

Animal-assisted Therapy as a Potential Tool for Management of Dental Anxiety in Children: A Questionnaire-based Cross-sectional Study

BASHYAM NALINI¹, CHANDRABHATLA SRINIVAS KUMAR²



ABSTRACT

Introduction: Animal-Assisted Therapy (AAT) is being developed as an alternative approach to reduce the anxiety and comfort the apprehensive patients. Hence, to evaluate the child's and parental acceptance of pets in dental operator, their favourite pet, child's choice of live pet over soft toy, their preference of own pet vs therapy, more hairy pets vs less hairy pets, play area vs child's lap, the present study is undertaken.

Aim: To evaluate the influence of pets in reducing anxiety of children in the dental operator and acceptance of this technique by the children and the parents.

Materials and Methods: This questionnaire-based cross-sectional study was conducted on 65 children of age group 3-12 years and their parents who attended the Department of Pedodontics

and Preventive Dentistry, GITAM Dental college and Hospital, Visakhapatnam, Andhra Pradesh, India for a period of two weeks in the month of July 2018. They were assessed for anxiety and the influence of pets on anxiety levels using questionnaire and picture cards. The data was statistically analysed using Chi-square test.

Results: An 83.3% of parents and 75.4% of children felt that pets in the dental operator are useful in reducing the anxiety. A 58.5% of children preferred live pets whereas only 33.3% parents preferred them. Dog was found to be the most favourite pet for very young children (31.6%) whereas older children preferred rabbit (43.5%).

Conclusion: Animal-assisted therapy was found to be useful in reducing the anxiety of children during dental visit.

Keywords: Behaviour management, Fear, Parents, Pets

INTRODUCTION

In children, fear and anxiety are significant barriers to the dental care resulting in avoidance of dental treatment and consequent poor oral health and reduced quality of life [1]. Statistics have shown that between 3-43.4% of the children exhibited anxiety during dental treatment worldwide [2]. Dental fear is defined as an emotional reaction to a threatening stimuli in a dental setup, while, a state of apprehension that something dreadful is going to happen in relation to dental treatment is termed as dental anxiety. Dental anxiety is also associated with a sense of losing control [3]. Children are not very capable to express their fears and anxiety because of their limited communicative skills and their inability to cope up with threatening dental stimuli often manifests in behaviour management problems. So, early recognition and management of fear and anxiety is the key for effective dental treatment [4].

Many non pharmacological and psychological behaviour management techniques have been in use to address the child's behaviour in dental operator. Some of them aim to improve the communication between the patient and the pedodontist, while others are intended to eliminate the inappropriate behaviour and reduce anxiety [4].

Various forms of pre-exposure to the dental setting procedures have been suggested in modifying child's behaviour and one such technique is AAT. Animal assisted therapy is an applied interdisciplinary approach that uses animals to solve human behavioural problems, as an adjunct to other therapies [5]. It involves the interaction between the patient and an animal that has been specially trained for this therapy [6]. Using animals for solving human issues has been in practice since a long time, Levinson BM and Mallon GP, a psychologist and one of the early pioneers of AAT first used a dog in psychotherapy sessions with children and found that children were better able to communicate and express their

feelings when relating to a therapy dog during these sessions [7]. Apart from dogs, other animals like cats, rabbits, fish, and tortoise have also been tried as therapeutic animals in AAT [6].

The Pedodontist solely cannot make decisions regarding the use of any behaviour guidance techniques other than communicative management. It should also involve the parent and the child, if appropriate [8]. The parent shares the decision whether or not to treat and must be consulted regarding treatment strategies and potential risks. Informing the parent about the nature, risk, and benefits of the technique to be used and any professionally-recognised or evidence-based alternative techniques is essential to obtaining informed consent [8].

Hence, in order to bring awareness about the concept of AAT in dental operator, the present study was undertaken to evaluate the influence of pets in reducing anxiety of children in the dental operator and acceptance of this technique by the children and their parents.

MATERIALS AND METHODS

This questionnaire based cross-sectional study was conducted in the Department of Pedodontics and Preventive Dentistry at GITAM Dental College and Hospital, Visakhapatnam, Andhra Pradesh, India, with the permission taken from the Head of the Department. Since the study was questionnaire based, Ethical Committee Clearance may not warrant.

A total of 65 children and their parents, 33 male and 32 female in the age group of 3-12 years with no prior dental visit were randomly selected for a period of two weeks in the month of July 2018 and included in the study after obtaining the parental consent. Considering the present study as pilot study, smaller sample size was taken. The total number of parents participated in the study

were 60. The difference in the number of children and parents was because the children were siblings of same parent. Children were divided into two groups based on their age:

Group 1- children of 3-6 years

Group 2- children of 6-12 years

Inclusion criteria: Children aged between 3-12 years without prior dental visit were included in the study.

Exclusion criteria:

- Children with a previous dental experience.
- Children and parents who are not willing to participate.
- Children with systemic diseases, mental and physical disorders.

Survey Procedure

Once the children and their parents enter the dental operator they were briefly informed about the nature of the study and both children and parents were given separate questionnaire containing 12 [Annexure 1] and 11 [Annexure 2] questions respectively with multiple options in their language of preference and were asked to mark the most appropriate answer. The questionnaire was prepared on the basis of previous study [6] and modified according to the present study. Also, for better understanding, younger children between 3-6 years were showed the picture cards containing the images of pet animals. All this was carried out by a single interviewer to avoid the bias.

STATISTICAL ANALYSIS

All the collected data was entered into an Excel file (Microsoft version 2010) and analysis was carried out using Statistical Package for the Social Sciences (SPSS) version 21.0. Chi-square test was used for analyses of categorical data with p-value <0.05 considered to be statistically significant.

RESULTS

Parent's acceptance: About 83.3% of the parents [Table/Fig-1] considered the relationship between the child and the pet to be positive and felt that this association of the child with soft toys/live pets would reduce the child's anxiety in the dental operator. A 33.3% of the parents preferred live pets against soft toys and dog was found to be the preferred animal (60%) [Table/Fig-1]. Only 21.7% of the parents [Table/Fig-1] wanted these pets to be trained and many (85%) [Table/Fig-2] felt that pets are better placed in the play area rather than on the patient's lap. As none of the parent had answered the 12th question i.e, it was considered as miscellaneous.

Q1- Parent's opinion on child's acceptance of dental operator		Q2- Parent's opinion on child's anxiety in dental operator		Q3- Parent's opinion on whether soft toys/pets reduce child's anxiety	
Option	n, %	Option	n, %	Option	n, %
Accepts	57, 95	Increase	39, 65	Yes	50, 83.3
Rejects	3, 5	Decrease	21, 35	No	10, 16.7
Total	60, 100	Total	60, 100	Total	60, 100
Q4- Parent's preference of Soft toys Vs Live pets		Q5- Parent's choice of pet in dental operator		Q6- Parent's preference of own pets over trained pets	
Option	n, %	Option	n, %	Option	n, %
Soft toys	40, 66.7	Dog	36, 60.0	Own pets	47, 78.3
		Cat	01, 1.7		
Live pets	20, 33.3	Rabbit	17, 28.3	Trained pets	13, 21.7
		Tortoise	06, 10.0		
Total	60, 100	Total	60, 100.0	Total	60, 100

[Table/Fig-1]: Parent's opinion on child's acceptance of dental operator and on child's anxiety in the dental operator, whether soft toys/live pets reduce child's anxiety, Soft toys vs Live pets, Parent's choice of pet in dental operator and own pets over trained pets.

Q7- Pets at home		Q8- Children and pets share same space		Q9- Parents's consideration of relation between child and pets	
Option	n, %	Option	n, %	Option	n, %
Yes	19, 31.7	Yes	33, 55	Playmates	24, 40
				Child learns to take care of someone	27, 45
No	41, 68.3	No	27, 45	Can be risky	9, 15
Total	60, 100	Total	60, 100	Total	60, 100
Q10- Worries about child and pet association			Q11- Parent's preference of placing the pet		
Option	n, %		Option	n, %	
Bites and scratches	28, 46.7		Play area	51, 85	
Hygiene issues	24, 40				
Health risks	8, 13.3		On lap	9, 15	
Total	60, 100		Total	60, 100	

[Table/Fig-2]: Having pets at home, parent's opinion whether children and pets share same space, parent's consideration of relationship between children and pets, worries about their association and their preference of placing pet in the dental operator.

Child's preference according to age and gender: Of the total 65, 30 children (46.2%) felt that they would be anxious on entering the dental operator [Table/Fig-3] and 75.4% felt that their association with the pets would reduce the dental anxiety [Table/Fig-4] and many of them (58.5%) opted for live pets over soft toys [Table/Fig-5].

Most of the younger children (31.6%) preferred dog or cat whereas older children (43.5%) preferred rabbit as their favourite pet [Table/Fig-4]. About 66.4% [Table/Fig-5] preferred own pets rather than the trained pets and 78.5% of the children preferred more hairy pets [Table/Fig-4].

DISCUSSION

Fear refers to the actual or activated response to an object or situation whereas anxiety is an emotional state which precedes an encounter with a feared object or situation [9]. Anxiety has been described as coherent and a unique cognitive-affective structure within our motivational and defensive system [10]. Even both anxiety and fear involve behavioural, physiological, emotional, and cognitive components, but their way of expression is different from child to child [9]. It is important for a Pedodontist to employ a wide range of behaviour guidance techniques in order to meet the needs of the individual child since they exhibit a diversity of attitudes and temperament. To provide a good oral healthcare for infants, children, adolescents, and persons with special healthcare needs, the American Academy of Pediatric Dentistry (AAPD) recognised a continuum of both non pharmacological and pharmacological behaviour guidance techniques to promote a positive dental attitude, safety, and quality of care which are of utmost importance [11]. Besides, the uncomplicated techniques such as providing information, tell-show-do, and signalling, there are various distinct psychological approaches to control dental fear and anxiety in children which may range in complexity from those that are relatively easy to perform while others require specialised training [5]. One such technique is AAT, a type of psychotherapy which employs the presence of animals within therapy setting, addresses the issues and provides approach for circumventing the difficulties during treatment [12].

Hence, the questionnaire-based cross-sectional study was carried out to find the parental and child's acceptance of pets in the paediatric dental clinic. In the present study, 33.3% of the parents have believed that the presence of pets would reduce their child's anxiety in dental operator, and this is in accordance with a study conducted by Stefanini MC et al., in Italy, where the parents of the children with severe psychiatric problems thought that their children had greater acceptance of hospital experience, clinical practices and treatments with a significant improvement in their emotional

Q1- Child's feeling on entering dental operator				Q2- If anxious, anxiety is mostly while						
Age (years)		Anxious	Non anxious	p-value	Age (years)		Arriving at dental clinic	Sitting in the waiting room	Sitting on dental chair	Looking at the dental instruments
3-6	Number	8	11	0.787	3-6	Number	1	1	4	2
	Percentage	42.1%	57.9%			Percentage	5.3%	5.3%	21.1%	10.5%
6-12	Number	22	24		6-12	Number	3	3	11	5
	Percentage	47.8%	52.2%			Percentage	6.5%	6.5%	23.9%	10.9%
Total	Number	30	35		Total	Number	4	4	15	7
	Percentage	46.2%	53.8%			Percentage	6.2%	6.2%	23.1%	10.8%

[Table/Fig-3]: Age-wise comparison of child's feeling on entering dental operator. p-value<0.05 was considered as statistically significant (Chi-square test)

Q3- Pets at home				Q4- Playing with pets					
Age (years)		Yes	No	p-value	Age (years)		Yes	No	p-value
3-6	Number	3	16	0.741	3-6	Number	17	2	0.203
	Percentage	15.8%	84.2%			Percentage	89.5%	10.5%	
6-12	Number	11	35		6-12	Number	34	12	
	Percentage	23.9%	76.1%			Percentage	73.9%	26.1%	
Total	Number	14	51		Total	Number	51	14	
	Percentage	21.5%	78.5%			Percentage	78.5%	21.5%	

[Table/Fig-3]: Age-wise comparison of child's feeling on entering dental operator. p-value<0.05 was considered as statistically significant (Chi-square test)

Q5- Relaxed Vs Bored				Q6- Child's preference of favourite pet							
Age (years)		Relaxed	Bored	p-value	Age (years)		Dog	Cat	Rabbit	Tortoise	p-value
3-6	Number	18	1	0.049	3-6	Number	6	6	5	2	0.204
	Percentage	94.7%	5.3%			Percentage	31.6%	31.6%	26.3%	10.5%	
6-12	Number	32	14		6-12	Number	17	5	20	4	
	Percentage	69.6%	30.4%			Percentage	37%	10.9%	43.5%	8.7%	
Total	Number	50	15		Total	Number	23	11	25	6	
	Percentage	76.9%	23.1%			Percentage	35.4%	16.9%	38.5%	9.2%	

[Table/Fig-4]: Child's feeling in the presence of pet, age-wise preference of pet. p-value <0.05 was considered as statistically significant (Chi-square test)

Q7- Preference for More hairy pets vs Less hairy pets				Q8- Pets reduce dental anxiety					
Age (years)		More hairy pets	Less hairy pets	p-value	Age (years)		Yes	No	p-value
3-6	Number	24	9	0.367	3-6	Number	18	1	0.026
	Percentage	72.7%	27.3%			Percentage	94.7%	5.3%	
6-12	Number	27	5		6-12	Number	31	15	
	Percentage	84.4%	15.6%			Percentage	67.4%	32.6%	
Total	Number	51	14		Total	Number	49	16	
	Percentage	78.5%	21.5%			Percentage	75.4%	24.6%	

[Table/Fig-4]: Child's feeling in the presence of pet, age-wise preference of pet. p-value <0.05 was considered as statistically significant (Chi-square test)

Q9- Soft vs Live pets				Q10- Own pets vs Trained pets					
Age (years)		Soft toys	Live pets	p-value	Age (years)		Own pets	Trained pets	p-value
3-6	Number	7	12	0.783	3-6	Number	12	7	0.757
	Percentage	36.8%	63.2%			Percentage	63.2%	36.8%	
6-12	Number	20	26		6-12	Number	32	14	
	Percentage	43.5%	56.5%			Percentage	69.5%	30.5%	
Total	Number	27	38		Total	Number	44	21	
	Percentage	41.5%	58.5%			Percentage	66.4%	33.6%	

[Table/Fig-5]: Child's preference of type of pets p-value <0.05 was considered as statistically significant (Chi-square test)

Q11- Preference for Play area vs Child's lap				
Age (years)		Play area (n, %)	Child's lap (n, %)	p-value
3-6	Number	12	7	1.000
	Percentage	63.2%	36.8%	
6-12	Number	29	17	
	Percentage	63.0%	37.0%	
Total	Number	41	24	
	Percentage	63.1%	36.9%	

[Table/Fig-5]: Child's preference of type of pets p-value <0.05 was considered as statistically significant (Chi-square test)

expression and social skills after receiving AAT [13]. Also, mostly parents of all age groups gave consent for the presence of pet, in which 50% of the parents were of 9-12-year-old children [6]. The results of the present study have showed that about 60% of the parents preferred dog, 78.3% of the parents preferred own pets over trained pets and 85% of the parents have felt that play area is safe rather than on child's lap.

Taking into consideration, the Piaget's grouping of children based on cognitive growth [14], the present study divided the children into two groups of 3-6 years and 6-12 years.

Children of 3-6 years preferred dog or cat as their favourite pet. This could be because dog is the most common pet in Indian households and kittens being fluffy feline, which is in accordance to study by Gupta N and Yadav T [6]. About 48.5% of the boys preferred dog as their favourite pet. This is similar to the results obtained from study conducted by Gupta N and Yadav T where 56.7% of the boys preferred dog [6]. In the present study, most of the girls (43.8%) preferred rabbit as in the study conducted by Wedl M and Kotschal K [15]. About 58.5% children in this study preferred live pets over soft toys and the reason for this could be the fact that interaction with a live dog creates a more playful and social environment when compared to toys in children [16].

About 66.4% of the children preferred own pets rather than the trained pets which is explained by Kidd AH and Kidd RM that 98% of the 3-year-old children loved their family pets which already formed a human companion animal attachments [17]. A 75.8% of the boys preferred that pets are better to be placed in the play area whereas girls gave equal preference to play area and the child's lap for placing the animal.

Beetz A et al., stated that support by a friendly dog was associated with significantly lower cortisol levels than support by a friendly human during a social stress test in children with insecure attachments [18]. Children receiving sensitive, appropriate, and consistent care giving behaviour by a significant approach will become securely attached and will be able to enter into loving, trusting, empathetic relationships [12]. However, infection control guidelines and potential health risks must be taken into account when incorporating a therapy dog because parents are concerned about bites and scratches, hygiene issues and health risks like parasitic infections [1].

The eventual objective of the pedodontist is to accomplish communication in order to alleviate fear and anxiety, deliver quality dental care, build a trusting relationship between the dentist and child, and promote the child's positive attitude toward oral health and oral healthcare.

Limitation(s)

A large sample size is required in order to obtain considerable result which was considered as limitation of the study. Since, the present study was questionnaire-based, further clinical trials are necessary in order to assess the acceptance and influence of AAT

in the reduction of dental anxiety in children. Furthermore, the use of biological markers like pulse oximeter could be a proof that AAT helps in reduction of child's anxiety.

CONCLUSION(S)

Hence, AAT could be a potential behaviour management tool for children having anxiety issues as most of the children felt that their association with the pets would reduce the dental anxiety. Also, parents considered the relationship between the child and the pet to be positive. Furthermore, parents should be made more aware of clinical application of AAT in dental operator.

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PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Pedodontics and Preventive Dentistry, GITAM Dental College and Hospital, Visakhapatnam, Andhra Pradesh, India.
2. Professor, Department of Pedodontics and Preventive Dentistry, GITAM Dental College and Hospital, Visakhapatnam, Andhra Pradesh, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Bashyam Nalini,
D-No-24-81-2/2, Sanath Nagar, Gajuwaka, Visakhapatnam, Andhra Pradesh, India.
E-mail: nalini.bashyam99@gmail.com

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ANNEXURE-1**(Questionnaire for parent)**

1. What do you feel about your child when he/she enters the dental operator?
 - a) Accepts
 - b) Rejects
2. Do you think that entering into dental operator, child's anxiety levels would be
 - a) Increased
 - b) Decreased
3. Do you consider that soft toys/pets are useful in the reduction of your child's anxiety levels?
 - a) Yes
 - b) No
4. What is your preference?
 - a) Soft toys
 - b) Live pets
5. If live pet is your choice what kind of animal would you like to have?
 - a) Dog
 - b) Cat
 - c) Rabbit
 - d) Tortoise
6. Which one you prefer?
 - a) Own pets
 - b) Trained pets
7. Do you have any pets?
 - a) Yes
 - b) No
8. Do your children and pets share the same spaces?
 - a) Yes
 - b) No
9. How do you consider the relationship between your child and your pet?
 - a) Positively, they are playmates
 - b) Positively, the child learns/is learning to take care of someone
 - c) Negatively, it can be risky
10. What worries you most in the child and pet association?
 - a) Bites and scratches
 - b) Hygiene issues
 - c) Health risks (parasites, infections ...)
11. Where do you prefer the pets to be placed during dental treatment?
 - a) Play area
 - b) On the child's lap
12. If any other, (miscellaneous).

ANNEXURE-2**(Questionnaire for child)**

Name:

Age: Sex:

1. How do you feel when you enter into a dental set up?
 - a) Anxious
 - b) Non anxious
2. If anxious, anxiety is most while
 - a) Arriving at dental clinic
 - b) Sitting in waiting room
 - c) Sitting in the dental chair
 - d) Looking at dental instruments
3. Do you have pets at home?
 - a) Yes
 - b) No
4. Do you like playing with pets?
 - a) Yes
 - b) No
5. How do you feel playing with pets?
 - a) Relaxed
 - b) Bored
6. Which is your favourite pet?
 - a) Dog
 - b) Cat
 - c) Rabbit
 - d) Tortoise
7. What is your preference?
 - a) More hairy pet
 - b) Less hairy pet
8. Do you feel having pets with you reduces your anxiety during dental visit?
 - a) Yes
 - b) No
9. What would you prefer?
 - a) Soft toys
 - b) Live pets
10. If live pets, what would be your preference?
 - a) Own pets
 - b) Trained pets
11. Where do you prefer pets to be placed during dental visit?
 - a) Play area
 - b) On your lap