

Anxiety Associated With Endodontic Therapy: An Evaluative Study

Shantwana Singh, **Brijesh Kumar Singh, ***Bharat Choudhary, *Remya Ramachandran, *****Vaibhav Bansal, *****Deepa Davis**

*Department of Conservative Dentistry and Endodontics, Rishiraj Dental College, Bhopal, **Department of Surgery and Radiology, Private Veterinary Practice, ***Department of Conservative Dentistry and Endodontics, Guru Govind Singh College of Dental Sciences, Bhopal, ****Private Practice, *****Department of Public Health Dentistry, Sri Aurovindo College of Dentistry, *****Private Practice

ABSTRACT

Patients treated for endodontic reasons might experience anxiety due to the pain associated with this procedure. This anxiety can be managed by psychotherapy or pharmacological intervention or combination of the two. This study was carried out to assess the level of anxiety associated with pain precipitated during the endodontic treatment. It also assessed the various ways by which this anxiety could be brought down. Amongst the patients who underwent endodontic treatment, in the Department of Conservative Dentistry and Endodontics, 100 were selected on the basis of having experienced pain during the endodontic treatment. After completion of the treatment, these patient were given a questionnaire to fill. It contained 12 questions to assess the level of anxiety, they could experience in future, during any endodontic procedure and the ways in which it could be brought down or controlled. Subjects who were given the positive information regarding endodontic treatment indicated that they were less fearful of pain associated with endodontic treatment.

As a result, the patient may be more at ease before and during treatment, avoidance behaviour may be decreased and the patients can make a decision regarding treatment choice which is based on common sense rather than fearful expectations..

KEY WORDS: dental anxiety, endodontic therapy, phobia

INTRODUCTION:

Endodontic treatment, at times, tends to precipitate pain, during and after treatment. Patients who have experienced this pain might develop a fear psychosis and could be reluctant to undergo any such treatment at a later date^[1].

This anxiety or phobia related to endodontic treatment has been explained and is said to be characterized by an unpleasant state of inner turmoil. It is manifested as nervous behaviour, such as shuffling and pacing^[2]. Anxiety related to endodontic treatment is usually precipitated as a result of previous unpleasant stressful situations during or after the previous dental treatment^[1]. Expectations of a future threatening situation coupled with negative experience

from the past dental treatment could be the trigger factor. This may result in avoidance of future dental treatment and is one of the frequently encountered problems in dental practice^[3,4,5]. Management of such patients is essential. Since otherwise they could prove to be a potential source of stress to the dentist and assistant. Numerous strategies have been suggested for management of these patients. Among these psychological, pharmacological and a combination of the two have been suggested and deployed.

This study was carried out so as to analyse the potential of anxiety precipitation during future endodontic treatment, amongst the patients who had experienced pain during and after endodontic treatment. It also analysed the different commonly used strategies for overcoming this anxiety.

MATERIALS AND METHODS:

This study was conducted on the patients who underwent endodontic treatment, the Department of Conservative Dentistry and Endodontics, RKDF Dental College & Research Centre, Bhopal.

Corresponding Author:

Dr Shantwana Singh

Sr Lecturer,

Department of Conservative Dentistry and Endodontic,

Rishiraj Dental College, Bhopal - 462037

Phone No.: 9340930725

E-mail: dr.shantwana87@gmail.com



S. No.	Questionnaire
Q 1	If you had to go to dentist tomorrow how would you feel before consultation? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious
Q 2	If you were to wait in dentist's office for your turn in chair for treatment, how would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious
Q 3	When you will be seated in dental chair for treatment,how would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious
Q 4	Based on experiences during your previous endodontic treatment, how would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremdy anxious
Q 5	If you are in dental chair for root canal treatment, waiting for dentist, getting instruments & syringe for your treatment, would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious
Q 6	If you are about to be administered local anaesthetic injection in your gum, would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious
Q 7	When cavity will be prepared with airtorhandpiece, how would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious
Q 8	When endodontic file will be introduced in to your tooth, how would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious
Q 9	When dentist immediately start your treatment without any rapport, would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremelyanxious
Q 10	If dentist's waiting area is made more friendly with home environment & music is played, would you feel (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious
Q 11	Before starting the treatment, if you are shown video showing the treatment procedure & explained in detail, would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious
Q 12	If medication is administered for relieving anxiety, would you feel? (a) Not anxious (b) Slightly anxious (c) Fairly anxious (d)Very anxious (e)Extremely anxious

One hundred patients, comprising of both genders in the age group of 17 to 68 years, were selected on the basis of having experienced pain during or after the treatment.

All the patients were explained about the study and their consent was taken. Each patient was given a questionnaire consisting of 12 questions. They were explained in detail about the questions and the response to be marked. There are shows questioned: The questionnaire assessed the level of anxiety, they could experience in future, during any endodontic procedure and the ways in which it could be brought under control. Based on the response given by these patients, data was tabulated and assessed.

Descriptive and inferential statistical analyses were carried out in the present study. Level of significance was fixed at $p=0.05$ and any value less than or equal to 0.05 was considered to be statistically significant. Student t tests (two tailed, unpaired) was

used to find the significance of study parameters on continuous scale between two groups. Analysis of variance (ANOVA) was used to find the significance of study parameters between the groups (Inter group analysis).

The Statistical software IBM SPSS statistics 20.0 (IBM Corporation, Armonk, NY, USA) was used for the analyses of the data Microsoft word and Excel were also used.

RESULTS:

In response to imminent consultation with the dentist, 60% of the respondents did not experience anxiety, 33% felt slightly anxious, 3% fairly anxious and 4% very anxious. In response to waiting in the dental clinic, 62% felt no anxiety, 33% felt slightly anxious, 4% fair anxious and 3% were very anxious. On being seated in the dental chair for treatment, 52% felt free of anxiety, whereas 32% were slightly

Table 1: Demographic characteristics of the study participants (N=100).

<i>Variables</i>	<i>Sub-groups</i>	<i>100</i>	<i>%</i>
Gender	Male	57	57.0
	Female	43	43.0
Age group (in years)	17 – 34	60	60.0
	35 – 52	32	32.0
	53 – 68	8	8.0

anxious, 6% fairly anxious and 10% were very anxious. On being administered local anaesthetic injection, only 17% felt free of anxiety, 47% were slightly anxious, 14% fairly anxious, 20% very anxious and 2% extremely anxious. On cavity being prepared in the tooth, 25% felt free of anxiety, 39% were slightly anxious, 11% were fairly anxious, 20% very anxious and 5% were extremely anxious. On endodontic file being placed in the tooth, 26% were free of anxiety, 40% slightly anxious, 8% fairly anxious, 21% very anxious and 5% extremely anxious. On unknown dentist starting the treatment, without any rapport, led only 16% to be free of anxiety, whereas 64% were slightly anxious, 7% fairly anxious, 10% very anxious and 3% extremely anxious. Making waiting area being made friendlier with music playing lead 89% towards relaxation, while 9% felt a little uneasy and 2% anxious. On being shown the video of the treatment and procedure being explained in detail lead 70% to feel relaxed, whereas 17% felt uneasy 3% anxious, 4% very anxious and 6% extremely anxious. With medication being administered for relief of anxiety 59% felt relaxed, 36% slightly uneasy, 1% anxious and 4% very anxious (Table 02). Amongst the questioned patients, females reported higher level of anxiety in response to the all questions, which was statistically significant (Table 3). Patients in the age group of 17-34 years, experienced higher level of anxiety than the older age groups, which was found to be statistically significant. Patients in the age group of 53-68 years experienced least amount of anxiety and 35-52 years experienced intermediate level of anxiety (Table 4).

DISCUSSION:

In our study, the number of male (57%) patients was slightly higher than female (43%) but overall and statistically, the level of anxiety in female patients was higher. Bartley et al and Stabholz A et al in separate

studies have reported similar findings^[6,7].

The higher level of anxiety in females can be explained on the basis of hormonal fluctuations that arise at various stages in life most commonly associated with the reproductive cycle and associated events^[8]. These have been found to be linked with variable level of anxiety and due to different brain chemistry^[8].

Patients were divided into three age groups, on the basis of psychological and physiological maturity. In the first age group, patients from 17-34 years were placed and they comprised 60% of the total patients evaluated. Mature patients were placed in the second age group, comprising of 35-52 years and they comprised of 32% of the total patients. More mature and elderly patients were grouped together, comprising of the third group, which ranged from 53-68 years. The level of anxiety was found to be higher in the younger patients. As the age progressed, the level of anxiety went down, with elderly patients experiencing the least anxiety. Similar result was found in a study carried out by Stabholz A et al, wherein it was found that younger patients, comprising of 35 -49 years, experienced higher level of anxiety than the other age group^[7].

Amongst the various assumed situations, highest number of patients experienced anxiety, if the treatment was to be carried out by an unfamiliar dentist without any rapport, which is understandable, since any unfamiliar situation precipitates doubt or anxiety in the human mind.^{9,10} The second highest number of patients, to experience anxiety, was in relation to administration of local anaesthesia injection into the gums. This appears to be justified since fear of injection, is one of the primary and prime reasons of fear in humans, when undergoing medical treatment.^{10,11,12} Third highest number of patients, who experienced anxiety, was in relation to use of air rotor hand piece for cavity preparations. The sound of the air rotor hand piece, running in the oral cavity is quite disconcerting to quite a few patients, moreover if a person has experienced sensitivity or pain due to cavity preparation with air rotor hand piece, it could lead to apprehension of the same, at any later use.^{13,14} Fourth highest number of patients, experiencing anxiety was in relation to use of endodontic file within the tooth. Use of endodontic files in canals with vital pulp tissue can precipitate unbearable pain, which could lead to patients being apprehensive of their usage in future.^{13, 14, 15} Fifth highest was when patient was seated in the dental chair waiting for treatment. Sixth highest number of patients to experience anxiety

Table 2: Comparison of the responses to the questionnaire in terms of {Mean (SD)} among males and females using unpaired t test.

Questionnaire	GENDER	N	Mean	Std. Deviation	t value	p value
Q1	Male	57	1.42	0.706	1.380	0.171
	Female	43	1.63	0.787		
Q2	Male	57	1.46	0.657	0.381	0.704
	Female	43	1.51	0.798		
Q3	Male	57	1.61	0.881	1.521	0.132
	Female	43	1.91	1.042		
Q4	Male	57	1.65	0.641	0.606	0.546
	Female	43	1.74	0.928		
Q5	Male	57	1.75	0.689	0.919	0.360
	Female	43	1.91	0.971		
Q6	Male	57	2.37	1.046	0.669	0.505
	Female	43	2.51	1.077		
Q7	Male	57	2.51	1.182	0.942	0.349
	Female	43	2.28	1.241		
Q8	Male	57	2.39	1.221	0.038	0.970
	Female	43	2.40	1.237		
Q9	Male	57	2.16	0.862	0.518	0.605
	Female	43	2.26	1.026		
Q10	Male	57	1.07	0.258	1.770	0.080
	Female	43	1.21	0.514		
Q11	Male	57	1.51	0.984	0.827	0.410
	Female	43	1.70	1.301		
Q12	Male	57	1.49	0.630	0.140	0.889
	Female	43	1.51	0.827		

was when going to dental office for consultation. While being seated, waiting for the consultation or treatment, thinking of the possible outcome, could lead to anxiety^[14]. The least number of patients to experience anxiety was when waiting in the dental office for their turn^[1].

Based upon previous endodontic treatment, majority of the patients, experienced anxiety, which ranged from extreme to slight. Amongst the anxious patients, slight anxiety was predominant. When seated in the dental chair for any dental treatment, majority of the patients, did not experience any anxiety, but when they were to wait for endodontic treatment, majority of the patients, experienced anxiety. A similar finding was obtained by Armfield et al in a study on management of fear and anxiety in the dental office.^{3,16,17}

Amongst the various strategies for relief of

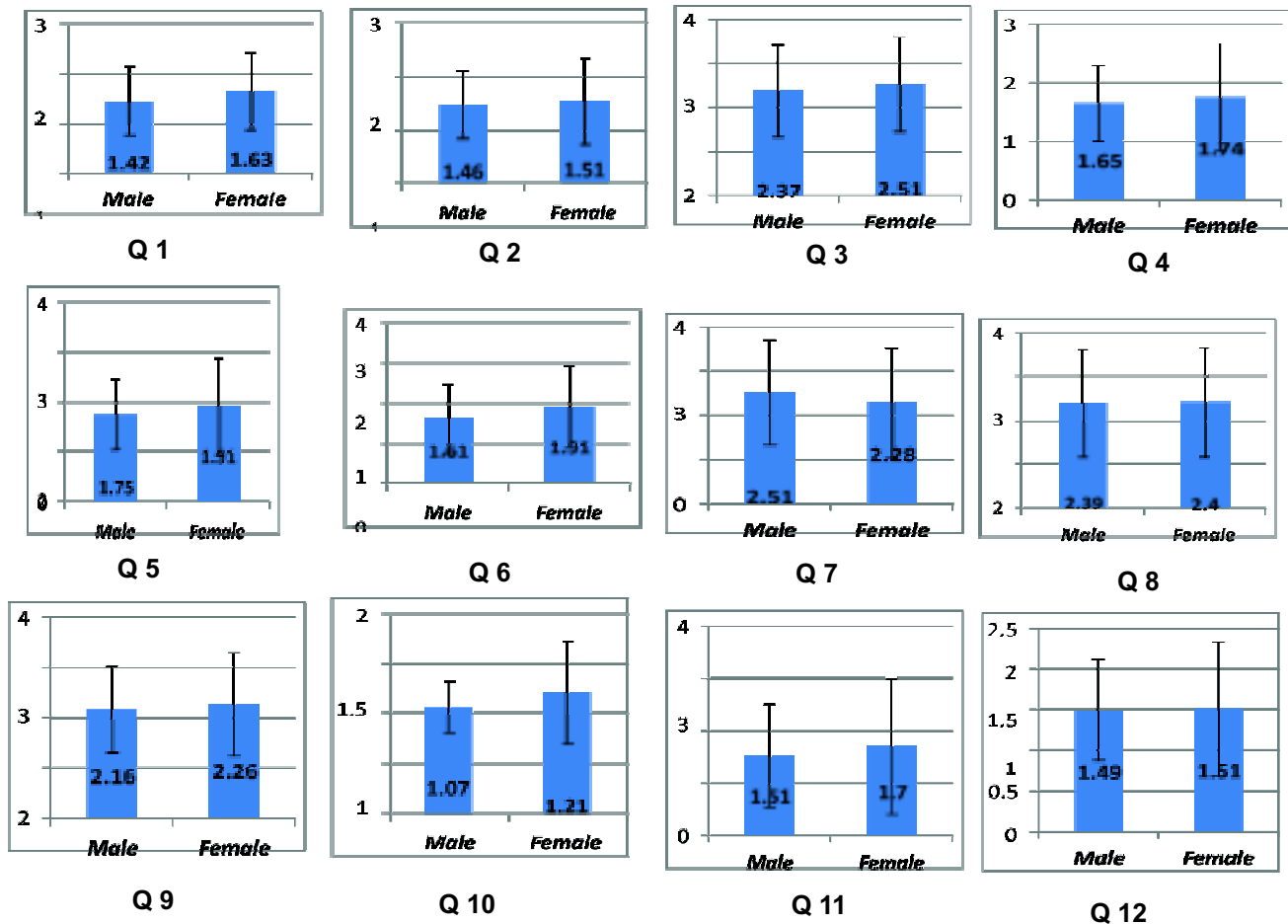
anxiety, in relation to endodontic treatment, it was found that the highest number of patients, felt relaxed, free of anxiety, when the waiting area is made more friendly with homely environment and when music is played. Music tends to relieve anxiety and relax the person by soothing the nervous system,^[18] since home environment is most relaxing, for majority of people, being present in a similar environment for treatment, can bring down the level of anxiety^[14,18].

If patient are explained about the procedure in detail, as well as shown a video of that procedure, the relaxations is second highest after the waiting area changes. Administration of medication for relief from anxiety, results in lowest number of patients, feeling free of anxiety. Playing of music in the dental clinic was found to relieve dental anxiety quite effectively by Maulina et al.¹⁸ The same fact was reiterated in separate studies by Ovayolu N et al^[19] Mamedova L et

Table 3: Comparison of the responses to the questionnaire in terms of {Mean (SD)} among different age groups using ANOVA test.

Questionnaire	Age Around (in years)	N	Mean	Std. Deviation	f value	p value
Q1	17-34	60	1.55	0.769	0.571	0.567
	35-52	32	1.50	0.762		
	53-68	8	1.25	0.463		
	Total	100	1.51	0.745		
Q2	17-34	60	1.55	0.790	0.863	0.425
	35-52	32	1.41	0.615		
	53-68	8	1.25	0.463		
	Total	100	1.48	0.717		
Q3	17-34	60	1.72	0.885	0.047	0.954
	35-52	32	1.78	1.008		
	53-68	8	1.75	1.389		
	Total	100	1.74	0.960		
Q4	17-34	60	1.70	0.830	0.759	0.471
	35-52	32	1.75	0.718		
	53-68	8	1.38	0.518		
	Total	100	1.69	0.775		
Q5	17-34	60	1.88	0.940	1.364	0.260
	35-52	32	1.81	0.592		
	53-68	8	1.38	0.518		
	Total	100	1.82	0.821		
Q6	17-34	60	2.43	1.031	2.086	0.130
	35-52	32	2.59	1.073		
	53-68	8	1.75	1.035		
	Total	100	2.43	1.057		
Q7	17-34	60	2.42	1.211	1.466	0.236
	35-52	32	2.56	1.216		
	53-68	8	1.75	1.035		
	Total	100	2.41	1.207		
Q8	17-34	60	2.55	1.241	1.853	0.162
	35-52	32	2.25	1.164		
	53-68	8	1.75	1.165		
	Total	100	2.39	1.222		
Q9	17-34	60	2.22	0.940	0.055	0.946
	35-52	32	2.16	0.954		
	53-68	8	2.25	0.886		
	Total	100	2.20	0.932		
Q10	17-34	60	1.12	0.372	0.811	0.448
	35-52	32	1.19	0.471		
	53-68	8	1.00	0.000		
	Total	100	1.13	0.393		
Q11	17-34	60	1.53	1.065	2.017	0.139
	35-52	32	1.84	1.322		
	53-68	8	1.00	0.000		
	Total	100	1.59	1.129		
Q12	17-34	60	1.50	0.748	0.149	0.862
	35-52	32	1.53	0.718		
	53-68	8	1.38	0.518		
	Total	100	1.50	0.718		

Figure 1: Comparison of the responses to the questionnaire in terms of {Mean (SD)} among males and females using unpaired t test.



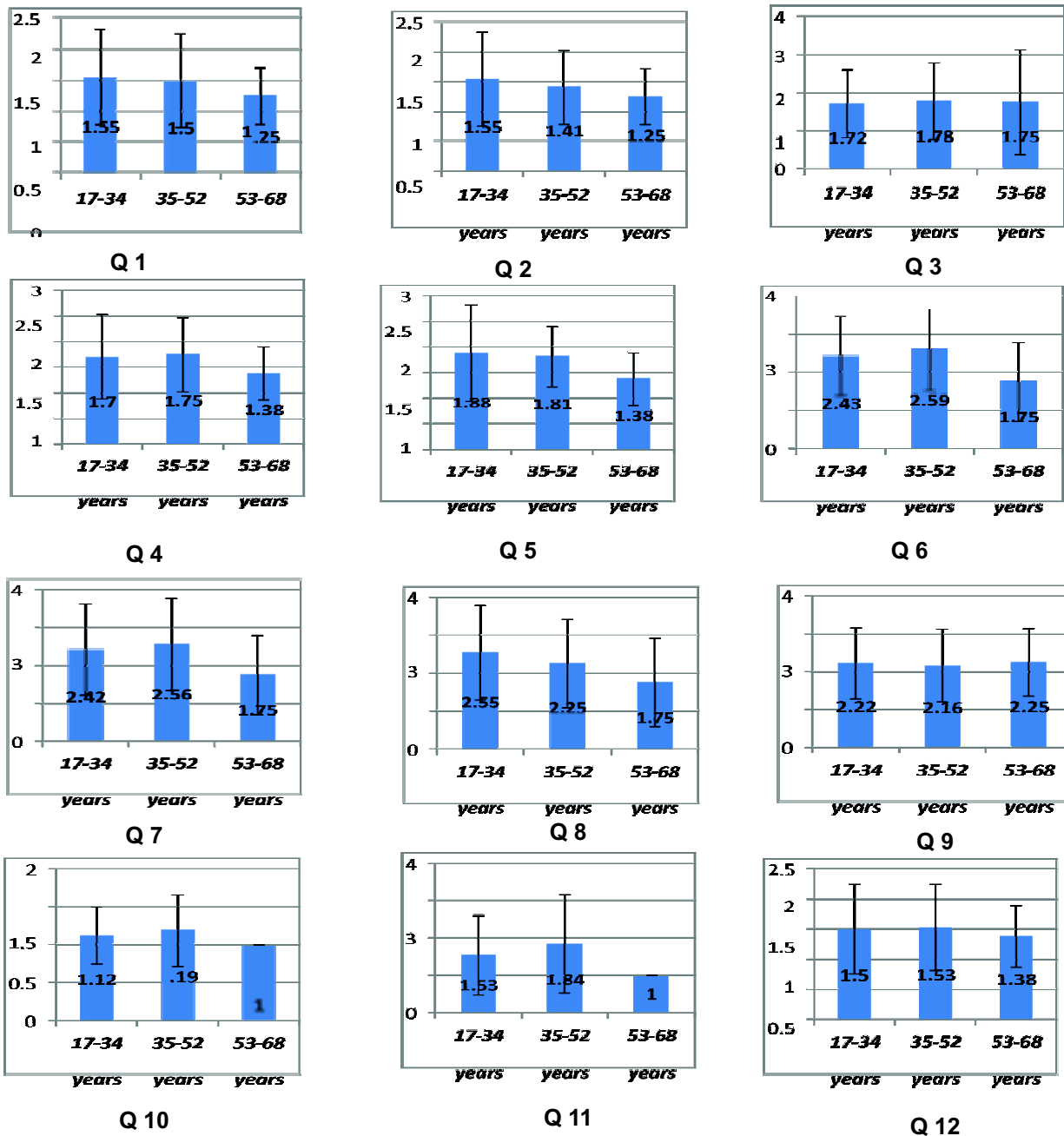
al^[20], Klassen J.A. et al^[21] and Rana S.A. et al^[22]. Music helps to activate sympathetic and parasympathetic nerve system,^[23,24] which decreases muscle contractility as well as heart rate which helps in reducing anxiety level^[25].

CONCLUSION:

Dispelling negative beliefs and knowledge about endodontic treatment through information education and communication reduces fear of pain associated with endodontic treatment. As a result, the patient may be more at ease before and during treatment, avoidance behaviour may be decreased and the patients can make a decision regarding treatment choice which is based on common sense rather than fearful expectations.

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Figure 2: Comparison of the responses to the questionnaire in terms of {Mean (SD)} among different age groups using ANOVA test.

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