Ethnicity and Pathways of Fear in Endodontics

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Abstract

Introduction: Cultural competencies in multicultural societies with different ethnic perceptions pose a challenge during the management and treatment of patients with dental fear and anxiety. This study aimed to identify the most common and relevant pathways of fear and anxiety related to root canal treatment in different ethnic groups. **Methods:** All participants visiting the Griffith University Dental Clinics, Gold Coast, Australia, were invited to participate if they had undergone primary root canal treatment or were scheduled to undergo the same. Patients with mental disabilities, those with no history of root canal treatment, those who only had surgical root canal treatment, and those below 20 years old were excluded. All participants completed the "My Endodontic Fear questionnaire." **Results:** Eight hundred seventy-nine patients (20–90 years old) who had root canal treatment or were scheduled to have one consented to participate in this study. White (54.5%) and Arab/African respondents (30.9%) were more likely ($P < .001$) to use the conditioning pathway compared with East Asian (10.5%) or Aboriginal/Pacific Islander groups (3.9%). Age was a significant factor for all ethnicities ($P < .05$); 40-year-old and 65+-year-old groups showed less fear compared with the 20- to 39-year old groups. Female sex was significantly related to the use of the informative ($P < .001$) and parental ($P = .002$) pathways. **Conclusions:** The present study showed that different pathways appear to be adopted by different ethnic groups, indicating the importance of customizing strategies in a multicultural society to manage fear and anxiety related to root canal treatment. *(J Endod 2015;41:1437–1440)*

Key Words

Conditioning, endodontic, ethnicity, fear and anxiety, pathways, phobia

Dental fear and anxiety is a universal concern to many patients and dentists. Current literature appears to indicate that fears and the pathways involved can differ among individuals (1, 2). Although several studies have been conducted on the perception of dental fear and anxiety in different regions of the world (3–7), no study has analyzed the role of ethnicity in a multicultural society. 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 (1). Patients may use 1 or more of these pathways when expressing fear and anxiety (8).

In 1993, a study of 456 children in Jerusalem revealed that the dental anxiety of boys between the 2 ethnic groups studied was significant; 1 group had higher levels of dental fear than the other (9). Interestingly, the mothers of these children came from the same area, thus suggesting the parental pathway (9). Then, in 1995, researchers found that among 2 randomly selected groups of Danes and Hong Kong Chinese, the Chinese experienced significantly higher dental anxiety (5). Nicolas et al (7) identified that among a French population of 2725 adults, 7.3% had dental phobia, with the overall prevalence of dental anxiety reaching 13.5% in a similar proportion to populations in other European and Australasian countries. Coolidge et al (10) studied dental fear and anxiety in the Hispanic population in the United States; their findings suggested that those who have had traumatic dental experiences at any age are more likely to have dental fear because of this trauma and thus use the conditioning pathway. Oosterink et al (11) studied the relationship between 67 fear-provoking dental stimuli and the participant's place of birth and reported that the place of birth explained the second highest amount of variance in the number of stimuli that provoked anxiety ($P < .001$). Here dental anxiety (patients with high generalized anxiety) explained the maximum variance ($P < .001$) (11). Again, such data indicate that the ethnicity and place of birth may have an impact on the origin of dental fear and that treating the original cause of fear stimuli may aid in decreasing fear and anxiety. Carrillo-Diaz et al (12) found that dental fear was associated with irregular patterns of dental visits and concluded that there was a relationship between conditioned vulnerability and dental fear.

It is important for practitioners to understand a patient's fears and anxiety, and with a thorough psychological case formulation identifying the origin of their fears (causative factor), treatment of their fears can be much more effective. A number of studies have identified that different population groups have different levels of dental fear. The authors of the current study have analyzed these studies and grouped the

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0099-2399/$ - see front matter

http://dx.doi.org/10.1016/j.joen.2015.04.014

TABLE 1. Current Extrapolated Literature on the Relationship between Ethnicity and Pathways of Fear Related to Endodontic Treatment

	Direct pathway	Indirect pathways			
	Cognitive conditioning	Informative	Parental	Verbal threat	Vicarious
Fuks et al, (1993) (9)			Israeli		
Schwarz et al, (1995) (5)					Chinese Danish
Domoto et al, (1998) (4)	Japanese				
Carillo-Diaz et al, (2012) (12)	White				
Moore et al, (1993) (6)	Danish				Danish
Locker et al, (2001) (24)	White				
Poulton et al, (2001) (32)	White				

populations on the basis of the pathways (Table 1). However, no studies have explained all 5 pathways in relation to variations in ethnicity within 1 population group. Thus, the authors conducted the current study to identify the relationship between fear pathways related to endodontic therapy and ethnicity.

Methodology

This study was undertaken with the approval of the Human Resources and Ethics Committee of Griffith University, Gold Coast, Australia. The study was open for a period of 18 months (February 2012–August 2013) to all patients visiting the Griffith University Dental Clinic. It is important to note that Australia is acknowledged as a highly successful multicultural society. All participants were provided with an information sheet and were requested to provide informed consent. For inclusion, the participants were directly asked if they had undergone root canal therapy or were scheduled to undergo the same. No surgical therapies were included in the study. Only patients who could recall their past endodontic experience were considered for participation. Participants with mental disabilities, a history of surgical root canal therapy, and those under the age of 20 years were not included.

All participants were administered the "My endodontic fear questionnaire" introduced by Carter et al (2); no help was provided to them while answering the questionnaire, and no intervention was conducted afterward. Participants were asked to rate factors that may have caused their dental fear and anxiety on a 3-point Likert scale (yes, no, and neutral [no response]). Use of the conditioning, informative, parental, verbal threat, and vicarious pathways was analyzed using the following questions:

1. Have you experienced strong discomfort at the dental office in the past?
2. Do you recall friends or relations having unpleasant experiences with root canal treatments?
3. Do your parents have similar fears or root canal treatments, have you ever been threatened to be taken to the dentist as a form of punishment, or do you think television and magazines have an effect on peoples fear of the dentist?

Participants could strongly agree or disagree on more than 1 pathway that they believed had an impact on their fear and anxiety.

Responses were categorized and analyzed using SPSS (V20.0; SPSS Inc, Chicago, IL). Significance was set a priori at $P < .05$. All data were presented using descriptive statistics and tested for normality using Kolmogorov-Smirnoff tests, with responses analyzed using nonparametric analysis of variance (Kruskal-Wallis) and appropriate post hoc tests (Tukey procedure and Bonferroni correction).

Results

In total, 879 participants with an average modal age group of 40–64 years completed the survey. Of these, 55.1% were women. Participants were categorized by age using Erik Erikson's psychological stages (13–15) to evaluate the influence of age on the pathways of fear and anxiety. Some participants ($n = 253$) used more than 1 pathway when reporting on the origins of their dental fear. Religion was only significantly related to 2 pathways: conditioning ($n = 865$, $\chi^2_1 = 34.896$, $P < .001$) and parental ($n = 871$, $\chi^2_3 = 53.980$, $P < .001$). Sex was only significantly related to 2 pathways: informative ($n = 870$, $\chi^2_2 = 88.066$, $P = .000$) and parental ($n = 871$, $\chi^2_3 = 13.558$, $P = .004$). Age was significantly related to all ethnicities ($P < .05$); patients aged 40–64 years and 65+ years were less fearful than the 20- to 39-year age groups. Sex (female) was significantly related to only 2 pathways: the informative ($P < .001$) and parental ($P < .002$) pathways. Area of living (rural/urban) was significantly related to all pathways except conditioning ($P < .05$); those in rural areas reported higher dental fear than urban dwellers. Men were significantly more likely than women to cancel root canal appointments because of fear ($P = .008$), but this was not related to area of living. Table 2 summarizes fear pathways and ethnicities for the current study. It was found that 54.5% of whites used the conditioning pathway as the most common pathway. However, 45.9% also used the informative pathway; 16.1% of East Asians and 39.4% of Arabs/Africans used the verbal threat pathway the most. Aboriginals/Pacific Islanders (PIs) most commonly used the 32.7% parental pathway. Table 3 shows the significance of pathways relative to ethnicity; ethnicities were categorized into 4 major groups: white, East Asian, Aboriginal/PI, and Arab/African. Table 4 summarizes the distribution of age and area of living according to sex in the different ethnicities.

TABLE 2. Summary of Fear Pathways Related to Root Canal Treatment and Ethnicities

		Pathways (%)					
		Conditioning	Informative	Parental	Verbal threat	Vicarious	No response
Ethnicity	White ($n = 390$)	54.5	45.9	9.6	25.6	31.3	0.0
	East Asian ($n = 105$)	10.5	12.1	2.4	16.1	20.0	0.0
	Aboriginal/PI ($n = 54$)	3.9	29.0	32.7	18.8	9.8	0.0
	Arab/African ($n = 330$)	30.9	30.8	55.1	39.4	38.8	1.5