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The way children Perceive And Act Towards Oral Health And Dental Trial

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Abstract: The current study aimed at enriching the current knowledge on children's attitudes and behaviours towards oral health and dental care. The participants were 100 children (8-10 years) and were obtained from different primary schools in Holy Makkah Saudi Arabia. The principal aims of the study were to gain a survey of information in relation to children's attitudes, beliefs, behaviours and understanding of oral and dental care to ensure not only an understanding of the subject but also to act as a foundation for the development of interventions which aim to improve attitudes and behaviours in relation to oral health. In general, children had positive practices in relation to their dental care and oral hygiene. The perceptions that children had about dentists were also mainly positive even though the findings indicated that the younger children had more positive affect, emotion and past experience. As for children's understanding of these dental concerns, the outcome was rather alarming and based on lack of knowledge and misconception. Consequently, all the findings and conclusions of this study can be useful for the creation of educational programs within the context of promoting oral health and hygiene – "An Adventure about Oral Health.

Keywords: oral health; dental practices; oral health promotion

1. Introduction

Dental problems that are associated with oral health and personal hygiene are some of the biggest challenges that affect today's societies including children. A large number of children and adolescents suffer from fear and anxiety towards dental problems and visiting the dentist [1], which has a long term effect on their behavior. As per the current literature, dental fear and anxiety is considered as a major public health issue [2] and may have its roots within the individual or other factors such as subjective (e. g., frequency and nature of previous dental visits, information), social (e. g., parental or peer influence based on their experience and attitude) and contextual factors (e. g., lack of clinical skills, dental environment and noises, medical procedures) [1]. It has also been acknowledged that fear and anxiety prevent children from developing positive dental behaviors in the future, including non-cooperation or even avoidance of dental treatment [2]. For instance, the sufferers of dental phobia are known to cancel an appointment three times more often than other patients [3]. On the other hand, dental fear and anxiety leads to avoidance of treatment thus worsening the condition of patients' oral health. From the perspective of health professionals, it would also be more challenging and time consuming to manage anxious patients and it has been crucial for the dentists to develop an atmosphere which would help to reduce patient's anxiety and worries. [2]

One of the ways of minimizing anxiety in children is through the use of sedation. Nevertheless, sedating children before dental procedure is associated with many risks to anesthesiologists and patients [4], however, in cases where dental fear and anxiety are severe, conscious sedation or even general anesthesia is used and given [5].

Negative and discriminatory attitudes and behaviors of children towards healthcare are common and are attributable to lack of education and understanding [6]. Offering children information about health will help them be more aware, knowledgeable and practice healthier and positive behaviors.

The present project aims at gathering data that will help to increase the understanding of children's knowledge, perception and practices towards oral hygiene as well as their practices and behaviors towards these aspects. Although our study is exploratory, we anticipated that children may have some gaps in their knowledge and may have incorrect understanding about dental care. The outreaching objective of the study is to identify how we can enhance the content of oral and dental health education programs to target the myths that children have regarding dental care

.Materials and Methods

.1. *Settings and Ethical Aspects*

The study was conducted at two different schools (a public and a private school) located in the Makkah in August *2024* . Informed consent for parents was requested and children also provided assent, and all agreed to participate. All participants were guaranteed anonymity. Children were excluded if they were non-Arabic speakers or had a developmental delay. These exclusion criteria were important to guarantee that all participants had the necessary skills to understand the questions and report their responses in the formats that were provided. However, no child was excluded from the study due to these exclusion criteria. Data were collected in both public (73.3%) and private schools (26.7%) in the Alaziziah district.

.2. *Participants*

The sample (N = 101; male = 49; female = 52) was collected in several classroom settings, and it is composed of children between 8 and 10 years (X = 9.11 years; SD = 0.79) in the regular education levels (third and fourth grades). From the total sample, 55.4% were in the third grade and the remaining 44.6% in the fourth grade. Each child was asked to complete a self-report survey individually.

The age range between 8 and 10 years was chosen to ensure that all the samples would be at the same concrete operational stage of development, according to Piaget's theory (1963), and the children will have similar interests and experiences.

.3. *Measures and Procedures*

Demographic data. Children's gender, age and level of education, as well as some knowledge, behaviors and perceptions related to dental issues, were obtained through a survey.

Dental and oral hygiene habits. Participants were asked about their dental hygiene habits: "How many times per day do you brush your teeth?" (response scale ranged from 0 to more than 3 times per day), "Do you usually brush your teeth every day?" (yes/no), "Do you brush your teeth with toothpaste?", "Do you floss?", "After brushing your teeth, do you use mouthwash?", "Do you have an adult helping you brush your teeth?" (response options were 1 = yes, 2 = sometimes and 3 = no).

Previous dental problems and experience with dental treatments. Participants were asked about previous dental and oral problems and experience with treatments: "Have you ever had a cavity?", "Have you ever had pain in your gums?", "Have you ever bled from your gums?", "Have you ever had a tooth taken out?", "Have you ever been to the dentist?", "Have you ever had a bad experience at the dentist?" Responses to these questions were given using "Yes" or "No" options.

Dental practitioners are professionals who provide dental care to patients of all ages. In this study, participants were requested to rate their perception about the dentists. Responses were given on a scale from 1 ('I don't like them') to 3 ('I like them'). A scenario was also depicted to the participants as if they have a problem in their teeth and they have to visit a dentist. They were then asked if after going to the dentist they got better, worse or remained the same.

Emotions. The children's emotions towards the dental practices for instance going to the dentist were measured through the use of SAM scale. SAM is made up of five graphic figures (mannequins) in each one of the following two dimensions: The first one is the Valence which has a range of a happy mannequin to an unhappy mannequin. The second one is the level of arousal which ranges from a mannequin that is highly aroused to one that is not aroused at all. The participants were given a story which described that they have been to the dentist and were asked how happy/sad and nervous/calm they would feel. They answered with two self-assessment manikin scales [7]. The first one was a set of five images depicting a human body and a human face, from very happy to very sad. The second one was a set of five images in a row which depicted a human body in different levels of arousal from nervous to calm. Thereafter, the participants were given a scenario in which they had a toothache and had to visit the dentist. They answered with two self-assessment manikin scales the same as the previous question. Previous research has indicated that SAM has good convergent validity and internal consistency.

[8,9].

Perceptions about the dental and oral health. In order to elicit responses from the participants, they were given a cue that asked them to think about oral and dental health and then write and draw a hygiene. face Other to questions show regarding how the they knowledge felt on about dental 'going and to oral the hygiene dentist'. were

also Understanding given dental to and the oral participants. Thus, they were provided with questions regarding how much toothpaste is recommended when brushing scale one's was teeth. pictorial, The which response contained four pictures of a toothbrush with different amounts of toothpaste ranging from a small amount which was deemed to be inadequate to a large amount which was also deemed to be excessive.

They were also requested to state as to what is adult the can maximum have, number how of many teeth types that of an teeth a person may have, how often one should brush his or her teeth and for how long.

The questionnaires were used to collect data about children's care for their dental and oral hygiene. Previous dental caries and experiences of dental treatments and perceptions towards dentists were developed from the questions included in both questionnaires, Modified Child Dental Anxiety Scale (MCDASF) [10] and Children's Fear Survey Schedule–Dental

Subscale (CFSS-DS) [11]. The current literature indicates that MCDASF and CFSS-DS are both reliable and valid measures (alpha = 0.82) to assess dental experiences in 5-12 years old children from different parts of the world [12,13].

.4. *Statistical Methods*

Data were analyzed using IBM SPSS Statistics 20 for Windows.

Descriptive statistics were employed in this study including frequencies, percentages, means and standard deviations; inferential statistics include t-test for paired sample, χ^2, univariate and multivariate analysis of variance (ANOVA and MANOVA respectively) and regression analysis. The data set applied in this study had only a few missing values due to non-response; thus, they were treated as such and were not filled in by the participants' average .

.5. *Sample Size*

G*Power 3.2.3 software analysis [14] was used to estimate the sample size, suggesting a minimum of about 84 participants that should be recruited. More specifically, for detecting a medium effect size (f = 0.25, using Cohen's standard effect sizes) in the analysis of variance, a sample of 84 participants was suggested. For a large size effect (f = 0.40), a sample of 210 participants should be recruited. The program also suggests for the *t*-tests a minimum of 23 participants for a medium effect (d = 0.05) and 54 participants for a large size effect (d = 0.80) [15]. Our final sample was composed of 101 children, which fit the number of participants suggested for, at least, a medium effect size.

2. Results

Main Results

Dental and oral hygiene habits

Regarding participants' dental and oral hygiene habits (Table 1), most participants brush their teeth twice a day (48.5%), every day (99.0%), without the help of an adult (89.1%). Most participants use toothpaste (98%) but do not floss (48%) nor use mouthwash (41.6%).

Table 1. Frequencies and percentages of children's responses about their dental habits and behaviors.

	Frequency	**Percent (%)**
"Do you brush your teeth every day?"		
Yes	100	99.0
No	1	1.0
"How many times per day do you brush your teeth?"		
1 time	8	7.9
2 times	48	47.5
3 or more times	43	42.6
Missing	2	2.0
"Do you have an adult helping you brush your teeth?"		
Yes	2	2.0
Sometimes	9	8.9
No	101	89.1
"Do you use toothpaste when brushing your teeth?"		
Yes	98	97.0
Sometimes	1	1.0
No	1	1.0
Missing	1	1.0
"Do you floss your teeth?"		
Yes	15	14.9
Sometimes	37	36.6
No	48	47.5
Missing	1	1.0
"Do you use mouthwash?"		
Yes	27	26.7
Sometimes	32	31.7
No	42	41.6
"Have you ever been to the dentist?"		
Yes	88	87.1
No	11	10.9
Missing	2	2.0
"Have you ever had a cavity?"		
Yes	46	45.5
No	55	54.5

Table 1. *Cont.*

		Frequency	Percent (%)
"Have you ever had gum pain?"			
	Yes	54	53.3
	No	46	45.5
	Mis sing	1	1.0
"Did you ever bleed from your gums?"			
	Yes	76	75.2
	No	25	24.8
"Have you ever had a tooth taken out?"			
	Yes	69	68.3
	No	32	31.7
"Have you ever had a bad experience at the dentist?"			
	Yes	27	26.7
	No	71	70.3
	Mis sing	3	3.0

- Previous dental problems and experiences with dental treatments

Concerning participants' previous dental problems and experiences with dental treat- ments (Table 1), a large majority had been to the dentist (88.9%), 45.5% already had a cavity, gum pain (54%) and bleeding (75.2%) and a tooth taken out (68.3%). Most participants (72.4%) reported never having had a bad experience at the dentist.

- Opinion about dentists

Most participants have a positive opinion about dentists (Table 2), with 72.3% saying they like them, 10.9% saying they do not like them and 16.8% answering that they do not know. Regarding the scenario in which participants had to imagine they were having a problem with their teeth and went to the dentist (Table 2), 92.1% thought they would be better afterward.

Table 2. Frequencies and percentages of children's responses about their attitudes and opinions about dentists.

"What is your opinion of dentists?"		
	Frequency	**Percent (%)**
Do not like them	11	10.9
Do not know	17	16.8
Like them	73	72.3
"Imagine you have a problem in your teeth, and you go to the dentist. After the dentist appointment, do you think you will get . . . "		
Better	93	92.1
Same	6	5.9
Worse	2	2.0

- Feelings toward dental and oral health

When asked to write down what they felt about oral and dental health, 68.3% reported positive feelings ("well," "happy," "calm"), 18.8% reported negative feelings ("fearful," "nervous," "concerned") and 12.9% reported neutral words ("normal," "more or less").

- Emotional responses: valence and arousal

Regarding the scenario in which they had to imagine going to the dentist, most partic- ipants imagined feeling very happy (40.6%) and very calm (43.6%). Only a few imagined feelings very sad or sad (6%) and very nervous or nervous (13.8%)

- When provided with a scenario in which they had a toothache and went to the dentist, 28. 7 % of the participants felt neutral while 31. 7 % felt very calm. More than the previous findings, it was seen that the participants envisioned themselves as sad (19. 8 %) or very sad (10. 9 %) and nervous (16. 8 %) or very nervous (12. 9 %).
- They imagined being happier, t (100) = 5.57, p < 0.001, d = 0.60, and calmer, t(100) = 4.05, p < 0.001, d = 0.37, when they are exempted from having a toothache when going to the dentist (respectively, M = 3. 98; SD = 1. 02 and M = 3. 90; SD = 1. 25) than when they visit the dentist with a toothache (respectively, M = 3. 26; SD = 1. 34 and M = 3. 41; SD = 1. 42).
- A MANOVA was conducted entering how happy and calm participants imagined feeling when visiting the dentist (routine visit as well as when experiencing pain) as criterion and sex and school year as predictors. The analysis of variance revealed significant main effects of school year for the level of happiness during a routine dental visit (F (1, 97) = 9.36, p = 0.003,
- ηp 2 = 0.086), as well as when in pain (F (1, 97) = 20.51, p < 0.001, ηp 2 = 0.175).
- Furthermore, the results of the study showed that the level of comfort that children felt when visiting the dentist, in a routine visit was significantly different from that of the level of comfort when visiting the dentist when in pain (F (1, 97) = 12.11, p = 0.001, ηp 2 = 0.111). The Children in the third grade than the children in the fourth grade reported that they would feel happier during the routine visit(M = 4. 25, SD = 0. 132 v M = 3. 64, SD = 0. 147) as well as when in pain (M = 3. 76, SD = 0. 164 v M = 2. 64, SD = 0. 183). In the same way, the third grade children had a higher level of comfort than the fourth grade children during the routine visit (resp. M = 4. 28, SD = 0. 159 and M = 3. 45, SD = 0. 178) as well as when in pain (resp. M = 3. 88, SD = 0. 178 and M = 2. 82, SD = 0. 199). No main effect of sex was found (F < 0.83) as well as no significant interactions between sex and school year (p < 0.298).
- Age was tested as a predictor of how happy and calm the participants would be when they visit the dentist (routine visit as well as when in pain). Age was a significant negative predictor of the participants' perceived happiness, (β = -0. 233, t (99) = -2. 38, p = 0.019, R 2 = 0. 054) in the routine visit but not the level of happiness (β = -0. 085, t (99) = -0. 845, p = 0. 400, R 2 = 0. 007). On the other hand, age served as a negative predictor of happiness (β = −0. 207, t (99) = −2. 11, p = 0.037, R 2 = 0. 043) of the partic-pants when in pain but not of the calmness (β = −0. 121, t (99) = −1. 21, p = 0. 228, R 2 = 0. 015). In order to understand whether or not the participants' previous experience would affect their perception of how they would feel when going to the dentist (routine visit as well as when experiencing pain), the study used a 2 x 2 ANOVA and found out that "Have you ever had a bad experience at the dentist?" had no significant effect on the participants' perception of happiness and calmness when going to the dentist (routine visit as well as when experiencing pain) by using a 2 x 2 independent t-test (Aspire & Mwanza, 2018).

- Knowledge concerning dental and oral hygiene

When asked what the right amount of toothpaste one should use when brushing their teeth was, most participants (70.3%) chose an option depicting an excess amount of toothpaste, and few participants (2.7%) chose the option corresponding to an amount that was too little. Only 27% of participants chose the option corresponding to the correct amount (see Table 3 for percentages of correct and incorrect responses for each question).

Table 3. Percentage of correct responses by question.

	Incorrect by Default	Correct	Incorrect by Excess
Amount of toothpaste	2.7	27	70.3
Maximum number of teeth (32)	37.8	48.6	13.5
Types of teeth (3)	10.8	27	62.2
Teeth brushing—how many times a day (2)	0	6.8	93.2
Teeth brushing—for how long (2 mn)	10.8	32.4	56.8

On average, participants considered that the maximum number of teeth an adult can have is 30 (M = 30.21; SD = 5.65). Responses ranged from 12 to 50 teeth. Many participants indicated the correct number of teeth (48.6%), and 51.3% indicated an incorrect number of teeth. Among those who gave an incorrect answer, 37.8% chose a lower number of teeth, and only 13.5% considered the maximum number of teeth to be more than 32.

When asked how many types of teeth a person could have, the average response was five (M = 4.80; SD = 4.22) and participants' responses ranged from 2 to 30. Only 27% of participants chose the correct number (three). Of the 73% that wrote incorrect numbers, most participants (62.2%) chose a higher number of types of teeth, and 10.8% chose a lower number of types of teeth.

Participants considered that one should brush their teeth about three times per day (M = 3.14; SD = 0.58). Responses ranged from two to five times per day. Only 6.8% of participants chose the correct number of times (two). The remaining 93.2% of participants wrote that one should brush their teeth three or more times per day.

Regarding how long one should brush their teeth, on average, participants considered that it should last for about 5 min (M = 5.12; SD = 6.56). Responses ranged from 1 to 40 min of duration. From those participants that chose an incorrect duration, most were wrong by excess (56.8%), only 10.8% were wrong by default, and 32.4% of participants indicated the correct duration (2 min).

By counting the correct responses for the questions described above, a score of correct responses was obtained for each participant (Table 4). In total, 23% did not choose one correct response, and most participants only got one correct response (44.6%).

Table 4. Percentage of total correct responses.

Number of Correct Responses	%
0	23.0
1	44.6
2	27.0
3	5.4

An ANOVA entering sex and school year as independent variables and the number of correct responses as a dependent variable was run. Only school year yielded a significant effect (F (1, 70) = 13.10, p = 0.001, ηp^2 = 0.158). Children in the third grade (M = 1.44; SD = 1.07) got more correct responses than those in the fourth grade (M = 0.79; SD = 1.15). No other effects were significant (p > 0.241).

Age was also found to be a negative predictor of the number of correct responses ($\beta = -0.257$, t (72) = −2.26, p = 0.027, R^2 = 0.066).

To understand if knowledge about dental and oral health issues depended on pre-
vious experience, chi-square tests were performed. However, no significant effects were found (m).

3. Discussion

The present project aims to provide conceptual and theoretical outcomes, giving evidence about children's knowledge and attitudes about oral health and dental practices. Children reported accurate and positive behaviors regarding dental and oral hygiene habits. Most of these children brush their teeth twice a day and every day, using toothpaste.

However, only about half of them reported flossing or using mouthwash.

Regarding previous experiences with dental problems and oral treatments, a large majority had already gone to the dentist, but only some of them reported to have already had painful experiences, such as cavities, gum pain, bleeding or even a tooth taken out. A relevant aspect is that only 28% of these children reported having already had a negative and traumatic experience at the dentist.

In general, children's opinions and beliefs about dentists were globally positive. Most of them have not only a positive attitude about them but they also generally trust

in dentists and believe in the success of treatments/help if needed. Most children also reported positive emotions (i.e., feeling happy and calm) in an imaginary scenario of visiting the dentist. However, some of them also described feelings of fear, sadness and stress. The results suggested an effect of children's age and educational level: older children reported more negative attitudes and emotions, as well as painful feelings about visiting the dentist.

Finally, and concerning children's knowledge about dental and oral hygiene, the re- sults were quite negative and worrying, ruled by ignorance and incorrect beliefs. Most chil- dren answered wrongly about the amount of toothpaste needed for a brushing once, its correct time/duration and daily frequency. In the same line, the majority of children also reported incorrect knowledge about quite basic questions, such as the maximum number of teeth an adult can have or even how many types of teeth are there. Regarding children's knowledge responses, the results also showed the significant effect of educational level and age. Age was found to be a negative predictor of the number of correct responses. Thus,

children in the third grade provided more correct responses than those in the fourth grade. A possible explanation for this significant effect could be related to the current educational program in the second grade of Portuguese schools, where younger children learn about several human body parts, in particular the oral cavity.

Future studies should be conducted using a larger sample of children from different contextual statuses. These could be the main limitations of the present study: the sam- ple size and the similar economic status (all of our children are included in a medium economic familiar cultural level). A larger sample might allow conducting a more com- plex statistical analysis and test more significant effects. Another suggestion is to include other social and contextual variables, such as the economic status (SES) of the participants. The literature suggests the disadvantaged SES contexts as risk indicators for dental and oral problems. In fact, several studies showed that bad oral health has a significant relation with children's SES [16–18]. Early dental problems are usually described as associated with sociodemographic factors, dietary and oral health habits [19].

Dental stigma, fear and phobia comprise a complex and multifactorial current prob- lem [20]. The research evidence suggests that it might be related to both endogenous (e.g., personality traits) and exogenous (e.g., information through media; previous traumatic experiences; modeling and vicarious learning through significant others) factors [20–22]. The evidence also suggests that this negative approach have clear and practical implica- tions, and it should be conceptualized as consisting of a triad: attitudes (i.e., prejudice, fear), knowledge (i.e., ignorance and lack of valid and appropriate knowledge) and behavior (i.e., avoidance, refuse) [20,21].

While there is increasing knowledge about health literacy in adult populations, less evidence and interventions are available and implemented with children [21,22]. Accord- ing to the literature, children with access to clear information about health entertain fewer negative worries, more knowledge and are able to address these issues in a more realistic and appropriate manner. This evidence could be explained by the Information Provision Model (IPM) that was designed to integrate the various processes involved in information provision, such as the self-regulation theory and schema/script theories, as well as the role that individual difference aspects (e.g., age, temperament, coping styles) may play in how children respond to such information. Briefly, this model theorizes that by providing information about health procedures, children may be able to identify the most appropriate schemata to cope with that event [23]. Accurate information may contribute to the decrease in fear and anxiety related to anticipation of medical-health events and lead to positive outcomes, minimized uncertainties, reduced threat and fear perception and inconsistencies between unreal expectation and the reality of dental procedures. On the contrary, children without this accurate information may activate inappropriate schemas related to healthcare settings, increasing their negative responses (e.g., worries, fears, and anxiety), resulting in fewer realistic expectations and future avoidance behaviors [23].

The present project is therefore designed to generate conceptual and theoretical outputs whereby information will be given about children's knowledge and attitudes on dental health and dental care. The children had a good knowledge and practice of the dental and oral hygiene practices. Most of these children brush their teeth twice in a day and every day and this is with toothpaste.

Yet, only about half of them stated that they floss or use mouthwash as a part of their oral hygiene regimen.

With regard to previous history of dental caries and other oral conditions and treatment, the majority of them has previously visited the dentist, but only some of them stated that they had experiences pain such as cavities, gum pain/bleeding or even having a tooth extracted. Another important consideration is that only 28% of these children surveyed have already had a negative and thus potentially traumatic encounter with the dentist.

In general, children's perceptions and conceptions of dentists were positive, although with some reservations. Most of them have a positive perception of them and also have a high level of trust in dentists and think that any treatment/ help that is needed will be effective. The majority of children also expressed positive affects (i. e., happy and calm) when imagined being at the dental parison. However, some of them also described feelings of fear, sadness and stress. The result indicated the influence of children's age and educational level: older children had more negative attitudes and emotions, and painful feelings towards going to the dentist.

Finally, and in what concerns children's understanding of dental and oral hygiene, the results were mainly unfavorable and concerning, due to lack of information and false beliefs. The majority of children responded incorrectly about the amount of tooth paste to be used in a brushing once, the right time/ duration and the frequency to be taken daily. Similarly, most of the children also provided incorrect information in response to fairly basic questions such as the number of teeth an adult may have or even the types of teeth. For knowledge responses of children, the results also revealed that educational level and age had significant impact. Age was found to be a negative predictor of number of correct answers. Therefore, the children in the third grade responded more accurately than the children in the fourth grade. This might be because of the current curriculum in the second grade of the Portuguese schools where children are taught about various body parts including the mouth.

Further research should be carried out with a larger number of children from various background. These may be the major flaws of the current study: the number of participants and the level of economy (all the children in this research are medium level of economic cultural status). This could have enabled the researcher to do a more complicated statistical test and to

determine other results. Another suggestion is to incorporate other sociodemographic and contextual factors such as the economic status of the participants. The existing literature also indicates that the disadvantaged SES contexts are the risk factors for dental and oral health complications. Indeed, several research works have also pointed out that oral health of children is highly correlated with their SES [16–18]. Dental problems in early childhood are usually associated with sociodemographic characteristics, diet and oral hygiene practices [19].

Dental stigma, anxiety and phobia are the current challenging issue which has its roots from various factors. The current literature shows that it may be caused by intra personal factors such as personality style, and inter personal factors such as information from mass media, previous experiences, modeling and vicarious experience from significant others. The evidence also indicates that this negative approach have clear and practical implications, and it should be analyzed as having three components: attitudinal (stereotyping, anxiety), cognitive (lack of information and erroneous information) and behavioral (avoidance, non-compliance) [20,21].

While there is more and more emphasis on health literacy in the adult population there is still a lack of evidence and application in children [21,22]. According to the literature, children who are exposed to proper information regarding the health problems have less negative thoughts, better knowledge and are able to deal with these conditions in a better way. This could be explained by Information Provision Model (IPM) that was designed to incorporate all the process involved in information provision such as the theories of self-regulation and schema/ script, and the part that personal characteristics (e. g., age, temperament, coping styles) may play in how children make sense of it. In short, this model hypothesized that as people are provided with information regarding the health procedures, they are able to identify the most suitable schemata to use in a given situation. Thus, information can help to reduce anxiety and fear based on the deflection of the myths regarding the dental and sick care experiences and promote optimistic results, reduction of uncertainties, threat and fear appraisals and incongruence of what was expected and what happened. On the other hand, the children who were not exposed to such information may develop wrong schemas when it comes to healthcare settings thus eliciting negative responses such as worries, fear, and anxiety and thus lower and more realistic approaches and experiences and avoidances.

The works on children's access to information in regard to their body and health care since the last century have emphasized this as one of the children's basic rights. Information provision is a crucial aspect of preparing children for pediatric health procedures [23, 25].

The use of entertaining materials like games, activities and books to teach children about health and medical procedures is also increasing these days [26–28]. Play with ludic games is a very participative activity and is a powerful tool to promote learning and the change of health behaviors in the entertaining and interesting way. There has been the prior study which has also revealed that the informational interventional studies are especially impactful for the children in the concrete operational stage that according to Piaget (1963) ranges from seven or eight years to twelve years [24; 29–31].

Conclusions

Based on the conceptual and theoretical findings of children's knowledge and attitudes towards oral health and dental care, the present project will aim at creating educational and innovative materials regarding oral health and dental hygiene, "An Adventure about Oral Health. The outcomes of this research will be practical as it will involve the creation of educational and game like activities (including a board game and an activities book) on the mentioned oral and dental issues.

Saying so, the data collected from children in the present study will be used in the educational programs titled "An Adventure Health" about to Oral try to enhance the positive perception and practices towards oral health as well as to increase awareness of the participants on this particular aspect.

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