Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 10, Issue, 03, pp.67027-67030, March, 2018

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

BEHAVIOUR MANAGEMENT BY COLOURING EXERCISE USING FEATURES OF COGNITIVE DEVELOPMENT IN CHILDREN

[1]Dr. Savitha Sathyaprasad, *[1]Dr. Sruthy P.G., [1]Dr. Krishnamoorthy, S. H., [1]Dr. Vinodhini, J., [1]Dr. Anjana, A.G. and [2]Rekha, R.

[1]Department of Pedodontics and Preventive Dentistry, KVG Dental College and Hospital, Sullia
[2]Department of Community Medicine, KVG Dental College and Hospital, Sullia

ARTICLE INFO

Article History:
Received 22nd December, 2017
Received in revised form
04th January, 2018
Accepted 20th February, 2018
Published online 30th March, 2018

Key words:
Cognition,
Anxiety,
Colouring.

ABSTRACT

Anxiety is an important stumbling block faced by paediatric dentists in routine practice. Paediatric dentists should address these concerns seeking a satisfactory patient/professional relationship and making it easier to provide dental treatment for children.

Aim: This study was undertaken to evaluate the effectiveness of colouring exercise in reducing dental anxiety in children and to find out if colouring can be a newer adjunct in behaviour management.

Methods and material: Fifty subjects of age group 4-9 years were selected for the study according to Frankl's behaviour rating scale. Study group was divided into two as Group A: 4-6 years ,Group B: >6-9 years. The anxiety level of children in each group before and after colouring exercise was measured using facial image scale.

Statistical analysis used: Analysis was done using Wilcoxon test, mann-whitney test.

Results: The mean anxiety score in Group A before colouring exercise was found to be 3.52(4) and after applying this technique the mean score was reduced to 2.44(2) and it was found to be highly statistically significant. In Group B the mean anxiety score before colouring was found to be 2.4(2) and after applying this technique mean score was reduced to 1.48(1) and was found to be statistically significant.

Conclusions: According to our findings, children aged 4-6year shows reduced anxiety levels compared to that of >6-9years. This result suggests that there is a correlation between children's cognitive development and anxiety level. Colouring exercise can be a novel non pharmacological behaviour management method in clinical paediatric dentistry.

Citation: Dr. Savitha Sathyaprasad, Dr. Sruthy P.G., Dr. Krishnamoorthy, S. H., Dr. Vinodhini, J., Dr. Anjana, A.G. and Rekha, R. *et al*., 2018. "Behaviour management by colouring exercise using features of cognitive development in children", *International Journal of Current Research*, 10, (03), 67027-67030.

INTRODUCTION

Anxiety is an important stumbling block faced by paediatric dentists in routine practice. It is a special type of fear, felt in anticipation of a frightening stimulus (Annamary *et al*., 2016). Many children who are extremely anxious totally avoid the dental examination and refuse dental treatment. Dental anxiety and fear (DFA) in children has been recognized in many countries as a public health dilemma, and has been studied at length (Shim *et al*., 2015). This cycle of problem results in avoidance of dental care which in turn leads to development of severe caries and periodontal diseases thus grossly affecting the patient's general wellbeing and a compromised oral health (Viswanath and Kumar, 2014 and Annamary *et al*., 2016). Thus, paediatric dentists should address these concerns seeking a satisfactory patient /professional relationship and making it easier to provide dental treatment for children (Leal *et al*., 2013). Holst *et al* were able to establish that dental anxiety was more pronounced in younger children compared to older children. However, this age-related expression of dental anxiety is dependent on the psychological development of the child and not necessarily on chronological age. This psychological development significantly affects the cognitive aspect of the child's development. Usually, the child is in the pre-operative period of the stage of representative intelligence between the ages of 2 and 4 years. At this stage, the child can only focus on one perceptual dimension and finds comprehending the whole ramification of an issue to be difficult. For example, a child who was once hurt by a needle prick would find it difficult to comprehensed that the dental needle is different and that the method of application may not cause any hurt. At this stage of mental development, perceptual illusions are believed to predominate over logical reasoning (Folayan *et al*., 2014).

Corresponding author: **Dr. Sruthy P G.**
Department of Pedodontics and Preventive Dentistry, KVG Dental College and Hospital, Sullia.

As the child gradually moves to the concrete operational stage at a later age, logical reasoning commences. Only then can one logically reason with the child in the dental chair with any hope of gaining cooperation. Before this, a child may be termed pre-cooperative. At a later age, children move into the stage of formal operation. At this stage of cognitive development, the child is able to consider possibilities and hypotheses. They may work out all the possibilities (combinational operations), and use a scientific or experimental approach. Thus, anxiety becomes more based on reality. These developmental changes may help to explain why the incidence of dental anxiety decreases with age (Folayan *et al*., 2014). A child's behaviour and cooperation to treatment is greatly influenced by the dental environment. Changing the outlook of the parents and the society would encourage paediatric dentists to build a "child-friendly" environment for treating children, particularly those who are anxious and uncooperative. Environmental factors like colours, that impart a positive feeling in the child's mind help in reducing dental anxiety (Annamary *et al*., 2016).

Colour plays an imperative role in a child's life.In 1939 Goldstein claimed that specific colours elicit specific emotional responses (Annamary *et al*., 2016)' (Buchanan and 2002). It can be a stress relieving factor to all. Colour can be perceived biologically, emotionally and thus could impart psychological responses. Renee van der Vennet *et al* stated in one of his study as colouring specific art patterns will reduce anxiety ,and which is in par with the study done by Khadar *et al* (van der Vennet and Serice, 2012), (Khadar *et al*., 2013). It has been observed and studied by many clinicians that children's use of colour in art reflects their emotional status, wherein coordination between light, eyes and brain results in normal response to colour (Annamary *et al*., 2016). Till now no reported / published studies are conducted in India to evaluate Colouring exercise as a treatment modality for dental anxiety reduction and its influence on cognitive development of child. Hence this study will be undertaken to evaluate the effectiveness of colouring exercise in reducing dental anxiety in children and to find out if colouring can be a newer adjunct in behaviour management.

MATERIALS AND METHODS

The study was initiated subsequent to approval of K.V.G. Dental College ethical committee. Patients were selected based on the inclusion and exclusion criteria, consent of patients willing to participate in the study was obtained. Fifty subjects of age group 4-9 years, reported to Department of Pedodontics and Preventive Dentistry, K.V.G. Dental College, Sullia for treatment was selected according to Frankl's behaviour rating scale. Fifty subjects selected for the study was divided into two groups according to their age group.

Group 1: 4-6 yr. age group children
Group 2: >6-9 yr. age group children

This was done to investigate what extent cognitive development was associated with anxiety level in children (Broeren and Muris, 2009).

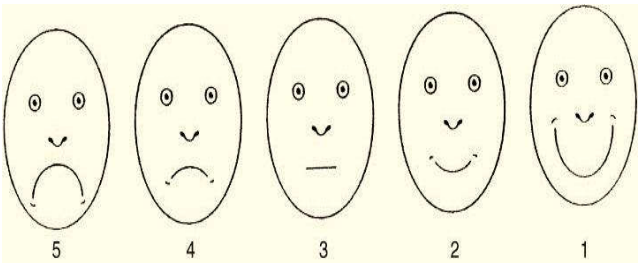
Inclusion Criteria for the study group was as follows

- Apparently healthy Children of 4-9 age group (Pre-operational and concrete-operational stages of cognitive development)
- Children who are classified as negative and positive according to Frankl's behaviour rating scale and

Exclusion criteria were as mentioned below

- Children who are classified as definitely positive and definitely negative according to Frankl's behaviour rating scale
- Children who are not willing to participate/Not interested in colouring
- Differently abled Children

The anxiety level of children in each group was measured using facial image scale (Figure 1) soon after entering the clinics. The child was made to sit separately and away from parents.

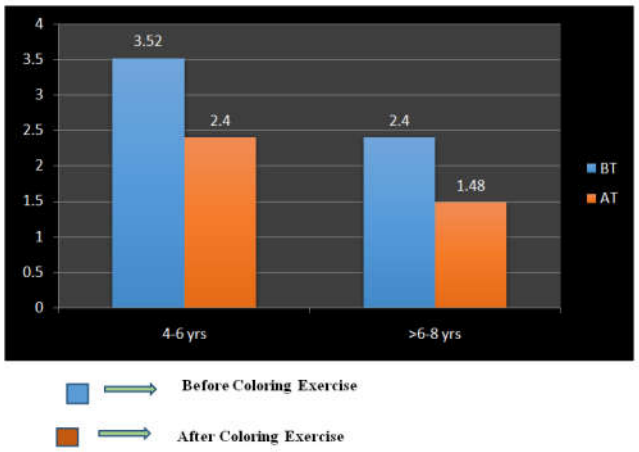


After anxiety scoring, pictures and crayons given to the patient and asked them to Colour for 30 minutes (Figure 2).

Anxiety level of children measured after colouring exercise using the same facial image scale. Correlation between colouring exercise and anxiety reduction in children of 2 different age groups were evaluated. The data was statistically analysed using Mann-whitney test and Wilcoxon test.

RESULTS

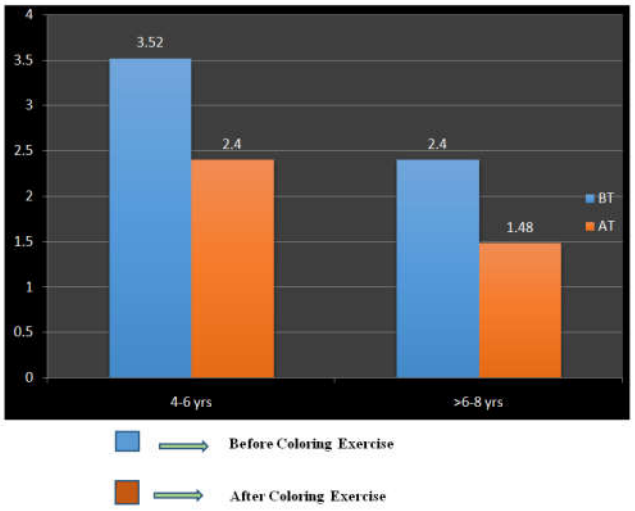
The age of children included in this study was 4-9 years of age group. Table 1 and Graph 1 show the mean/median score before and after the colouring exercise. In Group A (3-6 years) the mean score before colouring exercise was found to be 3.52 (4) and after applying this technique the mean score was reduced to 2.44 (2) and it was found to be highly statistically significant. In Group B (>6-9 years) the mean score before colouring exercise was found to be 2.4 (2) and after applying this technique mean score was reduced to 1.48 (1) and was found to be statistically significant.



Graph 1.

Table 1.

	Mean(median)	Mean(median)
Group	4-6 yrs	>6-8 yrs
Before Coloring Exercise	3.52 (4)	2.44(2)
After Coloring Exercise	2.4 (2)	1.48(1)
P value (Wilcoxon test)	<0.01	<0.05



Graph 2.

Table 2.

	Mean Rank	Mean Rank
Group	Before Coloring Exercise	After Coloring Exercise
4-6 years	30.14	29.72
>6-8	20.86	21.28
P value(mann-whitney)	<0.05	<0.05

Significant reduction of anxiety can be seen in Group A than in Group B after colouring exercise. Table 2 and Graph 2 shows a significant difference in anxiety level is seen within these 2 groups even before applying this technique. Mean rank of anxiety before colouring exercise is more in group A compared to group B. Mean rank after colouring exercise also shows a significant difference in Group A and Group B.

DISCUSSION

Dental anxiety and fear (DFA) in children has been recognized in many countries as a public health dilemma, and has been studied at length (Shim *et al*., 2015).

It is described as state anxiety as it occurs due to the dental treatment procedure and is related with negative expectations which are often linked to earlier traumatic experiences, negative attitudes in the family (Cohen *et al*., 1982), fear of pain and trauma and perceptions of an unsuccessful and/or a painful previous dental treatment. It is one of the most common problems encountered in the dental operatory and is a source of challenge for the Paediatric Dentist; as many children who are extremely anxious totally avoid the dental examination and refuse the dental treatment (Viswanath and Kumar, 2014), which impairs the rendering of dental care, leading to impaired quality of life. It often leads to occupational stress in dental personnel and conflict between parents/caregivers [(11)].Thus, Paediatric dentists should address these concerns seeking a satisfactory patient/professional relationship and making it easier to provide dental treatment for children (Leal *et al*., 2013). For this reason, in the present study, we evaluated the effectiveness of colouring exercise in reducing dental anxiety in children.

Study conducted by Suzanne Broeren *et al* revealed significant age trends for general fearfulness, ‘‘fear of the unknown’’, and generalized anxiety. More specifically, younger (i.e., 4- and 5-year-old) children displayed higher fear scores, whereas older (i.e., 6- and 7-year-old and 8- and 9-year-old) children exhibited higher generalized anxiety scores. These age trends were in keeping with those reported in previous studies. For example, Muris *et al*. (2000) also noted that specific fears, and especially infantile fears, decline as children become older, whereas symptoms of generalized anxiety (i.e., worry) tend to increase with age (Broeren and Muris, 2009). The current study revealed comparatively high anxiety score in children with younger age group (3-6 years) and anxiety score is less in older age group(>6-9 years).Instead of other anxiety reduction protocols here we used colouring exercise as a method of reduction of anxiety in this children. The result of this study are similar to those of Renee van der Vennet ,Susan Serice (2012), Curry and Kasser (2005) in their studies they found that colouring reduces anxiety to a significantly greater degree (van der Vennet and Serice, 2012).

According to Gulser kilinc’s and Aynur akay’ findings, children were more anxious at the dental clinic than at the kindergarten. General perception in the population with regard to dental treatment is pain and discomfort. Such thought processes are bound to affect the behaviour of paediatric dental patients even before the first dental appointment. Identification and management of child’s/patient’s behaviour is an important aspect in the delivery of successful dental treatment (Kilinc *et al*., 2016). Colouring exercise can be used for management of child’s anxiety to an extent .When the child is in the pre-operative period (2 and 4 years) , he can only focus on one perceptual dimension and finds comprehending the whole ramification of an issue to be difficult. At this stage of mental development, perceptual illusions are believed to predominate over logical reasoning. As the child gradually moves to the concrete operational stage at a later age, logical reasoning commences. Only then can one logically reason with the child in the dental chair with any hope of gaining cooperation. Before this, a child may be termed pre-cooperative. These developmental changes may help to explain why the incidence of dental anxiety decreases with age (Folayan *et al*., 2004). According to Jyoti mathur’s study, they found children’s drawing helpful in measuring anxiety during dental treatment (Mathur *et al*., 2017).

Here we tried to eliminate/reduce this kind of dental anxiety in children during their first appointment by diverting their mind from anxious stimuli and the result was successful and highly significant.

Conclusion

From our finding it proved that colouring exercise has a significant role in reducing anxiety in children. Children aged 4-7 year (Intuitive stage of preoperational stage) shows better anxiety reduction compared to that of >7-9 year (concrete operational stage) age group. Colouring exercise provided an effective way to lower dental anxiety in Children which is more applicable in Preoperational stage. Hence this can be a novel non pharmacological behaviour management method in clinical paediatric dentistry.

Acknowledgement: Nil

REFERENCES

Annamary, K., Prathima, GS., Sajeev, R., Kayalvizhi, G., Ramesh, V. and Ezhumalai, G. 2016. Colour Preference to Emotions in Relation to the Anxiety Level among School Children in Puducherry–A Cross-Sectional Study. Journal of clinical and diagnostic research: *JCDR*., Jul;10(7):ZC26.

Broeren, S. and Muris, P. 2009. The relation between cognitive development and anxiety phenomena in children. *Journal of child and family studies*, Dec 1;18(6):702.

Buchanan, H. and Niven, N. 2002. Validation of a Facial Image Scale to assess child dental anxiety. *International Journal of Paediatric Dentistry,* Jan 1;12(1):47-52.

Cohen, LA., Synder, TL. and labelle, AD. 1982. Correlates of dental anxiety in a university population. *J Pub H Dent*, 42(3): 228-35.

Folayan, MO., Idehen, EE. and Ojo OO. 2004. The modulating effect of culture on the expression of dental anxiety in children: a literature review. *International Journal of Paediatric Dentistry,* Jul 1;14(4):241-5.

Khadar, MG., Babapour, J. and Sabourimoghaddam, H. 2013. The effect of art therapy based on painting therapy in reducing symptoms of separation anxiety disorder (SAD) in elementary school boys. *Procedia-Social and Behavioral Sciences*, Jul 9;84:1697-703.

Kilinc, G., Akay, A., Eden, E., Sevinç, N. and Ellidokuz, H. 2016. Evaluation of children's dental anxiety levels at a kindergarten and at a dental clinic. *Brazilian oral research*, 30(1).

Leal, AM., Serra, KG., Queiroz, RC., Araújo, MA. And Maia Filho, EM. 2013. Fear and/or anxiety of children and parents associated with the dental environment. *Eur J Paediatr Dent*, Dec 1;14(4):269-72.

Mathur, J., Diwanji, A., Sarvaiya, B. and Sharma, D. 2017. Identifying Dental Anxiety in Children's Drawings and correlating It with Frankl's Behavior Rating Scale. *International journal of clinical pediatric dentistry*, Jan;10(1):24.

Shim, YS., Kim, AH., Jeon, EY. aand An, SY. 2015. Dental fear and anxiety and dental pain in children and adolescents; a systemic review. *Journal of Dental Anesthesia and Pain Medicine,* Jun 1;15(2):53-61.

Simon, AK., Bhumika, TV. and Nair, NS. 2015. Does atraumatic restorative treatment reduce dental anxiety in children? A systematic review and meta-analysis. *European journal of dentistry*, Apr;9(2):304

van der Vennet, R. and Serice, S. 2012. Can coloring mandalas reduce anxiety? A replication study. Art therapy. 2012 Jun 1;29(2):87-92.

Viswanath, D. and Kumar, M. Dental Anxiety, Fear And phobia in Children. *International Journal of Dental Research* and *Development* (IJDRD).;1(4):1-4.

****