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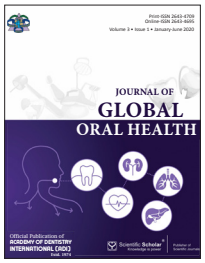

Research Article

The use of pediatric behavior management techniques among Syrian dentists - A cross-sectional study

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ABSTRACT

Objectives: The aim of this study was to evaluate and compare the attitude toward several behavior management techniques among Syrian pediatric dentists (PDs), general dental practitioners (GDPs), and other dental specialists (ODSs). Dental fear and anxiety are highly prevalent among schoolchildren and pre-school children. Behavior management techniques can be either pharmacological or non-pharmacological. Distraction is a non-pharmacological behavior management technique, which is safe, economical, and effective. **Materials and Methods:** A self-designed questionnaire was distributed through social networks. Syrian GDPs, PDs, and ODSs participated in the online questionnaire. The questionnaire consisted of four sections and required responses regarding participants' demographic characteristics, work setting, the use of several behavior management techniques, and attitude toward tablet distraction use. Pearson's Chi-square test was performed at 5% for statistical analysis using SPSS version 23.0. **Result:** A total of 642 participants responded. Most of the participants reported using tell-show-do (63.08%) and positive reinforcement (65.58%) techniques. Less than half of the participants (45.79%) used virtual reality (VR) eyeglasses for distraction. PDs used cartoons and storytelling techniques significantly more than GDPs and ODSs, with $P = 0.023$ and $P < 0.001$, respectively. However, most of the participants never used touch screen video games (74.45%) or joystick video games (92.21%) for distraction. Half of the questionnaire participants (52.34%) were unsure about using a tablet device for distraction. **Conclusion:** This study concluded that tell-show-do, positive reinforcement techniques, and VR eyeglasses were used the most. However, the vast majority of the participants never used video games for distraction. A good proportion of the study participants were hesitant about using a tablet device as a means of distraction.

Keywords: Dental anxiety, Dental fear, Distraction, Questionnaire

INTRODUCTION

Dental anxiety is an unpleasant emotional state before dental treatment, while dental fear is an emotional response to certain stimuli during dental procedures. Dentists must be aware that managing pain is different from managing fear and anxiety.[1] Dental fear and anxiety (DFA) are highly prevalent among schoolchildren and pre-school children globally.[2] In addition, DFA can cause oral health deterioration due to dental treatment postponement or avoidance.[3] Moreover, DFA is affected by decayed, missing, and filled permanent teeth (DMFT) scores and self-perceived oral health.[4] However, dental anxiety was not related to personality traits.[5] Reducing fear and anxiety are the cornerstone of successful pediatric practice. Distraction is a non-pharmacological behavior

management technique for diverting a child's attention away from unpleasant dental stimuli.[6] According to McCaul and Malott,[7] the human capacity to pay attention is limited and one should focus on the painful stimuli to perceive pain. Distractors can be either active or passive according to the sensory modalities involved (visual, aural, or kinesthetic).[8,9] Passive distraction demands the child to remain calm while the dental assistant is actively distracting him, for example, by watching cartoons or listening to stories. Active distraction requires more of a child's engagement in certain activities during dental treatment, such as singing songs or playing video games.[10] Distraction appears to be an economical, safe, and effective strategy.[11] An early attempt at distraction was using a ceiling or a wall-mounted television screen.[12] Recently, however, many pediatric hospitals have utilized tablets as a distraction tool for anxiety management instead of pharmacological sedation or physical restraint,[13] which is more preferred in children.[14]

Pharmacological behavior management techniques involve the use of various medications to manage anxiety, pain, and discomfort during dental procedures. Sedation is the use of medication to help patients relax and manage anxiety. Sedation can be administered in various ways. Nitrous oxide, is a mild sedative that is commonly used to alleviate anxiety. General anesthesia is used rarely in dentistry and is typically reserved for patients who need extensive dental work or who have severe anxiety or medical issues. It involves the administration of medication that puts the patient to sleep during the procedure.[6] Pharmacological techniques are used by 93% of the American Academy of Pediatric Dentistry (AAPD) members.[15] However, parental acceptance of pharmacological behavior management techniques was not as high as non-pharmacological techniques.[16] There is a dearth of data in the literature regarding Syrian dentists' views on different behavior management techniques in pediatric dental practice. Hence, the aim of this study was to evaluate and compare the attitude toward several behavior guidance techniques among Syrian pediatric dentists (PDs), general dental practitioners (GDPs), and other dental specialists (ODSs).

MATERIALS AND METHODS

Ethical approval was provided by the institutional review board of Damascus University (N 529/2022) on October 24, 2022. Participants were Syrian PDs, GDPs, and ODSs and the participation was optional and anonymous. An online Arabic self-designed questionnaire was created using Google Forms software survey in November 2022. It was designed based on similar validated questionnaires.[17,18] The questionnaire consisted of four sections. The first section included data regarding the demographic characteristics of participants including sex, age, years of experience, type of practice, and working hours per day. The second section covered participants' work settings. The third section addressed participants' use of several behavior management techniques. The last section addressed participants' attitude toward tablet distraction use.

The inclusion criteria for the responses were (1) respondents who were members of the Damascus dental syndicate and (2) respondents who were GDPs, PDs, or ODSs. The exclusion criteria were questionnaires with missing answers. Descriptive statistics (frequency and percentage) were performed using MS Excel (Microsoft Excel, Microsoft Crop, WA, USA). For comparison of results between study groups, Pearson's Chi-square test was performed. The significant level for alpha was set at 0.05 ($P < 0.05$). Data were analyzed using IBM SPSS software v.23 (IBM Corp., Armonk, USA).

RESULTS

A total of 642 participants completed the online questionnaire, and the overall response rate was 23.91% (642/2684). Table 1 shows participants' experience and practice. More than half of the participants (52.80%) were male (GDPs: 64.16%, PDs: 33.71%, and ODSs: 40.41%). Most of the participants (64.49%) had fewer than 5 years of experience (GDPs: 73.89%, PDs: 59.55%, and ODSs: 49.22%). About half of the participants (55.14%) worked in a private clinic (GDPs: 58.33%, PDs: 43.82%, and ODSs: 49.22%). Approximately half of the participants (51.25%) worked more than 5 h/day (GDPs: 49.44%, PDs: 44.94%, and ODSs: 57.51%).

As shown in Table 2, there were statistically significant differences in the participants' responses regarding the work setting ($P < 0.001$). About half of GDPs (55.56%) and ODSs (63.73%) sometimes provided dental care for children. More than half of PDs (65.17%) and ODSs (56.48%) would ask a dental assistant for help, while less than a half of GDPs (44.44%) would do. Almost two-thirds of PDs (60.67%) had a dental chair-mounted tablet, while more than half of GDPs (67.22%) and ODSs (55.44%) had not. Most of the participants reported using tell-show-do (GDPs: 58.06%, PDs: 87.64%, and ODSs: 61.14%) and positive reinforcement (GDPs: 61.39%, PDs: 88.76%, and ODSs: 62.69%) techniques, with a significant difference to GDPs ($P < 0.001$). Distraction techniques were divided into five basic categories: storytelling, virtual reality (VR) eyeglasses, watching cartoons, touch screen video games, and joystick video games. The use of different distraction techniques differed among participants with VR eyeglasses being the most distraction technique used (GDPs: 43.89%, PDs: 59.55%, and ODSs: 43.01%), with a significant difference to ODSs ($P = 0.023$). About a third of GDPs (36.39%) and ODSs (27.98%) used the storytelling technique, while half of PDs (51.69%) did, with a significant difference to ODSs ($P = 0.002$). More than half of PDs (59.55%) used cartoons as a distraction technique. However, almost two-thirds of GDPs (61.11%) and ODSs (70.47%) did not, with a significant difference to ODSs ($P < 0.001$). Interestingly, most of the participants never used

Table 1: Practice and experience of participants.

Characteristics	Total *n* (%)	GDPs *n* (%)	PDs *n* (%)	ODSs *n* (%)
Sex	642 (100)	360 (100)	89 (100)	193 (100)
Male	339 (52.80)	231 (64.16)	30 (33.71)	78 (40.41)
Female	303 (47.20)	129 (35.84)	59 (66.29)	115 (59.59)
Age	642 (100)	360 (100)	89 (100)	193 (100)
<25	377 (58.72)	240 (66.67)	47 (52.81)	90 (46.63)
25–30	123 (19.16)	50 (13.89)	20 (22.47)	53 (27.46)
>30	142 (22.12)	70 (19.44)	22 (24.72)	50 (25.91)
Years of experience	642 (100)	360 (100)	89 (100)	193 (100)
<5	414 (64.49)	266 (73.89)	53 (59.55)	95 (49.22)
5–10	100 (15.58)	34 (9.44)	17 (19.10)	49 (25.39)
>10	128 (19.94)	60 (16.67)	19 (21.35)	49 (25.39)
Type of practice	642 (100)	360 (100)	89 (100)	193 (100)
Private clinic	354 (55.14)	210 (58.33)	39 (43.82)	105 (54.40)
Non-government organization	160 (24.92)	68 (18.89)	34 (38.20)	58 (30.05)
Government organization	128 (19.94)	82 (22.78)	16 (17.98)	30 (15.54)
Working hours per day	642 (100)	360 (100)	89 (100)	193 (100)
<5	169 (26.32)	87 (24.17)	35 (39.33)	47 (24.35)
5	144 (22.43)	95 (26.39)	14 (15.73)	35 (18.13)
>5	329 (51.25)	178 (49.44)	40 (44.94)	111 (57.51)

GDPs: General dental practitioners, PDs: Pediatric dentists, ODSs: Other dental specialists, *n*: Sample size

Table 2: Work settings.

Question	Total *n* (%)	GDPs *n* (%)	PDs *n* (%)	ODSs *n* (%)	*P*-value
1. Do you provide dental care to children?	642 (100)	360 (100)	89 (100)	193 (100)	<0.001*
Always	273 (42.52)	142 (39.44)	86 (96.63)	45 (23.32)	
Sometimes	325 (50.62)	200 (55.56)	2 (2.25)	123 (63.73)	
Never	44 (6.85)	18 (5.00)	1 (1.12)	25 (12.95)	
2. Do you ask a dental assistant for help?	642 (100)	360 (100)	89 (100)	193 (100)	<0.001*
Always	327 (50.93)	160 (44.44)	58 (65.17)	109 (56.48)	
Sometimes	187 (29.13)	110 (30.56)	23 (25.84)	54 (27.98)	
Never	128 (19.94)	90 (25.00)	8 (8.99)	30 (15.54)	
3. Does your dental chair have a mounted tablet?	642 (100)	360 (100)	89 (100)	193 (100)	<0.001*
Yes	258 (40.19)	118 (32.78)	54 (60.67)	86 (44.56)	
No	384 (59.81)	242 (67.22)	35 (39.33)	107 (55.44)	

GDPs: General dental practitioners, PDs: Pediatric dentists, ODSs: Other dental specialists. *P<0.05: Significant difference based on Pearson's Chi-square test, *n*: Sample size

touchscreen video games (GDPs: 76.11%, PDs: 59.55%, and ODSs: 78.24%), and joystick video games (GDPs: 92.50%, PDs: 89.89%, and ODSs: 92.75%) as distraction techniques [Table 3].

Attitude toward tablet distraction use is presented in Table 4. Regarding the participants' views on using an electronic tablet to manage dental anxiety, about a third of the participants disagreed (GDPs: 30.56%, PDs: 25.84%, and ODSs: 31.09%). However, almost half of them were unsure (GDPs: 52.78%, PDs: 48.31%, and ODSs: 53.37%). About half of PDs (42.70%) thought that using a tablet would improve child patients' experience. However, more than half of GDPs (54.17%) and ODSs (56.99%) thought that they would not, with a significant difference to GDPs ($P < 0.001$). Approximately a quarter of PDs (23.60%) considered that using a tablet had made their work less stressful, while most of the participants reported that they had not tried it (GDPs: 67.50%, PDs: 58.43%, and ODSs: 72.54%).

DISCUSSION

The aim of this study was to evaluate and compare the attitude toward several basic behavior management techniques among Syrian GDPs, PDs, and ODSs. An online questionnaire was used due to its affordability, accuracy, and accessibility to both researchers and participants. The results of this questionnaire showed that tell-show-do and

positive reinforcement techniques were used by most of the participants. This result is not surprising as those techniques are simple, economical, and can be used with the majority of pediatric patients who are able to communicate.[15] This current finding is consistent with a previous result reported in several questionnaires.[17,19,20] Distraction is a non-pharmacological basic behavior management technique that is safe, effective, and economical. In addition, it is used by 96% of AAPD members.[15] VR eyeglasses were used by most of the study participants. A similar result was reported in Nigeria.[18] A possible explanation of this finding is that VR eyeglasses could achieve superior distraction due to their interactive, immersive, and multisensory nature.[21] Moreover, VR eyeglasses block the visual field of a child to mask some irritating stimuli as well.[22] In addition, Nordgård and Låg[23] reported that VR eyeglasses positively affected procedural pain and anxiety in pediatrics. Furthermore, VR eyeglasses could effectively decrease anxiety before the dental appointment.[24] More than half of PDs preferred cartoons as a distraction technique using a tablet, this result is not surprising as most of PDs had a dental chair-mounted tablet. Al-Halabi *et al.*,[25] found that watching cartoons on a tablet device was more effective in relieving DFA compared to AV eyeglasses. This could be because AV eyeglasses were difficult to wear and blocked the dentist's vision while performing the dental treatment. Storytelling as a distraction technique was more preferred by PDs over GDPs and ODSs. This could be due to the PDs' higher exposure to children. Even though audio distraction was less effective compared to audiovisual distraction,[26,27] storytelling was the most effective audio distraction technique.[28] However, children can be just captivated at the beginning of the story, which makes it effective only at the start of the dental procedure.[29] It should be noted that, there were significant differences in ODSs in the usage of the three previous distraction techniques, as a result of ODSs being more occupied with their field of specialty and less exposed to children. Although active distraction surpasses passive distraction in terms of controlling fear and anxiety,[14,30-32] the overwhelming majority of the participants never used video games. However, due to the fact that passive distraction techniques are more time-saving, more cost-effective for dentists, and less demanding for children.[33]

Table 3: The use of behavior management techniques among participants.

Question	Total *n* (%)	GDPs *n* (%)	PDs *n* (%)	ODSs *n* (%)	*P*-value
1. Tell-show-do	642 (100)	360 (100)	89 (100)	193 (100)	<0.001*
Always	405 (63.08)	209 (58.06)	78 (87.64)	118 (61.14)	
Sometimes	135 (21.03)	86 (23.89)	11 (12.36)	38 (19.69)	
Never	102 (15.89)	65 (18.06)	0 (0.00)	37 (19.17)	
2. Positive reinforcement	642 (100)	360 (100)	89 (100)	193 (100)	<0.001*
Always	421 (65.58)	221 (61.39)	79 (88.76)	121 (62.69)	
Sometimes	129 (20.09)	82 (22.78)	9 (10.11)	38 (19.69)	
Never	92 (14.33)	57 (15.83)	1 (1.12)	34 (17.62)	
3. Storytelling	642 (100)	360 (100)	89 (100)	193 (100)	0.002*
Always	231 (35.98)	131 (36.39)	46 (51.69)	54 (27.98)	
Sometimes	236 (36.76)	128 (35.56)	29 (32.58)	79 (40.93)	
Never	175 (27.26)	101 (28.06)	14 (15.73)	60 (31.09)	
4. Virtual reality eyeglasses	642 (100)	360 (100)	89 (100)	193 (100)	0.023*
Always	294 (45.79)	158 (43.89)	53 (59.55)	83 (43.01)	
Sometimes	215 (33.49)	120 (33.33)	28 (31.46)	67 (34.72)	
Never	133 (20.72)	82 (22.78)	8 (8.99)	43 (22.28)	
5. Watching cartoons using a tablet	642 (100)	360 (100)	89 (100)	193 (100)	<0.001*
Always	200 (31.15)	106 (29.44)	53 (59.55)	41 (21.24)	
Sometimes	63 (9.81)	34 (9.44)	13 (14.61)	16 (8.29)	
Never	379 (59.03)	220 (61.11)	23 (25.84)	136 (70.47)	
6. Touchscreen video games using a tablet	642 (100)	360 (100)	89 (100)	193 (100)	0.004*
Always	113 (17.60)	58 (16.11)	22 (24.72)	33 (17.10)	
Sometimes	51 (7.94)	28 (7.78)	14 (15.73)	9 (4.66)	
Never	478 (74.45)	274 (76.11)	53 (59.55)	151 (78.24)	
7. Joystick video games using a tablet	642 (100)	360 (100)	89 (100)	193 (100)	0.875
Always	29 (4.52)	15 (4.17)	6 (6.74)	8 (4.15)	
Sometimes	21 (3.27)	12 (3.33)	3 (3.37)	6 (3.11)	
Never	592 (92.21)	333 (92.50)	80 (89.89)	179 (92.75)	

GDPs: General dental practitioners, PDs: Pediatric dentists, ODSs: Other dental specialists. *$P<0.05$: Significant difference based on Pearson's Chi-Square test, *n*: Sample size

Table 4: Participants' attitude toward tablet distraction use.

Question	Total *n* (%)	GDPs *n* (%)	PDs *n* (%)	ODSs *n* (%)	*P*-value
1. Do you agree with using a tablet as a distraction tool to manage dental anxiety?	642 (100)	360 (100)	89 (100)	193 (100)	0.284
Agree	113 (17.60)	60 (16.67)	23 (25.84)	30 (15.54)	
Disagree	193 (30.06)	110 (30.56)	23 (25.84)	60 (31.09)	
Unsure	336 (52.34)	190 (52.78)	43 (48.31)	103 (53.37)	
2. Do you think that using a tablet will improve a child's patient experience?	642 (100)	360 (100)	89 (100)	193 (100)	<0.001*
Yes	150 (23.36)	72 (20.00)	38 (42.70)	40 (20.73)	
No	321 (50.00)	195 (54.17)	16 (17.98)	110 (56.99)	
Maybe	171 (26.64)	93 (25.83)	35 (39.33)	43 (22.28)	
3. Do you feel that using a tablet made your work less stressful?	642 (100)	360 (100)	89 (100)	193 (100)	0.180
Yes	112 (17.45)	65 (18.06)	21 (23.60)	26 (13.47)	
No	95 (14.80)	52 (14.44)	16 (17.98)	27 (13.99)	
Did not try	435 (67.76)	243 (67.50)	52 (58.43)	140 (72.54)	

GDPs: General dental practitioners, PDs Pediatric dentists, ODSs: Other dental specialists. * *P*<0.05: Significant difference based on Pearson's Chi-square test, *n*: Sample size

Surprisingly, most of the participants were hesitant about using a tablet device as a means of distraction. A possible explanation for this result is that most of the study participants had fewer than 5 years of practice and needed further training concerning different distraction tools. However, tablet devices have proven to be practical, user-friendly, and effective for pediatric behavior management.[34] A good proportion of PDs believed that using a tablet would improve a child's patient experience compared to GDPs and ODSs, which could be due to PDs' higher exposure to children and mastering several distraction techniques. This study had some limitations. First, it was a self-administered questionnaire which led to a low response rate and sampling bias. Second, most of the questionnaire participants had fewer than 5 years of practice. Therefore, the findings of this study should be generalized with caution.

CONCLUSION

The findings of the present questionnaire highlighted the use of a variety of basic behavior management techniques among Syrian GDPs, PDs, and ODSs. Tell-show-do, positive reinforcement techniques, and VR eyeglasses were used by most of the study participants. Storytelling and cartoon display were preferred by PDs. However, most of the participants never used video games for distraction. Most of the questionnaire participants were hesitant about using a tablet device as a means of distraction.

Declaration of patient consent

Patient's consent is not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

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