

Running Head: DENTAL ANXIETY AMONG PATIENTS

Dental Anxiety among Patients Seeking Dental Care in Bangladesh



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Declarations

I, Liza Akter certify that this dissertation is my research work. Here I have acknowledged all materials and sources used in this thesis paper. I also certify that this dissertation has not previously been submitted for assessment and I have not copied in part or whole work of other students or persons. I am aware of the policy on plagiarism and can understand its implications.

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Dated, Dhaka
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Approval Sheet

This is to certify that I have read this dissertation entitled “Dental Anxiety among Patients Seeking Dental Care in Bangladesh” submitted by Liza Akter, in partial fulfillment of the requirements for the Degree of MPhil in Clinical Psychology, University of Dhaka and the research carried out by her under my supervision and guidance.

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Abstract

For the better management of dental patients, it is imperative to assess patients' anxiety before providing treatment. Modified Dental Anxiety Scale (MDAS) is the most commonly used psychometric instrument to assess dental anxiety. In Bangladesh, there is no reliable and valid instrument for assessing patients' dental anxiety as well as no data on the prevalence of dental anxiety among dental patients. Considering this issue, the main objective of the study was to assess the prevalence of dental anxiety among patients by using the Bangla Modified Dental Anxiety Scale (BMDAS). The study incorporated two phases (I) test the psychometric properties of the Bangla Modified Dental Anxiety Scale (BMDAS) and (II) determination of the prevalence of dental anxiety along with associated factors among dental patients. In the phase-I, data were collected from 200 dental patients and 39 students of different hospitals and University of Dhaka respectively for testing the psychometric properties of the Bangla Modified Dental Anxiety Scale (BMDAS). Results on exploratory factor analysis revealed a one-factor model of dental anxiety similar to other studies. Results on testing reliability showed excellent internal consistency reliability (Cronbach's Alpha .90) and significant correlation coefficient ($r = .78, p < 0.01$) for the test- retest reliability. A correlation between Bangla Modified Dental Anxiety Scale (BMDAS) ($r = .60, p < 0.01$) and the Anxiety Scale (AS) was found to be significant in assessing convergent validity of the Bangla Modified Dental Anxiety Scale (BMDAS) whereas its content validity was assessed by the judges. These indicated good psychometric properties of the Bangla Modified Dental Anxiety Scale (BMDAS) for assessing dental anxiety. In the phase- II, data were collected from 311 dental patients of different hospitals for determining the prevalence of dental anxiety among patients. Results showed that the prevalence of dental anxiety was 23.5% among the dental patients which indicated nearly one fourth of the patients had dental anxiety. The predictors of dental anxiety among the patients were age, educational

qualification, and past dental visits supported with other studies. Patients' dental anxiety was found more on tooth drill and local anesthetic issues rather than others. There was a significant difference, $t(309) = 2.90$, $P = .004$, between the two age groups. Younger patients ($M = 14.38$, $SD = 5.62$) had more dental anxiety than the older patients ($M = 12.50$, $SD = 5.06$). Patients ($M = 15.89$, $SD = 5.65$) who never visited dentists reported higher level of dental anxiety than those ($M = 12.67$, $SD = 5.10$) had the experience of dental visit previously, $t(309) = 5.06$, $P < .001$. There was no significant effect for gender, $t(309) = 1.26$, $P = .208$, despite male patients ($M = 14.16$, $SD = 5.54$) attaining higher scores than female patients ($M = 13.37$, $SD = 5.44$). These findings supported with other studies.

It can be said that the study revealed nearly one fourth of the patients had dental anxiety. Therefore, results of the study will contribute to assess dental anxiety among patients by using Bangla Modified Dental Anxiety Scale (BMDAS). Besides, the predictors of dental anxiety will help to make a proper treatment plan for the anxious patients accordingly.

Keywords: Dental anxiety, Bangla Modified Dental Anxiety Scale (BMDAS), prevalence, assessment, treatment plan

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Dedicated To
My Beloved Father

The terms 'fear', 'anxiety', and 'phobia' are often used interchangeably in the literature. But there are differences among these terms. Fear is an emotional response induced by perceived threat and danger. This emotional response is considered as a normal emotional reaction to objects and situations though it is perceived as genuinely threatening to the person (Draper & James, 1985). Fear helps individuals to be prepared for fight or flight. Therefore fear is rational. Anxiety is our body's natural response to any stress. It has the characteristics of feeling tensed, thoughts of worry, and also have physiological changes. There are several reasons for anxiety. The most frequent reason for anxiety is the apprehension about future events which is associated with the negative experiences. Usually, it happens without the presence of triggering stimulus and it is an irrational response. Therefore anxiety might be considered like a disorder when the apprehension of reaction of anxiety is irrational as well as strong enough (Ost & Skaret, 2013). On the other hand, the phobia is an irrational and excessive fear of an object or situation. Most of the cases phobia is involved with a sense of endangerment or a fear of harm. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013) and the International Classification of Mental and Behavioral Disorders (ICD-10; WHO, 1992), phobia is a mental health disorder if the criteria are fulfilled. Those criteria included such as individuals showing an extreme and persisting fear about any discernable object or situation; avoidance of those objects or situations; and the interference of daily life and as well as occupational life of those individuals.

It is important to distinct these terms in dental settings. Dental fear is an emotional response which is natural and usually seen in children. On the other hand, the phenomena of dental anxiety and dental phobia are considered as disorder and can be found in children and

adults. Most of the cases of dental anxiety and dental phobia are needed dental and psychological treatment approaches for the betterment.

Dental patients frequently experience dental anxiety. All over the world, a significant portion of patients suffers from dental anxiety. Dental anxiety can be defined as patients' response toward the stress which is specific to the dental situations (Appukuttan et al., 2012; Corah, Gale, & Illig, 1978). It refers to the patient's response toward stresses which is related to the dental procedures and mostly the stimulus is vague, anonymous, and not present at that moment (Humphris, Dyer, & Robinson, 2009; Jaakkola et al., 2009). It can also be defined as an emotional state which is associated with the anticipation or expectation of encountering with a feared stimulus of dental treatment or some aspects of it like the dental office environment, fear of pain, and dental polish or drilling (ter Horst & de Wit 1993).

In dentistry, fear and anxiety are common though there is little systematic and empirical study of the nature, the origins, and distributions of such fear and anxiety. The development of dental anxiety can be assumed from the light of the psychodynamic viewpoint. Psychiatrists and psychologists who contributed to this field mainly took the viewpoint from the Freudian speculations of Oedipal conflicts which means a desire for sexual involvement with the parent of the opposite sex and a concomitant sense of rivalry with the parent of the same sex; and it occurs at the phallic stage of a person's normal development (Freud, 1899). In the case of dental anxiety, it is assumed that patients project their own sexual desires to the dentist. As a result, patients fear about dental treatment procedures as it is symbolized as punishment for bad oral wishes (Miller, 1970). But there is little research supporting these explanations. Shoben and Borland (1954) considering such themes conducted research about fear of dentistry. Interestingly, scores of fearful and non-fearful group patients were similar in most of the cases like in the

frequency of high anxiety, trouble with authority figures, emphasis on appearance, emphasis on orality or dependency. Only the major differences were that fearful dental patients more frequently reported a history of past traumatic dental experiences and unfavorable attitudes toward dentists and the family members. Another study (Lautch, 1971) reported that phobic patients scored slightly but significantly higher on Eysenck's neuroticism scale and lower on the extraversion scale than the phobic patients. It was also found that traumatic dental experiences separated phobic patients from the non-phobic patients.

Painful experiences and family members' attitudes found in these studies suggest alternative approaches for understanding and explaining fear reactions to dentistry. Such kind of fear reactions might be considered as learned responses to the stimuli which are inherent in the dental situations and treatment procedures. Therefore, it might be another important explanation of fear reactions besides than the psychoanalytic viewpoint. Such a perspective of behavioral as well as cognitive approaches have led to significant advances in understanding the reason of fear reactions and as well as treatment of many types of human fears in clinical psychology and psychiatry including dental fear and anxiety (Marks, 1969). Therefore, dentists as well as psychologists work together for the management of dental anxiety among patients with the combination of pharmacological and psychological treatment approaches. Most of the cases, it is reported that the effect of pharmacological treatment found on the short-term basis and in the case of emergency (Malamed, 1993). On the other hand, psychological interventions are helpful for the long-term basis for reducing dental anxiety as well as improving the oral health of the patients (Slovin, 1997). Therefore, psychologists play a very important role in the management of dental anxiety and phobia among dental patients.

1.1 Etiology of Dental Anxiety

The etiology of dental anxiety and dental phobia is multifactorial like other psychological problems or disorders. Psychological problems are generally viewed through the framework of a bio-psycho-social concept where genetics, psychological as well as environmental, and social factors play important role in developing and maintaining such problems. Dental anxiety and dental phobia might be developed with the interaction of those factors though the present knowledge of the etiology of dental anxiety and dental phobia is complicated. Various etiological models of dental anxiety are described here from the viewpoint of Ost and Skaret (2013).

1.1.1 The Multi-Factorial Model of Dental Anxiety

The etiology of dental anxiety is multi-factorial. The development of dental anxiety depends on the interaction among three factors according to the multifactorial model of dental anxiety. These factors are personal factors, external and social factors, and dental factors (shown in Figure 1).

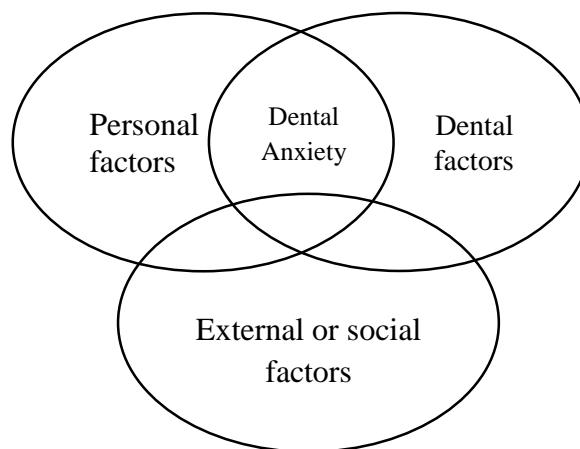


Figure 1. Multi-factorial model of dental anxiety

1.1.1.1 Personal Factors

Personal factors of dental anxiety included genetics, age and maturity, temperament, personality traits, other mental health problems and experiences of traumatic events. Genetics plays a significant role for developing anxiety-related disorders and therefore, for developing of dental anxiety as well as dental phobia (Kendler, Neale, Kessler, Heath, & Eaves, 1992; Kendler et al., 1995). Age is one of the important personal factors for the development of dental anxiety. Dental anxiety often has its origin in childhood (Berggren & Meynert, 1984b; Locker, Liddell, Dempster, & Shapiro, 1999a). Children often show fear reactions and behavior management problems at the time of dental treatment procedures. Most of these fear reactions are normal emotional reactions onto the dental situations. Therefore in dentistry, these reactions might not be assumed for the symptoms of dental anxiety. Every child goes with different phases of the socio-emotional developmental processes. The children grown up and by this time become more mature. As a result, they comply with dental procedures most of the time. Sometimes, some of those children cannot comply with the dental treatment because of their dental anxiety which may disrupt their dental treatment procedures needed attention so that they can overcome their dental fear and anxiety. Studies also showed that some features of personality, temperament, and some other mental or developmental disorders have an impact on individuals which make them more vulnerable to be dentally anxious and phobic (Klingberg & Broberg, 2007; Ray et al., 2010). It is known that temperament is such kind of a person's emotional quality which is generally remaining stable over time. Usually, different dimensions of temperament like shyness, negative emotionality, activity, and impulsivity are found in children and adults. These dimensions of temperament have been linked with dental fear and anxiety and some other behavioral problems also (Arnrup et al., 2007; Bergdahl, M. & Bergdahl, J., 2003; Lundgren,

Elfstrom, & Berggren, 2007; Stenebrand, Boman, & Hakeberg, 2012). Uncooperative behavior and dental anxiety have the relation with neuropsychiatric disorders in children and adolescents, e.g., attention deficit hyperactivity disorder (ADHD), autism, and some other mental health disorders (Klingberg & Broberg, 2007). Other studies showed that patients having a past history of trauma-related issues or events, and survivors from the torture are vulnerable to the stimulus of dental treatment situations. These factors also act as one of the contributing factors for the development of the ongoing process of dental anxiety related problems (Humphris & King, 2011; Singh et al., 2008; Willumsen, 2004).

1.1.1.2 External or Social Factors

External or social factors of dental anxiety included parental dental anxiety, social learning or modeling, socio-economic status etc. Studies showed that the dental anxiety of parents affects children's dental anxiety and fear (Freeman, 2007; Hittner & Hemmo, 2009). Sometimes, parents visit to their dentists with their children. When the children see the parents' apprehension and anxiety reactions in the dental settings, they might be fearful about the dental settings also. This might increase children's general vulnerability to the unknown and unpleasant treatment procedures like dental procedures and thereby increase their dental fear and anxiety. Parental dental anxiety here is like modeling for children as children are exposed to parental anxiety. Children might also be learned dental fear and anxiety through the social learning process through their siblings, friends, and relatives. Another important factor is the socio-economic status of the individual. Gustafsson, Arnrup, Broberg, Bodin, & Berggren (2007) showed that dental anxiety has been found more frequently among the lower socio-economic status groups and immigrant groups. One of the explanations regarding this issue might be that these groups of individuals are more vulnerable to fearful stimuli of dentistry with the addition of

other daily life problems. Another reason might be that the oral health of those individuals is lesser than the general population; therefore it increases the risks of having unpleasant and painful experiences at the time of dental treatment procedures.

1.1.1.3 Dental Factors

Dental factors included previous painful dental experiences, frequent exposures to the painful dental treatment processes, and the perceived lack of control over the dental procedures. There is strong evidence that previous painful experiences related to dental treatment are one of the significant etiological factors for the development of dental anxiety related problems (Berggren & Meynert, 1984b; Locker, Shapiro, & Liddell, 1996; Milgrom, Mancl, King, & Weinstein, 1995). Ost and Hugdahl (1985) found that in most cases the development of dental anxiety and phobia might seem following Pavlov's (1927) classical conditioning of learning theory. Dental patients often reported that painful dental treatment is the main cause of their dental anxiety and phobia where the pain is going through with the combination of the feeling of lack of control over the dental procedures (Milgrom, Vignehsa, & Weinstein, 1992). Frequent exposures to discomfort and pain related to dental treatment processes perceived by the patients help to increase and maintain the likelihood of a vicious circle of dental anxiety. Therefore, patients might develop a perceived lack of control about dental treatment as well.

1.1.2 Vicious Circle Models of Dental Anxiety

Theoretically, the development of dental anxiety and dental phobia might be described with the help of three vicious circle models. These are "general vicious circle of dental anxiety", "internal vicious circle of dental anxiety" and "vicious circle of interpersonal relations".

1.1.2.1 General Vicious Circle of Dental Anxiety

The general vicious circle of dental anxiety and phobia is described by Berggren and Meynert (1984b) shown in Figure 2. From this vicious circle model, it is found that patients having dental fear and anxiety usually avoid dental treatment which leads to a deterioration of the patients' dentition. As a result, poor oral teeth create the negative feelings including shame, guilt and embarrassment onto dental treatment and also the social situations. Again these negative feelings and the fear and anxiety, in turn, reinforce the patients' avoidant behavior about the dental treatment; so therefore the vicious circle is established.

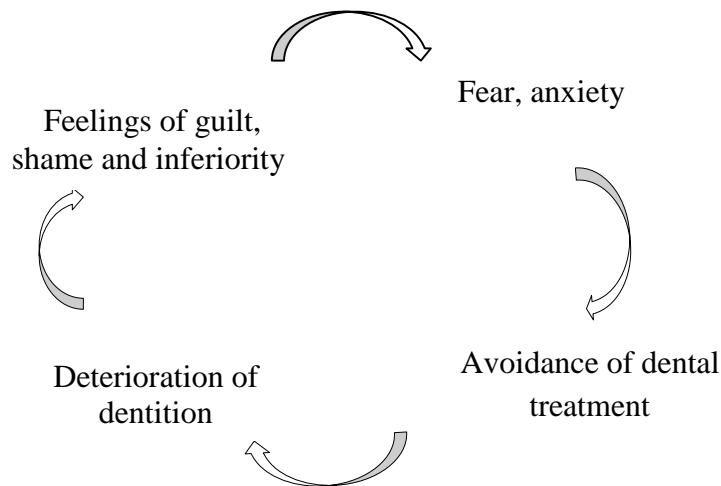


Figure 2. General vicious circle of dental anxiety

1.1.2.2 Internal Vicious Circle of Dental Anxiety

This model of internal vicious circle (shown in Figure 3) describes the internal reactions of the patients perceived as a danger for them when exposed to the dental situation. Thus

patients experience the dental situation and the thinking of such situation as threat full for them. Eventually, their responses to such situations increase their muscle tension and some of the physiological changes such as increased heart rate, increased blood pressure, sweating are found among the patients. Then the patients misinterpret these changes as the signs of impending danger which in turn contribute to catastrophic thoughts among the dental patients. These results in turn increase the feelings of extreme fear, threat and dread among the patients which are considered beyond their control. This internal vicious circle of dental anxiety has been taken from the vicious circle of panic disorder (Clark, 1986).

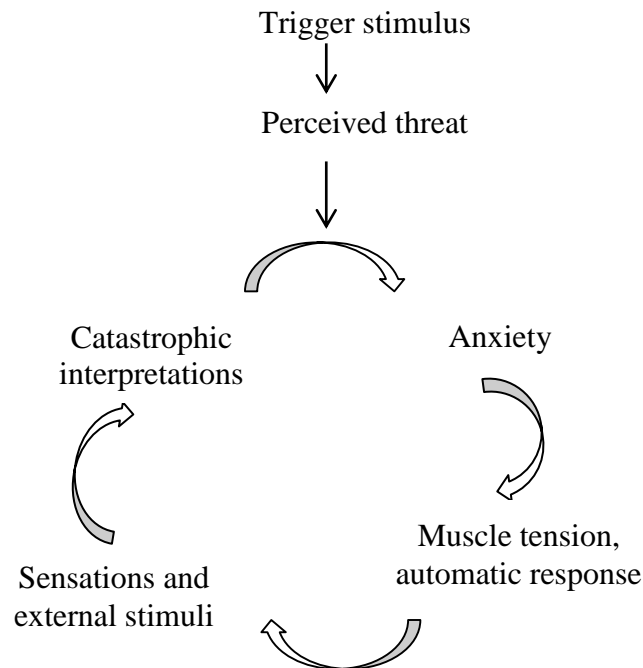


Figure 3. Internal vicious circle of dental anxiety and fear

1.1.2.3 Vicious Circle of Interpersonal Relations

This vicious circle (shown in Figure 4) includes avoidance behavior and its consequences especially the impact of patients' appointments postponement, of not showing up for sessions, as

well as negative emotional reactions from the dental staff and the dentist; and the poor social relations with the dentist and patients. This model is proposed by Willumsen (1999). Dental anxious patients often cancel or postpone their appointments. This often causes negative emotional reactions as well as practical, financial and motivational problems to the dental staff. So when the anxious patients come on an emergency basis, the negative emotional reactions of the staff and as well as the patients make it difficult for providing better treatment. The dentist might get annoyed in this situation and also the patients have the high level of stress. Therefore, the emergency consultation might be regarded as a negative experience by the dental patients which ultimately increase the possibility of canceling the next appointment of the patients.

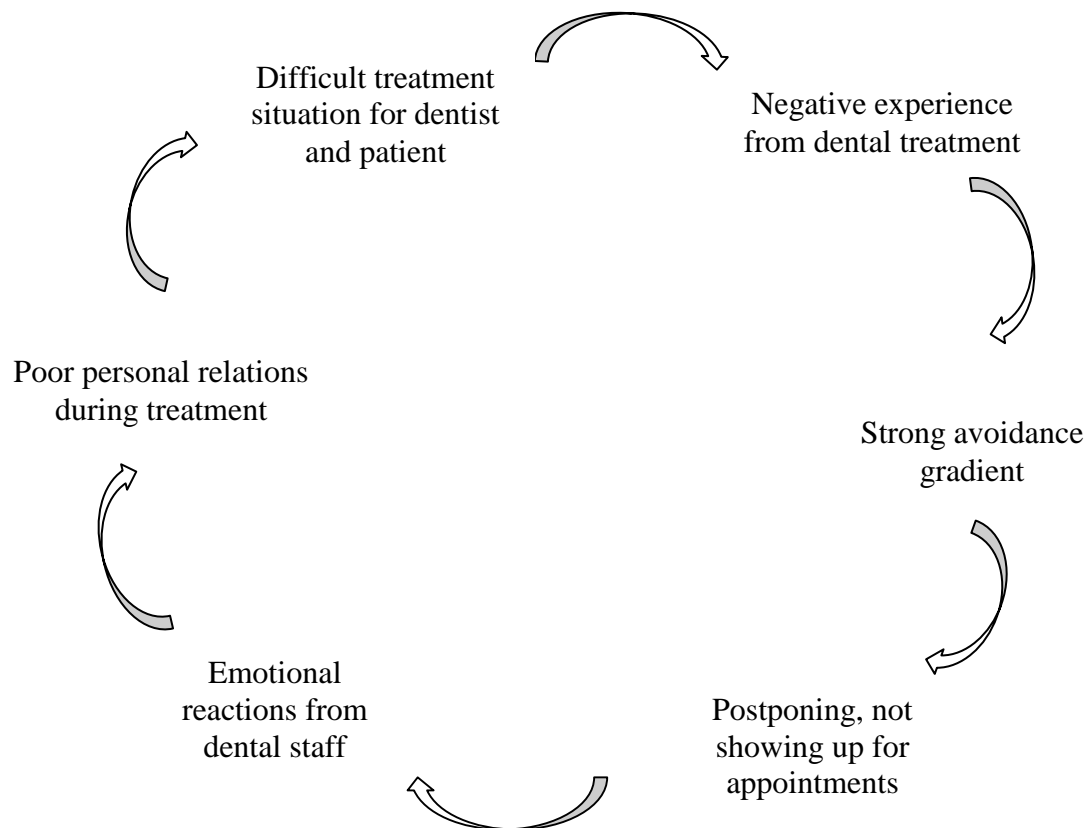


Figure 4. Vicious circle of interpersonal relations

1.2 Pathways of Dental Fear and Anxiety

Carter, A., Carter, G., Boschen, Alshwaimi, & George (2014) described that there are five pathways associated with the development of dental fear and anxiety. These five pathways included as conditioning pathway, vicarious pathway, informative pathway, verbal threat pathway and parental pathway. These pathways interplay with other background factors for developing of dental anxiety and also the dental phobia. These pathways are discussed here (shown in Figure 5).

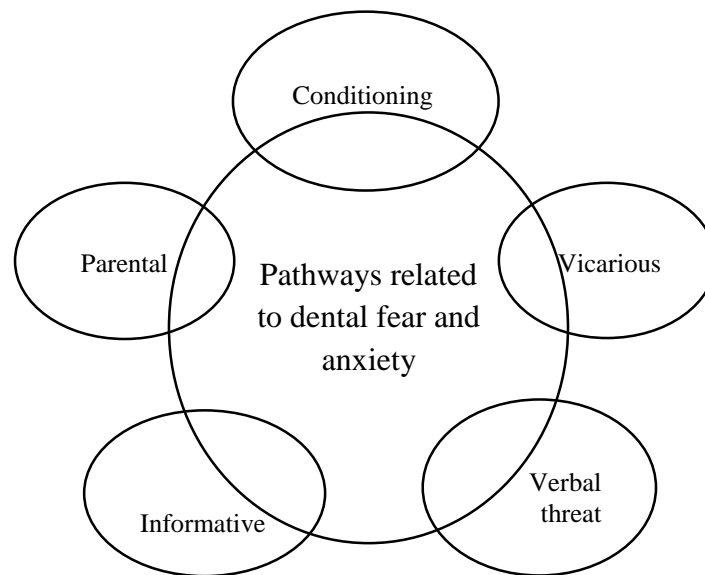


Figure 5. Pathways of dental fear and anxiety

1.2.1 Conditioning Pathway

Conditioning pathway is one of the most important pathways related to the development of dental anxiety and fear. Conditioning pathway of dental anxiety includes both the classical conditioning and operant conditioning. Conditioning can be defined as a learning process in

which an individual learns through the personal experiences. Early researches on conditioning of fear of infants have been found by Watson and Morgan (1917) and Watson and Rayner (1920). Then Pavlov (1927) published a paper named 'conditioned reflexes' and that paper represented as the first in-depth and detailed experiment for the development of conditioning. Classical conditioning is defined as the process where a previously neutral stimulus acquires the ability to directly elicit a response through pairing this stimulus with another unconditioned stimulus that elicits the same response (Pavlov, 1927). This viewpoint might be taken for the acquisition of dental anxiety. For example, if a dental patient experiences a painful procedure during a dental visit and then the unconditioned response is of anxiety or fear. Then this might be conditioned with the association of dentist (the conditioned stimulus) and anxiety or fear (the conditioned response) (Hugdahl, 1979; Merckelbach, Arntz, & de Jong, 1991; Mineka & Keir, 1983; Rachman, 1977). Representation of such kind of conditioned stimulus (dentist or related stimuli especially the dental procedures) is then elicits the conditioned response of dental anxiety among the patients during their next consultation (Hugdahl, 1979; Merckelbach et al., 1991; Mineka & Keir, 1983; Rachman, 1977). On the other hand, operant conditioning is a process in which the frequency of a particular behavior is modified through the consequences that follow the behavior. Patients' behaviors are reinforced through the association of positive consequences or by removing the negative consequences. Therefore, those behaviors are increased in frequency of likelihood to occur again (Cook & Mineka, 1989; Hugdahl, 1979; Mineka & Keir, 1983; Wolpe, 1981; Wolpe, Lande, McNally, & Schotte, 1985). On the other hand, certain behaviors of patients are reduced in frequency if those behaviors follow up negative consequences (positive punishment) or lead to remove of positive consequences (negative punishment) (Cook & Mineka, 1989). In case of dental anxiety and phobia, this process of positive punishment happens

if pain and anxiety occur while visiting the dentist. On the other hand, if the patient avoids the dentist and this avoidance behavior helps to reduce the anxiety, then it is called as negative reinforcement. This negative reinforcement results the avoidance behavior again and again consequently contributing to the development of dental anxiety and phobia, also maintenance of those problems (Cook & Mineka, 1989).

1.2.2 Vicarious Pathway

In 1978, Rachman proposed that individuals acquire phobic responses indirectly besides direct contributors of phobia acquisition. Vicarious experience or vicarious conditioning is one of indirect pathways for the development of dental fear and anxiety. Vicarious conditioning is the process of conditioning in which an individual learns a fear response by seeing fearful experiences from others, therefore often avoids the situations. In dentistry, when an individual observes another person's fear responses because of visiting to the dentist might learn indirectly that dental situation is also threatening for him. Consequently, he might avoid dental visit if needed and as a result might be developed dental anxiety or phobia. Researches indicated that people having extreme level of dental fear and anxiety avoid the dentist most of the time (Armfield, 2010; Locker et al., 1999a). In Armfield's study (2010), participants having extreme level of dental fear and anxiety were more likely of not taking oral examination. Therefore, this vicarious pathway is an important pathway for developing dental anxiety.

1.2.3 Informative Pathway

Another indirect pathway for the development and acquisition of dental fear and anxiety is the informative pathway. This pathway does not necessarily require an individual visiting to the dentist for developing dental anxiety. Anyone can get biased information from dental anxious patients, negative connotations advertised by social media as well as from friends and relatives

with personal negative experiences about dental environment, treatment procedures, attitudes and behavior of the dentists. This misleading information then might lead to the acquisition as well as to the development of dental fear and anxiety. Rachman (1977) discussed about the relevance of this pathway as children rearing involved information given by the caregivers and other family members. If the children get the biased information then they might develop childhood dental anxiety and so the adult life.

1.2.4 Verbal Threat Pathway

This pathway may be similar with informative pathway; however these two pathways are different in odontophobia also called dental phobia which means intense irrational fear of dentists or receiving dental care. Verbal threat pathway is the process when an authority figure threatens an individual with painful or negative experiences of dental procedures, then it affects to the emotions of that threatened person. This emotion of fear and anxiety about the painful as well as negative experiences is then associated with the dental visits or dental procedures. Consequently, the person may develop dental fear and anxiety. Rachman (1977) proposed that individual's acquisition of fear or phobia happens by the learning of dangerousness of a situation from other persons and not observing the situation directly. It was found that those individuals heard stories from other persons about their traumatic or painful dental experiences having acquisition of fear of dental procedures (Askew & Field, 2008). Several other studies have examined the effects of words of mouth information onto the children and found acquiring of fear and anxiety among those children (Field, 2006; Field, Ball, Kawycz, & Moore, 2007; Field, Cartwright-Hatton, Reynolds, & Creswell, 2008a; Field & Lawson, 2008b; Field, Lawson, & Banerjee, 2008c).

1.2.5 Parental Pathway

Parental pathway of dental anxiety is the pathway depending on the parenting modeling. When the children see their parents' expression of fear and anxiety about the dental procedures, they might be fearful about that. Representation of parents' expression of fear and anxiety about the dental procedures then might lead to the development of dental fear and anxiety among the children. Research findings have demonstrated that fear of children is positively correlated with their parental dental fear especially the mother's one (Field, Ball, Kawycz, & Moore, 2007; Ollendick & King, 1991). Ollendick & King (1991) found that mothers who expressed their high levels of fear and anxiety in front of their children were more likely having fearful children. But it needs to be considered that any relationship among the parents and children's fears might also be due to other pathways like informative or vicarious pathway as all these pathways are related in some way. But within odontophobia individuals using this pathway had their sole influence of odontophobia from their parental expression of fear whereas the vicarious pathway is multifaceted (Carter et al., 2014).

1.3 Measures of Dental Anxiety and Fear

Assessment of dental anxiety is an important procedure for clinical and research purposes. There are a number of scales for the assessment of dental anxiety (Newton & Buck, 2000). Many different types of instruments have been developed over the time for the measurement of dental anxiety. These included Corah's Dental Anxiety Scale (DAS; Corah, 1969), Dental Anxiety Scale-Revised (DAS-R; Ronis, 1994), Dental Fear Survey (DFS; Kleinknecht, Klepac, & Alexander, 1973), Dental Anxiety Inventory (DAI; Stouthard, 1989), Short version of the Dental Anxiety Inventory (S-DAI; Stouthard, Hoogstraten, & Mellenbergh, 1995), Modified Dental Anxiety Scale (MDAS; Humphris, Morrison, & Lindsay, 1995), Short

Dental Fear Question (SDFQ; Jaakkola et al., 2009). Some of these scales have been adopted and tested of their psychometric properties for the dental and psychological researches (Marya, Grover, Jnaneshwar, & Pruthi, 2012). Some other instruments have been developed to assess negative cognitions among patients, coping strategies with dental treatment and attitudes to dental personnel. These are the Dental Cognitions Questionnaire (DCQ; De Jongh, Muris, Schoenmakers, & ter Horst, 1995), Dental Beliefs Scale-Revised (DBS-R; Milgrom, Weinstein, & Getz, 1995), Dental Coping Strategy Questionnaire (DCSQ; Bernson, Elfstrom, & Berggren, 2007). Different measures of dental anxiety have been shown in Table 1 including their items and scores as well.

Among these scales, Modified Dental Anxiety Scale (MDAS) is being widely used for clinical and research settings for the assessment of dental anxiety (Coolidge et al., 2008a; Humphris, Freeman, Campbell, Tuutti, & D'souza, 2000). Modified Dental Anxiety Scale (MDAS; Humphris et al., 1995) is based on the Corah's Dental Anxiety Scale (CDAS; Corah, 1969). It was developed to be an improvement of Corah's (1969) dental anxiety scale. MDAS is simple, quick and very easy to complete, reliable, valid and it has no instrumental effects (Humphris et al., 1995; Humphris, Clarke, & Freeman, 2006). It has mean scores to differentiate from phobic to non-phobic patients (Humphris et. al., 1995; Humphris et al., 2000). The completion of the MDAS does not increase patient's anxiety (Humphris et al., 2006; Humphris & Hull, 2007). It is a brief five items questionnaire. Each item has five answers; the answers vary from "not anxious" scored 1 to "extremely anxious" scored 5. MDAS has been used in many countries all over the world and has been translated into different languages (Abu-Ghazaleh et al., 2011; Acharya, 2008; Bahammam & Hassan, 2014; Coolidge et al., 2008a; Coolidge, Chambers, Garcia, Heaton, & Coldwell, 2008b; Coolidge, Hillstead, Farjo, Weinstein, &

Coldwell, 2010; Ilguy, D., Ilguy, M., Dincer, & Bayirli, 2005; Tunc, Firat, Onur, & Sar, 2005; Yuan, Freeman, Lahti, Lloyd-Williams, & Humphris, 2008).

1.3.1 Measures of Dental Anxiety in Bangladesh

Worldwide different types of psychometric tools are used for assessing dental anxiety.

But there is no published data regarding the prevalence of dental anxiety or any reliable and valid psychometric tools for the assessment of dental anxiety in Bangladesh.

Table 1
Measures of Dental Anxiety and Fear

Name of the instrument	Number of items	Scores	Scale	Assesses what	Source
Modified Dental Anxiety Scale (MDAS)	5	5 to 25	5-point Likert scale	Screening and severity of dental anxiety	Humphris et al., (1995)
Dental Anxiety Scale (DAS)	4	4 to 20	5-point Likert scale	Screening and severity of dental anxiety	Corah (1969)
Dental Anxiety Scale-Revised (DAS-R)	4	4 to 20	5-point Likert scale	Severity of dental anxiety	Ronis (1994)
Dental Fear Survey (DFS)	20	20 to 100	5-point Likert scale	Dental fear and anxiety	Kleinknecht et al., (1973)
Dental Anxiety Inventory (DAI)	36	36 to 180	5-point Likert scale	Severity of dental anxiety	Stouthard (1989)
Short Dental Anxiety Inventory (S-DAI)	9	9 to 45	5-point Likert scale	Severity of dental anxiety	Stouthard et al., (1995)
Short Dental Fear Question (SDFQ)	1	1 to 4	4-point Likert scale	Dental fear for clinical measurement	Jaakkola et al., 2009

Dental Cognitions Questionnaire (DCQ)	38	0 to 38	dichotomous scale “yes” or “no”	Frequency and believability of negative cognitions related to dental treatment	De Jongh et al., (1995)
Dental Beliefs Scale-Revised (DBS-R)	28	28 to 140	5-point Likert scale	Patients’ attitudes toward dental treatment and dental personnel	Milgrom, Weinstein et al., (1995)
Dental Coping Strategy Questionnaire (DCSQ)	20	0 to 120	7-point Likert scale	Coping strategies of patients in dental situation	Bernson et al., (2007)

1.4 Prevalence of Dental Anxiety

Though there is a great improvement in preventive dentistry and also has been advancement in the dental treatment techniques, dental anxiety is seen stable over the years (Smith & Heaton, 2003). It is rated fourth between common fears and ninth among intense fears (do Nascimento, da Silva Araujo, Gusmao, & Cimoies, 2011). In another study, it is ranked 5th among common fears (Agras, Sylvester, & Oliveau, 1969). Study showed that 6% to 15% of people suffer from high dental anxiety (Eli, Uziel, Blumensohn, & Baht, 2004). Numerous studies showed high dental anxiety among their participants (Humphris et al., 2009; Locker, Liddell, & Shapiro, 1999b; Sohn & Ismail, 2005). Dental anxiety is prevalent all over the world and not limited to a population or a country (Chellappah, Vignehsa, Milgrom, & Lam, 1990). Worldwide prevalence level of dental anxiety in different countries has been shown in Table 2.

Table 2*Prevalence of Dental Anxiety in Different Countries by Using MDAS*

Countries	Prevalence (%)	Study participants	Sources
Brazil	28.17	Dental patients	Kanegane, Penha, Borsatti, & Rocha (2003)
Chennai, India	53.5	Dental patients	Swetah & Kumar (2015)
Himachal Pradesh, India	29.2	Dental patients	Fotedar, S., Bhardwaj, & Fotedar, V. (2016)
Iran	58.8	Dental patients	Saatchi, Abtahi, Mohammadi, Mirdamadi, & Binandeh (2015)
Saudi Arabia	51.6	Dental patients	Fayad, Elbieh, Baig, & Alruwaili (2017)
Turkey	8.8	Dental patients	Ilguy et al., (2005)
Germany	17.0	General population	Enkling, Marwinski, & Jhren (2006)
Jordan	8.8	General population	Khraisat & AL-Olaimat (2013)
Sweden	4.7	General population	Svensson, Hakeberg, & Boman (2016)
United Kingdom	11.6	General population	Humphris, Crawford, Hill, Gilbert, & Freeman (2013)
U.S.A	11.7	General population	Gatchel, Ingirsoll, Bowman, Robertson, & Walker (1983)
Canada	31.0	General population	Locker (2003)

1.4.1 Dental Anxiety Regarding Age

The prevalence of dental anxiety is linked with age. Most of the studies showed that dental anxiety and age has an inverse relationship where the level of dental anxiety declines over the years. Therefore, the older people has less dental anxiety than the younger people (Abanto, Vidigal, Carvalho, Sa, & Bonecker, 2017; Acharya, 2008; Enkling et al., 2006; Fayad et al.,

2017; Hagglin, Berggren, Hakeberg, Hallstrom, & Bengtsson, 1999; Holtzman, Berg, Mann, & Berkey, 1997; Humphris et al., 1995; Yuan et al., 2008).

1.4.2 Dental Anxiety Regarding Gender

The prevalence of dental anxiety is differ between genders. Many studies showed that dental anxiety is more common in female than male (Armfield, 2010; Arslan, Erta, & Ulker, 2011; Erten, Akarslan, & Bodrumlu, 2006; Humphris et al., 2009; Scott & Hirschman, 1982). On the other hand, some other studies claimed that dental anxiety is equal for both male and female (Berggren & Carlsson, 1984a; Saatchi et al., 2015; Thomson, Locker, & Poulton, 2000).

1.4.3 Dental Anxiety Regarding Past Dental Visit

Another important factor that is linked with the prevalence of dental anxiety is patients' past dental visit and past dental experiences. It has been found that patients who had previously visited the dentist having less dental anxiety than those who never visited dentists (Fayad et al., 2017). On the other hand, those had previously painful negative experiences from the dental visit have shown high level of dental anxiety (Berggren & Meynert, 1984b; Locker et al., 1996; Milgrom, Mancl et al., 1995).

1.5 Associated Factors of Dental Anxiety

In literature, it was found that the prevalence of dental anxiety is associated with different factors. Some of these factors are age, gender, socioeconomic status, past dental visit, past painful dental experiences, etc. Even genetics and personality traits are also associated with it (Kendler et al., 1992; Kendler et al., 1995). Some studies have reported differences of the prevalence of dental anxiety between genders, with women being typically more anxious than men (Corah et al., 1978). Some other studies found that there is an inverse relationship between dental anxiety and age; the level of anxiety tends to decline over the years (Abanto et al., 2017;

Acharya, 2008; Enkling et al., 2006; Fayad et al., 2017; Hagglin et al., 1999; Holtzman et al., 1997; Humphris et al., 1995; Yuan et al., 2008). Another study (Gustafsson et al., 2007) found that lower socioeconomic status is linked with dental anxiety. Fayad et al., (2017) found that who have visited dentist have lower level of dental anxiety as well as who have previously painful negative experiences shown high level of dental anxiety (Berggren & Meynert, 1984b; Locker et al., 1996; Milgrom, Mancl et al., 1995).

1.6 Impact of Dental Anxiety

Dental anxiety has a significant role on individuals' oral health and it also impacts on the person's overall quality of life (Almoznino et al., 2015; Mollashahi, 2015). Dental anxiety affects not only the dental patients but also the dentists who may become anxious when dealing with those highly anxious patients (Appukuttan, 2016; Cooper, Watts, & Kelly, 1987; Corah, 1988; Eitner, Wichmann, Paulsen, & Holst, 2006; Humphris & Peacock, 1993). Dental anxiety is often a barrier for many patients which interrupted the patients for not taking dental treatment. Therefore, it might be a common reason for people avoiding dental treatment (Chadwick, 2002; Corah, 1988; Ilguy et al., 2005; Skaret, Raadal, Berg, & Kvale, 1998) which affects 6% of the general population (Kleinknecht & Bernstein, 1978) impacting their oral and overall quality of life. It also affects the dental patients severely through impacting their dental treatment, oral health and the overall quality of their lives.

1.7 Rationale of the Study

Dental anxiety impacts on individual's oral health along with overall quality of life of a person (Almoznino et al., 2015; Mollashahi, 2015). It often results in missing, delaying or even cancelling dental appointments (Malvania & Ajithkrishnan, 2011; Ng, Chau, & Leung, 2004;

Vassend, 1993). Many of the patients often do not take treatment because of dental anxiety and several factors like age, gender, past dental visit etc. are associated with it (Corah et al., 1978; Hagglin et al., 1999; Udoye, Oginni, & Oginni, 2005). This dental anxiety is not only a barrier for the patients taking dental treatment but also source of stress for the professionals when dealing with those anxious patients (Appukuttan, 2016; Cooper et al., 1987; Corah, 1988; Eitner et al., 2006; Humphris & Peacock, 1993). Therefore, studies that aim at identifying prevalence with associated factors of dental anxiety among patients might help for their better treatment plan during consultations which might help to improve patients' oral health and the overall quality of life. However, it should be emphasized to use screening tools with adequate psychometric properties when conducting such studies to ensure the quality of information collected. Modified Dental Anxiety Scale (MDAS) is such type of screening tool with adequate psychometric properties. In Bangladesh, there is no reliable and valid scale for assessing dental anxiety among patients. Therefore when adapting the MDAS, it is needed to find out the factor analysis along with reliability and validity testing. Also, there is no data regarding the prevalence of dental anxiety among patients in Bangladesh. Several studies showed the differences of prevalence of dental anxiety regarding age, gender, past dental visit, etc. (Abanto et al., 2017; Acharya, 2008; Armfield, 2010; Arslan, et al., 2011; Fayad et al., 2017). As there is no published data in our country regarding the prevalence of dental anxiety among the dental patients, this study was carried out to assess the prevalence of dental anxiety along with associated factors among dental patients using Bangla Modified Dental Anxiety Scale (BMDAS).

1.8 Objective of the Study

The main objective of the study was to assess the prevalence of dental anxiety among patients by using Bangla Modified Dental Anxiety Scale (BMDAS). There were some specific objectives of this study. The specific objectives of the study were such as –

1. To find out the factorial structure of the Bangla Modified Dental Anxiety Scale (BMDAS).
2. To assess the reliability of the Bangla Modified Dental Anxiety Scale (BMDAS).
3. To assess the validity of the Bangla Modified Dental Anxiety Scale (BMDAS).
4. To find out the predictors of dental anxiety among the patients.
5. To find out whether any differences of dental anxiety between gender.
6. To find out whether any differences of dental anxiety between age groups.
7. To find out whether any differences of dental anxiety among patients regarding previous dental visits.

Methods

This was a cross-sectional study. Two independent samples were included for the study and carried out into two different phases (phase - I and II). Phase-I was carried out to test the psychometric properties of the Bangla Modified Dental Anxiety Scale (BMDAS) and phase-II was for determining the prevalence of dental anxiety along with associated factors among dental patients. Phase-I was carried out from October to November, 2019 and Phase-II was done from December, 2019 to February, 2020.

A. Phase- I: Test the Psychometric Properties of the Bangla Modified Dental Anxiety Scale (BMDAS)

A.2.1 Participants

In total 239 participants were included for this phase. Among them 200 were the dental patients and 39 were the students respectively. Among those 200 dental patients, there were 99 male and 101 female patients respectively. Their mean age was 32.32 (SD = 10.4). Among the 39 students, there were 15 male and 24 female students respectively and their mean age was 25.36 (SD = 1.81). The dental patients were included proportionately from the Dhaka Dental College and Hospital, Bangabandhu Sheikh Mujib Medical University (BSMMU), and Sir Salimullah Medical College and Hospital. The students were included from the University of Dhaka, Bangladesh.

A.2.2 Sampling

This cross-sectional study was carried out thorough purposive sampling. In total 239 participants were included through purposive sampling with literature review and found that 200 participants are enough for testing the psychometric properties of the Modified Dental Anxiety Scale (MDAS) (do Nascimento et al., 2011; Fayad, 2017; Saatchi et al., 2015). The sample

inclusion criteria were 1) male and female dental patients, 2) whose age was 18 years and above. The exclusion criteria were such as 1) whose age below 18 years, 2) who were receiving psychiatric treatment, and 3) who refused to take part in the study.

A.2.3 Materials Used

A.2.3.1 Demographic Information Form

A demographic information form was used. This form was provided to the participants for collecting information on various demographic variables such as age, gender, past dental visits etc.

A.2.3.2 Modified Dental Anxiety Scale

The translated Bangla Modified Dental Anxiety Scale (BMDAS) was used in this phase. Description of the scale has been provided in the introduction section.

A.2.3.3 Anxiety Scale

A 36-item anxiety scale was used to assess the construct validity of the Bangla Modified Dental Anxiety Scale (BMDAS). Anxiety scale is widely used by Bangladeshi mental health professionals. This scale was developed to assess anxiety for Bangladeshi population (Deeba & Begum, 2004). The initial scale consisted of 39 items in 5-point Likert scale format. Item analysis of the scale was done using 102 clinical and 102 non-clinical subjects. In total 36 items were selected for the final scale on the basis of item-total correlation and discrimination value (both significant at $\alpha = 0.01$). Experimental try-out was conducted on 410 participants (207 clinical and 203 non-clinical participants). Split-half reliability of the scale was 0.916 ($\alpha = 0.01$) and the Cronbach –alpha reliability was 0.947. The test-retest reliability ($r = 0.688$) was also found significant ($\alpha = 0.01$). The content validity of the scale was ensured by following the

sequential system model of scale development and by experts' input in different stages of the item construction. Three experimental criterion were found to be positively correlated with the present scale's scores (psychiatrists' ratings, $r = 0.317$; patients' self-ratings, $r = 0.591$; HADS, $r = 0.628$; $p < .01$). Construct validity was assessed by discriminability of the scale among clinical and non-clinical samples ($f = 60.275$) at $\alpha = 0.01$), and item total correlation (ranged from $r = 0.399$ to $r = 0.748$, $p = 0.01$). It has both severity and screening norms for assessing anxiety.

A.2.4 Procedures

At first, permission was obtained from different hospitals for this study. The dental patients who were attending the outpatient department (OPD) were included as sample. After providing both verbal and written consents; participants completed the study questionnaires while at the waiting room, prior to consultation. After completion, each participant was thanked for their participation and data quality was ensured by checking the completeness of the questionnaires. After that data were prepared for the analysis in a secured manner. The overall procedures of phase-1 are shown in Figure 6.

Guidelines of International Test Commission (ITC, 2010) were followed for testing psychometric properties of Bangla Modified Dental Anxiety Scale (BMDAS). There were several steps and these steps have been carried out here.

Step- 1: Translation into Bangla

At the first of this step, all the items of the Modified Dental Anxiety Scale (MDAS) were translated into Bangla by the researcher. Then the Bangla translation was checked by two clinical psychologists to know whether it could be understood by the professionals and patients of our country.

Step- 2: Judge Evaluation

After completing the forward translation, judges (dentists, clinical psychologists, and psychiatrists) evaluated the initial Bangla version of the scale whether it is understandable to our dental patients. After that, judges' opinions were compiled and again checked with the opinion of a dentist.

Step- 3: Back Translation

After compiling the judge's evaluation, items of the scale were ready for the back translation and this was done with the help of a dentist who was not oriented about the original scale of MDAS. By this time back translation was completed then the Bangla version of MDAS was ready for testing psychometric properties.

Step- 4: The Final Scale

The data collection for the scale was initiated in this step. First of all, it was tried to establish rapport with the participants before collecting the data. Participants were oriented about the purpose of the study and verbal as well as written consents were taken from the participants before taking participation in the study. They were also assured that given information would be kept confidential.

Step-5: Data Analysis to Test Psychometric Properties of the Bangla Modified Dental Anxiety Scale (BMDAS)

In this step factor analysis, reliability and validity tests were carried out for testing the psychometric properties of the translated BMDAS. Exploratory factor analysis was examined for factor analysis. Internal consistency (Cronbach Alpha) and test–retest reliability were assessed for testing reliability. Validity testing of the BMDAS was carried out through content and construct validity.

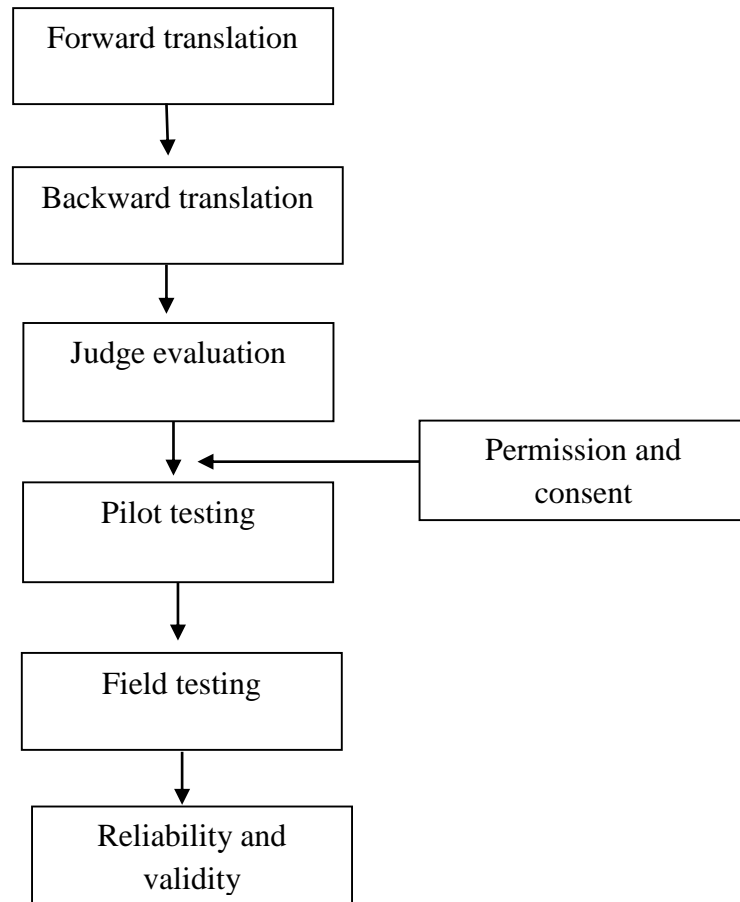


Figure 6. Overall procedures of the study (Phase -I).

B. Phase- II: Determination of the Prevalence of Dental Anxiety along with Associated Factors

B.2.1 Participants

In total 334 dental patients were included for this phase. Among them 311 completed the measures. Among 311 participants, there were 144 male participants and 167 female participants respectively. Their mean age was 32.22 (SD = 10.77). The demographic information of the participants is shown in the Table 3. The dental patients were included proportionately from the

Dhaka Dental College and Hospital, Bangabandhu Sheikh Mujib Medical University (BSMMU), and Sir Salimullah Medical College and Hospital.

Table 3
Demographic Information of the Participants

Variable	Categorization	N	(%)
Age	Group1 (18-35)	204	65.6
	Group2 (>35)	107	34.4
Gender		144	46.3
	Male	167	53.7
Education	Female		
	Class 1 to 5	121	38.9
	Class 6 to HSC	111	35.7
	Honors and above	54	17.4
Occupation	Illiterate	25	8.0
	Job holder	64	20.6
	Businessmen	23	7.4
	Students	91	29.3
Past dental visit	Others	133	42.8
	Yes	208	66.9
Last visit	No	103	33.1
	Within 6 months	108	3.7
	1 year ago	29	9.3
	2 years ago	17	5.5
Previous dental experience	More than 2 years	54	17.4
	Good	106	34.1
	Bad	35	11.3
Dental visit from	Both good and bad	67	21.5
	Dhaka city	83	26.7
	Outside of Dhaka city	228	73.3

B.2.2 Sampling

The study was carried out through purposive sampling. In total 334 participants were included in the phase- II through purposive sampling. The sample inclusion criteria were 1) male and female dental patients, 2) whose age was 18 years and above. The exclusion criteria were such as 1) whose age below 18 years, 2) who were receiving psychiatric treatment, and 3) who refused to take part in this study.

The following formula was used to determine the sample size of the phase- II.

$$ss = \frac{Z^2 * p * (1-p)}{c^2}$$

Where, Z= Z value (e.g., 1.96 for 95% confidence level), p = prevalence, 29. 2% (Fotedar et al., 2016), c = 5%.

The sample size was 318 by using this formula. Then by considering the 5% non-response rate final total sample was 334.

B.2.3 Materials Used

B.2.3.1 Demographic Information Form

A demographic information form was used for collecting information from the participants. This form included demographic variables such as age, gender, past dental visits, past dental experiences etc.

B.2.3.2 Bangla Modified Dental Anxiety Scale (BMDAS)

The adapted Bangla Modified Dental Anxiety Scale (BMDAS) was used to assess the prevalence of dental anxiety among the patients seeking dental care. It was a 5-point Likert scale. Description of the BMDAS is on the phase-I section of the study.

B.2.4 Procedures

At first, permission was obtained from different hospitals. The dental patients who were attending the outpatient department (OPD) were included as sample. First of all, patients were oriented about the study. Then they were provided the questionnaires. After providing both verbal and written consents, participants completed the study questionnaires at the waiting room, prior to consultation with dentists. After completion, participants were thanked for their participation in this study. Collected data were analyzed by using SPSS 20 version. Overall procedures of the study (phase – II) is shown in Figure 7.

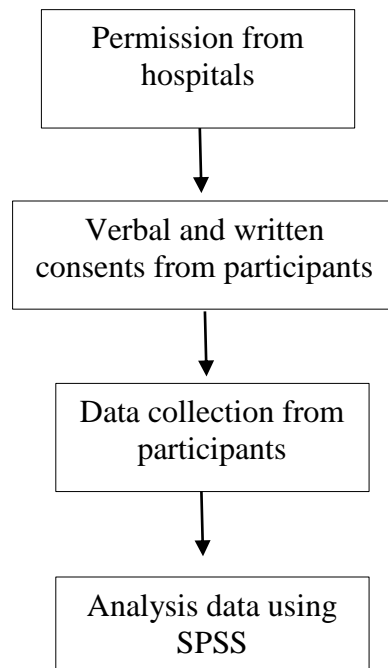


Figure 7. Overall procedures of the study (Phase-II)

Results

A.3 Results of the Phase- I of the Study

A.3.1 Factor Analysis of the Bangla Modified Dental Anxiety Scale (BMDAS)

Data was analyzed for the exploratory factor analysis (EFA). Principal component method with varimax-rotation was used. The initial analysis showed one component with eigenvalue exceeding 1 explained 70.80% of the total variance. An inspection of scree-plot (shown in Figure 8) revealed a clear break after one component. The initial eigenvalue and variance of the (1) component is shown in Table 4 and factor loadings of the items of the scale is shown in Table 5. Factor loadings showed that all of the scale's items factor loadings were .70 and above which indicated this factor extracted sufficient variance from the variable.

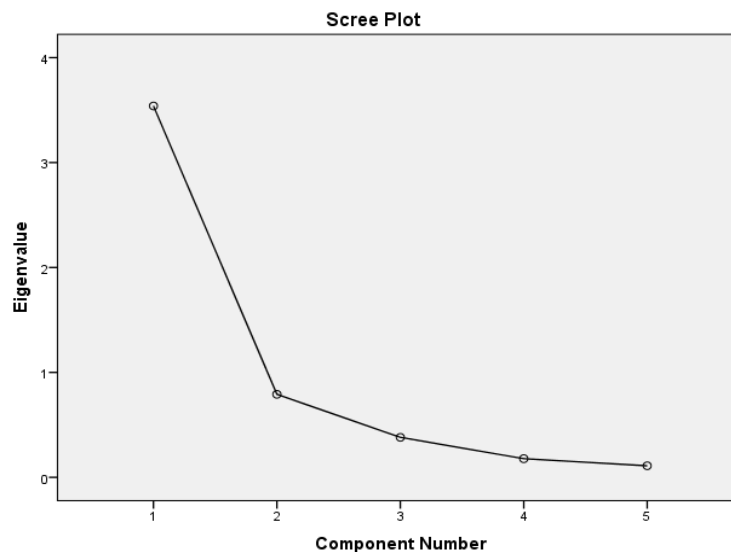


Figure 8. Scree plot of the Bangla Modified Dental Anxiety Scale (BMDAS)

Table 4
The Initial Eigenvalue and Variance of the One Component

Component	Total	% of variance
1	3.54	70.80

Note. Extraction Method: Principal Component Analysis

Table 5
Factor Loadings of Items of the BMDAS

Items	Component- 1
Q1	.709
Q2	.758
Q3	.901
Q4	.909
Q5	.908

A.3.2 Determining Reliability of the Bangla Modified Dental Anxiety Scale (BMDAS)

Reliability of a test can be determined through different methods e.g., internal consistency reliability, test-retest reliability, alternate or parallel form reliability (Golden, Sawicki, & Franzen, 1984). In this study, internal consistency reliability and test-retest reliability were carried out.

A.3.2.1 Internal Consistency Reliability

For determining internal consistency of the scale, Cronbach's Alpha was assessed. Cronbach's Alpha of the BMDAS was .90 which showed excellent internal consistency of this scale. Table 6 and Table 7 showed the inter-item correlation matrix and item-total statistics for 5 items of the BMDAS respectively.

Table 6
Inter-item Correlation Matrix of the BMDAS

Item Number	Q1	Q2	Q3	Q4	Q5
Q1	1.00				
Q2	.62	1.00			
Q3	.45	.53	1.00		
Q4	.54	.55	.85	1.00	
Q5	.48	.60	.88	.82	1.00

A.3.2.2 Test-Retest Reliability

The BMDAS was administered twice with an interval of 1 week to 3 weeks on a sample of 39 students in order to assess test–retest reliability of the BMDAS. The Pearson's correlation between these two responses was examined with the help of SPSS 20 version software and significant correlation or the coefficient of stability ($r = .78$, $p < 0.01$) has been found for the test–retest reliability of the scale. Mean of the total score of the first administration of the BMDAS

was 13.85 (SD = 4.14) and the mean of the total score of the second administration of the BMDAS was 13.82 (SD = 4.73).

Table 7
Item-total Statistics of the BMDAS

Item Number	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's Alpha if item deleted
Q1	13.71	25.82	.59	.45	.90
Q2	13.30	24.83	.65	.48	.89
Q3	12.74	22.02	.82	.83	.86
Q4	12.93	22.67	.84	.76	.85
Q5	12.69	21.88	.83	.81	.85

A.3.3 Determining Validity of the Bangla Modified Dental Anxiety Scale (BMDAS)

Content and construct validity of the BMDAS were assessed. Content validity was assessed by the judges (Dentists, clinical psychologists and psychiatrists). Construct validity (Anastasi, 1988) of the BMDAS was carried out through convergent validation. Convergent validity of the scale was examined with the Anxiety Scale (Deeba & Begum, 2004) and significant correlation ($r = .60$, $p < 0.01$) has been found for the BMDAS with anxiety scale.

B.3 Results of the Phase- II of the Study

B.3.1 Prevalence of Dental Anxiety

Results indicated that the prevalence of dental anxiety was 23.5% among the patients. Prevalence of dental anxiety was also calculated on male and female patients; patients of group one and group two (shown in Table 8).

Table 8
Prevalence of Dental Anxiety among Patients

Variables	N	(%)
Prevalence		
Total patients	311	23.5
Male patients	144	11.9
Female patients	167	11.6
Group1	204	18.0
Group 2	107	5.5

Note. Group 1=18 to 35 years old, Group 2 = > 35 years old

B.3.2 Predictors of Dental Anxiety

Regression analysis was used to test if patients' age, gender, educational qualification, occupation and past dental visit significantly predicted patients' dental anxiety. The results indicated the predictors of dental anxiety (shown in Table 9).

Table 9
Predictors of Dental Anxiety among Patients

Dental Anxiety		
Model 1		
Variable	β	95% CI
Age	-1.486*	[-2.838, -0.178]
Gender	-0.396	[-1.719, 0.835]
Educational qualification	1.241**	[0.536, 1.900]
Occupation	0.234	[-0.358, 0.858]
Past dental visit	2.754**	[1.437, 4.093]
R ²		1.33
ΔR^2		.119
F		9.370***

Note. N= 311, CI= Confidence Interval, **p<.01, *p< .05

B.3.3 Correlation with Demographic Variables and Dental Anxiety

Results showed that there were significant correlation with demographic variables (age, educational qualification, past dental visit and past dental experiences) with dental anxiety (shown in Table 10).

B.3.4 Other Characteristics of Dental Anxiety

Through descriptive analysis of the items of the Bangla Modified Dental Anxiety Scale (BMDAS), it was found that patients were more anxious regarding the items of tooth drill and local anaesthetic injection than the other itmes of the scale (shown in Table 11).

Table 10
Correlation among Demographic Variables and Dental Anxiety

Variable	Dental Anxiety
Age	-.163**
Gender	-.072
Educational qualification	.213**
Occupation	-.018
Past dental visit	.277**
Past dental experience	.143*

Note. ** $p < .01$, * $p < .05$

Table 11
Descriptive Analysis of Items of the BMDAS

Items	M	SD
1. If you went to your dentist for treatment tomorrow, how would you feel?	2.14	1.134
2. If you were sitting in the waiting room (waiting for treatment), how would you feel?	2.24	1.138
3. If you were about to have a tooth drilled, how would you feel?	3.15	1.499
4. If you were about to have your teeth scaled and polished, how would you feel?	2.97	1.423

5. If you were about to have a local anaesthetic injection in your gum, above an upper back tooth, how would you feel?	3.23	1.499
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Note. N = 311, M = Mean, SD = Standard Deviation

t-test analysis was carried out to see whether dental anxiety had any significant differences regarding age group, gender and past dental visit. It revealed that there were a significant difference, $t(309) = 2.90$, $P = .004$, between the two age groups. Younger patients (18 to 35 years old) had higher dental anxiety ($M = 14.38$, $SD = 5.62$) than the older patients (>35 years old) ($M = 12.50$, $SD = 5.06$). There was no significant effect for gender, $t(309) = 1.26$, $P = .208$, despite men ($M = 14.16$, $SD = 5.54$) attaining higher scores than women ($M = 13.37$, $SD = 5.44$). Patients who never visited dentists reported higher level of dental anxiety ($M = 15.89$, $SD = 5.65$) than those who had the previous experience of dental visit ($M = 12.67$, $SD = 5.10$), $t(309) = 5.06$, $P < .001$ (shown in Table 12).

Table 12
Results of t-test According to Age, Gender and Previous Dental Visit

Variables	N	M	SD	t
Age				
Group1	204	14.38	5.62	2.90**
Group 2	107	12.50	5.06	
Gender				
Male	144	14.16	5.54	1.26
Female	167	13.37	5.44	

**Previous
Dental Visit**

Yes	208	12.67	5.10	5.06***
No	103	15.89	5.65	

Note. Group 1= 18 to 35 years old, Group 2 = >35 years old,
M = Mean, SD = Standard Deviation, **p <.01, ***p<.00

Discussion

The present study was carried out to assess the prevalence of dental anxiety among patients seeking dental care in Bangladesh. The main objective of the study was to assess the prevalence of dental anxiety among patients by using the Bangla Modified Dental Anxiety Scale (BMDAS). The specific objectives of this study were such as to find out the factorial structure of the Bangla Modified Dental Anxiety Scale (BMDAS); to assess the reliability of the Bangla Modified Dental Anxiety Scale (BMDAS); to assess the validity of the Bangla Modified Dental Anxiety Scale (BMDAS); to find out the predictors of dental anxiety among the patients; to find out whether any differences of dental anxiety between gender; to find out whether any differences of dental anxiety between age groups; to find out whether any differences of dental anxiety among patients regarding previous dental visits.

The study was completed through two phases: Phase - I and Phase - II. Phase - I was carried out for testing the psychometric properties of the Bangla Modified Dental Anxiety Scale (BMDAS) and Phase - II was carried out for assessing the prevalence of dental anxiety among patients along with associated factors. In the Phase – I, results showed good psychometric properties of the Bangla Modified Dental Anxiety Scale (BMDAS). Exploratory factor analysis (EFA) of the Bangla Modified Dental Anxiety Scale (BMDAS) showed one factor model of dental anxiety and this factor extracted sufficient variance from the variable of dental anxiety which has been indicated by the high factor loadings of all the items of the Bangla Modified Dental Anxiety Scale (BMDAS). Gremigni, Mobilio, Casu and Catapano (2014), Humphris et al., (1995), and Ogawa, Sago, and Furukawa (2020) found similar type of factor in their studies. Regarding the reliability of the Bangla Modified Dental Anxiety Scale (BMDAS), it was found excellent internal consistency (Cronbach's alpha .90). This indicated that all of the items of the

Bangla Modified Dental Anxiety Scale (BMDAS) could measure the same construct of dental anxiety. This high internal consistency of the Bangla Modified Dental Anxiety Scale (BMDAS) is comparable with other studies (Acharya, 2008; Giri, Pokharel, Gyawali, & Bhattarai, 2017; Humphris et al., 1995; Yuan et al., 2008). The test-retest reliability of the Bangla Modified Dental Anxiety Scale (BMDAS) showed high correlation (George & Mallery, 2003). Therefore, it can be said that the Bangla Modified Dental Anxiety Scale (BMDAS) has the stability of the obtained scores of the construct of dental anxiety on two separate occasions on the same participants as well as the good test-retest reliability. Another very important psychometric properties of any scale is validity along with reliability. Therefore, the validity of the Bangla Modified Dental Anxiety Scale (BMDAS) was assessed. The validity of the Bangla Modified Dental Anxiety Scale (BMDAS) was done through content validity and construct validity. Content validity was ensured by the experts' evaluation. Convergent validity was carried out for assessing the construct validity of Bangla Modified Dental Anxiety Scale (BMDAS). Convergent validity was assessed through using the anxiety scale with Bangla Modified Dental Anxiety Scale (BMDAS) and found a moderate level correlation of BMDAS with the anxiety scale. It is known that dental anxiety and dental phobia is specific field which included under the section of specific phobia of DSM-5. Therefore, it is not so much close to other anxiety disorders of DSM-5. That's why it might be found moderate level of correlation when assessing convergent validity. Overall, it can be said that Bangla Modified Dental Anxiety Scale (BMDAS) has good psychometric properties (based on the factor analysis, reliability and validity testing) for assessing dental anxiety among patients.

In the Phase - II of the study, prevalence of the dental anxiety was assessed by using Bangla Modified Dental Anxiety Scale (BMDAS). The cut-off score for the BMDAS was the

score of 19 for assessing whether a patient has dental anxiety or not (Humphris et. al., 1995). By using this cut-off score, the prevalence of dental anxiety found 23.5% among the dental patients. The study showed that nearly one fourth of the patients had dental anxiety. It was also found that prevalence of dental anxiety was slightly more on male dental patients than female dental patients. The prevalence regarding age, it was found that dental anxiety was more prevalent on younger patients than on older patients. The ratio of the prevalence of dental anxiety is that younger patients have dental anxiety more than three times higher than the older patients. The predictors of dental anxiety among those patients were age, educational qualification and the past dental visit. There were significant correlation among age, educational qualification, past dental visit and past dental experiences with dental anxiety. It was found that patients were more anxious regarding tooth drill and local anaesthetic injection than the teeth scaled and polishing and waiting for the treatment. An inverse relationship was found between age and dental anxiety, the younger patients had more dental anxiety than older patients. The study also revealed no significant differences in dental anxiety on male and female dental patients. But there was a significant differences in dental anxiety among the patients based on their past dental visit. Patients those had previous experience of dental visit had less dental anxiety than those patients did not have experience of dental visit at any time.

These findings of dental anxiety like other psychological problems can be explained within the bio-psycho-social framework in which biological, psychological and sociocultural factors contribute to the development of dental anxiety. The biological factors like age has been found one of the predictors of dental anxiety in this study which is supported with other studies (Abanto et al., 2017; Acharya, 2008; Enkling et al., 2006; Fayad et al., 2017; Holtzman et al., 1997; Humphris et al., 1995; Yuan et al., 2008). Another important factor is genetics which

might play an important role in specific phobias though we did not explore this in this study. In the future study, it might be investigated whether genetic transmission occurred in case of dental anxiety and phobia (Barlow, 2000; Ray et al., 2010). With regard to psychological factors, patients were more prone to anxious on tooth drill and local anaesthetic injection. Patients might acquire this through direct conditioning, modeling or information (Armfield, 2010; Askew & Field, 2008; Field et al., 2007; Ollendick & King, 1991). This might lead them to avoid the dental treatment and also the development of dental anxiety and phobia in turn. Also the past dental experiences found association with dental anxiety in the study and this is similar with other studies (Armfield, 2010; Askew & Field, 2008). Another psychological factor, temperament has been linked with dental anxiety (Lundgren et al., 2007) which might be explored in the future study as it was not explored in this study. The social factors like educational qualification has been linked to dental anxiety in this study but not with occupation. Overall it can be said that through the interaction of bio-psycho-social factors, patients might develop dental anxiety.

These findings of the study can also be explained from the clinical perspective of the multifactorial model of dental anxiety. Here, three contributing factors personal, external/social and dental factors are linked with the development of dental anxiety. The personal factors age and maturity, sex, personality traits and temperament are considered as contributing factors for dental anxiety (Abanto et al., 2017; Acharya, 2008; Lundgren et al., 2007; Klingberg & Broberg, 2007). In this study, age has been linked with dental anxiety but not with the sex. The external/social factors like socioeconomic status, educational qualification, occupation contribute to the dental anxiety (Acharya, 2008; Gustafsson et al., 2007). In this study, educational qualification was found the contributing factor of dental anxiety. The dental factors like past

dental visit, past dental experiences lead to dental anxiety and phobia and in this study there were correlation between past dental visit and past dental experiences with dental anxiety. Study showed that a majority of dentally phobic patients reported that previous painful and unpleasant dental treatment as the origin of their phobia. In most of the cases, the dental anxiety and phobia has its origin in childhood and adolescence. Over the time, it develops a vicious circle of avoidance of dental treatment and dental care which in turn lead them of having poor oral health and shame and guilty feeling as well and the overall quality of life (Berggren & Meynert, 1984b).

The findings of the study can also be discussed on the basis of others studies. The prevalence of dental anxiety needs to be considered as a significant portion of patients have dental anxiety. This prevalence of dental anxiety is higher than some other studies (Gatchel et al., 1983; Humphris et al., 2013; Ilguy et al., 2005; Enkling et al., 2006; Khraisat et al., 2013; Svensson et al., 2016) although it is less than of some other studies (Fayad et al., 2017; Fotedar et al., 2016; Kanegane et al., 2003; Saatchi et al., 2015; Swetah & Kumar, 2015). The less prevalence of dental anxiety on older patients might be due to older patients have been visited or taken more dental treatment than the younger patients. The older patients might be gone through more experiences on pain, stresses which have been impacted their perception of dental anxiety as well. These might be also due to a general decrease in anxiety with aging and increased exposure to other diseases. That's why older patients have less dental anxiety than the younger patients which might be explored in any future study. However, the treatment of those anxious patients' needs to be considered when dealing with them. Treatment for those anxious patients might be inclusive both with medication and counseling regarding their dental anxiety for their better management and as well as their overall quality of life (Berggren & Carlsson, 1984a). The

predictors (age, educational qualification and the past dental visit) of dental anxiety found in this study, similar with other studies (Abanto et al., 2017; Acharya, 2008; Fayad et al., 2017; Humphris et al., 1995). And the patients' dental anxiety more on the tooth drill and local anesthetic injection supported with other studies (Armfield & Milgrom, 2011; Berggren & Meynert, 1984b). The significant differences between two age group also found with other studies (Abanto et al., 2017; Acharya, 2008; Enkling et al., 2006; Fayad et al., 2017; Hagglin et al., 1999; Holtzman et al., 1997; Humphris et al., 1995; Yuan et al., 2008) though some other studies differ with this (Saatchi et al., 2015; Tunc et al., 2005). Some studies found significant differences between male and female patients; female were more anxious than male patients (Auerbach & Kendall, 1978; Enkling et al., 2006; Erten et al., 2006; Fayad et al., 2017; Humphris et al., 1995; Saatchi et al., 2015). Interestingly, this study did not find significant differences of dental anxiety on gender basis which is supported with other studies (Berggren & Carlsson, 1984a; Saatchi et al., 2015; Thomson et al., 2000). On the other hand, there was a significant difference on patients based on their past dental visit. Patients who had previously visited the dentist found less dental anxiety than those who never visited the dentists and this was supported with Fayad et al., (2017).

4.1 Limitations of the Study

There were some limitations of this study. Data was not collected through random sampling and was collected from only Dhaka city. In Bangladesh, all types of patients including dental patients generally come to Dhaka for treatment purposes from all over the country. Treatment at the Dhaka city for any kind of problems like dental problem is much better and available than other cities of the country. This study revealed that 73.3% dental patients came to visit dentists from outside of Dhaka city. It might be assumed that the sample of this study is

representative of dental patients as they came from across the country. Another limitation was that data was collected only from the government settings hospitals as it was not possible to manage to get permission from the private settings hospitals.

4.2 Conclusion

In conclusion it can be said that Bangla Modified Dental Anxiety Scale (BMDAS) is a reliable and valid scale for assessing dental anxiety. This study will contribute to assess dental anxiety among patients seeking dental care along with considering the predictors of dental anxiety among the patients. Thus, it will help us to make proper treatment plan for those anxious patients of Bangladesh accordingly.

4.3 Future Research

Future research might be on exploring other issues of anxious patients like their protective factors, coping mechanism etc. It might be explored in future that why older patients have had less dental anxiety than the younger patients. The efficacy of a psychological intervention might also be evaluated by using the Bangla Modified Dental Anxiety Scale (BMDAS) in future study.

4.4 Approval of the Study

This study was approved (Project Number: MP190503) by the ethical review committee of the Department of Clinical Psychology, University of Dhaka, Dhaka, Bangladesh.

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Appendices

Appendix-1



Appendix-2:

চিকিৎসা মনোবিজ্ঞান বিভাগ
ঢাকা বিশ্ববিদ্যালয়
কলা ভবন (৫ম তলা)
ঢাকা-১০০০, বাংলাদেশ



DEPARTMENT OF CLINICAL PSYCHOLOGY
UNIVERSITY OF DHAKA
Arts Building (4th floor)
Dhaka 1000, Bangladesh

Tel: 9661900-73, Ext. 7801, Fax: 880-2-8615583, E-mail: clinpsy@du.ac.bd

Certificate of Ethical Approval

Project Number : MP190503


Project Title : Dental Anxiety among Patients Seeking Dental Care in Bangladesh

Investigators : Liza Akter and Kamal Uddin Ahmed Chowdhury


Approval Period : 26 May 2019 to 25 May 2021

Terms of Approval

1. Any changes made to the details submitted for ethical approval should be notified and sought approval by the investigator(s) to the Department of Clinical Psychology Ethics Committee before incorporating the change.
2. The investigator(s) should inform the committee immediately in case of occurrence of any adverse unexpected events that hampers wellbeing of the participants or affect the ethical acceptability of the research.
3. The research project is subject to monitoring or audit by the Department of Clinical Psychology Ethics Committee.
4. The committee can cancel approval if ethical conduct of the research is found to be compromised.
5. If the research cannot be completed within the approved period, the investigator must submit application for an extension.
6. The investigator must submit a research completion report.


.....
Chairperson
Ethics Committee
Department of Clinical Psychology
University of Dhaka

Appendix-3:


 ঢাকা ডেন্টাল কলেজ হাসপাতাল
 পরিচালকের কার্যালয়
 ডায়েরী নং : ৪৫০৪ তাং : ০৭/১১/১৯
 পরিচালক :
 উপ-পরিচালক :
 সহকারী পরিচালক :
 সচিব :

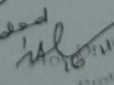
তারিখ : ০৭.১১.১৯ইং
 বরাবর,
 পরিচালক
 জালা ডেন্টাল কলেজ হাসপাতাল -
 মিরপুর, ঢাকা-১২০৬

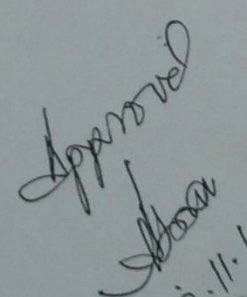
বিষয় : গবেষণা কার্যের পোস্ত- অগ্রহণের অনুমতি প্রদান প্রসঙ্গে।

প্রথম
 বিনীত নিবেদন এই যে, আমি ঢাকা বিশ্ববিদ্যালয়ের স্নিগ্ধিয়াম
 আইনোলজি বিভাগের এম. ফিল (পার্ট-২) এর অধ্যয়নার্থী।
 আমি, "Dental Anxiety among Patients Seeking Dental
 Care in Bangladesh" এই মনোরাজ্যে একটি গবেষণা করতে
 চাই। এই গবেষণায় অত্র বিভাগে আমি আপনাব
 হাসপাতালের (Oral and Maxillofacial Surgery, Conser-
 vative Department) রোগীদের মধ্যে পোস্ত- অগ্রহণ
 করতে চাই।

অতএব, আপনার নির্দেশে আমায় অস্থূল আবেদন এই যে,
 আমায় ঠিক যিভাগ অর্জিত হতে আগামী ৩ মাস
 ০৬.১১.১৯ইং হতে ০৬.০২.২০ইং পর্যন্ত পোস্ত- অগ্রহণের জন্য
 অনুমতি প্রদান করতে আশা করি।

বিনীত নিবেদন,
 মিস্টার আমায় -
 এম. ফিল (পার্ট-২)
 স্নিগ্ধিয়াম আইনোলজি বিভাগ -
 ঢাকা বিশ্ববিদ্যালয়

Forwarded

 Professor Ara Haider
 BDS DDS MS OMS
 Professor & Head
 Dept. of Oral & Maxillofacial Surgery
 Dhaka Dental College & Hospital
 Dhaka, Bangladesh


 18.11.19
 ডাঃ মোঃ আশিফুর রহমান
 পরিচালক
 জালা ডেন্টাল কলেজ হাসপাতাল, পিপি।

Date: 16.06.2019

To
The Director
Sir Salimullah Medical College & Mitford Hospital
Dhaka-1100

OK
B
১৩/৬/১৯
B
mm
[Signature]

পরিচালক
শ্রী সলিমুল্লাহ মেডিকেল কলেজ
আরও মিতফোর্ড হাসপাতাল,
ঢাকা

Subject: **Permission for data collection as part of my M. Phil research.**

Dear sir,

With due respect, I humbly want to state that I am an M.Phil student at the Department of Clinical Psychology, University of Dhaka. As a requirement of my M.Phil degree, I am conducting a research on **“Dental Anxiety among Patients Seeking Dental Care in Bangladesh”** under the supervision of Kamal Uddin Ahmed Chowdhury, Associate professor of this department. The data will be collected from patients seeking dental care through interview method. All the data will be kept confidential. Before collecting data, permission will be taken from the patients. I am also assuring that no violation of research ethics will be occurred in conduction of this research.

I therefore, pray and hope that you will give permission to collect data from the patients in your authorized department.

Sincerely Yours

[Signature], 13.06.19
Liza Akter
M.Phil (2017-18)
Dept. of Clinical Psychology
University of Dhaka

Supervised by
[Signature], 13.06.19
Kamal Uddin Ahmed Chowdhury
Associate Professor
Dept. of Clinical Psychology
University of Dhaka

Date: 22.06.2019

To,
The Chairman
Department of Conservative Dentistry and Endodontics
Bangabandhu Sheikh Mujib Medical University
Dhaka- 1000

Subject: **Permission for data collection as part of my M. Phil research.**

Dear Sir,

With due respect, I humbly want to state that I am an M. Phil researcher at the Department of Clinical Psychology, University of Dhaka. As a requirement of my M. Phil degree, I am conducting a research on **"Dental Anxiety among Patients Seeking Dental Care in Bangladesh"** under the supervision of Kamal Uddin Ahmed chowdhury, Associate professor of this department. The data will be collected from dental patients through interview/survey method. All the data will be kept confidential. Before collecting data, permission will be taken from the patients. I am also assuring that no violation of research ethics will be occurred in conduction of this research.

I therefore, pray and hope that you will give permission to collect data from the dental patients in your authorized department.

Sincerely Yours

21.06.19

Liza Akter
M. Phil (2017-2018)
Dept. of Clinical Psychology
University of Dhaka

Supervised by

[Signature] 21.06.19

Kamal Uddin Ahmed chowdhury
Associate Professor
Dept. of Clinical Psychology
University of Dhaka

Attachment:

- 1. Research proposal
- 2. Instruments of Collecting Data
- 3. Consent Form

Permission my be given for data collection only.

1
25/06/19
Prof. Dr. Qutuzul Kabir
Chairman
Col & Maxillofacial Surgery Department
Bangabandhu Sheikh Mujib Medical University
Shahbagh, Dhaka-1000

Date: 22.06.2019

To,
The Chairman
Department of Pedodontics
Bangabandhu Sheikh Mujib Medical University
Dhaka- 1000

Subject: **Permission for data collection as part of my M. Phil research.**

Dear Sir,

With due respect, I humbly want to state that I am an M. Phil researcher at the Department of Clinical Psychology, University of Dhaka. As a requirement of my M. Phil degree, I am conducting a research on "**Dental Anxiety among Patients Seeking Dental Care in Bangladesh**" under the supervision of Kamal Uddin Ahmed chowdhury, Associate professor of this department. The data will be collected from dental patients through interview/survey method. All the data will be kept confidential. Before collecting data, permission will be taken from the patients. I am also assuring that no violation of research ethics will be occurred in conduction of this research.

I therefore, pray and hope that you will give permission to collect data from the dental patients in your authorized department.

Sincerely Yours

Liza Akter, 21.06.19

Liza Akter
M. Phil (2017-2018)
Dept. of Clinical Psychology
University of Dhaka

Supervised by

Kamal Uddin Ahmed chowdhury 21.06.19

Kamal Uddin Ahmed chowdhury
Associate Professor
Dept. of Clinical Psychology
University of Dhaka

Attachment:

1. Research proposal
2. Instruments of Collecting Data
3. Consent Form

Prof. Dr. Jebun Nessa
22/06/2019
Prof. Dr. Jebun Nessa
Chairman
Department of Pedodontics
B S M Medical University
Shahbag, Dhaka-1000

Date: 22.06.2019

To,
The Chairman
Department of Oral and Maxillofacial Surgery
Bangabandhu Sheikh Mujib Medical University
Dhaka- 1000

Subject: **Permission for data collection as part of my M. Phil research.**

Dear Sir,

With due respect, I humbly want to state that I am an M. Phil researcher at the Department of Clinical Psychology, University of Dhaka. As a requirement of my M. Phil degree, I am conducting a research on "**Dental Anxiety among Patients Seeking Dental Care in Bangladesh**" under the supervision of Kamal Uddin Ahmed chowdhury, Associate professor of this department. The data will be collected from dental patients through interview/survey method. All the data will be kept confidential. Before collecting data, permission will be taken from the patients. I am also assuring that no violation of research ethics will be occurred in conduction of this research.

I therefore, pray and hope that you will give permission to collect data from the dental patients in your authorized department.

Sincerely Yours

LA, 21.06.19

Liza Akter
M. Phil (2017-2018)
Dept. of Clinical Psychology
University of Dhaka

Supervised by

Kamal Uddin Ahmed Chowdhury, 21.06.19

Kamal Uddin Ahmed chowdhury
Associate Professor
Dept. of Clinical Psychology
University of Dhaka

Attachment:

1. Research proposal
2. Instruments of Collecting Data
3. Consent Form

Permission is given for data collection for research purpose -

21/06/19

Chairman
Oral & Maxillofacial Surgery Department
Bangabandhu Sheikh Mujib Medical University
Shahbagh, Dhaka-1000

Appendix-4:**অংশগ্রহণকারীর প্রতি নির্দেশনা**

জনাব,

আমি, ঢাকা বিশ্ববিদ্যালয়ের ক্লিনিক্যাল সাইকোলজি বিভাগের একজন এম.ফিল গবেষক। আমি আমার ডিগ্রীর অংশ হিসেবে একটি গবেষণা করছি। আমার গবেষণার শিরোনাম হচ্ছে “Dental Anxiety among Patients Seeking Dental Care in Bangladesh”. এই গবেষণার অংশ হিসেবে আমি, “Modified Dental Anxiety Scale (MDAS)” – এই নামের একটি মনোবৈজ্ঞানিক মানক আমাদের দেশে ব্যবহারের উপযোগী করার চেষ্টা করছি। এই মানকটি দিয়ে কারো ডেন্টাল আঙ্জাইটি আছে কিনা তা সহজেই নির্ণয় করা যায়। এই গবেষণার অন্যতম উদ্দেশ্য হচ্ছে এই মানকটি আমাদের দেশে ব্যবহার উপযোগী করা, এর নির্ভরযোগ্যতা, যথার্থতা দেখা এবং ডেন্টাল আঙ্জাইটির লক্ষণের তীব্রতার মাত্রা নির্ণয় করা। আপনার কাজ হবে নিম্নের মানকটির বিভিন্ন পদগুলোর মধ্যে আপনার ক্ষেত্রে যেটা প্রযোজ্য সেটাতে টিক চিহ্ন (✓) দেয়া। এক্ষেত্রে উল্লেখ্য যে, আপনার তথ্যসমূহ কেবলমাত্র গবেষণার কাজে ব্যবহার করা হবে এবং আপনার পরিচয় গোপন রাখা হবে।

সাপেক্ষে,

আগ্রহী হলে নিম্নে স্বাক্ষর দিন

লিজা আক্তার

এম.ফিল গবেষক

ক্লিনিক্যাল সাইকোলজি বিভাগ

ঢাকা বিশ্ববিদ্যালয়

অংশগ্রহণকারীর প্রতি নির্দেশনা

জনাব,

আমি, ঢাকা বিশ্ববিদ্যালয়ের ক্লিনিক্যাল সাইকোলজি বিভাগের একজন এম.ফিল গবেষক। আমি আমার ডিগ্রীর অংশ হিসেবে একটি গবেষণা করছি। আমার গবেষণার শিরোনাম হচ্ছে “**Dental Anxiety among Patients Seeking Dental Care in Bangladesh**”。 এই গবেষণার অন্যতম উদ্দেশ্য হচ্ছে আমাদের দেশের রোগীদের মধ্যে ডেন্টাল অ্যাঞ্জাইটির লক্ষণ আছে কিনা তা নির্ণয় করা।

এক্ষেত্রে উল্লেখ্য যে, আপনার তথ্যসমূহ কেবলমাত্র গবেষণার কাজে ব্যবহার করা হবে এবং আপনার পরিচয় গোপন রাখা হবে। আপনি চাইলে যেকোনো সময় গবেষণায় অংশগ্রহণ থেকে বিরত থাকতে পারবেন।

সাপেক্ষে,

আগ্রহী হলে নিম্নে স্বাক্ষর দিন

লিজা আক্তার
এম.ফিল গবেষক
ক্লিনিক্যাল সাইকোলজি বিভাগ
ঢাকা বিশ্ববিদ্যালয়

Appendix-5:ব্যক্তিগত তথ্য

১। বয়সঃ

২। লিঙ্গঃ ক) পুরুষ খ) মহিলা গ) অন্যান্য

৩। পূর্বে কখনো দাঁতের ডাক্তার দেখিয়েছেন?

ক) হ্যাঁ খ) না

I) "হ্যাঁ,, হলে সর্বশেষ কতদিন আগে দাঁতের ডাক্তার দেখিয়েছেন?

ক) ৬ মাসের মধ্যে খ) ১ বছর আগে

গ) ২ বছর আগে ঘ) ২ বছরের বেশি সময়

II) আনুমানিক কতবার দাঁতের ডাক্তার দেখিয়েছেন?

ক) ১ - ২ বার খ) ৩ - ৫ বার গ) ৫-এর অধিক বার

III) পূর্বে দাঁতের ডাক্তার দেখানোর অভিজ্ঞতা কেমন ছিল?

ক) ভাল খ) খারাপ গ) ভাল এবং খারাপ উভয়ই

৪। পূর্বে কখনো দাঁতের ডাক্তার দেখানোর সাক্ষাৎকার স্থগিত করেছেন কিনা?

ক) হ্যাঁ খ) না

৫। দাঁতের ডাক্তার দেখাতে এসেছেন?

ক) ঢাকা থেকে খ) ঢাকার বাইরে থেকে

৬। আপনি কি বর্তমানে কোন মানুষিক সমস্যার জন্য কাউন্সেলিং/ সাইকোথেরাপি/ ওষুধ নিচ্ছেন?

ক) হ্যাঁ খ) না

Appendix-6:

Bangla Modified Dental Anxiety Scale (BMDAS)

দাঁতের সমস্যার জন্য দাঁতের ডাক্তারের কাছে যাওয়ার আগে আপনি কতখানি উদ্ভিগ্নবোধ করেন? নিচে কতগুলো প্রশ্ন এবং প্রতিটি প্রশ্নের কতগুলো সম্ভাব্য উত্তর দেওয়া আছে। আপনার জন্য যে উত্তরটি প্রযোজ্য সেটিতে টিক চিহ্ন (✓) দিন।

০১। যদি আপনাকে আগামীকাল দাঁতের চিকিৎসার জন্য দাঁতের ডাক্তারের কাছে যেতে হয়, তাহলে আপনি কেমন অনুভব করবেন?

উদ্ভিগ্ন নই <input type="checkbox"/>	কিছু মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	মাঝামাঝি মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	বেশ মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	তীব্র মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>
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০২। যদি দাঁতের চিকিৎসার জন্য দাঁতের ডাক্তারের চেয়ারে অপেক্ষায় থাকেন, তখন আপনার কেমন অনুভূতি হবে?

উদ্ভিগ্ন নই <input type="checkbox"/>	কিছু মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	মাঝামাঝি মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	বেশ মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	তীব্র মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>
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০৩। ধরুন কিছুক্ষণের মধ্যে আপনার দাঁতে ড্রিল করা হবে, এ অবস্থায় আপনি কেমন অনুভব করবেন?

উদ্ভিগ্ন নই <input type="checkbox"/>	কিছু মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	মাঝামাঝি মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	বেশ মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	তীব্র মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>
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০৪। ধরুন কিছুক্ষণের মধ্যে আপনার দাঁতে স্কেলিং ও পলিশ করা হবে, এ অবস্থায় আপনি কেমন অনুভব করবেন?

উদ্ভিগ্ন নই <input type="checkbox"/>	কিছু মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	মাঝামাঝি মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	বেশ মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	তীব্র মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>
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০৫। ধরুন কিছুক্ষণের মধ্যে আপনার পেছনের দাঁতের মাড়িতে অবশ্যকারী ইঞ্জেকশন দেয়া হবে, সেই মুহূর্তে আপনি কেমন অনুভব করবেন?

উদ্ভিগ্ন নই <input type="checkbox"/>	কিছু মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	মাঝামাঝি মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	বেশ মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>	তীব্র মাত্রায় উদ্ভিগ্ন <input type="checkbox"/>
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স্কোরিং:

উদ্ভিন্ন নই = ১

কিছু মাত্রায় উদ্ভিন্ন = ২

মাঝামাঝি মাত্রায় উদ্ভিন্ন = ৩

বেশ মাত্রায় উদ্ভিন্ন = ৪

তীব্র মাত্রায় উদ্ভিন্ন = ৫

মোট স্কোর বের করতে হবে সবগুলো আইটেম যোগ করে, যা কিনা ৫-২৫-এর মধ্যে হবে।

Appendix-7:

উদ্বেগ বা Anxiety পরিমাপনের মানক

এই বিবৃতিগুলো আপনার ক্ষেত্রে প্রযোজ্য কি না যাচাই করাই আমাদের উদ্দেশ্য। লক্ষ্য করুন প্রতিটি বিবৃতির পাশেই সম্ভাব্য পাঁচ ধরনের উত্তর দেয়া আছে। এগুলো হলো- 'একেবারেই হয় না', 'খুব সামান্য হয়', 'মোটামুটি হয়', 'অনেক বেশী হয়'। প্রশ্নমালায় প্রদত্ত বামপার্শ্বের বিবৃতিগুলো পড়ে গত এক মাসের মধ্যে এই বিবৃতিগুলো আপনার ক্ষেত্রে কতটা প্রযোজ্য তা বিবৃতির ডানপার্শ্বের সম্ভাব্য পাঁচটি উত্তরের যেটি প্রযোজ্য সেটির ঘরে টিক (✓) চিহ্ন দিয়ে নির্দেশ করুন। এই পাঁচটি উত্তরের থেকে যে কোন একটিকে বেছে নিন এবং সবগুলো প্রশ্নের উত্তর দিন। অনুগ্রহ করে লক্ষ্য করুন সবগুলো বিবৃতির উত্তর দিয়েছেন কি না। আপনার সহযোগিতার জন্য ধন্যবাদ।

বিবৃতিসমূহ	একেবারেই হয় না (০)	খুব সামান্য হয় (১)	মোটামুটি হয় (২)	বেশী হয় (৩)	অনেক বেশী হয় (৪)
১. আমার ঘনঘন শ্বাস পড়ে					
২. আমার দমবন্ধবোধ হয়					
৩. আমার বুক ভার ভার লাগে					
৪. আমার বুক ধড়ফড় করে					
৫. আমি বুকে ব্যথা অনুভব করি					
৬. আমার গা/হাত-পা শিরশির করে					
৭. আমার হাত/পা কাঁপে					
৮. আমার হাত/পা অবশ লাগে					
৯. আমার হাত-পা জ্বালাপোড়া করে					
১০. আমার মাথা বিম্বিম্ব করে					
১১. আমার মাথা ঘোরে					
১২. আমার মাথা ব্যথা করে					
১৩. আমার মাথা থেকে গরম ভাপ ওঠে					
১৪. আমার গলা শুকিয়ে যায় ও পিপাসা লাগে					
১৫. আমি অসুস্থ হয়ে যাবো এমন মনে হয়					
১৬. আমি আমার স্বাস্থ্য নিয়ে চিন্তিত থাকি					
১৭. আমি দুর্বলবোধ করি					

বিবৃতিসমূহ	একেবারেই হয় না (০)	খুব সামান্য হয় (১)	মোটামুটি হয় (২)	বেশী হয় (৩)	অনেক বেশী হয় (৪)
১৮. আমার হজমে অসুবিধা হয়					
১৯. আমার পেটে অস্বস্তি লাগে					
২০. আমার বমি বমি লাগে					
২১. আমার খুব ঘাম হয় (গরমের জন্য নয়)					
২২. আমি আরাম করতে পারি না					
২৩. আমার সামাজিক পরিবেশে কথা বলতে অসুবিধা হয়					
২৪. একই বিষয় নিয়ে আমার বারবার চিন্তা হয়					
২৫. আমার খুব খারাপ কিছু ঘটবে বলে আশংকা হয়					
২৬. আমি প্রায়ই দুঃশ্চিন্তাগ্রস্ত থাকি					
২৭. আমি প্রায়ই চমকে ওঠি					
২৮. আমি বিচলিত ও সন্ত্রস্তবোধ করি					
২৯. আমার আত্মনিয়ন্ত্রন হারাবার ভয় হয়					
৩০. আমি এত নার্ভাস বা উত্তেজিত বোধ করি যে মনে হয় আমার সবকিছু এলোমেলো হয়ে যাচ্ছে					
৩১. আমি ধৈর্য ধরতে পারি না					
৩২. আমি সিদ্ধান্তহীনতায় ভুগি					
৩৩. আমার আত্মবিশ্বাসের অভাববোধ হয়					
৩৪. একটা বিষয়ের প্রতি মনোযোগ দিয়ে রাখা আমার জন্য বেশ কষ্টকর					
৩৫. আমার মনে হয় আমি এখনই মারা যাচ্ছি					
৩৬. আমার মৃত্যু ভয় হয়					

54 & less = Mild; 55 to 66= Moderate; 67 to 77= Severe; 78 to 135 & above= Profound. .

Cut- off point =47.5

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