



## The Influence of Visual Art Therapy on Paediatric Dental Patient: A Pilot Study

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### ABSTRACT

**Objective:** This study examined the influence of visual art therapy techniques in reducing anxiety level among 4 to 6 years old paediatric dental patients.

**Methods:** Eleven subjects were selected among 4 to 6 years old paediatric dental patients. The initial reaction towards dental procedure/treatment was evaluated using Frankl Behavior Rating Scale. The anxiety level was assessed by using Malay-Modified Child Dental Anxiety Scale (MCDAS<sub>M</sub>) to measure a child situational anxiety of pre- and post-treatment. Visual art making activities included free drawing, clay moulding and collage technique. The participant reaction to dental treatment was assessed by using Frankl Behavioural Rating Scale for two subsequent independent visits in two weeks interval. Median and Ordinal Test ranked the variables score of behavioural reaction towards dental treatment and anxiety level.

**Results:** Play-doh (PD) subjects could accept dental procedures more if compared to free drawing (FD) and storytelling by collage (ST) subjects, which has lower post treatment-median scores in Visit 1 and Visit 2, FD and ST subjects need more time to show positive attitude towards dental treatment.

**Conclusion:** These findings suggest dental anxiety level of children aged 4 to 6 years old reduced after the art therapy and play-doh(clay-moulding technique) is the art making activity of choice among 4 to 6 years old paediatric dental patients.

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### INTRODUCTION

Anxiety is uneasiness, worry and nervous feeling towards a subject or situation (1, 2). Anxiety is both common and complex. In many ways, it is a quite unremarkable fact of normal living (1, 3). Many people anxious whenever they are facing problems, attending an interview, sitting an examination, receiving medical or dental treatment, undergoing minor or major surgery and knowing new places or

friends (4, 5, 6). Apparently, anxiety encounter by all level of age from a very young child to an elderly (1, 7, 8, 9).

In older people, it is results in the rejection of an 'unkind' world and a retreat into isolation. In youngsters, it results in a flight from responsibilities that can normally be accepted by someone within the age group (1, 10). On the other hand, a very young child may cry as a reaction to a situation

and could not tell their emotions and feelings (3, 9). Commonly, the young children are expressing their feeling by crying or avoiding something unusual or a stranger (3, 11). Physical reaction or crying is the most common reaction towards something, which the children may think it is a threat (11, 12). Hence, this is also known as unpredictable behaviours. Subsequently, this reaction may influence the child's performance towards a situation (3).

Many adult experience dental anxieties whenever they need to visit a dentist. The visit to dentist may not a pleasant one in an adult following an experience of traumatized dental visit during childhood (10). A mother with dental anxiety may transmit some of her own anxiety to her child (13, 14). Eventually, this situation leads to deterioration of oral health problems (10).

In an avoiding situation, an accompany parent/ an adult may distract the child from the unusual situation or a stranger. Distraction is one of a natural behaviour management (non-pharmacological) technique to let the child forget about the threat or diverting the child's attention (3). Some other behaviour management types in children are voice control, tell-show-do, ask-tell-ask, direct observation, pre-visit positive imagery and positive reinforcement (3). However, this traditional behaviour management may or may not influence the young children very well (3, 7). Furthermore, an adult may not know the child either anxious or fear to something or an object (10).

Art therapy is a medium to understand someone emotions, feelings and at the same time as a therapy via someone's drawing, figures moulding, colouring or creating a story by using stickers/collage (15, 16, 17). Following the art therapy, a therapist begins to understand the pathways that produce the emotional reaction (5, 15, 16, 17). Many studies reported that art therapy could reduce anxiety in students going for university examination (6), in an oncology child that going for multiple oncology treatment (18) and trauma patients (4, 19). Eventually, the colour of choice and the child's drawing may tell the child's emotion and expression (5, 15, 17). Ultimately, this media to create a creative product are engaged in a process that requires attention of cognitive, emotional, instinctive or patterned reactions, inner verbal dialogue, selective choices, kinaesthetic movement, auditory stimulus, even smell plays a part of image making (2, 5, 20).

Many young children are very anxious to see dental chair and receive dental treatment (3, 7, 9).

Behaviour management techniques would be used appropriately according to child's age (3) and usually it will take a longer period and require multiple visits. Traditional behaviour management technique may or may not a success pathway and usually end up with dental treatment under pharmacological influence (14).

This study examined the influence of visual art therapy techniques (art-making activities) in reducing paediatric dental patient anxiety level.

## MATERIALS AND METHODS

### *Participants*

Eleven subjects recruited from the Paediatric Dental Clinic, Faculty of Dentistry, University of Malaya. The subjects were selected based on baseline Frankl Behavioural Rating Scale towards dental procedure/ treatment. The participants aged between 4 to 6 years old. The participants recruited after patient informed consent obtained from parent/guardian. The patient informed consent reviewed and approved by the Institutional Review Board of University of Malaya.

### *Study design*

The participants allowed to choose in between three visual art therapy technique (art making activities); free drawing, play-doh moulding (adopting from clay moulding technique) or to make a story from stickers (collage technique) for Visit 1 and Visit 2. The participants received face-to-face interview of Malay-Modified Child Dental Anxiety Scale (Malay-MCDAS<sub>f</sub>) items (21) by one calibrated interviewer and need to point to which the best 'cartoon faces' represent their feeling that placed in front of them pre- and post-dental procedure. The subject accompanied by parent/guardian during Malay-MCDAS<sub>f</sub> administration in Visit 1. Each Malay-MCDAS<sub>f</sub> items, the response ranges from relaxed or not worried (score 1) to very worried (score 5). The responses recorded based-on their individual form, known as pre-treatment dental anxiety assessment.

The participants received art therapy, based-on the technique (art making) independently chosen by the participant in Visit 1 and Visit 2 for 15 minutes in each session. Then, the participant invited to sit in the dental chair to attempt simple dental procedure/ treatment in the dental chair. The participant level of cooperation rated using Frankl Behaviour Rating Scale (22) for each Visit 1 and Visit 2 (Table 1). Upon completion of simple dental procedure/ treatment that has been proposed in each visit,

the participant interviewed again using the same Malay-MCDAS<sub>f</sub> as post-treatment dental anxiety assessment. The interval between Visit 1 and Visit 2 was two weeks.

#### Measure/instrument

For the pre- and post-art therapy level of anxiety, the participant required to complete MCDAS<sub>f</sub>. Whilst dental procedure/treatment acceptance was assessed using Frankl Behaviour Rating Scale (Table 1).

Table 1: Frankl Behavioral Rating Scale

1	--	Definitely negative.	Refusal of treatment, forceful crying, fearfulness, or any other overt evidence of extreme negativism.
2	-	Negative.	Reluctance to accept treatment, uncooperative, some evidence of negative attitude but not pronounced (sullen, withdrawn).
3	+	Positive.	Acceptance of treatment; cautious behavior at times; willingness to comply with the dentist, at times with reservation, but patient follows the dentist's directions cooperatively.
4	++	Definitely positive.	Good rapport with the dentist, interest in the dental procedures, laughter and enjoyment.

#### Statistical analysis

Level of anxiety and behaviour rating scale described the nature of information within the number assigned to anxiety level and reaction to dental treatment. The ordinal test allowed for rank order by which reaction to behaviour could be sorted, but still does not allow

for relative degree of difference between the anxiety level and behaviour reaction to dental treatment. The median allowed to measure of central tendency; however, the mean is not allowed to measure central tendency. In this pilot study, the influence of visual art therapy technique was analysed using ordinal test at ( $P \leq 0.1$ ).

## RESULTS

#### Anxiety

Anxiety results of anxious participant are shown in Table 3. The first visit, interquartile range (IQR) of post-treatment for participant that had chosen playdoh (PD) was higher than in the pre-treatment. In second visit, both free drawing (FD) and PD showed the same interquartile range of 5 in post-treatment and higher than the pre-treatment anxiety level. In both Visit 1 and Visit 2, the median MCDAS<sub>f</sub> score showed the lowest in post-treatment among PD subjects respectively.

On the first visit, the PD subjects could accept dental procedures that mean the anxiety level reduced post-treatment if compared to the FD and ST. None of the subject chose ST in Visit 2.

#### Reaction to dental treatment

Table 2 showed, the first visit, there was no significant difference between dental treatment reaction among the chosen technique ( $P > 0.1$ ). The median among PD subjects were higher than FD and ST respectively.

Frankl Scale Behavioural Rating in Table 2 showed no significant difference between all techniques in Visit 1. Thus, it showed that all subjects

Table 2: Median scores, Interquartile range and P value of each art therapy technique towards dental treatment reaction

Measure	Median			Interquartile Range (IQR)			Ordinal rank test ( $P \leq 0.1$ )
	FD	PD	St	FD	PD	St	
Visit 1							
1. Tooth brushing demonstration	3.00	3.00	-	0	0	-	0.914
2. Invite child to sit in the dental chair	2.00	3.00	2.00	0	2	0	0.592
3. Simple oral examination	2.00	2.00	2.00	0	2	0	0.513
4. Attempt to take panoramic radiograph	3.00	3.00	2.00	0	0	0	0.783
Visit 2							
1. Brush child's teeth using own toothbrush in the dental chair	2.00	3.00	-	1	1	-	0.399
2. Blow the teeth with wind	3.00	3.00	-	1.5	2	-	0.699
3. Introduce rotary/slow speed hand piece by polishing the teeth	3.00	2.00	-	1.5	1.5	-	0.773
4. Temporization or stabilization on at least a tooth	2.00	3.00	-	1	0.5	-	0.284

were still adapting to the dental procedures in the first visit. However, the ordinal rank test showed lower P-value in Visit 2 for simple dental procedures, which with the hand instruments but not related to dental hand pieces. This showed all FD, PD and ST subjects had adapted to dental procedures in Visit 2. However, none of the subjects chose ST in Visit 2.

Table 3: Median and Interquartile range of MCDASf pre- and post-treatment anxiety level

Measure	Median		Interquartile Range (IQR)	
	Pre	Post	Pre	Post
Visit 1				
FD	18	18	0	0
PD	18	15	8	9
ST	20	21	0	0
Visit 2				
FD	19	19	4	5
PD	19	16	3	5
ST	-	-	-	-

*Art therapy technique of choice*

Majority of the children chose play-doh (clay moulding technique) as the visual art therapy of choice in both Visit 1 and Visit 2 (Figure 1 and 2). The second technique of choice is free drawing (Figure 1 and 2). Some subjects chose same art-making activity in both Visit 1 and Visit 2. While some subjects chose different art-making activity technique.

Figure 1 Percentage of art therapy technique chose by subject in Visit 1.

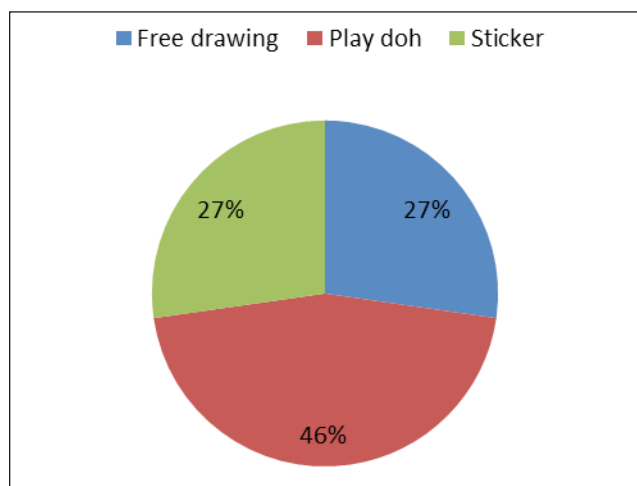
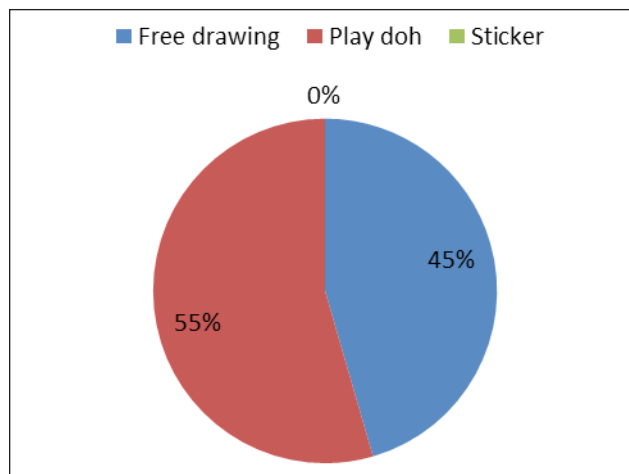


Figure 2 Percentage of art therapy technique chose by subject in Visit 2.



**DISCUSSION**

All subjects were accompanied by their parent/guardian. Following to some children have separation anxiety and would need their parent to accompany them (14, 23, 24, 25). However, the parent did not participate or assist with the Malay-MCDAS<sub>f</sub> scoring or art making activities. The MCDAS<sub>f</sub> is the most establish psychometric test and involving the child to select cartoon faces from ‘very happy’ to ‘very sad’ (10, 21). MCDAS<sub>f</sub> is the easiest and fastest way to indicate a child anxiety level towards dental procedure. While, the validated and developed Malay-MCDAS<sub>f</sub> by Esa and co-workers was used in this study to rate dental anxiety status in young children (21). In Visit 1, many of the subjects were still not adapting to clinical environment and less communicating to express their words verbally. The subjects were actually communicating with researcher (clinician) via the art therapy by telling the figures that have been drawn or moulded especially in Visit 2. Most, if not all, children are attracted to art activities. Given a piece of paper and crayon most children without anxiety will occupy, for at least a short period. However, in young children with anxiety the sense of touch, see, smell and hear are required in order to get a piece of paper full with drawing. The challenge is to use the art in a meaningful way that is not merely an activity and provides some therapeutic benefit to the child (5, 26) and paediatric dentist as a whole. Figure 1 and Figure 2 showed play-doh (clay moulding technique) was the highest art making of choice. The pleasure of the colours, the new smell and the pleasant smooth feeling of



the play-doh (clay) gave the excitement of moulding three dimension figures (20). Eventually the children were actually telling the story about each of the figure moulded and they could link between one-moulded figures to another. Nevertheless, an image from a drawing could tell a lot of stories (16, 26).

We spent some time in trying out pencils, crayons, collage and play-doh (to replace plasticine or clay) before allowing the child to choose the art making activity in Visit 1 and Visit 2. We discussed our reactions to the marks the tools made, the physical reaction to touch, smell and the memories elicited by the various media. The discussion broadened to experience with child who used free drawing, collage using stickers or moulding the play-doh as spontaneous expression and explored these products with the child (27). Following to this, conversation between the clinician (researcher) and the child begun till the time to relate and introduce dental chair and list of dental procedures (Table 2). The purpose was to allow the child to 'feel' their way into media and not associate these tools with 'art' as aesthetics or distraction but to let the child to transfer and activate the left-brain into language and cognition (26). These basic activities could be correlated with the art therapy modality.

At the age of four to six years old, milestones in child development showed by age of four a child is becoming more self-determining and begin to try to impose their will. They are able to interact, need less parental support and begin to relinquish comfort objects (3). In general, this age group could accept art therapy modality even though they were anxious in a dental clinic setting (25). Majority of children in our paediatric dental general anaesthesia waiting list with anxiety aged in between four to six years old. Children under eleven years old are unable to express their feelings in words and their mind is fully developed for abstract thinking (5). However, they have the control of drawing, moulding and sticking. Therefore, this pilot study in agreement with several studies that showed art therapy could reduce anxiety in any age group and as a potential media to reduce anxiety among anxious children.

The subjects in this study were selected among the children that can communicate in Bahasa Malaysia. Therefore, the sample size was very small. Furthermore, this study conducted in a short period and as a pilot study. In future, a larger and sufficient sample size would eventually achieve if the study will be conducted in a longer period.

## CONCLUSIONS

Within the limits of this study, dental anxiety level of children aged 4 to 6 years old reduced after the visual art therapy and play-doh is the art making activity of choice among these children group of age.

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