Pathways of Endodontic Fear in Different Age Groups for Iraqi Endodontic Patients

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ABSTRACT

Background: Fear, anxiety and phobia are major complications for both patient and dental care providers despite the technological advances that have made dentistry less painful and less uncomfortable. This study aimed to identify the most common pathways of fear related to root canal treatment in different aged groups for both genders.

Materials and methods: The study sample consisted of (800) patients were selected, aged (20-59) years old from patients attending the Al-Shiekh Omar specialized dental center. The questionnaires of pathways of endodontic fear were prepared and translate from English to Arabic languages by certified translator and were filled by patients themselves without any help from endodontists. Patients with mental disabilities, those who only had surgical root canal treatment, those below 20 years and above 59 years old, and those not understand Arabic language were excluded.

Results: The most commonly reported pathway for fear and anxiety with endodontic procedures was the cognitive (32.9%) followed by the informative, parental, verbal, and vicarious pathways (29%, 25%, 6.7%, 6.4%) respectively. Also, the result showed that the informative pathway appeared higher than other pathways in groups (1, 2); while cognitive pathway appeared higher than other pathways in groups (3, 4, 5, 6, 7, 8). The patients in all groups showed the percentage of direct endodontic fear pathway was less than indirect pathway, where the indirect pathway was (65%) while direct pathway was (35%) totally. The result of the study showed that females had higher percentage (59.3%) of endodontic fear than males (40.7%) generally.

Conclusion: The present study showed that different pathways appear to be adopted by different age groups, indicating the importance of customizing strategies in the management of fear and anxiety related to root canal treatment. Fear of root canal treatment is mostly influenced by the cognitive pathway.

Keywords: Fear, phobia, cognitive pathway, informative pathway, age.

المستخلص

الخلفية: يعتبر الخوف والقلق والرُهاب من المضاعفات الرئيسية لكل من المرضى ومقدمي الرعاية الصحية للأسنان على الرغم من التقدم التكنولوجي الذي جعل طب الأسنان أقل إلماً وعدم إرتياح. تهدف هذه الدراسة للتعرف على المسارات الأكثر شيوعا بلخوف والمتعلقة بمعالجة قنوات الجذور في مختلف الفئات العمرية لكلا الجنسين.

المواد والطرق: تكونت عينة الدراسة من (٨٠٠) مريض تم اختيارهم بعمر (٢٠-٥٩) سنة من المرضى الذين حضروا المركز التخصصي لطب الأسنان في الشيخ عمر. تم إعداد استبيانات حول مسارات الخوف من علاج حشوة الجذر وترجمتها من الإنجليزية إلى العربية من قبل مترجم معتمد وتم ملؤها من قبل المرضى أنفسهم دون أي مساعدة من أخصائيي علاج حشوات الجذور للأسنان وقد تم استبعاد المرضى الذين يعانون من إعاقات عقلية، والذين لديهم علاج لحشوات الجذور الجراحية، والذين تقل أعمارهم عن ٢٠ سنة وما فوق ٥٩ سنة، والذين لا يفهمون اللغة العربية.

النتائج: أظهرت النتائج بان المسار الاكثر شيوعا للخوف والقلق مع الإجرائات العلاجية لحشوات الجذور هو الإدراكي (٣٢,٩٪)، تليها المسارات المعرفي والأبوي واللفظي والنيابي (٢٩٪، ٢٥٪، ٦,٧٪، ٦,٤٪) على التوالي وأظهرت النتائج أن المسار المعرفي أعلى من المسارات الأخرى في المجموعات (١، ٢)؛ في حين ظهر المسار الإدراكي أعلى من المسارات الأخرى في مجموعات (٣، ٤، ٥، ٦، ٧، ٨). وكذلك أظهر المرضى في جميع المجموعات أن نسبة مسار الخوف المباشر كانت أقل من المسار الغير مباشر، حيث كان المسار غير المباشر (٦٥٪) بينما كان المسار المباشر (٣٥٪). وأظهرت نتائج الدراسة بشكل عام أن الإناث كانت أعلى نسبة (٥٩,٣٪) من الخوف لعلاج حشوات الجذور مقارنة بالذكور (٤٠,٧٪).

الإستنتاج: أظهرت الدراسة الحالية أن مسارات الخوف المختلفة تظهر في مختلف الفئات العمرية، مما يدل على أهمية تخصيص ستراتيجيات في إدارة الخوف والقلق المتعلقان بعلاج قنوات الجذور. ويتأثر الخوف من علاج قنوات الجذور في الغالب من قبل المسار الإدراكي.

الكلمات الرئيسية: الخوف, الرُهاب, المسار الإدراكي, المسار المعرفي, العمر.

INTRODUCTION

Generally fear is defined as an individual's response to a real threatening event or dangerous situation to protect his or her life [1,2]. An existing specific stimulus like injection or drilling can provoke dental fear immediately [3-5]. While dental anxiety refers to patient's specific reaction toward stress associated with dental treatment in which the stimulus is unknown, vague or not present at the moment [5,6]. Regardless, in both these situations the patient's emotional reactions could be practically similar [3].

High levels of dental fear and anxiety have been reported to be major reasons for patients delaying or cancelling dental appointments [7]. Furthermore, treating anxious patients might take more time; it is hard to manage them during the procedure and they are often unsatisfied with their treatment [8,9].

Current literature appears to indicate that fears and the pathways involved can differ among individuals [10,11]. Although several studies have been conducted on the perception of dental fear and anxiety in different regions of the world [12-16].

Dentists do not usually screen dental fear. A study in England showed that only 20% of dentists

who were interested in treating patients with dental fear, had used a screening method to evaluate their patient's level of fear [17]. Prior to treatment, dentists should be able to detect patient's level of fear so they can use appropriate management options [3].

Rachman in **1977** was one of the first to look at the pathways of fears and anxiety, proposing that there were three pathways people acquire fears by: conditioning, vicarious and informative.

Years later, Ost and Hugdahl in 1981, 1983, 1985 analyzed multiple pathways of fear (Phobic Origins Questionnaire), to evaluate fear of social phobia, agoraphobia, and simple phobias. It was reported that those who had conditioned experiences (cognitive pathway) had bodily responses to fear.

Five pathways related to dental fear have been recognized: conditioning, parental, informative, verbal threat, and visual vicarious. The conditioning pathway occurs as a result of direct dental traumatic experiences, the parental pathway relates to dental fear learned from parents/guardians, the informative pathway is related to fearful experiences learned/ heard from others, the verbal threat pathway uses the dental environment as punishment for bad behavior in children, and the visual vicarious pathway is caused by fear-inducing dental situations seen in the media [10, 22]. Patients may have one or more of these pathways when expressing fear and anxiety [23].

MATERIALS AND METHODS

This study was done in Baghdad city. The study was open for a period of 6 months and ended April 2016. All participants was visited the endodontic department of Al-Shiekh Omar specialized dental center and were invited to participate in the study if they met the inclusion criteria. The total number of participants was (800) and divided into 8 groups as shown in Table (1).

Table (1): Distribution of the population sample.

Group 1	100 males	20-29 years
Group 2	100 females	20-29 years
Group 3	100 males	30-39 years
Group 4	100 females	30-39 years
Group 5	100 males	40-49 years
Group 6	100 females	40-49 years
Group 7	100 males	50-59 years
Group 8	100 females	50-59 years

For inclusion, the participants were directly asked whether they had undergone a primary root canal treatment, had root canal retreatment or were treatment planned to have a root canal treatment. Further all participants had to be able to remember their root canal treatments experience.

Participants with mental disabilities, who never had a root filling (not planned to have a root canal treatment), had only surgical treatment, under the age of 20 or above 59 years old, and those who could not understand Arabic (identified by directly asking patient before offering the survey) were excluded.

All questionnaires of endodontic fear pathways were prepared and translated from English to Arabic languages by certified translator. All participants were provided with an information sheet (Questionnaire) and requested to provide informed consent. No intervention was provided to the participants to help them answer the questionnaire.

The first section of the survey questionnaire included personal questions (age and gender), number of times for visiting the endodontic clinic, reason for not visiting (postponing) the endodontic clinic, and also whether the patient was having primary root canal treatment or retreatment.

While the second section was a modification of the first part of 'Phobic Origins Questionnaire' labelled 'A. ONSET OF PHOBIA' created by **Ost and Hugdahl** in **1981** for fear and anxiety response patterns (pathways); which consisted of five questions, and each of one refer to type of pathway of fear as shown in Table (2). The patient may have more than one type of pathways.

Descriptive analysis was used in order to analyze and assess the results of the study.

Table 2: Second section of questionnaire (pathways of endodontic fear).

Types	Questions	Yes	No
Cognitive (conditioning)	Have you experienced strong discomfort at the endodontic clinic in the past?		
Informative	Do you remember situations or story about unpleased experience for another person in endodontic clinic?		
Parental	Do you remember situation or story about unpleased experience for family members in endodontic clinic?		
Verbal threat	Have you threatened to be taken to the endodontic clinic as a form of punishment?		
Vicarious	Do you have another thing that can caused fear from endodontic treatment of your teeth?		

RESULTS

The result of the study showed that (60.4%) of patients had previous endodontic treatment while (39.6%) of patients hadn't have previous endodontic treatment as shown in Table (3).

The majority of the subjects (55%) admitted that they were seek endodontic treatment only when there is pain while (25.3%) were seek endodontic treatment sometimes occasionally, (12.1%) were seek endodontic treatment every 6 months, while (7.6%) were seek endodontic treatment every one year as shown in Table (4).

The most common reason given by the participant (36.4%) for not attending the endodontic clinic regularly was "cost" while (32.8%) thought that "limited time" prevent them from attending endodontic clinic, (18.1%) of the subjects delayed or avoided treatment because of "dental fair" while the remaining samples (12.8%) didn't seek treatment because (there is no need) as shown in Table (5).

The patients in all groups showed a variety of pathways to acquire endodontic fear generally. The result appeared that (32.9%) of participant indicates that the cognitive pathway caused them to become fearful of endodontic treatment as the most common pathway, (29%) indicate that they acquire their fear from informative pathway, while (25%) was parental pathway, (6.7%) and (6.4%) claimed that verbal threat and vicarious pathways respectively caused them to fear endodontic treatment. Also, the result showed that informative pathway appeared higher than other pathways in groups (1,2); while cognitive pathway appeared higher than other pathways in groups (3,4,5,6,7,8) as shown in Table (6), Figure (1).

This result of study can give another idea that patients in all groups showed less percentage of direct endodontic fear pathway (35%) than that of indirect pathway (65%) as shown in Table (7).

The result of the study showed that females had higher percentage (59.3%) of endodontic fear than males (40.7%) generally. Male participants in all groups showed that the cognitive, parental, informative pathways were the most common pathways to acquire endodontic fear (29%, 28.5%, 27.3%) respectively followed by verbal and vicarious pathways (9.1%, 6.1%) respectively which had the lessor pathways in males. While in female participants showed that the cognitive pathway was the most common pathway to acquire endodontic fair (35.9%) followed by informative and parental (30.2%, 22.3%), then verbal and vicarious pathways (6.7%, 4.8%) respectively which had the lessor pathways in females as shown in Table (8).

Table (3): Percentage of patients with previous endodontic treatment.

Groups	Yes (%)	No (%)
G1	65	35
G2	46	54
G3	47	53
G4	64	36
G5	54	46
G6	69	31
G7	67	33
G8	71	29
Total	60.4	39.6

Table (4): Percentage of patient's admission to endodontic clinic.

Groups	Every 6 month (%)	Every year (%)	Sometimes (%)	When there is pain (%)
G1	15	7	25	53
G2	7	9	23	61
G3	11	9	23	57
G4	9	5	24	62
G5	13	7	29	51
G6	17	11	28	44
G7	15	5	22	58
G8	10	8	28	54
Total	12.1	7.6	25.3	55

Table (5): Percentage of patient's reasons for postponing the attending of endodontic clinic regularly.

Groups	High cost (%)	Limited time (%)	No need (%)	Dental fair (%)
G1	41	22	31	6
G2	15	35	9	41
G3	32	52	7	9
G4	42	28	6	24
G5	29	45	12	14
G6	51	27	8	14
G7	36	28	20	16
G8	45	25	9	21
Total	36.4	32.8	12.8	18.1

Table (6): Percentage of patient's endodontic fear pathways.

Groups	Cognitive (%)	Informative (%)	Parental (%)	Verbal threat (%)	Vicarious (%)
G1	20.4	34.4	24.8	8.9	11.5
G2	29.5	37.1	24.2	5.3	3.8
G3	29.5	25	27.7	12.5	5.4
G4	40.1	27.1	20.3	2.9	9.7
G5	31.9	27.8	29.2	6.9	4.2
G6	35.5	34.2	23.7	1.3	5.3
G7	36.8	19.3	33.3	8.8	1.8
G8	36.2	25.4	22	9.6	6.8
Total	32.9	29	25	6.7	6.4

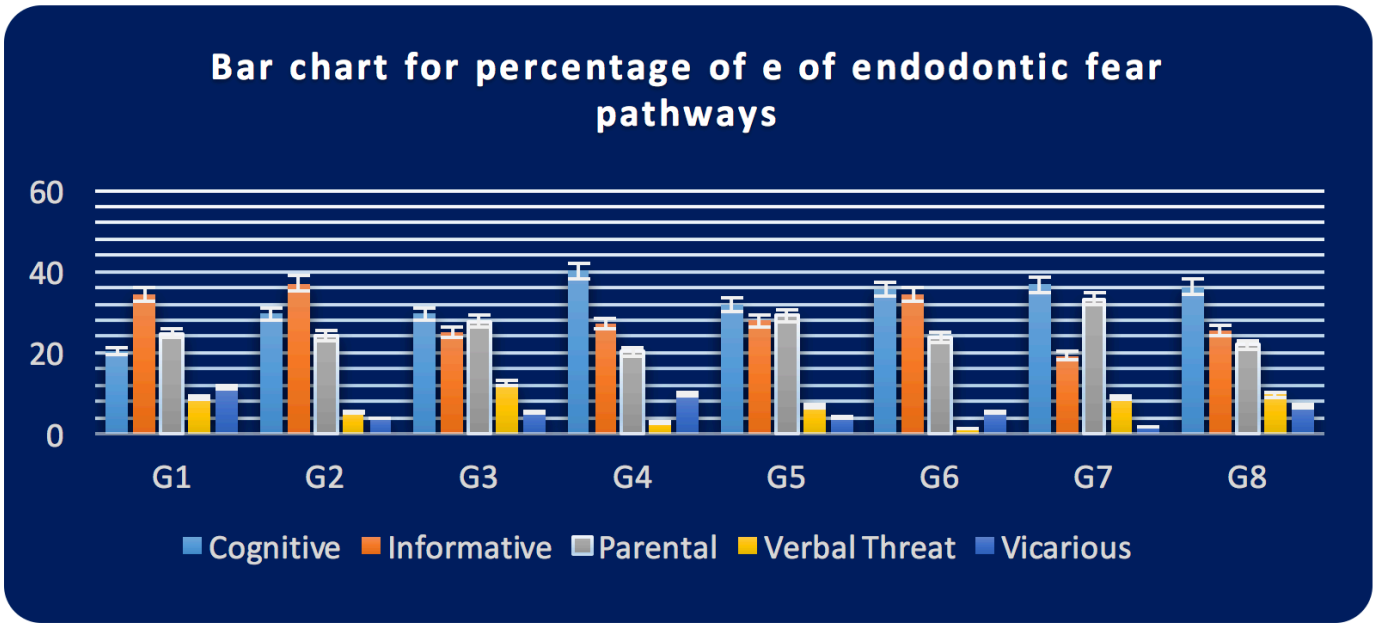

Figure (1): Bar chart graph for Percentage of patient's endodontic fear pathways

Table (7): Percentage of patient's direct and indirect endodontic fear pathways.

Groups	*Direct pathway (%)*	*Indirect pathway (%)*
G1	37.2	62.8
G2	29.5	70.5
G3	29.5	70.5
G4	40.1	59.9
G5	31.9	68.1
G6	35.5	64.5
G7	36.8	63.2
G8	36.2	63.8
Total	35	65

Table (8): Percentage of patient's endodontic fear pathways in males and females.

Groups	*Cognitive (%)*	*Informative (%)*	*Parental (%)*	*Verbal Threat (%)*	*Vicarious (%)*	*Total (%)*
Males	29	27.3	28.5	9.1	6.1	40.7
Females	35.9	30.2	22.3	4.8	6.7	59.3

DISCUSSION

Endodontic fear is a major concern as it can often lead to avoidance of the dentist and delay in requesting advice or treatment. Further management of consenting patients may be difficult because of the difficulty in understanding the nature or cause of fear [13,15,24].

It was reported that out of the various dental procedures, patients were most fearful of endodontic treatment [24]. Endodontic fear may be multifactorial, and hence, determination of endodontic patient fear requires analysis of the multiple pathways through which fear develops [22,25,26]. A two-point scale (yes and no) was utilized for this study to determine the pathways of fear with endodontic treatment.

The present study looks to understand the origins (pathways) of endodontic fear in different age groups of patients attending the endodontic department of Al-Shiekh Omar specialized dental center.

The current study showed that the cognitive pathway seemed to have a greater influence on the perception of endodontic fear among participants than other pathways generally, and this finding was similar to the result that found by **Ost and Hugdahl** in **1981**; **Carter *et al.*** in **2015**. This can indicated that patients were most fearful of pain from past experiences where patients found endodontic therapy highly stressful, on par with oral surgery procedures

[27]. In addition, that some of the personal comments indicated that fear could be due to other reasons not related to the actual procedure.

Also, the result showed that the cognitive pathway appeared higher in patients with age between (30-59) years because these groups have enough time to accumulate previous endodontic fear experiences while informative pathway appeared higher in twenties because these patients not have enough time to accept and affect from other persons experience with endodontic treatment.

The patients in all groups showed the percentage of direct endodontic fear pathway was lessor than that of indirect pathway, and can be related to that the direct pathway represent the single effect of cognitive pathway only (direct endodontic traumatic experiences) while indirect pathway represent the total effect of informative, parental, verbal threat, vicarious totally (indirect effect relates to endodontic fear learned from others ex: parents/guardians, friends). This result was agreed with **Murray and Foote** in **1979**.

The result of the study showed that females had higher percentage of endodontic fear than males generally and this agreed with **Carter *et al.*** in **2015**. This can related to the nature of Iraqi females in comparison to Iraqi males whose have the ability to withstand and hide pain.

Determining why endodontic patients feared from dentist was important in treatment planning and managing patients. The use of pretreatment endodontic fear questionnaires may help to identify the cause of patient's fear; this can aided the practicing dentist in managing patients effectively.

The present cross-sectional study has been conducted on a limited population who referred to Sheikh Omar specialized dental center during the study period. These patients had lower economical and educational levels; therefor studies on larger populations are needed to reveal the accurate pathways of endodontic fear in the society.

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