

ORIGINAL PAPER

Dental Cognition and Anxiety Related to Dental Treatment among Adolescence students in Jordan National Schools

Fatma M. Elemary, MSc, RN, PhD

Assistant Professor, Psychiatric-Mental Health Nursing, Ain Shams university, Egypt

Hanan T. Elbahnasawy, MSc, RN, PhD

Assistant Professor, Pediatric Nursing, El- Menoufya University, Egypt
Currently Dean Faculty of Nursing, Isra University, Amman, Jordan

Correspondence: Hanan T. Elbahnasawy, Dean of the Faculty of Nursing, Isra University, Amman, Jordan
E-mail: hanantharwat2005@yahoo.com

Abstract

Introduction: Negative cognition and anxiety related to dental treatment continues to be a major obstacle for oral health care.

Aim: This study aims to explore the dental cognition (thoughts and believes) and anxiety related to dental treatment among adolescents in Jordan National Schools.

Design: A descriptive cross sectional research design was utilized in this study.

Setting: The study was conducted at Jordan National Schools (Private Schools) were located in Irbid City, Jordan.

Sample: One hundred fifty students who are eligible and meet the inclusive criteria.

Tools: The following instruments were utilized: 1) Soci-Demographic- Dental Characteristics Sheet; 2) Dental Hygiene Practices through asking questions; 3) Common Dental Problems Sheet; 4) The Dental Cognitions Questionnaire; 5) The Modified Dental Anxiety Scale.

Findings: The primary findings showed that almost half of the students between 12 to less 15 years of age and slightly more than three fourths of them were female. About half of them have an average school achievement. More than half of them have unsatisfactory practices about teeth brushing. While half of them have pain during chewing and two thirds have bleeding gum followed by dental decay, while the majority complains of dental pain. Also, two groups of the studied children were similar regarding both their visiting to the dentist more than twice a year and once per year for treatment. Also statistically significant differences between studied children regarding their anxiety associated with dental visiting. There was positive relationship between studied children's age& dental cognition and their anxiety while there was negative relation between gender and their anxiety.

Recommendation: Activate the role of both school health nurse and pediatric nurse practitioner to provide oral health screening, early risk assessment, and preventive services as well as appropriate referrals to children who are at the highest risk for early childhood caries.

Keywords: Dental Practices, Dental Anxiety, Negative Dental Cognition, Adolescents.

Introduction

World Health Organization recognizes that adolescences are young people between the age of 10-19 years old and they constitute about a fifth of the world's population (WHO, 2005). Children and adolescents often face a variety of stressful dental procedures and experience dental anxiety when attending appointments. In particular, dental procedures can be stressful experiences. Dental caries, tooth decay, predominantly affect children and adolescents. As a result, these individuals may have oral problems that can affect systemic health. Whenever oral health is compromised, the overall health of a person and the quality of his or her life may be at risk (Hmud & Walsh, 2009).

Anxiety is defined as 'a state of apprehension resulting from the anticipation of a threatening event or situation's (American Heritage Science Dictionary, 2005). Dental anxiety is defined as "an abnormal fear or dread of visiting the dentist for preventive care or therapy and unwarranted anxiety over dental procedure" (Encyclopedia of Medical Concepts, 2009). Dental anxiety is associated with a state of apprehension with a fear of something dreadful is going to happen during dental treatment (Klingberg & Broberg, 2007).

Assessment of children's dental beliefs and thoughts provides valuable information for identifying their dental anxiety and then manage it. Accordingly, there is a clear need to explore the negative cognition (thoughts and believes) and anxiety related to dental treatment in younger and older children. Whereas, analysis of dental anxiety from a cognitive perspective could be useful to gain a better understanding of the mechanisms involved in dental anxiety (Colares & Richman, 2002).

Within the same context, dental anxiety is a serious problem affecting a significant part of the population. It has been identified as a significant and common problem in both children and adults and is considered an obstacle in the provision of quality dental care by dental care providers. It is reported that prevalence of dental anxiety was 7–12% among individuals and ranges 5.7% to

19.5% among children and adolescents (Sohn & Ismail 2005).

Furthermore, dental anxiety is a significant problem for both dental health care workers and patients. Whereas, the anxious patients require more chair time, frequently cancel scheduled appointments and are regarded by dentists as a great source of professional stress", which have an additional costs for patients as well (Bray et al., 2009). In this regard, dental anxiety also may have a significant impact on patients' lives. Firstly, it often leads to avoidance of the stimuli (the dental context), which can have a deleterious effect on oral health. Secondly, dental anxiety can have a wide ranging and profound impact on individuals' daily lives (Bray et al., 2003) and multi-dimensional impact encompassing physical, emotional, and social aspects of a person's functioning (Peltier, 2009).

Moreover, dental anxiety can be considered an important barrier to patients receiving the recommended dental care (Smith & Heaton, 2003); more specifically, dental anxiety in children is positively related to miss dental appointments (Wogelius & Poulsen, 2005). Within this point, dental anxiety should concern us as professionals because it prevents many potential patients from seeking care and it causes stress to the dentists undertaking dental treatment. A major source of stress for general dental practitioners is coping with the difficult patient. Therefore the treatment of young children can be challenging for the dental practitioner as their level of cooperation can be limited due to their anxiety (Blinkhorn, 2006).

Within the same context, recent research points out that cognitive factors involved in the processing of dental-related stimuli are better predictors of the fearful behavior (Armfield, 2010). Also from a cognitive perspective, suggest that five interconnected factors are involved in the etiology and maintenance of childrens' dental fear; fear of loss of control, the unknown, actual pain or its anticipation, intrusion into the physical or psychological space and lack of trust in the dentist for the fear of betrayal (Richard, 2000).

The assessment of oral health status and related care of patients is a largely neglected area of nursing practice. Although, nurse practitioners are on the front line of children's health care delivery. They can play an important role in providing oral health screening, early risk assessment, and preventive services as well as appropriate referrals to children who are at the highest risk for early childhood caries (Donna & Donna, 2009).

Significance of the study:

Unfortunately, advances in dental treatment methods and technology and increased knowledge, did not have any impact on the reduction of dental anxiety over the past few decades as shown by various studies conducted in several counties across a wide range of cultures.

In particular, dental caries, tooth decay, predominantly affect children & adolescents and often face them to a variety of stressful dental procedures and experience dental anxiety when attending their appointments. Furthermore, dental fear and anxiety in childhood may persist to adulthood and is a significant predictor for avoidance of dental visits in adulthood. This pinpoints childhood as a critical stage for preventing and intercepting dental fear and anxiety, thereby assisting people to protect their oral health and oral health-related quality of life in the long term.

Aim of the study

The current study was aimed to explore the dental cognition (thoughts and believes) and anxiety **related** to dental treatment among adolescents in Jordan National Schools.

Research Questions:

- Is the dental treatment affects the adolescents' cognition and exposing them to experience anxiety?
- Are there relations between studied adolescents' ages, gender & dental cognition and their anxiety associated or due to dental visit?

Subjects and Methods

A descriptive cross sectional design was utilized to conduct this study. The study was conducted at the Jordan National Schools (Private Schools) located in Irbid City, Jordan.

A purposive sample of one hundred fifty students in the Jordan National Schools in Irbid City, Jordan during the academic year 2012-2013 and who were eligible and met the inclusive criteria of the study.

The inclusion criteria for the participants were:

- Age was determined from 12 year and above.
- School students who had previous dental visits.

Tools of Data Collection

Five different tools were used for the purpose of data collection. These included a Demographic & Dental Characteristics, Dental Practices through asking questions, Common Dental Problems, Dental Cognition Questionnaire, and The Modified Dental Anxiety Scale.

I-Demographic-Dental Characteristics

This sheet was constructed by researchers to elicit data about firstly, demographic characteristics such as children's age, gender, grade in school, economic status and school achievement. And secondly about dental characteristics such; Time since Last Dental Visit, Average Visiting Frequency, When Expected to Make Next Visit, Has an appointment for a future dental visit, Have you canceled or postponed an appointment due to your resistance to dental treatment, behaviors that you displayed because you was going to receive dental treatment, Has you had any traumatic dental experience.

II- Dental Practices through asking questions

This sheet was constructed by researchers to elicit data about students' dental practices through asking questions on their teeth brushing as wash hands, apply hygiene toothpaste to brush and pour small amount of water over toothpaste, hold toothbrush bristles at 45 degree angle to gum line, brush inner and outer surfaces of upper and lower

teeth by brushing from gum to crown of each tooth, etc., Each item was rated on a two point Likert Scale: 1= Done and 0 = Not Done

III- Common Dental Problems Sheet

This sheet is to identify the students' dental problems such as pain during chewing, bleeding gum, dental decay and dental pain.

Content validity was tested by the five specialized persons in the field of pediatric nursing.

IV -The Dental Cognitions Questionnaire Dental Cognitions Questionnaire

This questionnaire (De jongh et al. 1995) contains 38 items (beliefs and self-statements) to assess believability of negative cognitions related to dental treatment. These items have been translated and simplified sense of line with the level of understanding of students. The first section of the questionnaire contains a list of 14 negative beliefs pertaining to dentistry in general (e.g. "Dentists don't care when it hurts") and to the patient himself (e.g. "I can't stand pain"). Following the sentence: "When knowing that I have to undergo dental treatment very soon, I think . . ." The second section consists of 24 negative self-statements that pertain to thinking during treatment (e.g. "Everything goes wrong"). Following the sentence: "While being treated, I think . . ." The participants were asked to tick "Yes" or "No" for each item. Each item was rated on 2 points: 2, 1 which mean Yes "I and No "I don't believe", respectively.

V-The Modified Dental Anxiety Scale

Dental anxiety in children was measured using the Modified Dental Anxiety Scale (MDAS) (Humphris et al.1995). It consists of 5 questions each with a 5 category rating scale, ranging from 'not anxious' to 'extremely anxious'. This answering scheme is a simplified rating system in comparison with **Corah's Dental Scale** (Corah 1969) which was an early 4 question measure of dental anxiety. The MDAS has an extra item about the respondent's anxiety to a local anaesthetic injection. In accordance with the modification conducted by researchers on the

scale to be suited with the students' description of their feelings, each item scored as follows: Not anxious (1) Fairly anxious (2) and Extremely anxious (3). Total score is a sum of all five items, range from 3 to 15.

Pilot study and field work

A pilot study was undertaken with the objectives of evaluating the clarity and the feasibility of the statements of the tools of data collection and thus provides more clarification for unclear meanings if there is a need to match the children's ability to comprehend the items of the different tools.

Once permission was granted to proceed in this study, the researchers contacted the directors of the selected schools to explain the purpose of the study & to obtain their cooperation. In each of the selected classes, also a simple explanation for the purpose of the study & tools of data collection was done by the researchers for the classes' teachers to obtain their cooperation and assistance in the process of data collection. The respondents assured anonymity of answers and that the information will be used for scientific research only and will be strictly confidential. The data of this study were collected during the period from November 2012 to January 2013. Teachers distributed the questionnaire to children in their class groups and each class teacher explained the purpose of the questionnaire. Students were invited to complete the questionnaire in their classes in the presence of the teachers for further help regarding any misunderstandings in the comprehension of the items of questionnaire. The respondents were spent a relatively 30 minutes or slightly more to provide answer for the items of Demographic- Dental Characteristics Sheet & Dental Practices & Common Dental Problems and also to report their thoughts, feelings and experiences with dentistry, or the dental environment by check with yes or no regarding the items of Dental Cognitions Questionnaire according to their believability of dental cognition that related to dental situations. Also the respondents were requested to rate the amount of their feeling state with a 3 category rating scale,

ranging from 'not anxious' to 'extremely anxious' which corresponds to their feeling about a various situations or procedures which can be encountered at the dental office.

Ethical Consideration

The nature and purpose of the study was explained to the directors of the selected schools as well as the classes' teachers to obtain their cooperation. All the information that is obtained from the participated children was be treated with the almost confidentiality .Clarification to any point of the study tools was provided to the classes' teachers if needed to ensure accuracy of the participants' responses.

Statistical Analysis

After completing the data collection, data were coded and transferred into a specific designed format to be suitable for computer feeding .All data were verified for any error .The Statistical Package for Social Science (SPSS) version 20 was utilized for statistical analysis and tabulation. The following statistical measures were used; Descriptive measures include number, percentage, arithmetic mean, one-way ANOVA and Chi-square tests were utilized in this study.

Results

The results of the study are presented in sections. The first section provides a description of the sample demographic and dental visiting characteristics & dental hygiene practices and dental problems. The second section includes descriptive data with attention to participants' dental cognition and their anxiety related to dental treatment. Section three reveals relations between the participants' ages& gender and Dental Cognition and their anxiety associated or due to dental visit.

First Section: Sample Socio-demographic and Dental Visiting Characteristics' and dental Hygiene Practices and Dental Problems:

In table 1 the Socio-demographic Characteristics of the studied population are presented.

Table (1) Socio-demographic Characteristics of the Studied Students (N0=150)

Students characteristics	No	%
Age		
12-	79	52.7
15-	71	47.3
Gender		
Male	33	22.0
Female	117	78.0
Grade		
6-7	40	26.7
8-9	39	26
10 or more	71	47.3
Economic		
Insufficient	0	0
Sufficient	108	72.0
Sufficient and save	42	28.0
Students' school achievement		
Above Average	42	28.0.
Average	78	52.0
Below Average	30	20.0

Table 1 shows that 52.7% of studied students age were between 12 to less than 15 years, the mean age of students' was 12 years, while 78% of them were female their grade between 10 to more 47.3%. Also, for 72% and 52% their economic status is sufficient and school achievement was average respectively. In table 2 the distribution of the sample according to their dental hygiene practices is presented.

Table 2: Distribution of the students according to their dental hygiene practices No=150)

Items	Done	Not done
-Wash Hands	49.3	50.7
-Apply toothpaste to brush and pour small amount of water over toothpaste.	41.3	58.7
-Hold toothbrush bristles at 45 degree angle to gum line.	46	54
-Brush inner and outer surfaces of upper and lower teeth by brushing from gum to crown of each tooth.	24.7	75.3
-Brush each tooth separately.	46	54
-Clean biting surfaces of teeth.	30	70
-Brushing sides of teeth by moving bristles back and forth and brush over surface and sides of tongue.	39.3	60.7
-Rinse mouth thoroughly by taking several sips of water, swishing it across all tooth surfaces and spitting it into the basin.	46.7	53.3
-Clean the brush with running water.	37.3	62.7
-Return the brush to proper place.	13.3	86.7

Table 2 illustrates that most of the studied sample were not brushing their teeth even who brushed their teeth: they don't brush inner and outer surfaces of upper and lower teeth by brushing

from gum to crown of each teeth (75.3%). In table 3 the common dental problems of the students are presented.

Table (3): The Distribution of students according to their (No=150)

Items	No	%
-Pain during chewing	80	53.3
-Bleeding gum.	100	66.7
-Dental decay.	96	64
-Dental pain.	150	100

Number is not exclusive

Table (3) showed that 53.3%, 66.7%, 64% and 100% of the studied sample were have dental problems namely pain during chewing, bleeding gum, dental decay and dental pain respectively. Figure (1) explained that approximately two thirds of studied students were noted to less than one year since last dental visit.

Figure (2) emphasized that two groups were similar (40.7%) regarding both their visiting to the dentist more than twice a year and once per year. Figure (3) showed that approximately fifty percent of studied students have next visiting to the dentist only for pain or a problem.

**First Section: Sample Dental Visiting Characteristics:
Figure (1) Time since Last Dental Visit**

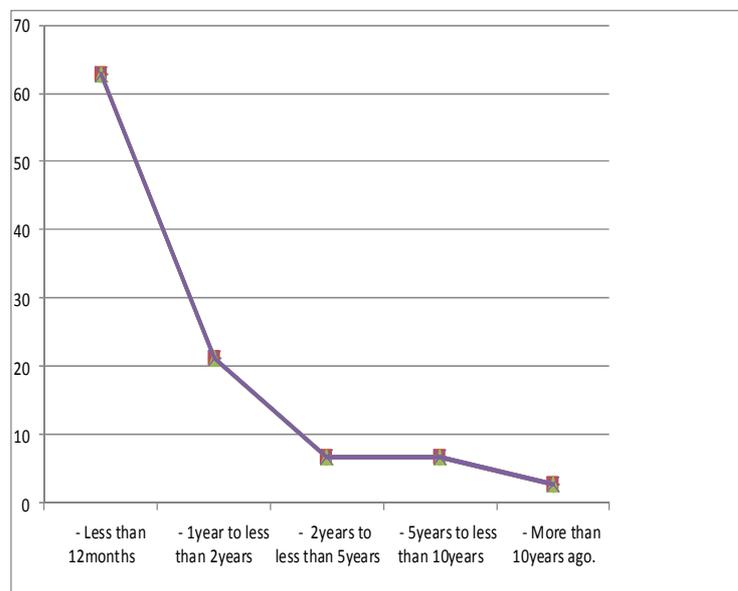


Figure (2) Average Visiting Frequency

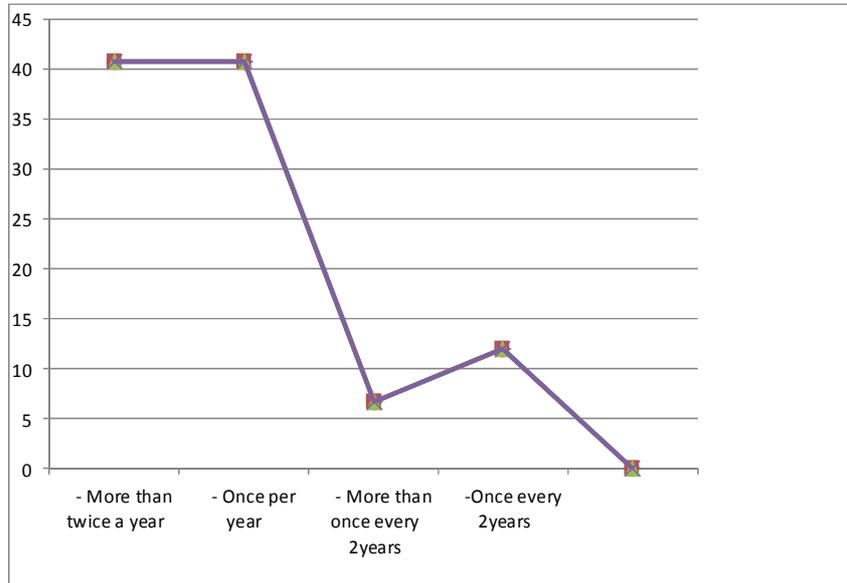


Figure (3) When Expected to Make Next Visiting

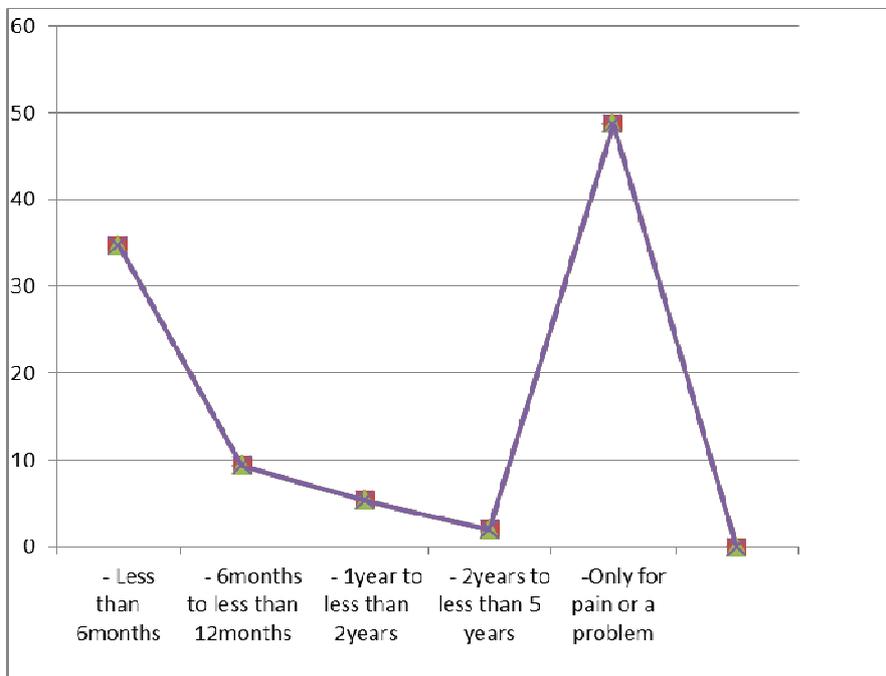


Table (4) Behavioral reactions displayed by studied students when informed of upcoming dental visit (N0=150)

Behavioral reactions	No	%
Temper tantrum	18	12.0
Unusually quiet	22	14.7
Whining	63	42.0
Pacing	25	16.7
Facial grimacing	21	14.0
Other	1	.7

Table (5) Frequency of studied students regarding their future dental appointment & resistance and traumatic dental experience (N0=150)

Dental appointment & Traumatic experience	Yes	NO
	%	%
Has an appointment for a future dental visit?	45.3	54.7
Have you canceled or postponed an appointment due to your resistance to dental treatment?	18.7	81.3
Have you had any traumatic dental experience?	63.3	36.7

Table (4) Illustrated that the behavioral reactions of studied students when informed of upcoming dental visit were varied from one to another the most common response is (42%) of whining followed by pacing (16.7%).

Table (5) Showed that (45.3 %) of studied students have appointment for a future dental visit, While the majority of them (81.3 %) reported no resistance to dental treatment; since they have not ever canceled or postponed an appointment. Also, approximately (63.3 %) of children were suffered from traumatic experience associated with dental treatment.

Second Section: Studied students' dental cognition and their anxiety related to dental treatment. Table 6, 7 & 8 answered the research question number one.

Table (6) Studied Students' Dental Cognitions Related to Beliefs about Themselves and Dentistry in General (N0=150) and emphasized that there were statistically significant differences between studied students' believing and unbelieving in their dental cognitions about themselves and dentistry in general.

Table (7) Studied students' dental cognitions regarding self-statements' related to dental treatment (N0=150)

Self-statements related to dental treatment	Yes "I believe" %	No "I don't believe" %	X	P value
15. Everything goes wrong	57.3	42.7	3.22	.072
16. This treatment will hurt	44.7	55.3	1.70	.191
17. My teeth will break	44.7	55.3	1.70	.191
18. Something surely will go wrong	61.3	38.7	7.70	.006
19. It never runs smoothly	82.7	17.3	64.02	
20. I am helpless	46.7	53.3	.66	.414
21. I can't control myself	68	32	19.44	.000
22. I can't escape, I'm locked in	64.7	35.3	12.90	.000
23. Anesthetics often do not work	56	44	2.16	0.142
24. The sound of the drill frightens me	80	20	54.00	.000
25. The dentist will drill in my tongue, gums or cheek	50	50	.00	1.000
26. The nerve will be touched	62	38	8.64	.003
27. have no control over what happens	76	24	40.56	.000
28. will die during treatment	46	54	.960	.327
29. will panic during treatment	64.7	35.3	12.90	.000
30. will faint during treatment	50.7	49.3	.027	.870
31. will suffocate during treatment	57.3	42.7	3.22	.072
32. can't stand this treatment for long	67.3	32.7	18.02	.000
33. will certainly have pain afterwards	71.3	28.7	27.30	.000
34. The filling will certainly fall out and has to be made again	58	42	3.84	.050
35. This treatment fails	46.7	53.3	.66	.414
36. I become sick	50.7	49.3	.27	.870
37. The dentist will lose control over his drill	49.3	50.7	.27	.870
38. The dentist believes that I am a difficult patient and act childish	68	32	19.44	.000

Table (8) Studied Students' Anxiety Associated With Their Dental Visit Through Asking Questions (N0=150).

Items	<i>Extremely Anxious</i>	<i>Fairly Anxious</i>	<i>Not Anxious</i>	X	P value
	%	%	%		
1-If you went to your Dentist for TREATMENT TOMORROW, how would you feel?	10.7	50.0	39.3	96.45	.000
2-If you were sitting in the WAITING ROOM (waiting for treatment), how would you feel?	43	55.3	0.7	117.62	.000
3-If you were about to have a TOOTH DRILLED, how would you feel?	82.7	17.3	0	36.64	.000
4- If you were about to have your TEETH SCALED AND POLISHED, how would you feel?	44.7	50.7	4.7	105.52	.000
5-If you were about to have a LOCAL ANAESTHETIC INJECTION in your gum, above an upper back tooth, how would you feel?	97.4	2.7	0	63.48	.000

Table (7): emphasized that there were statistically significant differences between studied students 'believing and unbelieving in their dental cognitions regarding self -statements about dental treatment.

Table (8) illustrated that there were statistically significant differences between studied students regarding their anxiety associated with dental visiting.

Third Section: Relation between the Participants' Ages, Gender & Dental Cognition and Their Anxiety Associated or Due to Dental Visit, Table (9) answered the research question number two.

Table (9): it showed that there were positive relationship between both the students' age & dental cognition and their anxiety, while there was a negative relation between their gender and their anxiety.

Table (9): Relationship between Studied Students' Ages & Gender & Dental Cognition and Their Anxiety Associated or Due to Dental Visit.

Socio-Demographic Characteristic	Students Anxiety (No=150)	
	No	Students Anxiety Mean (\pm SD)
Age		
12-less 15	79	4.16 \pm .505
15-less or equal 18	71	3.99 \pm .488
ANOVA	F=3.050	
P- value	.050	
Gender		
Male	33	3.76 \pm .450
Female	177	3.63 \pm .455
ANOVA	F=0.699	
P-value	.405	
Dental Cognition		
Yes(I believe)	98	6.47 \pm 1.115
No(I don't believe)	52	4.63 \pm 1.09
ANOVA	F=0.699	
P-value	.004	

Discussion

Dental treatment often implies a stressful situation for patients. Thereby it is irrelevant if the patient is suffering from pain or is keeping an appointment for a check-up.

Strategies for coping with anxiety are, for this reason, exceedingly important. Younger children are generally more afraid; also children with a long medical case history produce more fear. Anxiety can also often be an expression of the lack of education about the events taking place. A detailed explanation of the treatment taking place can relativize the fear of specific objects (Armfield & Spencer, 2006). Dental anxiety can cause people to delay or avoid seeking dental care despite being in need of treatment (Pojola et al., 2007).

In this regard, it was found that 60 to 90 percent of the school children were suffered from dental caries and about 5-33 percent of children experience at least one toothache during childhood. Such high percentages make children's dental health a major public health concern (Kasila et al., 2006). Approximately 9% of the child and adolescent population were suffered from dental fear and anxiety and dental behavioral management problems (Klingberg & Broberg, 2007). And about 16% of the children to do not seek care because of their extreme fear of dental treatment and consequently they run an increasing risk of undergoing more invasive treatments (Diercke, 2012). And such avoidance of treatment by anxious patients has also been associated with a deterioration of their oral health-related quality of life (Acharyas, 2008).

Regarding to Socio-demographic Characteristics, dental hygiene practices and dental problems of the studied students.

The findings of the current study revealed that (table 1); fifty percent of students aged were between 12-15 years of age, the mean age of student's was 12 years, their grade between 4-6 and their achievement were average, while two third of them were female and their economic status were sufficient. This finding was contracted with (The American Academy of Pediatric Dentistry 2008) (AAPD) recognizes that adolescence, which is considered to range from age 10-18, is a marked time for a thrust of caries activity due, in large part, to a lack of oral health care, including flossing and brushing habits.

As regards the dental hygiene practices of the studied sample regarding dental care, namely teeth brushing in (table 2); it is clear that more cleanly half of them have unsatisfactory practices about teeth brushing. This finding was accordance with (Asuman, 2006) who mentioned that most of the studied sample has unsatisfactory practice regarding teeth brushing, while the study is not in agreement with (Kaste 2008) who mentioned that most of the study sample has satisfactory practice regarding teeth brushing, and this may due to the different culture of every country.

In relation to distribution of students according to their dental health problems (table 3); this results showed that half of them have pain during chewing and two thirds have bleeding gum followed by dental decay, while the majority complains of dental pain. These finding are in accordance with (Hale, 2003) who mentioned that most of the studied sample visits the clinics of the school complain from dental problems which affect on the body system especially the GIT.

Concerning Dental Visiting Characteristics of the Studied School Children.

Findings of the present study showed that the time since last dental visit, average visiting frequency and when expected to make next visiting in Figure 1, 2 and 3 were explained that approximately two

thirds of students were noted to less than one year since last dental visit, also two groups were similar more than one third their visiting to the dentist more than twice a year and once per year and approximately fifty percent of students have next visiting to the dentist only for pain or a problem. This can be due to many factors namely, lack of confidence in providing a painless treatment, fear of injection and fear of tooth loss.

However, irregular attendance to dental examination and treatment or resorting only to the dental office when there is an urgent oral health problem which needs invasive and traumatic procedure reflects the level of anxiety to those groups of children. These findings were in agreement with (Frederick, 2001) who reported that all of children who participated were required to have had at least one previous dental appointment. For thirty seven percent this represents their second visit to the dentist. Approximately one third of the children had been to the dentist 3 to 4 times, and another one third of the group had been to the dentist five or more times in their life. The vast majority of children were noted to the visit a dentist every six months, roughly one quarter went once a year and relatively few saw their dentist less than once a year as it is also supported by Townend et al., (2000), and they stated that anxiety is the most common reason for not attending the dentist. Thus, avoidance of dental treatment can be a good indicator of dental fear. High levels of fear among children may also decrease seeking dental care. Similarly, dental anxiety in children and adolescents has been related to higher dental pathology, especially the number of missing teeth and the amount of decay.

Regarding Behavioral Reactions Displayed by Studied School Children When Informed of Upcoming Dental Visit.

The current study results reported that (table 4); one third of studied school children have whining; This may be interpreted as children's expectation about dental treatment as a traumatic intervention was linked with their behavioral response, particularly if the clinician should not consider

the importance of describing what he or she will be doing and what sensations the child will experience (e.g., what type of noise he or she will hear, what type of vibrations he or she will feel, what it will taste like).

This approved by (Armfield et al., 2007) who found that 300 of the children who did exhibit a behavioral response crying was the most common reported followed by whining, clinging and becoming unusually quite.

Regarding Studied School Children's Future Dental Appointment & Resistance and Traumatic Dental Experience.

The present study findings concluded that (table 5); the majority of respondents reported to have ever canceled or postponed an appointment because no resistance to dental treatment. Also, approximately two thirds of students were suffered from traumatic dental experience. One explanation could be that the treatment approach adopted by the majority of the general dental practitioners and pediatric dentists was a traumatic. On the other hand, the children's concept about dental treatment was terrifying and based on previous painful experience.

In the same context, (Folayan et al., 2004) mentioned that for many children, one of the most traumatic elements of dental work is they do not really understand what is happening or why it is happening to them. Parents can help from the outset, encouraging their children to see a visit to the dentist as a positive, healthy activity. Knowing your teeth are being looked after by an expert should provide peace of mind, not anxiety and tension – of course, the reality of a phobia is that it is never that straightforward.

Also, (Field & Lawson, 2003) reported that most children can live with having some anxiety about going to the dentist. For those with dental phobia, however, the thought of a dental visit is terrifying. They may be so frightened, in fact, that they'll do just about anything to avoid a dental appointment.

Concerning Students 'Dental Cognitions Related to Beliefs about Themselves and Dentistry in General.

The current study results revealed that (table 6); there were statistically significant differences between students' believing and unbelieving in their dental cognitions about oneself and dentistry in general. This reflects the differences in cognitive approach developed and adopted by the studied children regarding their beliefs about themselves and dentistry in general, as well as dentist's attitude throughout the session of treatment. Within the same context, in study of anxious dental patients, done by (Locker et al., 1999) found that the most common negative cognitions were about losing control, fainting or having a panic attack. However, catastrophic thoughts about treatment such as pain or the drill slipping were also frequent. These findings also agree with (Karjalainen et al., 2003) who mentioned that cognitive model, negative thoughts play a major role in fear evocation. That is, negative thinking leads to dysfunctional affect and behavior such as anxiety and avoidance.

Regarding Students 'Dental Cognitions about Self-Statements Related to Dental Treatments.

The present study findings demonstrated that (table 7); there were statistically significant differences between students' believing and unbelieving in their dental cognitions regarding self -statements about dental treatment. This could be explained that the characteristics & experiences and cognitive vulnerability that the person brings to the situation are more important than any objective characteristics of the experience itself in determining how aversive the experience will be. Dental procedures are excellent examples of this type of stressor. Accordingly, the children were caught in a 'vicious circle' that was difficult to break, and where fear and anxiety were maintained by negative expectations about treatment and about patient's own ability to cope in dental care situations.

This is in line with (Buchanan & Niven, 2002) who reported that it, the best way to manage a child's anxiety surrounding a visit to a dental clinic is to fully inform them about what to expect when they are there. Both the parent and the dentist can do this, although it must be ensured that the information being given is completely true or else the child may lose trust. During the procedure itself, the dentist must contemplate exactly how each thing they are doing may affect the child.

Concerning Students' Anxiety Associated With Their Dental Visit through Asking Questions.

The study results reflected that (table 8); there were statistically significant differences between students regarding their anxiety associated with dental visiting. However, dental anxiety was reported relating to attending to dentist in general, dental examination (check-up), scaling and polishing, local anesthesia, dental filling, dental extraction and dental treatment under general anesthesia. This is in congruent with (Armfield & Spencer 2006) findings that dental anxiety and phobia are extremely common. It has been estimated that 9% to 15% of Americans avoid seeing the dentist because of anxiety and fear. That's about 30 million to 40 million people. In a survey by the British Dental Health Foundation, 36% of those who didn't see a dentist regularly said that fear were the main reason. Also this is in agreement with (Ashkenazi & Faibish, 2002) who reported that, those with dental anxiety will have a sense of uneasiness when it's time for their appointments.

They'll have exaggerated or unfounded worries or fears. Dental phobia is a more serious condition. It's an intense fear or dread. People with dental phobia aren't merely anxious. They are terrified or panic stricken.

Regarding Relation between the Participants' Ages & Gender & Dental Cognition and Their Anxiety Associated or Due to Dental Visit.

The current study findings pointed out that (table 9); there were positive relationship between

student's age and their anxiety while a negative relationship between gender and their anxiety.

That it means; dental anxiety and dental pain were found to be associated mainly with the children's age. This result could be due to that the older children have had the chance of more dental visits of positive nature and this has helped to reduce this anxiety, while younger children have not yet this opportunity.

Furthermore, the current study findings also emphasized presence of positive relation between the studied children's dental cognition and their anxiety. This could be due to the important role played by cognition factors in developing phobias and anxiety manifestations. Whereas, dentally anxious people have been found to have a biased processing of information. They often overestimate the likelihood of negative events at the dentist and anticipate extremely aversive or painful consequences.

These findings are in agreement with a study conducted by (Klingberg & Broberg, 2007) found that age was strongly associated with dental anxiety. Moreover, these findings were consistent with that reported by (Baier et al., 2004) the etiology of dental anxiety in children is multifactorial, being associated with age, socioeconomic status, oral health status and dental pain experience.

In addition, (Carrillo-Díaz M et al., 2012) ,concluded through their study findings that; subjective oral health status, cognitive vulnerability variables and dental anxiety were strongly correlated.

Some limitations of the present study have to be considered like the scope of this study is to explore the subjective experiences provided by the participated children regarding the issues of dental cognition and anxiety. With basic assumptions that; each participant is truthful in his or her description of his or her cognition & anxiety of dental care, and the participants provided retrospective self-reports of their dental experiences regardless how many times were passed on these experiences.

Conclusion

Results of the study concluded that almost half of the students between 12 to less 15 years of age and slightly more than three fourths of them were female. About half of them have an average school achievement. More than half of them have unsatisfactory practices about teeth brushing. While half of them have pain during chewing and two thirds have bleeding gum followed by dental decay, while the majority complains of dental pain. Also, two groups of the studied children were similar regarding both their visiting to the dentist more than twice a year and once per year for treatment. Approximately half of students have next visiting to the dentist only for pain or a problem. Most common behavioral reaction as reported by the studied children when informed of upcoming dental visit is whining were less than half followed by pacing were less than fifth.

The majority of the studied children reported no resistance to dental treatment. Otherwise, two third of them were suffered from traumatic experience associated with dental treatment. Statistically significant differences were found between the studied children's believing and unbelieving in both their dental cognitions about oneself & dentistry in general and regarding self - statements about dental treatment. Also statistically significant differences between studied children regarding their anxiety associated with dental visiting. There was positive relationship between studied children's age, dental cognition and their anxiety while there was negative relation between gender and their anxiety.

Recommendations & Suggestions:

- Activate the role of both school health nurse and pediatric nurse practitioner to provide oral health screening, early risk assessment, and preventive services as well as appropriate referrals to children who are at the highest risk for early childhood caries.
- Practices of palliating measures aiming to decrease children's vulnerability anxiety and make them feel relaxed enough to cope with treatment.

- -Similarly, the attitude and behavior of everyone from the receptionist to the dentist makes a big impression specifically in the first session that establishes initial contact.

References

- Acharyas, S. (2008). Oral health related quality of life and its associated factors in an Indian adult population. *Oral Health Prev Dent*, 6:175-84.
- American Heritage Science Dictionary. (2005). Boston, Houghton Mifflin Company.
- Armfield, J., Stewart J. & Spencer J. (2007). The vicious cycle of dental fear: exploring the interplay between oral health, service utilization and dental fear. *BMC Oral Health*, 7:1
- Armfield, JM. (2010). Towards a better understanding of dental anxiety and fear: cognitions vs experiences. *Eur J Oral Sci*, 118: 259-64
- Armfield, J. M., & Spencer, A. J. (2006). Dental fear in Australia: Who's afraid of the dentist? *Australian Dental Association*, 51:1, 78-85.
- Ashkenazi, M., & Faibish, D. (2002). Dental fear and knowledge of children treated by certified pediatric dentists and general practitioners. *ASDC Journal of Dentistry for Children*, 69:3, 297-305
- Asuman, H. (2006). Oral health problems and needs of nursing home residence, Department of oral and Maxillofacial Surgery, Health Sciences Center, University of Washington, Seattle Washington, USA pp.24
- Baier, K., Milgrom, P., Russell, S., Mancl, L. & Yoshida T. (2004). Children's fear and behavior in private pediatric dentistry practices. *Pediatr Dent*, 4:316-21.
- Blinkhorn, A. (2006). Introduction to the dental surgery. In *Paediatric Dentistry*. Editor R Welbury, M Duggal, M Hosey. Third edition. Oxford University Press, chapter 2: 30-32.
- Bray, A., Chhun, A., Donkersgoed, R., Hoover, S. & Levitan S. (2009). An Evidence Based report investigating the most effective method to reduce dental anxiety. University of Toronto, Toronto, Canada.
- Buchanan, H. & Niven, N. (2002). Validation of a Facial Image Scale to assess child dental anxiety

- international Journal of Pediatric Dentistry, 12, 47-52
- Carrillo-Díaz, M., Crego, A., Armfield, JM. & Romero, M. (2012). Self-assessed oral health, cognitive vulnerability and dental anxiety in children: testing a meditational model. *Community Dent Oral Epidemiol*, 40: 8–16.
- Colares, V., & Richman, L. (2002). Factors associated with uncooperative behavior by Brazilian preschool children in the dental office. *ASDC Journal of Dentistry for Children*, 69:1, 87–91, 13.
- Corah, NL. (1969). Development of dental anxiety scale. *J Dent Res*, 48(4): 596.
- De jongh, A., Muris, P., Schoenmakers, N. & Terhorst, G. (1995). Negative cognition of dental phobic: reliability and validity of the Dental Cognitions Questionnaire Behaviour Research and Therapy, 33,507-515.
- Diercke, K., Ollinger, I., Bermejo, JL., Stucke, K., Lux, CJ. & Brunner, M. (2012). Dental fear in children and adolescents: a comparison of forms of anxiety management practiced by general and paediatric dentists. Department of Orthodontics, University of Heidelberg, Germany. *Int J Paediatr Dent*, 22:1, 60-7.
- Donna, H., & Donna, S. (2009) Role of Pediatric Nurse Practitioners in Oral Health Care, *Academic Pediatrics*, 9:462–6
- Encyclopedia of Medical Concepts. (2009). National Library of Medical Concept. National Library of Medicine, Ontario, Canada; [cited 2010June]. Available from <http://www.refernce.md/files/D016/MD016854HTML>.
- Field, AP. & Lawson, J. (2003). Fear information and the development of fears during childhood: effects on implicit fear responses and behavioural avoidance. *Behaviour Res Ther*, 41: 1277–1293.
- Folayan, MO., Idehen, EE. & Ojo O. (2004). The modulating effect of culture on the expression dental anxiety in children. *Int J Paed Dent*, 14: 241–245.
- Frederick, J. (2001) Development of an assessment instrument for assessing dental fear in children, a dissertation submitted to the faculty of the graduate school, Marquette University, in partial fulfillment of the requirements for the degree of doctor of philosophy, Milwaukee, Wisconsin., Pp11-14
- Hale, K., (2003) American Academy of Pediatrics Section on Pediatric Dentistry. Oral health risk assessment timing and establishment of the dental home. *Pediatrics*, 111(5 pt1) :1113:1116
- Hmud, R. & Walsh, LJ. (2009). Dental anxiety: Cause, Complications and Management Approaches. *JMD*, 2:1
- Humphris, G., Morrison, T. & Lindsay, SJE. (1995). The Modified Dental Anxiety Scale: UK norms and evidence for validity. *Community Dental Health*, 12:143-150.
- Karjalainen, S., Olak, J., Sderling, E., Pienih, A., Pienihakkinen, K. & Simell, O. (2003). Frequent exposure to invasive medical care in early childhood and operative dental treatment associated with dental apprehension of children at 9 years of age. *Eur J Paediatr Dent*, 4:186–190
- Kasila, K., Poskiparta, M., Kettunen, T., & Pietil, I. (2006). Oral health counseling in changing schoolchildren's oral hygiene habits: A qualitative study. *Community Dentistry & Oral Epidemiology*, 34:6, 419-428.
- Kaste, L. (2008). Coronal Caries in the primary and permanent dentition of children and adolescents 1-17years of age. *Journal of Dental Research*, 75 (special issues) 631-641.
- Klingberg, G. & Broberg, AG. (2007). Dental anxiety and dental behaviour management problems in children and adolescents: a review of prevalence and concomitant psychological factors. *Int J Paediatr Dent*, 17:6, 391-406
- Locker, D., Shapiro, D. & Lidell A. (1999). Variations in Negative Cognitions Concerning Dental Treatment Among Dentally Anxious and Nonanxious Individuals, *Cognitive Therapy and Research*, 23: 1, 93-103
- Peltier, B. (2009). Psychological treatment of fearful and phobic special needs patients. *Special Care Dentist*, 29 (1), 51-57.
- Pojola, V., Lahti, S., Vehkalahti, MM., Tolvunes, M. & Hausen, H. (2007). Association between dental fear and dental attendance among young adults in Finland. *Acta Odontol Scand*, 65:224-30.
- Schuller, AA., Willumsen, T. & Holst D. (2003). Are there differences in oral health and oral health behavior between individuals with high and low dental fear? *Community Dent Oral Epidemiol*, 31:116–21.
- Smith, TA., & Heaton, LJ. (2003). Fear of dental care: are we making any progress? *Journal of American Dental Association*, 134, 1101-1108.

- Sohn, W. & Ismail, AI. (2005). Regular dental visits and dental anxiety in an adult dentate population. *J Am Dent Assoc*, 136:58–66.
- The American Academy of Pediatric Dentistry (AAPD) AAPD.org/policy,2008/2009
- Townend, E., Dimigen, G. & Fung D. (2000). A clinical study of child dental anxiety. *Behav Res Ther*, 38: 31-46.
- Wogelius, P., & Poulsen, S. (2005). Associations between dental anxiety, dental treatment due to toothache, and missed dental appointments among six to eight year- old Danish children: a cross-sectional study, *Acta Odontologica Scandinavica*, 63, 179-182.
- White, R. (2000). Nurse assessment of oral health: a review of practice and education. *British Journal of Nursing*, 9:5, 260 – 266.
- World Health Organization. (2005). Sexually transmitted infections among adolescents: the need for adequate health services, Geneva American Heritage Science Dictionary. Boston, Houghton Mifflin Company.