

Knowledge, Attitude and Practice of Health Care Professionals Towards Universally Applied Behavior Modification Techniques for Management of Pediatric Patients

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ABSTRACT

Objective: To evaluate health care professionals' knowledge, preference and experience about various universally applied behaviour modification techniques for managing anxiety in pediatric patients.

Study Design: Cross-sectional survey.

Place and Duration of study: Operative Department Armed Forces Institute of Dentistry Rawalpindi in Apr 2020.

Methodology: An online questionnaire was circulated among 100 Health Care Professionals of Rawalpindi, including general practitioners, consultants and post-graduate residents of different fields of medicine and dentistry involved in the clinical care of pediatric patients, which included socio-demographic details, closed-ended questions about their knowledge about different universally applied behaviour modification techniques for management of anxiety, their preference in usage and factors affecting selection particular behaviour modification techniques for management of anxiety.

Results: 66 (84.61%) of the healthcare professionals were aware of the different universally accepted behaviour modification techniques; 12 (15.38%) were unaware of such techniques. 33 (42%) of the practitioners admitted that pediatric patients showed non-compliance to simple non-invasive procedures while 45 (58%) to invasive procedures. 49 (62.3%) of respondents used universally accepted behaviour modification techniques. 74 (94.87%) of the respondents opted Tell-Show-Do, while the majority opted combination of different behaviour modification techniques as the preferred method of universally accepted non-pharmacological behavior modification technique.

Conclusion: The majority of the health care professionals preferred Tell-Show-Do and positive reinforcement techniques along with the combination of various non-pharmacological techniques as the most commonly adopted techniques for management of anxiety in pediatric patients.

Keywords: Behavior management, Dental anxiety, Pediatric patients.

How to Cite This Article: Wahid M, Yousaf A, Shah PJA, Shah JA, Bhangar F, Shah M. Knowledge, Attitude and Practice of Health Care Professionals Towards Universally Applied Behavior Modification Techniques for Management of Pediatric Patients. *Pak Armed Forces Med J* 2022; 72(3): 921-926. DOI: <https://doi.org/10.51253/pafmj.v72i3.4627>

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INTRODUCTION

The anxiety of pediatric patients is a pivotal difficulty in all branches of medicine, including dentistry which presents a challenge to children, parents and healthcare professionals.^{1,2} Anxiety is an adaptive response of human psychomotor development which creates fear among children of real or unforeseen threats. So, it is a major obstacle to a trust-building relationship between the doctors and the patients, resulting in difficult management of behaviour, deliberate avoidance of seeking proper medical and dental care, ill health and ailments.^{3,4} Wright has classified child behaviour into three categories: pre-cooperative, cooperative and uncooperative. The pediatric patient can fall into one of these categories depending upon their age and the complexity of treatments they encounter.³

Various factors have been associated with anxiety

in pediatric patients related to children, their parents and healthcare providers. Age of the patient, fear of invasive procedures, exposure to unknown people, recalling of memories of previous treatments, socio-economic status of families and number of siblings are attributed to patient-related factors.^{5,6} Quality of treatment, awareness and practical implementation of different behaviour modification techniques, an influx of the number of patients in the clinic and nature of treatment greatly affect the proper dealing of anxious patients in clinical setups. This leads to developing a successful therapeutic alliance between the healthcare provider and the patient based on trust with the pediatric patients and their guardians.⁷ Objectives of effective behaviour management in anxious pediatric patients are to maintain communication, alleviate anxiety and fear, and modify non-compliant behaviour into compliant behaviour as per the requirement of the required treatment.⁸ Effective behaviour management is a key element of professional development and ought to be mastered by all the medical and dental

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Received: 23 Jun 2020; revision received: 04 Oct 2020; accepted: 09 Oct 2020

team members treating the children. Behaviour management techniques have been classified into pharmacological and non-pharmacological or universally accepted behaviour management techniques.^{9,10} Advanced pharmacological techniques involve hand-over-mouth exercises, protective stabilization and induction of general anaesthesia. Non-pharmacological techniques involve a wide range of tell-show-do responses, various acclimatization programs, live modelling, cognitive behavior approaches and working in liaison with the therapist.^{6,7} A review by Robert *et al*, investigated the efficacy of all the non-pharmacological interventions of behaviour management by comparing various techniques to minimize the anxiety in children for an effective treatment outcome and concluded that combination of these techniques is helpful in successfully managing anxious pediatric patients in a dental care set up.⁷

Little local literature shows knowledge of HCP about various universally applied non-pharmacological behaviour modification techniques and their strategies for managing pediatric patients. This survey aimed to assess health care professionals' knowledge, preference and success experience with various universally accepted non-pharmacological behavior modification techniques for managing pediatric patients. Results of the survey would benefit young graduates by adopting universally accepted non-pharmacological behavior modification techniques in their clinical practice to relieve the anxiety of pediatric patients and build trustworthy relationships for their effective treatment.

METHODOLOGY

After approval from the Ethical Committee (Ref no.905/Trg-ABP1K2), this cross-sectional survey was conducted at the Operative Department of Armed Forces Institute of Dentistry Rawalpindi in April 2020. A questionnaire on Google Forms was spread through social media among 100 healthcare professionals (HCP), including consultants and post-graduate (PG) Residents from different fields of medicine and dentistry working in different healthcare facilities in Rawalpindi.

Inclusion Criteria: The participants involved in the direct clinical care of pediatric patients were included in the survey.

Exclusion Criteria: The participants having less than 3 years of clinical experience or not managing pediatric patients were excluded.

The questionnaire included questions that inquired about participants' socio-demographic characteristics, year of graduation, level of professional training and qualification of health care provider as a general practitioner (BDS/MBBS), post-graduate trainee, consultant, working experience (5years experience, 5-10 years experience, more than ten years of experience), awareness on various BMTs and their application. Other information included the type of health care facility (private, public, military). Gender was inquired and recorded as male or female, age in years, and groups younger than 30, 30-39, 40- 49, or 50 years and above.

The sample size was calculated by using the WHO calculator. With a level of significance of 5%, with the power of the test kept at 90%, a total sample size of 68 was calculated, which was increased to 100 individuals based on the population proportion A= 31% & population proportion B=69%.¹¹

Out of 100 participants, only 78 successfully filled the form, and their response was selected for results. During analysis, age was dichotomized into younger practitioners (below forty years) and older practitioners (forty years and above). Facilities were categorized as military, public and private. The oral health care providers' level of training was categorized into graduates (BDS/MBBS) and post-graduate trainees and consultants. Non-pharmacological Behavior management techniques were grouped into universally applied and non-universally applied modified from Sahiner *et al*,¹² The universally applied BMTs included; tell-show-do, desensitization, non-verbal communication, positive reinforcement, modelling and distraction. The non-universally applied techniques included; parental presence/absence, voice control, hand over mouth, passive or active restraining and sedation.

Regarding awareness, those who reported knowing all the universally applied BMTs were considered aware, and their counterparts were unaware. Those who reported using five of the six universally applied BMTs daily were considered users. In contrast, those reporting infrequent use of the universally applied BMTs were considered non-users. Frequency distributions and cross-tabulations analyses were performed. The Chi-square test was used for statistically significant associations between dependent (awareness and use of BMTs) and independent variables (socio-demographics, practice type, level of professional training). The *p*-value lower than or up to 0.05 was considered as significant.

RESULTS

A total of 78 participants filled questionnaire, and their responses showed that 38 (48.7%) were males and 40 (51.2%) were females. Younger health care providers were (46) 58.9% and older as (32) 41.02%. 84.61% (66) of the healthcare professionals were aware of the various universally applied behaviour modification techniques, and (12) 15.38% were unaware (Table-I).

Table-I: Demographic details, type of practice, qualification, experience of participants, awareness and usage of behavior modification techniques.

Factors	n (%)
Gender	
Male	38 (48.72%)
Female	40 (51.28%)
Age	
Younger Healthcare practioners	46 (58.9%)
older Healthcare practioners	32 (41.02%)
Practice/Facility	
Private clinic	06 (07.69%)
Public Hospital	20 (25.6%)
Armed forces Hospital	52 (66.7%)
Distribution by Qualification	
Post Graduate trainees	45 (57.7%)
General dentists/Physicians	22 (28.2%)
Consultants	11 (14.1%)
Distribution by Experience	
< 5 years	40 (51.28%)
5-10 years	23 (29.14%)
More than 10 Years	15 (19.23%)
Awareness of Universally Applied Behavior Modification Technique	
Response	
Yes	66 (84.61%)
No	12 (15.38%)
Use of Universally Applied Behavior Modification Technique	
Response	
Yes	49 (62.3%)
No	29 (37.3%)

The frequency distribution of practitioners' awareness of behaviour management techniques is presented in (Table-II). Most respondents were aware of behavior management techniques and opted for a combination of different behavior management techniques. For example, all participants were aware of tell-show-do while sedation (4) 05.01% and hand-over-mouth techniques (5) 06.41% were rarely used; 42% (33) of the practitioners admitted that pediatric patients showed non-compliance to simple, non-invasive procedures, whereas 45 (58%) of the practitioners stated that their patients were non-compliant to invasive procedures.

Table-II: Frequency distribution of practitioners' awareness on behavior management techniques.

Behaviour Modification Techniques	n(%)
Tell Show Do	74 (94.87%)
Restrain/Protective Stabilization	60 (76.92%)
Parental Presence or Absence	64 (82.0%)
Sedation	04 (05.01%)
Desensitization	64 (82.0%)
Voice Control	58 (74.35%)
Non Verbal Communication	73 (93.58%)
Positive Reinforcement	74 (94.87%)
Modeling	68 (87.17%)
Distraction	65 (82.05%)
Hand Over Mouth	05 (06.41%)

All respondents who participated in the current study reported being influenced by a child's past dental experience in selecting a BMT while handling a particular child.

Parents' social-economic status was reported by (72) 92.3 % of the practitioners to influence their choice of a behaviour management technique. Generally, the child factors were reported by more practitioners than parents' factors influencing their choice for a BMT to be applied (Table-III).

Table-III: Factors affecting the selection of specific behavior modification techniques for management of anxiety in pediatric patient.

Factors	n(%)
Child's Past Dental/Medical Experience	76 (97.43%)
Child's Presenting Condition	68 (87.17%)
Child's Emotional State	66 (84.61%)
Child's Social Background	72 (92.30%)
Child's Medical Status	56 (71.79%)
Child's Age	69 (88.46%)
Parent's Fear/ Anxiety State	56 (71.79%)
Personal Condition on that Day	24 (30.76%)
Parents Preference	55 (70.51%)

Younger health care providers, 35 (44.9%), reported awareness of the universally accepted techniques, compared to older healthcare providers 16 (20.5%), and a *p*-value of 0.017 was significant. Male 27 (34.6%) were aware, while 11 (14.1%) were not aware. Of female respondents, 24 (30.8%) were aware, and 16 (20.5%) were unaware, with a *p*-value of 0.305, which was insignificant. Post-graduate trainees were more aware of BMTs, with a *p*-value of 0.05 (Table-IV). 38 (48.7%) respondents working in military hospitals knew various universally behaviour management techniques *p*-value of 0.08.

Young participants frequently used universally accepted behaviour modification techniques for their

pediatric patients with a *p*-value of 0.002, which is significant (Table-V).

practitioners, nature of the procedure carried out and the number of patients encountered in their clinical

Table-IV: Distribution of participants on aware of universally accepted behavior modification techniques.

Factors		Yes	No	<i>p</i> -value
		Percentage & Frequency	Percentage & Frequency	
Age	Younger Healthcare Practitioners	35 (44.90%)	11 (14.10%)	0.017
	Older Healthcare Practitioners	16 (20.50%)	16 (20.50%)	
Gender	Female	24 (30.80%)	16 (20.50%)	0.305
	Male	27 (34.60%)	11 (14.1%)	
Qualification	PG Trainees	32 (41.0%)	13 (16.7%)	0.05
	General Dentists/Physicians	10 (12.8%)	12 (15.4%)	
	Consultants	9 (11.5%)	2 (2.6%)	
Practice	Private Hospital	4 (5.1%)	2 (2.6%)	0.08
	Public Hospital	9 (11.5%)	11 (14.1%)	
	Armed Forces Hospital	38 (48.7%)	14 (17.9%)	

Table-V: Distribution of participants on use of universally accepted behavior modification techniques.

Factors		Yes	No	<i>p</i> -value
		Count & Percentage	Count & Percentage	
Age	Younger Healthcare practitioners	29 (37.02%)	17 (21.8%)	0.002
	Older Healthcare practitioners	20 (25.6%)	12 (15.4%)	
Gender	Female	25 (32.1%)	15 (15.4%)	0.574
	Male	24 (30.8%)	14 (15.4%)	
Qualification	Post Graduate Trainees	33 (42.3%)	12 (15.4%)	0.036
	General dentists/Physicians	9 (11.5%)	13 (16.7%)	
	Consultants	7 (9.0%)	4 (5.1%)	
Practice	Private Hospital	2 (2.6%)	4 (5.1%)	0.007
	Public Hospital	8 (10.3%)	12 (15.4%)	
	Armed Forces Hospital	39 (50.0%)	13 (16.7%)	

DISCUSSION

Anxiety is a behavioural response expressed by individuals in a situation of unforeseen threats expressing an increased stimulation of their sympathetic nervous system as a result of which patients surrender themselves to fear, provoking negative thoughts which further deviates them from seeking professional help regarding their oral and physical health, which affects their quality of life, resulting in accumulation of further anxiety, distress and increased avoidance and negligence.^{8,9} Various pharmacological and non pharmacological universally applied behavior techniques are used for behavioural modification in anxious and fearsome children seeking help for medical and oral health, including Cognitive-behavioural treatments, Hypnotherapy, Modeling, Audiovisual distraction, Systemic desensitization, Tell Show Do response, hand-over-mouth exercise and Protective stabilization. Audiovisual distraction utilizes TV sets, video games and cartoon movies for audio and visual distraction for easy management. Various factors have been attributed to the onset of anxiety among pediatric patients: age of the patient, effect of parental anxiety, pre-operative pain and dis-tress, clinical experience of

setups, fear and anxiety has proved to decrease with increasing maturity of children as per all the studies.¹⁰⁻¹² Zhang *et al*,⁹ used self-reports and behaviour rating scales, and most subjects depicted positive results when audiovisual distraction was used to lower the anxiety of pediatric patients. Audio visual distraction overcomes the anxiety and produces immediate positive outcomes for the long-term success of treatment, which is also widely accepted among the parents. Martinez Mier *et al*, compared different techniques among pediatric patients and found that patients accepted the Tell Show Do response more over other advanced techniques like nitrous oxide sedation and oxygen inhalation. These results coincide with our study as most practitioners preferred to tell show do response for behavioural therapy.¹³ For an effective rapport and trust development between the patient and doctor, there must be an effective building of communication via behavior modification techniques through modelling and various acclimatization programs. It is the key for all the methods to use for communication to gain the accentuated feeling of coping and control during the treatment leading to predictable outcomes.¹⁴ Cognitive-behavioural therapy with

Positive modelling, Psychologist led guidance, hypnotherapy, Self-guided help, and Systemic desensitization is gaining popularity among the practitioners because of its low cost and tapering the anxious pediatric patients off the pharmacological approaches.¹⁵ Davit *et al*, stated in their study that 85.4% of children underwent complete and successful invasive procedures like venipuncture without any advanced behaviour guidance techniques, which shows that pediatric patients can be at times managed without the use of any behavioural modification technique.¹⁶ Since the most feared procedures among the pre-school children are the invasive procedures, cognitive behavioural therapy reinforces positive effects by acclimatizing or familiarizing them to the known and unknown fear with the help of parents and short clinical meetings with graded exposure.¹⁷ By far, the most commonly used method by healthcare practitioners and parents is the tell-show-do response followed by parental presence and absence and nitrous oxide sedation. In our study, 94.4 % of the doctors employed this technique to encourage response among non-compliant patients.¹⁸ Based on the principle of learning theory, children are informed about the upcoming events and procedures in laypeople's language, demonstration of using a stimulator or mannequins and followed by actual procedures on the patients well before starting the procedures. It is one of the nonpharmacological methods of behavior modification which involves observation of a model by the pediatric patients, sometimes in conjunction with other techniques where they can view live models undergoing the same treatment, audio-visual distraction videos, thereby reducing the aversive consequences.^{19,20} 97.4% of respondents who participated in the current study reported to be influenced by a child's experience in the selection of a BMT during handling of a particular child.

92.3% of the practitioners reported parents' socioeconomic status influencing their choice of a behaviour management technique. Younger participants were more aware of universally applied behaviour modification non-pharmacological techniques than older participants, with a *p*-value of 0.017, which is significant and highlights the positive changes in the training curriculum that might have happened over time. Post-graduate trainees were 57.5% of the study population. Also, younger participants used universally applied behaviour modification techniques more frequently *p*-value of 0.002, which shows current trends in clinical knowledge, training and its practical application. Overall, most respondents were aware of different

behaviour modification techniques and used more than one technique for managing pediatric patients.

CONCLUSION

Within the limitation of the study, it was concluded that most health care professionals have a fair knowledge of non-pharmacological behaviour modification techniques. Tell Show Do, and positive reinforcement techniques are the most commonly adopted in clinical practice. However, the combination of various non-pharmacological techniques is preferred by most clinicians.

Conflict of Interest: None.

Authors' Contribution

MW: Contribution to write up, literature review of the article and reference citation, AY: Conceived the idea, planned the study and helped in manuscript writing, PJAS: Helped in data collection and proof reading of the article, JAS: Supervised the study, reviewed and done proof reading of the article, FB: Contributed to article writing and reference citation, MS: Helped in data collection and proof reading of the article.

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