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A survey of dental disease in outpatients of Rajshahi district, Bangladesh

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Abstract
The main purpose of this survey was to evaluate the periodontal disease condition within its occurring frequency and provide awareness to the dental patients in the Northern area of Bangladesh. In this survey work, total of 450 patients were interviewed including male and female within an age of >1 years. The maximum resident belongs to Rajshahi but some of them are from other region. A standard questionnaire was designed by research team and the English questionnaire was translated to Bengali to the respondents and the method of data collection was direct interview. Written consent was also taken from participants. This survey findings indicates that females are suffering dental problems more frequently than male. Though only few are illiterate (13.11%) but they have lack of knowledge about dental problems. In our study the patients suffers from cavity (49.11%), toothache (60.67%), bleeding (28.67%), sensitivity (68.67%), gum infection (20.22%), loose teeth (16.44%), dental plaque (35.33%) and bad breath (31.78%). The patients has habit of taking tobacco (14.67%), piper betel (10.22%), cold drinks (27.11%), chocolate (25.11%) and tea/coffee (66.44%). In this study majority of the patient clean their tooth by brushing (92%) and they use horizontal stroke (38.22%), vertical stroke (12%), both (36.89%). So for the betterment the patients must be conscious about their oral health especially about oral disease, life style and cleaning techniques.

Keywords: dental disease, appearance, educational status, patient habit, cleaning agent, brushing technique

1. Introduction

Oral health is one of the major indicator of total health and is also related to the better quality of life. According to WHO oral health is "a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking and psychological wellbeing"[1]. In short oral health is free from oral disease and related complication. The most common dental diseases are dental carries, periodontal gum disease, oral cancer, dental trauma and Noma. Although this disease sometimes leads to severe complexity, but if identified and treated at early stage that can be totally cured. The Global Burden of Disease Study estimates that in 2016 about 3.58 billion of people are suffered from oral disease, while dental carries is the most common of it and globally 2.4 billion people are sufferer of it [2]. Periodontal gum disease affects the surrounding tissue of teeth and it is 11th most prevalent disease globally [3]. Poor oral hygiene and tobacco use is the main cause of it. Tooth loss is one of the leading cause of disability at older age [2]. Oral cancer is one of the major types of cancer in Asian-Pacific countries due to frequent use of tobacco, alcohol and areca nut [4-5]. Injury to the teeth and nearby tissue i.e. oro-dental trauma is very common to children which has prevalence of 20% globally [6].

Oral disease sometimes linked to other related disease. Mouth is entry point of food intake and is vulnerable to microorganisms. Any unhygienic environment in mouth makes easy access to other organisms which can affect lungs, kidney etc. Tooth loss is directly associated with decreased food intake and malnutrition. Periodontal disease causes headache and dental caries linked with chewing problem, loss of appetite and sleep disturbance. Dental disease also changes the appearance of face and exerts negative impact on life especially on young children and on their families [7]. In his study on 1277 adults in UK, Masood M *et al*., (2017) finds direct correlation between dental health and quality of life [8]. Sometimes the affected people are sufferer from psychologically and socially. They suffered from lack of confidence, difficulty in verbal communication, depression, social isolation, inhibit opportunities for education and employment [9-10].

2. Materials and Method

2.1 Study Setting and Design

This cross sectional health study was carried out in Rajshahi by self-designed standard questionnaire. The data was collected from outdoor patients of Rajshahi Dental College Hospital, Popular Diagnostic Centre and Islami Bank Hospital, Rajshahi. The research was conducted to assess the dental health status of the patients of Rajshahi district. Current status of dental disease and patient behaviour regarding dental health was the main focus area of the research. The research team also focuses on the

knowledge of patients in the relevant perspective.
Rajshahi is a large city and habit of a diverse range of people. The educational qualification and standard in Rajshahi is well established, hence a data of this city will be an indication of measurement of health status in the country [11-12].

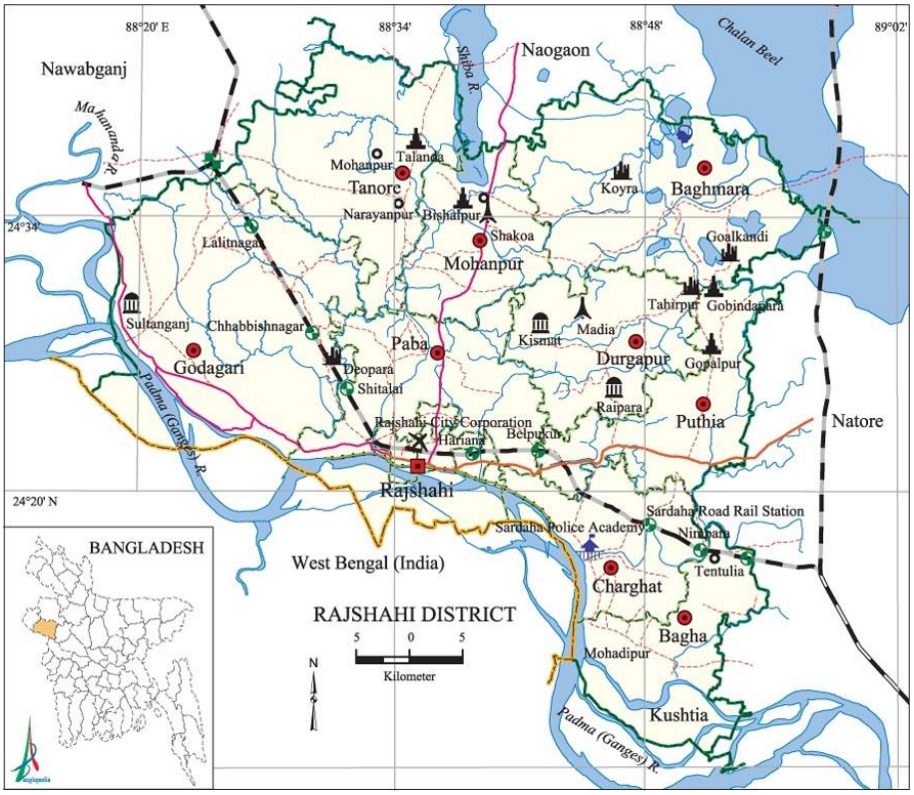

Fig 1: Map of Rajshahi city [13].

2.2 Data Collection
This data was collected by directly interviewing the patient. The data collectors was waiting in hospital/health care centre and when a patient completes his/her visits to the doctor then then data collectors convince the patient and collects the data. The English question was translated to Bengali (mother tongue of the patients) because most of the patients are unaware about the technical terms. The feedback provided by patient was converted into English and note down in the questionnaire form.

2.3 Period of study
The study was conducted from February'2019 to May'2019.

2.4 Sample selection
A total of 450 patients was selected for this study among them 212 are male and 238 are female.

2.5 Selection criteria
Inclusion criteria
- The participant were Bangladeshi in origin.
- They are suffering from dental disease/complexity.
- They were free from any serious illness and have no history of trauma or surgery.

Exclusion criteria
- Non Co-operative Patient.
- Inadequate information.
- Patient with systemic illness.
- History of previous accident.

2.6 Statistical Analysis
The data was analysed by Microsoft office Excel 2013 software.

2.7 Ethical considerations
The data was collected from patients without any influences or external pressure. After the data was collected, written consent was taken from the patient.

3. Result and Discussion
3.1 Sociodemographic detail of the patient
Among the 450 participants, most of them are 20-30 years old (36.0%), followed by 30-40 years (16.89%), 40-50 years (15.33%) and 10-20 years (13.33%). The proportion of male and female is 47.11% and 52.88%. The study sample in this study belongs to various occupations like businessman, housewife, service holder, student and worker. The educational status of the respondent shows that most of the patients in this study was educated. Around thirty one percent respondent are higher educated, while thirteen percent patient are uneducated. It is known that patients with higher educational level has more information on periodontal disease such as dental carries, gingivitis, and oral health preventive measures [14].
The patients has habit of taking tobacco (14.67%), piper betel (10.22%), cold drinks (27.11%), chocolate (25.11%) and

tea/coffee (66.44%). In a study in India conducted by Pricilla RA *et al*., found that about a quarter of the dental patients are tobacco user, 10.62% smoker and 10.16% are betel user [15]. More than half of the patient has family history of dental disease and about 11% patient has diabetes which sometimes accentuates the problems of dental disease. It is established that people with diabetes has 3 fold increased risk of periodontitis [16].

Table 1: Patient characteristics.

Characteristics	*N* (%)
Age	
0-10 Years	33 (7.33)
10-20 Years	60 (13.33)
20-30 Years	162 (36.0)
30-40 Years	76 (16.89)
40-50 Years	69 (15.33)
50-60 Years	32 (7.11)
60-70 Years	16 (3.56)
>70 Years	2 (0.44)
Gender	
Male	212 (47.11)
Female	238 (52.88)
Occupation	
Businessman	44 (9.78)
Farmer	10 (2.22)
House wife	133 (29.56)
Service	42 (9.33)
Student	173 (38.44)
Worker	24 (5.33)
Unemployed	24 (5.33)
Education	
Illiterate	59 (13.11)
Primary	98 (21.78)
Secondary	91 (20.22)
Higher Secondary	63 (14.0)
Higher	139 (30.89)
Habit of the patient	
Tobacco	66 (14.67)
Piper Betel	46 (10.22)
Cold drinks	122 (27.11)
Chocolate	113 (25.11)
Tea/coffee	299 (66.44)
Patient profile	
Diabetes	49 (10.89)
Family history of dental disease	234 (52.0)
Pregnancy	6 (1.33)

3.2 Disease pattern

The participants are suffering from wide range of dental disease like cavity (49.11%), toothache (60.67%), bleeding (28.67%), dental erosion (24.22%), sensitivity (68.67%), gum infection (20.22%), loose teeth (16.44%), dental plaque (35.33%) and bad breath (31.78%). Dental cavities is the development tinny black holes in the outer surface of teeth while dental erosion is the tooth enamel lose by acid which is produced from the ingested carbohydrate by bacteria. Dental plaque is the sticky colourless bacterial film on the tooth surface which ultimately leads to tooth decay. The data of this study was quite similar to previous study. A study conducted in Bangladesh in 2011-12 on 500 patients finds that 42.4% male and 50.5% female visited in Dhaka Dental College Hospital, has dental carries, 48.4% (male) and 61.2% (female) has gingivitis and 16.8% and 65.5% has fractured teeth [17]. From previous study in India dental disease pattern was found such as sensitivity (25%), missing tooth (25%) and dental carries (78.76%) [15]. A study in UK in 2017 found the prevalence of dental carries (31.5%), pocket (52.1%) and dental pain (5.4%) [8]. The summary of Khiste *et al*., research (2019) is that 42.7% study population (15-24 year age) has gum bleeding and 9.3% has calculus deposit [18]. Another study in Nigeria it is reported that among 543 dental patients 43.6% has experienced of tooth loss [19]. Fortunately the patients faces dental disease rarely like around eighty percentage has prevalence is about 1-2 times annually while 14% suffers 3-4 times per year.

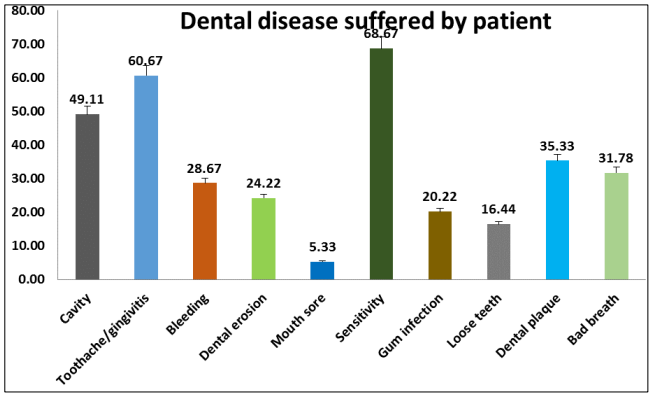

Fig 2: Dental disease suffered by patient.

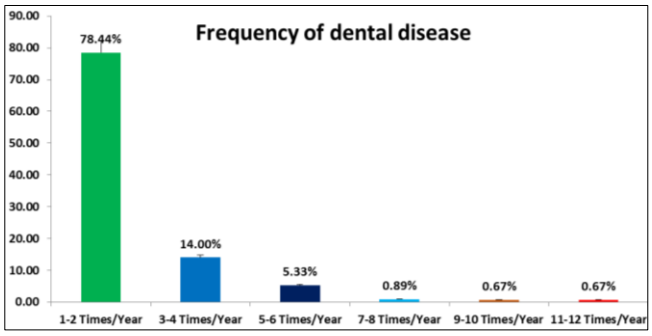

Fig 3: Frequency of dental diseases.

Majority of the patient has clear white teeth (63.11%), but a significant portion has brown teeth (31.11%) and only 5.78% has black teeth. Various drinks like tea, coffee and soft drink are mainly responsible for staining of tooth [20].

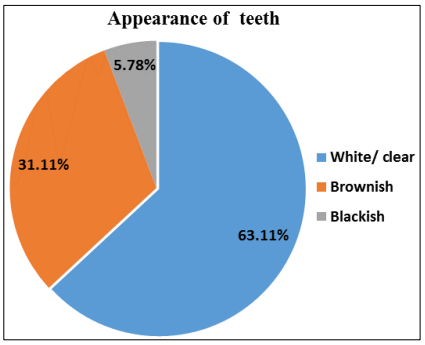

Fig 4: Appearance of teeth.

3.3 Patient's knowledge on tooth cleaning

In Bangladesh various types of cleaning tools are used to clean teeth brushing, flossing, gargling etc. In this study majority of the patient clean their tooth by brushing (92%) and they use horizontal stroke (38.22%), vertical stroke (12%), both (36.89%) and some of them are not aware about the technique. We know that ideal brushing technique is necessary because it helps to remove various types of debris and bacteria. Most of the patient in this study brush twice a day (56.67%) and once a day (40.67%). From the study conducted by Precilla RA *et al.*, it was found that 92.60% Indian people use brushing technique for tooth cleaning while 82.33% brush once a day and 16.95% brush twice a day. It also found that 83.60% use horizontal techniques and 15.01% use vertical brushing techniques [15]. According to American Dental Association it is recommended to change our brush on every three month because a single brush contains about 10 millions of bacteria [21] and from this study it comes that about 10.22% patient change their brush every month, 47.56% on every 2-3 month and 30.89% on every 4-6 month. Previous research data suggests that, the changing of brush once in 3 months 86.5% and till it goes to worn 10.6% [15]. There is another research conducted in Brazil and the researcher focuses on changing the brush and the outcome is 14.67% people changes brush every month, 59.5% changes every 3 month and 25.83% changes every 6 month [14].

Table 2: Tooth cleaning practice.

Characteristics	*N* (%)
Cleaning tool	
With brushing	418 (92.89)
Ash	16 (3.56)
With Miswak	48 (10.67)
Brushing technique	
Horizontal Stroke	172 (38.22)
Vertical Stroke	54 (12.0)
Both	166 (36.89)
Not Aware	58 (12.89)
Brushing frequency	
1 time/day	183 (40.67)
2 time/day	255 (56.67)
3 time/day	12 (2.67)
Brush changing	
Every month	46 (10.22)
Every 2-3 month	214 (47.56)
Every 4-6 month	139 (30.89)
Every 7-12 month	21 (4.67)
Not sure	30 (6.67)

3.4 Patient perception

In Rajshahi primary health care centre (Thana health complex, upazila hospital), secondary (district hospital) and tertiary (Medical college, institute) are exist. Mainly the patients visits government hospital (54.89%), and private clinic (36.44%). The low cost of the treatment, better service and readily availability may be the main reason for the visit.

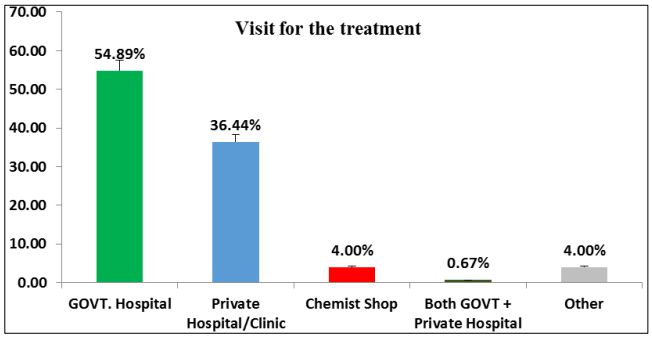

Fig 5: Types of healthcare centre visited by patient for treatment.

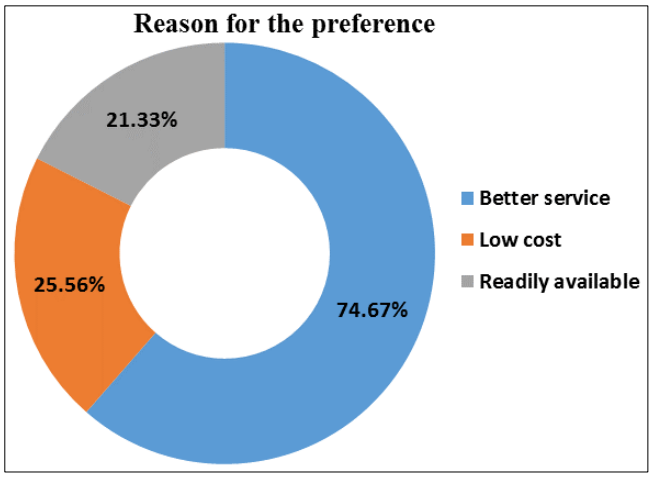

Fig 6: Reason for the preference of hospital choice.

Regular dentist visit provides an early warning system for disease. According to American Dental Association it is necessary to visit dentist on every 6 months [22]. Form the present study it is found that the patients are visiting to the dentist only during disease (93%) while more than eighty percent of the patient considers dental disease as major health problem. Health is the basic human need and is to be flfilled. In this study about 62.22% patient's perception is that proper fascility is available for them to the treatment of dental disease.

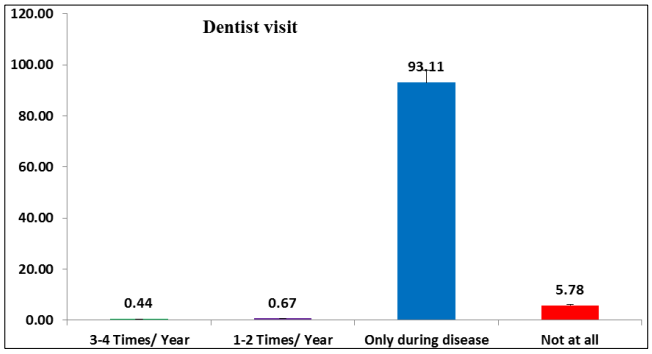

Fig 7: Frequency of dentist visit.

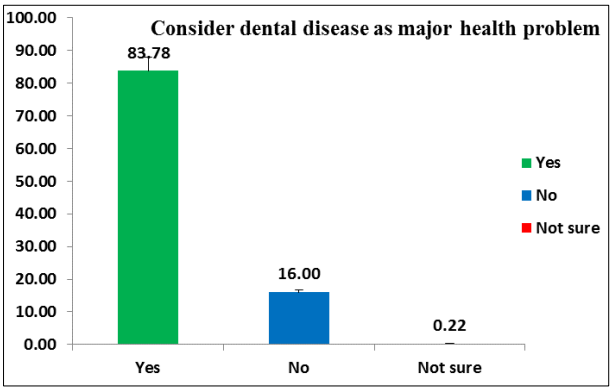

Fig 8: Perception about dental disease.

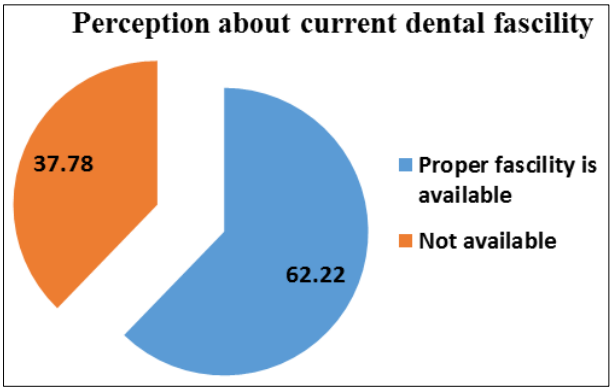

Fig 9: Perception on current dental facility.

This study finds a scenario of present status of dental health in common peoples of Rajshahi and could be used as an indicator of health in Bangladesh. Although there will be some dissimilarities, but the result of current data is not very different from the other countries in the South Asia.

3.5 Study limitations

The study has several limitations. Firstly the sample size is not very high. Next the marital status of the participants was not studied and thirdly family income of patients is not estimated as this is correlated with the dental health expenditure and care.

4. Conclusion

From the study it is clear that dental disease is an emerging problem although its frequency is still in control. But it should be controlled early stage especially from early childhood because dental disease affects young children mostly such as low academic result, absent in school and increase hospital visits [23]. To prevent dental disease awareness regarding issue, increase dental facility and nutritional uptake should be effective.

Competing interests

None.

Source of funding

None.

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