Oral Health Knowledge, Attitude and Practice among Primary School Children In Rural Areas of Assiut Governorate

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Abstract

Background: Oral health is fundamental to general health and well-being. Little is known about the oral health attitudes and behavior of children from developing countries such as Egypt in comparison with those from developed countries. **Objective:** To study the oral health knowledge, attitudes, and practice among primary school children in rural areas of Assiut governorate. **methods:** A cross-sectional school-based study design was carried out. Data were collected by using structured interview questionnaires. The questionnaire was designed to evaluate the knowledge, attitude, and practice of primary school children regarding their oral health and dental treatment. **Results:** This study included 1036 primary school students distributed along 8 public schools in 4 districts of Assiut governorate. The overall knowledge was satisfactory in 22.2% of students. The overall attitude was positive in 72.3% of students. About 60% of children usually clean their teeth. The most commonly used material for teeth cleaning was tooth brush and tooth paste (65.9%). Parents follow the children during teeth cleaning in 18.9% of cases. 55.6% of children visited the dentist before. In general, the most common cause of dentist's visit was suffering from toothache (75.3%). It was **concluded** that knowledge and practice about oral health among study participants were poor and needs to be improved. Therefore, comprehensive oral health educational programs for both children and their parents are required to achieve this goal.

Key words: knowledge, attitude, practice, oral health, school children, rural Assiut.

Introduction

Oral health is fundamental to general health and well-being. A healthy mouth enables an individual to talk, eat and socialize without experiencing active disease, discomfort or embarrassment. Oral diseases represent a major public health problem[(1)]. About 90% of school children world-wide and most adults have experienced caries. These could be attributed to several factors mainly lack of oral health awareness and over consumption of refined carbohydrate [(2)]. More than 50 million school hours are lost annually due to oral health problems, which affect children's performance at school and success in later life[(3)].

The past fifty years have witnessed a reduction in the severity and prevalence of oral diseases among the population of the developed countries[(4,5)]. Dental care has been systematically organized to improve dental health attitudes among children and the young[(6)]. The development has improved children's dental health and changed the dental caries patterns affecting them [(5)]. It also resulted in more adults being able to keep their natural dentition functional into a later age. Unfortunately, this is not the case in Middle East [(7,8)].

Little is known about the oral health knowledge, attitudes and behavior of children from developing countries such as Egypt in comparison with those from developed countries, although such

knowledge is an indication of the efficacy of applied dental health education programs. This study provides data for future research and allows comparisons with children's oral health attitudes in other nations. Schools of nursing and medicine should include oral health assessment in their curriculum to provide the students with the information and skills needed in order to become partners in oral health upon graduation. School nurses and physhcians are members of this community-based workforce and are well placed to promote oral health for primary school children.

Objectives

1. To assess oral health knowledge, attitude and practice among primary school children in rural areas of Assiut governorate.
2. To identify the relationship between oral health knowledge and attitude of primary school children and their socio-demographic characteristics.

Study questions:

Q1: what is the level of oral health knowledge, attitude and practice among primary school children in rural areas of Assiut governorate?

Q2: what is the relationship between oral health knowledge and attitude of primary school children and their socio-demographic characteristics?

Subjects And Methods

Sampling: The subjects comprising the population of this study were recruited from randomly selected eight public schools in rural areas of Assiut governorate, Upper Egypt. According to their geographic location, schools in rural areas of Assiut governorate were divided into four groups: Eastern, Western, Northern, and Southern. From each group, one district was chosen by simple random sample. From each district two primary schools were selected randomly. A total of 8 primary schools distributed along 4 districts were included in the study. The target of this study was students in the 5^{th} and 6^{th} grades of primary schools. Students who were below ten years of age were not invited to participate in the study as they were too young to understand and complete the questionnaire. In each school, the first class was selected randomly then every other class were included in the study. Total number of 5^{th} and 6^{th} year primary school children in rural areas of Assiut governorate was about 230,000. Considering the expected frequency of 50% and the worst acceptable level of 60%, the required sample size was 96 by using EPI INFO version 3.5.1 (2008). Considering design effect of 10. The required sample size was 960.

The schools under study were located in the following districts and villages:

- Abnoub district: Al-Hamam and Jazeeret Bahij villages
- Al-Fath district: Bani Mor and Al-Faima villages
- Manfalout district: Om Al-Kosour and Arab Bani-Shokair villages
- El-Ghanayem district: Der El-Ganadla and El-Mashiha villages

Permission was taken before the start of the study from directorate of education in Assiut governorate and the headmaster of each school. The headmasters were asked to inform the students and their parents about the study.

Study design: A cross-sectional school-based study design was carried out.

Instrument and methods of data collection: Data were collected using structured interview questionnaires. The questionnaire was designed to evaluate the knowledge, attitudes, and practice of primary school children regarding their oral health and dental treatment.

Assessment of participants' oral health knowledge included items on the effects of brushing and using fluoride on the dentition, the meaning of bleeding gums

and how to protect against it, the meaning of dental plaque and its effects, the number of deciduous and permanent teeth.

Items that assessed participants' dental attitudes included questions about feelings on the first visit to the dentist, the appearance of decayed teeth, and regular dental visits……etc.

Assessment of participants' oral health practice included brushing activity (such as frequency, duration and time), the parents' role in participants' oral hygiene and dental visits…….etc.

The questionnaire was pretested on thirty selected primary school children. The researchers trained data collectors and supervised them during data collection. The study was conducted during the academic year 2013/2014.

The study was approved by the Ethical Review Committee at Assiut Faculty of Medicine. Subject's informed consent was obtained before recruiting the children into this study.

Descriptive statistics were obtained and means, standard deviation, and frequency distribution were calculated. Chi square test was used for comparison between groups. The overall knowledge was considered satisfactory if the student provide right answers for ≥ 50% of questions. Also, the overall attitude was considered positive if the student provide positive attitude for ≥ 50% of questions. The data were analyzed using the Statistical Package for Social Science 16.0 (SPSS 16.0,Inc., Chicago, IL). P-value was considered significant if less than 0.05.

Results

This study included 1036 primary school students distributed along 8 public schools in 4 districts of Assiut governorate. Table (1) showed that the average age (± SD) was 11.6 (± 0.67) years. Males constituted about 48% of pupils under study. Father's work was worker in 42.1% and farmer in 35.3% of them. The vast majority (96.7%) of mothers were housewives. Regarding education of the parents, 28.3% of fathers and 40% of mothers were illiterate. The average number of family members was about 7 individuals per family.

Table (2) showed knowledge of pupils about oral health. Definition of gingival bleeding was correct in 11.4% of cases. Definition of dental plaque, effect of plaque on the teeth and number of milk teeth were correct in about 4.5% for each. The highest level of knowledge were whether sweats negatively affect teeth (91.9%) and whether teeth cleaning prevent dental caries (94.3%). The overall knowledge was satisfactory (right answers for ≥ 50% of questions) in 22.2% of pupils.

Table (3) showed attitude of pupils towards oral health. The least positive attitude (19%) was for feeling on the first visit to the dentist and the highest was whether the dentist treat the teeth problems and solve it (86.2%). The overall attitude was positive (positive attitude for ≥ 50% of questions) in 72.3% of pupils.

Table (4) showed practice of pupils regarding oral health. About 60% of children usually clean their teeth, of them 33.8% clean their teeth twice or more per day. The most commonly used material for teeth cleaning was tooth brush and tooth paste (65.9%). Pupils clean their teeth at the morning in 45.7% of cases. The time needed for teeth cleaning was more than two minutes in 18.8 % of cases. Parents follow the children during teeth cleaning in 18.9% of cases. 55.6% of children visited the dentist before. In general, the most common cause of dentist's visit was when suffering from toothache (75.3%). The last visit to the dentist was before six months in two thirds of pupils and it was due to toothache in the majority of them (91.8%).The most common services provided during the last visit were teeth examination (44.0%) and teeth extraction (28.8%). About one fifth of pupils (21.5%) had no decayed tooth whereas about two thirds (68%) of them had one or two

decayed teeth. About three fourths (76%) of pupils had extracted teeth.

Table (5) showed relationship between knowledge and attitude towards oral health and socio-demographic characteristics of the pupils. Satisfactory knowledge about oral health was significantly associated with older age of the pupils, higher paternal and maternal education and small family number (P<0.001 for each except maternal education P = 0.008). Also, positive attitude towards dental health was significantly associated with older age of the pupils, higher paternal and maternal education and small family number (P<0.001 for each except family size P = 0.008).

Discussion

In Assiut, data on oral health attitudes, knowledge and practice among children is not available; therefore the present study intended to provide such information with regards to school children aged 10 to 13 years old.

Some observations about school children's **knowledge** can be made. Overall, the level of oral health knowledge among the surveyed children was low and which is in parallel to the observations made by Sohail & Muhammad [(9)] who noticed that the majority of respondents had poor knowledge of dental and periodontal diseases & Ernesto et al.[(10)] who also noticed that 97.5% of children had limited knowledge of oral health issues, and reported suboptimal oral health care practice. About 75% of children were aware of the beneficial effect of fluoride while in our study, only 57.3% were aware .

The awareness of periodontal disease seems to be low among the children in rural areas of Assiut governorate. Most of the children were not aware about bleeding gums, dental plaque and the consequences of dental plaque. Only few children were aware of gingival bleeding as an indicator to periodontal diseases. Our observation is similar to Linn [(11)] & Priya et al. [(12)], who reported that only few children knew periodontal disease was a disease of the gingiva and there was no evidence that they knew about plaque.

Our observation showed that only few children (7.5%) practice tooth brushing as a valuable tool to fight against gingival bleeding which is similar to studies done by Linn [(11)] & Priya et al [(12)].

According to the children's opinion, the major factors that cause dental problems were sweets (91.9%) and fizzy drinks (65.4.7%), which is in parallel to the observations of a study conducted in India in which sweets (81.8%) and fizzy drinks (77.7%) causing dental problems [(12)] & Al- Omiri et al. [(13)] in Jordanian children who found that sweets (87.4%) and fizzy drinks (76.5%) had the same response to cause tooth decay. A similar study done by Mirza et al. [(14)] where they compared high and low socio-economic school children, who knew sweets (64.9%), (51.2%) and soft drinks (68.8%), (43.31%) respectively does affect the dental health.

Majority of the children knew that brushing their teeth prevents dental decay (94.3%) which is nearly similar to study done by Priya et al. (73.5%)[(12)], whereas in the study done in Pakistan reported that 57% of high socio-economic school children were only aware of brushing to prevent dental problems[(14)].

Only 4.5% of participants knew the correct number of milk teeth while about 40% knew the correct number of permanent teeth may be due to the importance of permanent teeth as regard their age. In a study conducted in north Jordan that agrees with us, only 2.7% of the subjects knew the correct number of the deciduous teeth, while 54 % knew the correct number of permanent teeth. About 75 % of the subjects reported having two or fewer carious teeth while 91% reported having two or fewer filled teeth [13]. In our study 68.2% had one or two carious while only 17.5% had one or more filled teeth.

The children demonstrated positive **attitudes** toward their dentists and high awareness of the link between oral health and systemic well-being. Most of the children (82.8%) accepted the fact that the general body health is related to oral and dental diseases which is nearly similar to study conducted in India (Chennai)[12] (71.8%) & other studies conducted on Jordanian school children (76.8%)[13] and on Pakistani school children (69.4%)[14].

As regard the dentist treat the teeth problems and solve it & the dentist examines the patients and inform about dental problems (86.2%) & (80.3%) had positive attitude respectively and this is parallel to a study done by Priya et al. [12] in which dentist cares properly about the patient (87.5%) & dentists always explain procedures before treatment (91.4%)

In general, the children have less understanding about major oral diseases; this may be seen in the light of fact about the regular visit to their dentist. A surprising finding in this regard was that more than two thirds of participants (68%) were aware of the importance of regular dental attendance. According to a study conducted in China [15] 73.6% of the children knew that regular dental check-ups are necessary. Similarly, 71.6% of the children in Chennai (India) agreed with the importance of regular dental visit, but in reality only 19.1% of them practiced it[12]. This scenario was observed in Malaysian, Jordanian and Pakistani studies also [13, 14, 16]

As regard **practice** of pupils regarding dental health care 33.8% clean their teeth twice or more per day which is lower than Priya et al. [12] 58.3% of children performed the recommended practice of brushing the teeth twice a day & what observed in some industrialized countries of east Europe [17-19]. This observation is similar to the study conducted by Harikiran et al. (38.5%) [20].

This study found that a low percentage of the children brushed their teeth twice per day and this was not fully organized or supported by parents, since about half of them (46%) only advised and never watched their child during tooth brushing These findings could be explained by the fact that many of our subjects were teenagers when children try to achieve independence and start their attempts to build their own identity without family interference. Lack of both parental and child oral health education might also explain these findings. This result is in accordance to study conducted in Jordan (59%) [13] & Chennai (India) 61.7% [12].

Brushing preferably in the morning (45.7%) may indicate that such habits are difficult to change merely through mass health education. This result is in accordance to studies conducted by Peng et al.[21] & Priya et al. [12] and this is in

contrast to the study conducted on Jordanian children[13]

Nearly two thirds of children (65.9%) used tooth brush and tooth paste for cleaning their teeth, the use of other recommended oral hygiene methods such as mouthwash & thread was found to be low; this also could be attributed to the lack of oral health education and/or the cost of such aids. Similar results were reported by Al-Omiri et al. (83.1%)[13] , Priya et al. (98%)[12], WHO (83%)[19] and Punitha and Sivaprakasam (62.9%)[22]. This result is not in accordance with that reported by Mahesh et al. [23] in Chennai, where in their study sample some of the children resorted to the use of charcoal as a medium to brush their teeth than the tooth brush. This could be probably due to lack of awareness or affordability for tooth brush and paste.

There were 75.3% of the children who would seek dental service only when they suffered from pain. On the contrary 44.4% of them had never visited the dentist which is similar to a study by Mirza et al. [14] where 46% reported that they never visited the dentist. The drive for the last visit was due to pain in 91.8% of the children may be due to deficient knowledge about other drives among rural children which is more compared with a study done by Punitha and Sivaprakasam [22] among rural children of Kanchipuram where 58.97% of them visited the dentist since they suffered from pain & study conducted by Priya et al. (32.4%) [12].

Role of parents was found very important in developing healthy habits among the young children. Children of educated parents showed higher level of knowledge, attitude and practice of oral health. Results of the current study showed that parental education was significantly associated with knowledge and attitude of school children ($P<0.001$). This is similar to study conducted in Pakistan[24].

Conclusion

Results of this study suggest that oral health knowledge and practice among study participants were poor and needs to be improved. Findings of the present study also show that utilization of dental service is mainly for pain relief. The results also suggest that simple preventive oral health measures among study participants like brushing twice a day is not a norm. Based upon these findings, systematic community-oriented oral health promotion programs are needed to target lifestyles and the needs of school children. School physician and nurse has to take an active role in reporting oral health problem to families and prescribe appropriate strategies for personal hygiene. Also, information regarding oral health should be included on wider basis in the school curriculum in an attempt to prevent and control dental diseases. In this background, an oral health promotion program has to involve partnership of school authorities, parents, and dental-care providers. Comprehensive oral health educational programs for both children and their parents are required to achieve this goal.

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Table (1): Socio-demographic characteristics of the studied primary school children in rural areas of Assiut governorate, 2013 / 2014.

	No. (n= 1036)	%
Age:		
< 12 years	463	44.7
≥ 12 years	573	55.3
Mean ± SD (Range)	11.61 ± 0.67 (10 – 13)	
Sex:		
Male	494	47.7
Female	542	52.3
Academic year:		
5th year	448	43.2
6th year	588	56.8
Father's work:		
Worker	437	42.1
Farmer	366	35.3
Employee	186	18.0
Unemployed	47	4.5
Mother's work:		
Housewife	1002	96.7
Employee	34	3.3
Father's education:		
Illiterate	293	28.3
Read & write	382	36.9
Primary / Preparatory	202	19.5
Secondary / University	159	15.4
Mother's education:		
Illiterate	414	40.0
Read & write	293	28.3
Primary /preparatory	190	18.3
Secondary /university	139	13.4
Family size: Mean ± SD (Range)	7.06 ± 1.99 (3 – 12)	

Table (2): Knowledge of the studied primary school children in rural areas of Assiut governorate about oral health, 2013 / 2014.

Knowledge	Correct		Incorrect	
	No.	%	No.	%
Definition of gingival bleeding	118	11.4	918	88.6
Definition of dental plaque	48	4.6	988	95.4
Effect of plaque on the teeth	47	4.5	989	95.5
Number of milk teeth	47	4.5	989	95.5
Number of permanent teeth	410	39.6	626	60.4
Sweats negatively affect teeth	952	91.9	84	8.1
Fizzy drinks negatively affect teeth	678	65.4	358	34.6
Teeth cleaning prevents dental caries	977	94.3	59	5.7
Use of Fluoride is essential for teeth	594	57.3	442	42.7
How can you protect yourself from bleeding gums	78	7.5	958	92.5

Table (3): Attitude of the studied primary school children in rural areas of Assiut governorate towards oral health, 2013 / 2014.

Attitude	Positive		Negative	
	No.	%	No.	%
Can you decide type of treatment you need?	258	24.9	778	75.1
Is it necessary for patients to determine their needs of dental treatment?	549	53.0	487	47.0
The appearance of decayed teeth affects human	858	82.8	178	17.2
The regular visits to dentist are essential	704	68.0	332	32.0
The dentists treat the teeth problems and solve it	893	86.2	143	13.8
The dentist examines the patients and inform about dental problems	832	80.3	204	19.7

Table (4): Practices of the studied primary school children in rural areas of Assiut governorate regarding oral health, 2013 / 2014.

	No. (n= 1036)	%
Do you clean your teeth		
Yes	624	60.2
No	412	39.8
How many times		
< once per day	180	28.8
Once per day	233	37.3
≥ Twice per day	211	33.8
What material used for teeth cleaning		
Tooth brush & tooth paste	411	65.9
Mouth wash	95	15.2
Siwaak	58	9.3
Thread for teeth cleaning	12	1.9
More than one	48	7.7
When do you clean your teeth:		
At the morning	285	45.7
After eating	24	3.8
Before going to sleep	82	13.1
At any time	209	33.5
Don't remember	24	3.8
What time needed for cleaning teeth:		
<One minute	71	11.4
One minute	90	14.4
Two minutes	98	15.7
> two minutes	117	18.8
Don't know	248	39.7
Parents follow the child during cleaning teeth:		
Parents follow the child	118	18.9
Not watch the child but give advice only	287	46.0
Mother only follow the child	34	5.4
No interest from parents	185	29.6
Did you visit dentist before		
Yes	576	55.6
No	460	44.4
Feelings on the first visit to the dentist:		
Positive	19	19.0
Negative	438	81.0
When did you visit dentist for last time:		
Before 6 months	390	67.7
From 6-12 months	12	2.1
From 1-2 years	128	22.2
Since 2-5 years	46	8.0
In general, when do you visit dentist:		
When suffer from tooth ache	434	75.3
Regularly every 6-12 months	12	2.1
Sometimes	130	22.6
Cause of the last visit to the dentist:		
Tooth ache	529	91.8
Advice from family and friends	12	2.1
Don't remember	35	6.1
What were the services provided in the last visit:*		
Teeth examination	336	44.0
Teeth extraction	87	28.8
Teeth X-ray	48	6.3
Dental measurement	23	3.0
Treatment of gums	35	4.6
Don't know	234	30.7
Number of decayed teeth:		
None	223	21.5
One - two	707	68.2
Three or more	106	10.2
Number of filled teeth:		
None	856	82.5
One	156	15.1
Two	12	1.2
Three or more	12	1.2
Do you have extracted teeth		
Yes	788	76.1
No	248	23.9

* There may be more than one answer.

Table (5): Relationship between knowledge and attitude of studied primary school children and their socio-demographic characteristics.

	Knowledge			Attitude		
	Satisfactory	Un-satisfactory	P - value	Positive	Negative	P - value
Age:						
< 12 years	47 (10.2)	416 (89.8)	<0.001	232 (50.1)	231(49.9)	<0.001
≥ 12 years	211 (36.8)	362 (63.2)		403 (85.2)	70(14.8)	
Sex:						
Male	105 (21.3)	389 (78.7)	0.484	338(68.4)	156(31.6)	<0.001
Female	125 (23.1)	417 (76.9)		411(75.8)	131(24.2)	
Academic year:						
5th year	48 (10.1)	425 (89.9)	<0.001	48(10.4)	415 (89.6)	<0.001
6th year	155 (27.1)	418 (72.9)		501(87.4)	72(12.6)	
Father's work:						
Employee	56 (30.1)	130 (69.9)		162(87.1)	24 (12.9)	<0.001
Farmer	58 (15.8)	308 (84.2)	<0.001	259(70.8)	107(29.2)	
Worker	93 (21.3)	344 (78.7)		293(67.0)	144(33.0)	
Unemployed	23 (48.9)	24 (51.1)		35 (74.5)	12 (25.5)	
Mother's work:						
Housewife	219 (21.9)	783 (78.1)	0.148	715(71.4)	287(28.6)	<0.001
Employee	11 (32.4)	23 (67.6)		34(100.0)	0 (0.0)	
Father's education						
Illiterate	58 (19.8)	235 (80.2)		186(63.0)	107(36.5)	<0.001
Read & write	59 (15.4)	323 (84.6)	<0.001	226(70.8)	156(40.8)	
Primary/ prep.	24 (11.9)	178 (88.1)		190(94.1)	12(5.9)	
Second. /university	89 (56.0)	70 (44.0)		147(92.5)	12(7.5)	
Mother's education						
Illiterate	94 (22.7)	320 (77.3)		270(65.2)	144(34.8)	<0.001
Read & write	57 (19.5)	236 (80.5)	0.008	233(79.5)	60(20.5)	
Primary / prep.	34 (17.9)	156 (82.1)		143(75.2)	47(24.8)	
Second. /university	45 (32.4)	94 (67.6)		103(74.1)	36 (25.9)	
Family size:						
3 - 5	91 (43.5)	118 (56.5)	<0.001	161(77.0)	48(23.0)	0.008
6 - 7	91(19.4)	378 (80.6)		350(74.6)	119(25.4)	
> 7	48 (13.4)	310(86.6)		238(66.5)	120(33.5)	

Satisfactory knowledge: Right answers for ≥ 50% of questions
Positive attitude: Positive attitude for ≥ 50% of questions

Fig. (1): Level of knowledge and attitude of studied primary school children

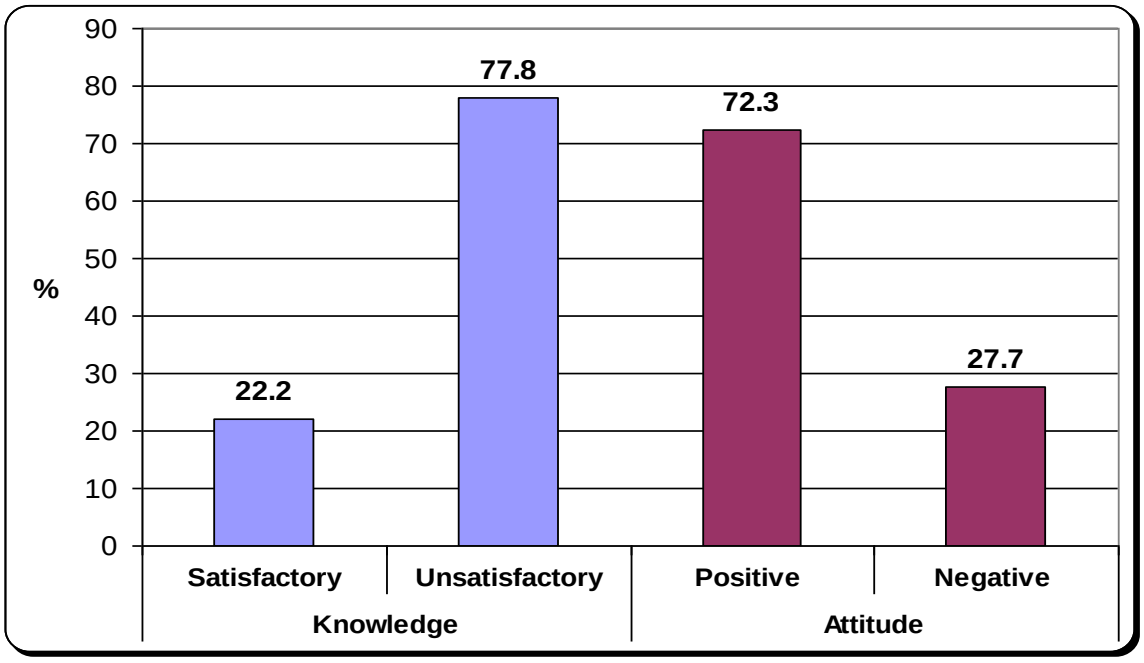

Fig. (2): Correlation between knowledge and attitude

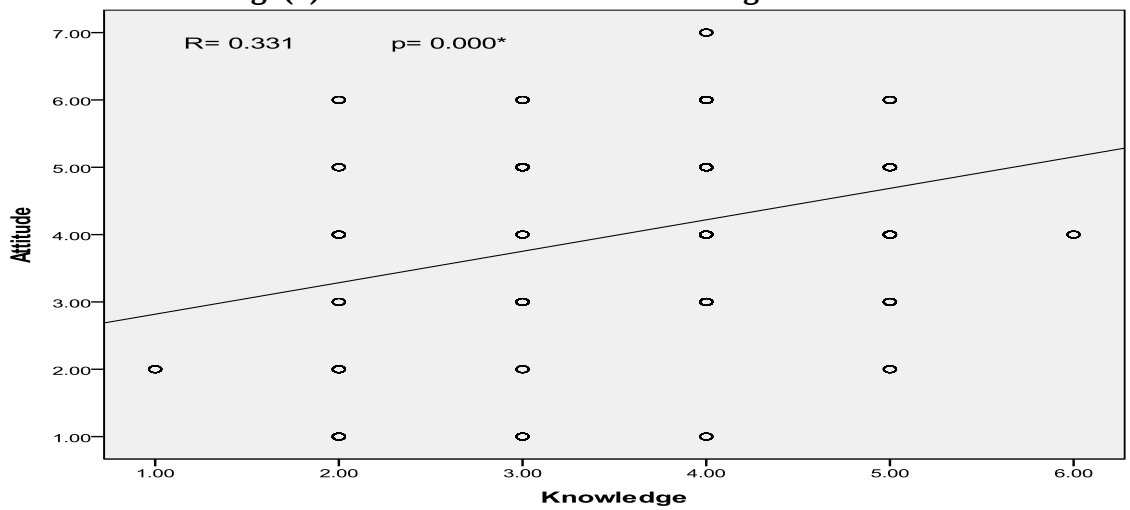

Figure (2) showed that there is a weak positive (r = 0.33) significant (P<0.001) correlation between knowledge and attitude of the students towards oral health.