al,¹⁸ and Dental Fear Survey (DFS) by Kleinknecht et al,¹⁹. Also, Dental coping strategy question by Berson et. al,²⁰ and oral health-seeking behaviour questionnaire by Khare et al.²¹ were used to collect data from only the adolescents whose parents granted consent to participate in the study. The collected data was analyzed using the Statistical Package for the Social Science (SPSS) version 26 and Microsoft Excel 2016. Continuous variables such as age, MDAS, and DFS scores were summarized by means and standard deviations, and Spearman's correlation was used to determine linear associations between the scores. Oral health-seeking behaviour was categorized into promoters and barriers. Linear regression was used to determine factors that influence oral health-seeking behaviour. Chi-square tests were used to compare the proportion between levels of fear and anxiety among the sexes and the

different schools. The results were then presented using tables, charts and graphs. Discrete data was represented on a bar graph.

The study was approved by the Ethical and Protocol Review Committee of the Department of Community and Preventative Dentistry of the University of Ghana Dental School, College of Health Sciences (CPDD/01/02/2024), ensuring ethical standards of the Institutional Research Committee and the Helsinki Declaration.

RESULTS

The mean age of the study population was 16.8 ($\pm$ 1.278) years with females forming the majority of the study population. Each of the three schools constituted a third of the entire study population. SHS-3 accounted for 49.5%, SHS-2 32.6% and SHS-1 17.9%. The courses were General Science 35.5%, General Arts 24.9%, Business 23.8%, Visual Arts 2.6%, and Home Economics 12.2%.

Table 1: Demographic Characteristics of Participants

Mean age (years)	Means	SD
	16.8	1.278
Sex	N	Percent
Male	178	46.1
Female	208	53.9
School		
St Thomas Aquinas SHS	126	32.6
Labone SHS	128	33.2
St Mary's SHS	132	34.2
Levels		
SHS 1	69	17.9
SHS 2	126	32.6
SHS 3	191	49.5
Course		
General science	137	35.5
General Arts	100	25.9
Business	92	23.8
Visual Arts	10	2.6
Home Economics	47	12.2

Using a cut-off OF MDAS > 19 to assess dental anxiety and a cut-off DAS > 15 to assess dental fear, the prevalence of dental anxiety and fear among adolescents was 24.8% and 21.4%, respectively, Figs. 1 and 2.

The male-sex school had the lowest levels of anxiety and fear, followed by the mixed schools. The female-sex school had the highest mean score for dental anxiety and fear, Fig. 3.

Oral health-seeking behaviours assessed among the adolescents were categorized into promoters and barriers to seeking oral health care as shown in Table 2 and Fig. 4 respectively. Less than half (40.4%) of the participants had visited the dental clinic, 59.6% had never attended the dental clinic and 36.5% of the participants had received dental treatment, Table 2. Most attendees (77.6%) only visited the dentist when needed, 12.8% had been to the dental clinic only once in their lifetime and 9.6% had visited the dental clinic more than once, Fig. 5. Toothache was the most common reason for seeking dental care (58.5%), followed by regular dental check-ups (23.7%), gum bleeding (13.5%) and loose teeth (10.9%),

Table 2. Fear was reported as the commonest barrier to seeking oral health care with a percentage of 50.8 among the adolescent cohort followed by high cost of dental care, 23.1%. Of the participants, 21.5% admitted to a lack of knowledge about dental health and didn't see the importance of dental health, Fig. 4.

Table 2
Specific oral health seeking behaviours

<i>Specific oral health seeking behaviours</i>	<i>N</i>	<i>Percent</i>
<i>Dental visit</i>	<i>156</i>	<i>40.4</i>
<i>Received dental treatment</i>	<i>141</i>	<i>90.4</i>
<i>Reasons for treatment</i>		
<i>Toothache</i>	<i>91</i>	<i>58.3</i>
<i>Regular check up</i>	<i>37</i>	<i>23.7</i>
<i>Gum bleeding</i>	<i>21</i>	<i>13.5</i>
<i>Tooth filling</i>	<i>15</i>	<i>9.6</i>
<i>Loose tooth</i>	<i>17</i>	<i>10.9</i>

Table 3 shows the factors that significantly predict positive oral health-seeking behaviour. Upon conducting a linear regression analysis, it was determined that fear, anxiety, and schools were significant predictors of good oral health-seeking behaviour. Fear and schools were noted to be positive predictors of good oral health-seeking behaviours while anxiety negatively influenced oral health-seeking behaviour.

Table 3
; Factors associated with good oral health-seeking behaviour

	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>Sig.</i>	<i>95.0% CI for B</i>	
	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		<i>Lower Bound</i>	<i>Upper Bound</i>
(Constant)	-0.589	2.231		0.792	-4.975	3.797
Barrier score	0.914	0.475	0.081	0.055	-0.02	1.849
Fear total score	0.366	0.027	0.577	< 0.001	0.313	0.419
Anxiety total score	-0.096	0.032	-0.129	0.003	-0.158	-0.034
AGE	-0.004	0.115	-0.001	0.973	-0.23	0.223
SEX	-0.81	0.492	-0.119	0.1	-1.777	0.157
SCHOOL	0.716	0.303	0.172	0.019	0.119	1.312

Only fear, anxiety and schools were significant predictors of good oral health-seeking behaviour (promoters).

Figure 7 shows the significant differences among the schools regarding promoters and barriers of oral health-seeking behaviours. St. Mary's senior high school had the highest positive prediction of oral health seeking behaviours. Promoter, $p = 0.001$, Barriers, $p < 0.001$

DISCUSSIONS

This study explored the association between dental anxiety and fear and oral health-seeking behaviours among adolescents. The findings demonstrated a relatively high prevalence of dental anxiety (24.8%) and dental fear (21.4%) among adolescents, with notable differences across sex and school type, and significant associations with oral health-seeking behaviours.

The prevalence of dental anxiety observed in this study is consistent with previous studies among adolescents, which report dental anxiety levels ranging between 10% and 30%.¹² The relatively high prevalence identified in this study highlights that dental anxiety remains a significant public health concern among adolescents in Ghana. Adolescence is a critical developmental period where negative experiences can shape long-term attitudes toward dental care.⁸ Therefore, the presence of anxiety at this stage may contribute to avoidance behaviours, delayed dental visits, and poorer oral health outcomes later in adulthood.

Female participants generally demonstrated higher scores for dental anxiety and fear compared to males, with the female-only school recording the highest anxiety and fear levels, while the male-only school had the lowest scores. This finding is consistent with numerous studies that found that females generally reported higher dental anxiety and fear than males.^{22,12} This difference may be attributed to psychological, social, and cultural factors, including greater emotional expressiveness among females and heightened sensitivity to pain or perceived threats.²³ Additionally, societal norms may make females more willing to report anxiety compared to males, who may underreport due to expectations surrounding emotional resilience.²⁴

Oral health-seeking behaviours among the adolescents were generally poor, despite experiencing oral health challenges. Among the 40.4% who had sought dental care, visits were mostly episodic and prompted by need, with toothache being the most common reason. These findings indicate a predominantly problem-oriented approach to dental care rather than a preventive one.²⁵ This pattern has been widely reported in many low and middle-income countries, where preventive dental visits are less common due to limited awareness, accessibility challenges, and financial constraints.²⁶

Fear emerged as the most common barrier to seeking oral healthcare, reported by more than half of the participants (50.8%), followed by high cost of dental care and lack of knowledge regarding oral health importance. These findings reinforce the role of psychological factors as major determinants of dental attendance. Fear-based avoidance may create a vicious cycle, where delayed care leads to worsening oral conditions, requiring more invasive treatment, which further reinforces anxiety and fear.²⁷ This highlights the importance of early preventive exposure and positive dental experiences among adolescents.

Regression analysis further demonstrated that fear, anxiety, and school type were significant predictors of oral health-seeking behaviours. Interestingly, fear showed a positive association with oral health-seeking behaviour, while anxiety negatively influenced dental attendance. This aligns with the concept of "health anxiety," where fear of potential health issues motivates individuals to pursue preventive care.²⁸ This distinction between fear and anxiety has been reported in previous studies, where fear may trigger action, whereas anxiety often leads to avoidance and delayed treatment.

School-related differences were also observed, with St. Mary's Senior High School demonstrating the highest positive oral health-seeking behaviours. This may reflect differences in health education, socioeconomic background, institutional culture, or access to healthcare services. Schools play an important role in shaping adolescents' health behaviours, and targeted school-based oral health education programs may improve preventive dental attendance and reduce anxiety.

The findings of this study also support the role of prevention-oriented beliefs and culture in reducing dental anxiety.¹⁷ Overall, the results emphasize the need for early preventive interventions, school-based oral health education, and strategies to reduce dental anxiety among adolescents. Such interventions

may improve oral health-seeking behaviours, reduce fear-related avoidance, and ultimately improve oral health outcomes among adolescents in Ghana.

In conclusion, generally, less than a third of the participants had dental anxiety and fear but the prevalence was higher in the females than in males.

Schools with female students had more positive oral health-seeking behaviour than the male-only schools. Dental fear and anxiety were found to be significantly associated and negative predictors of oral health-seeking behaviours among adolescents. This therefore, underscores the importance of addressing dental anxiety within this population, as it could lead to improved oral health behaviours and overall well-being.

LIMITATIONS

The result of the study may not be generalized to rural communities since most of the schools in the study are in the urban community.

RECOMMENDATION

A longitudinal approach to track changes in dental anxiety and oral health-seeking behaviours over time may be employed subsequently to establish causal relationships and provide a deeper understanding of how anxiety evolves and affects oral health practices.

Declarations

Ethical approval- The study was approved by the Ethical and Protocol Review Committee of the Department of Community and Preventative Dentistry of the University of Ghana Dental School (CPDD/01/02/2024), ensuring ethical standards of the Institutional Research Committee and the Helsinki Declaration;

Consent to participate in the study -Consent to participate in the study was sought through the parents of the students since they were under 18 years. The consent forms were sent to their parents by the school authorities and only children whose parents granted consent were allowed to participate in the study.

Consent for publication-N/A

Data availability-Data on the study is available and can be accessed from a dedicated repository to be provided by the corresponding author;

Competing interest-the authors have no competing interest to declare;

Funding-there was no funding for the study;

Authors' contributions-have been included in the submission package;

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Figures

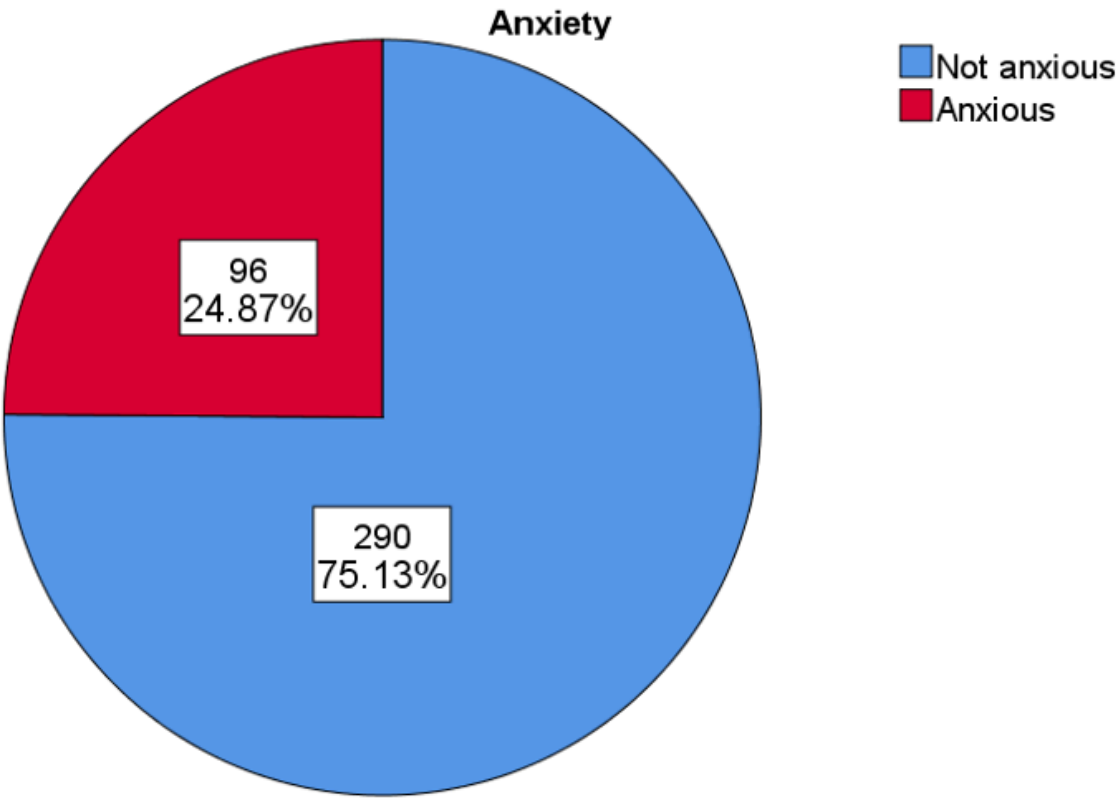


Figure 1

Levels of anxiety among the participants

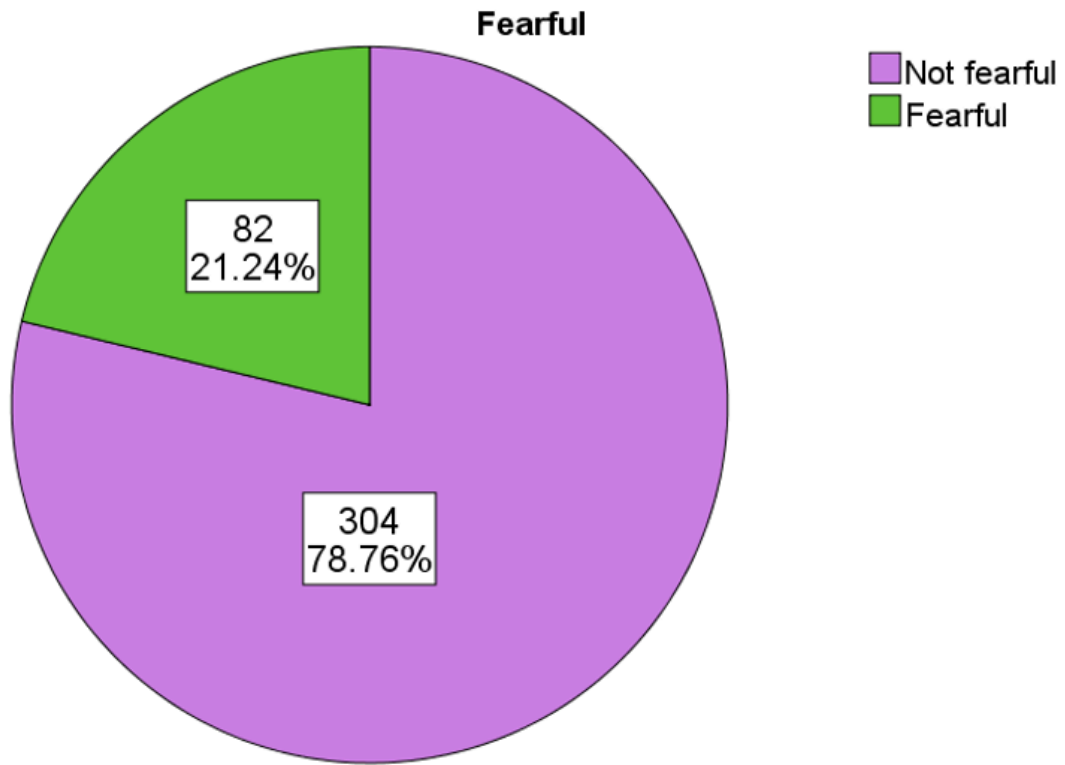


Figure 2

Levels of fear among the participants

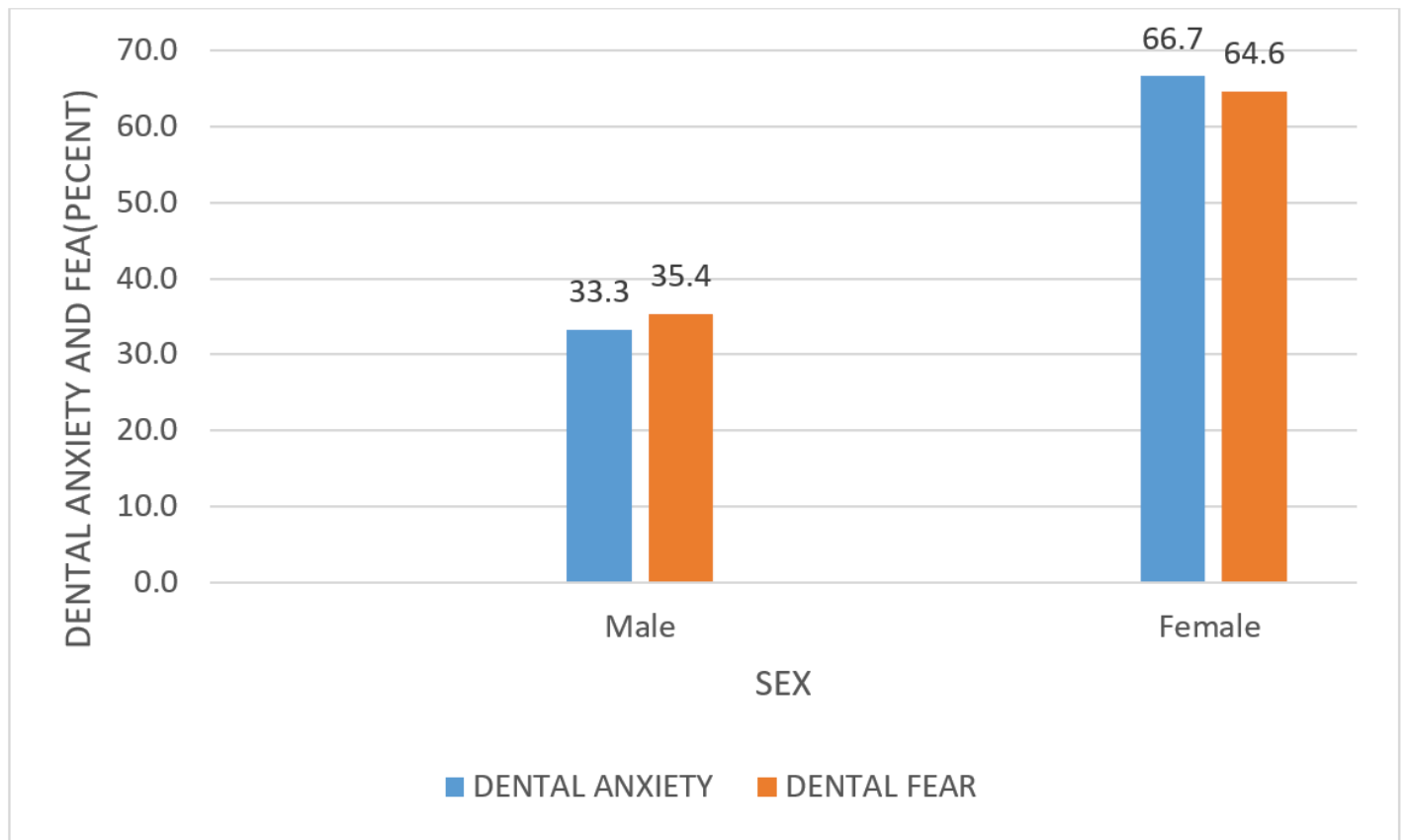


Figure 3

Levels of dental anxiety and fear among the sexes.

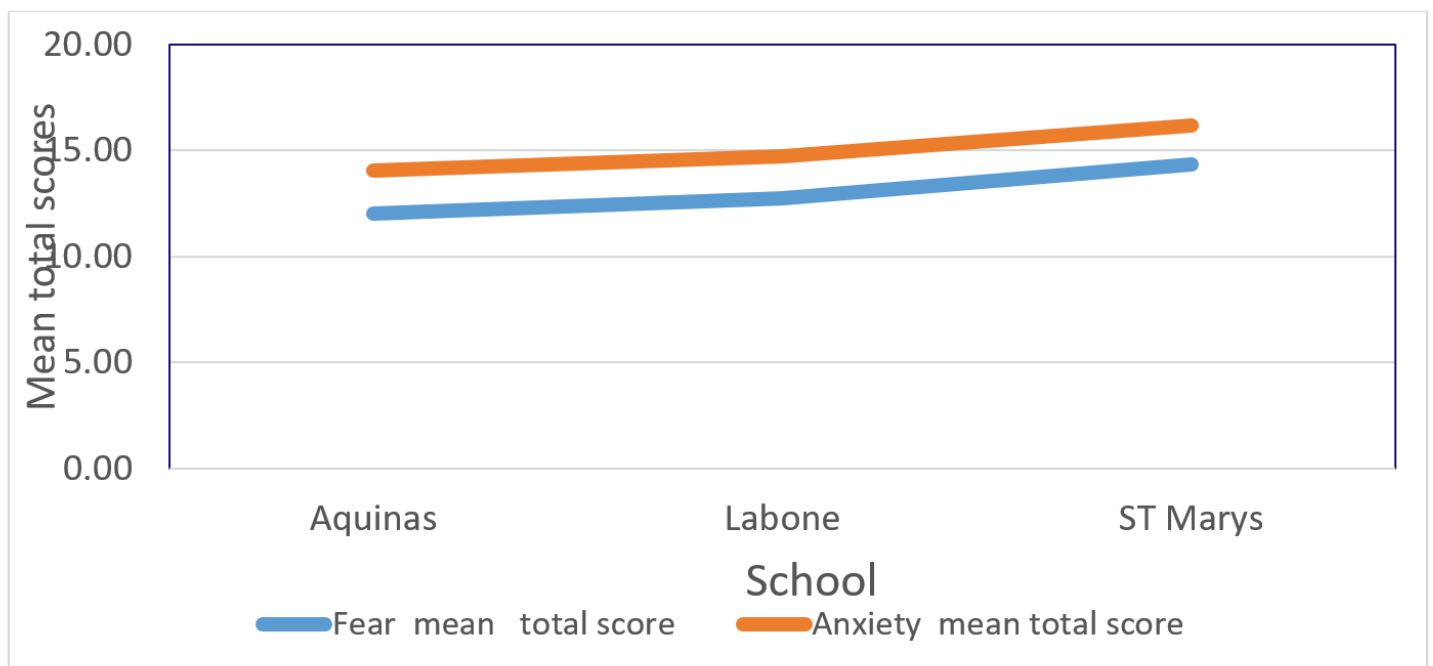


Figure 4

Comparisons of Anxiety and Fear scores among the three schools. P=0.002.

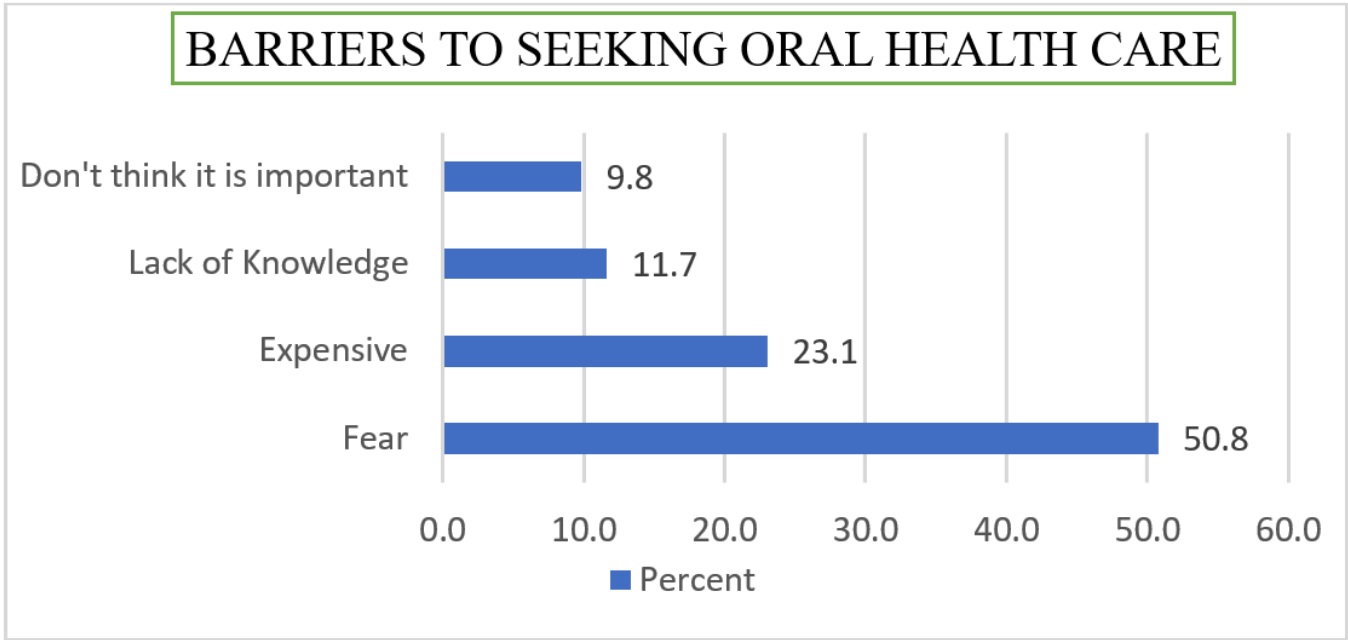


Figure 5

Barriers to seeking Oral healthcare

FREQUENCY OF DENTAL VISIT

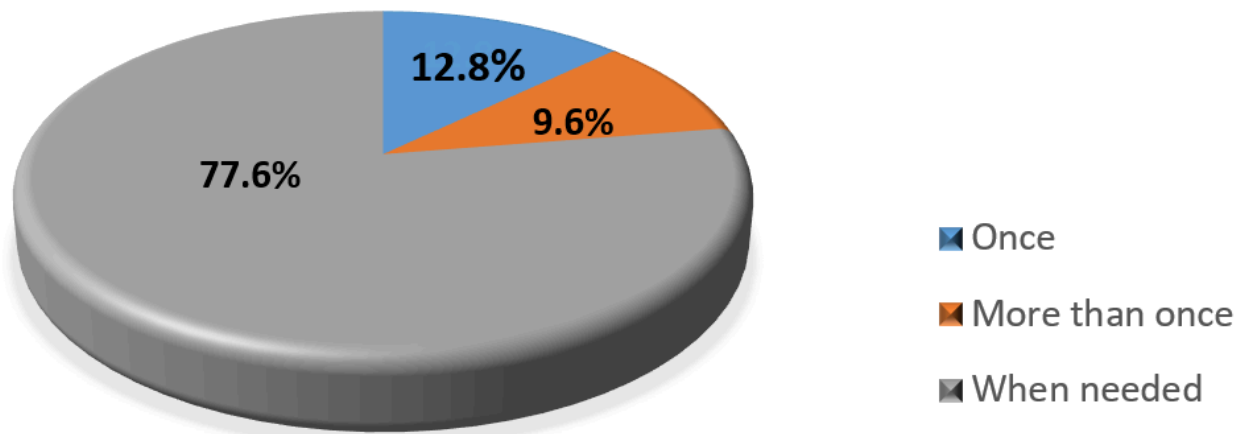


Figure 6

Frequency of dental visits among those who had visited the dentist

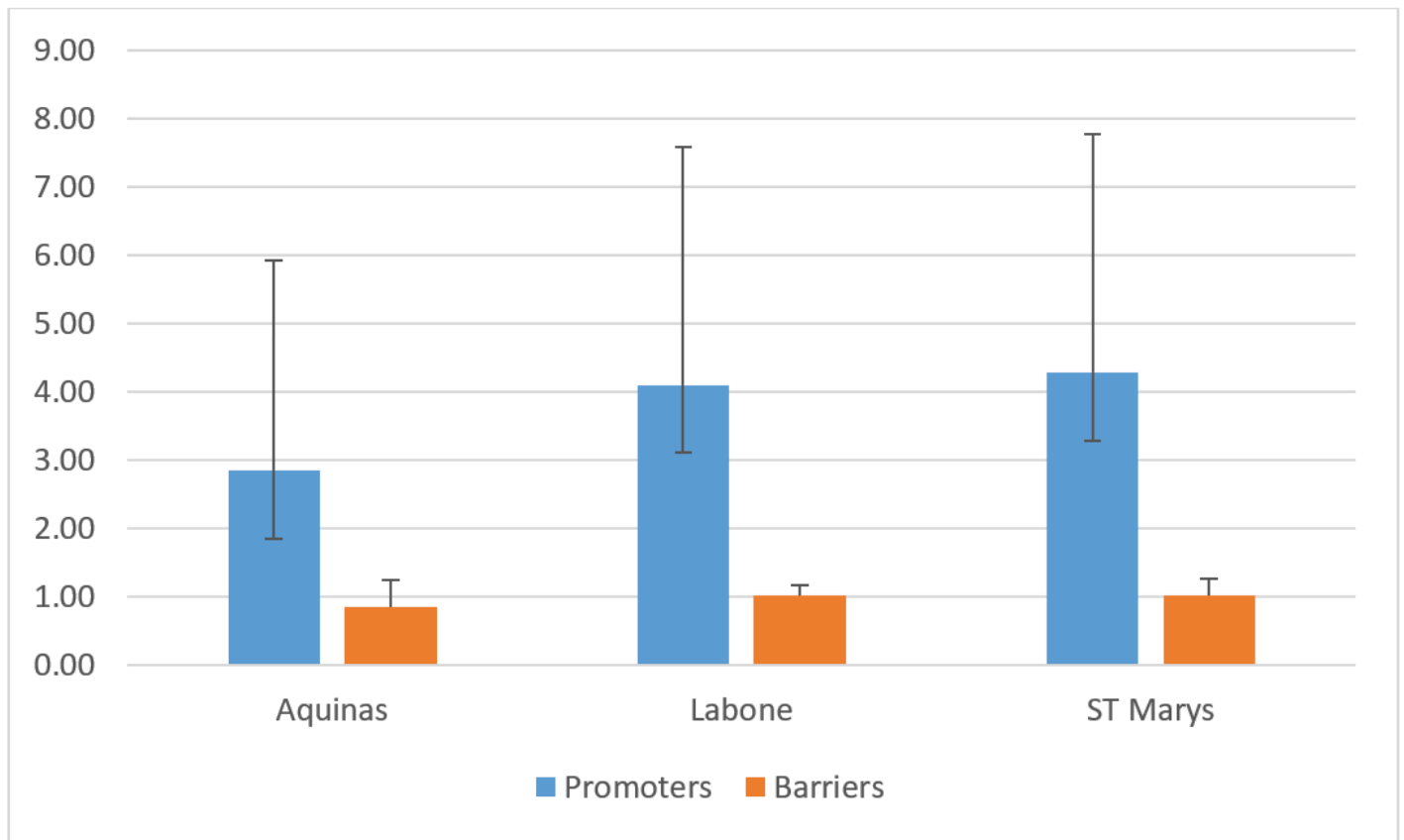


Figure 7

Promoters and barriers to oral health-seeking behaviours among the schools.