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RESEARCH ARTICLE

COMPARATIVEEVALUATIONOFTHREEPAINASSESSMENT SCALES- A CROSS SECTIONAL STUDY

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Abstract

Pain perception in children is highly variable and unreliable due to poor communication skills.Usually pain can be measured by self-report, biological markers and behavior of child,As pain is purely subjective,Self report is the best of available. Several faces scales have been developed for measurement of pain intensity in children. Therefore, this study was conducted to compare 3 different faces scales and to know which pain assessment scale is appropriate in Indian children. A cross-sectional, 5 month study was conducted on 180 patients aged between 3-15 years of both genders who have undergone extraction in dental office and in pediatric practice setup and also who have received injectable vaccinations. It was found that there is definite difference in perception of pain and discomfort between 3 age groups.

Keywords: Pain perception, Faces scales, pain assessment scale

INTRODUCTION

Pain perception is a very controversial topic in child patients. It is affected by various factors such as fear, anxiety, earlier experiences and parental factors. Pain is most frequent symptom of oral disease. It has also been famously referred to as a 5^{th} vital sign^[1].

Pain assessment serves as criteria for establishing success of treatment and patient satisfaction as pain is often the complaint for which the patient approaches the dentist in the first place^[1].Scales to assess pain in children have been extensively studied.Pain can be measured by self-report,biological markers and behavior because pain is subjective. Self-report is the best if available^[2].Pain is highly individualized and subjective event.Therefore, a child'sself-



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report(i.e,what a child says) has generally been considered to be the 'Gold standard' for pain assessment^[3].

Faces scales show a series of faces,typically hand drawn,with the faces graded in increasing intensity between no pain and worst pain possible(chambers and craig,1998)^[4].

Faces scales unlike other self-report measures are thought to be easily understood by children in that they do not require the child to translate their experience into numerical value^[3].

The scales differ in format ranging from simple line drawings(maunuksela et al,1987)through cartoon like representations (wong and baker ,1988).the scales also vary depending on whether tears are present in the worst pain face or not (bieri eta 1,1990) and whether the no pain face is aneutral face (bieri et al ,1990) or a smiling face(wong and baker,1998)^{[5].}

AIMS AND OBJECTIVES

The aim of this study is to assess pain in 3-15 year old children in a dental clinics and in pediatric medical hospitals and also to compare pain measurement techniques, different i.e, Wong-bakers faces pain rating scale(WBFPS), Maunukselaetalscale, Bieri et al scale.

MATERIALS AND METHODS

Study population

This was a cross-sectional study on 180 patients.

Inclusion criteria

Children aged 3-15y old were included in the study for perception of pain.

Exclusion criteria

Mentally challenged and children who had no previous painful experience in dental clinics. **Patients were divided into 3 groups on the basis of age (each group consist of 90 children)**

Group1 -3-6years

Group 2-7-10years

Group 3-11-15 years

And each group is further divided on the basis of gender

Data collection

Data collection was done during a 5-month study while patients were sitting on dental chair after extraction and patients who have undergone vaccinations /injections in pediatric medical hospitals.

Procedure

Each child was asked to grade present pain on 3 scales providing an evaluation of pain intensity at the moment of interview of patient. These scales were present sequentially. (WBFPS,,bieri et al scale, maunuksela et al scale).

Children were asked to choose the "face that best describe" his or her own pain.Children were taught that each face is for a child who has no pain or some, or a lot.

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Wong-Baker FACES Pain Rating Scale



STATISTICAL ANALYSIS

Descriptive measures of central tendency i.e,mean were used to examine the distribution of children's responses. Spearman correlation coefficients (for skewed data) were used to examine the relations between each of the 3 scales for children's ratings. As correlational analysis do not disclose mean differences between measures, analyses of varioance (ANOVA) were also undertaken. To examine age differences in children's use of the faces scales, children were divided into 3 age groups. 3-6yr old(n=30), 7-10y old(n=30), 11-15y old(n=30) in extraction and vaccination groups. A set of 2(gender) \times 3(age group) \times 3(faces scale) mixed ANOVA'S were used to examinedifferences in children's self-reported pain ratings in extraction and vaccination groups.

RESULTS

IN EXTRACTION

Descriptive statistics for children's pain ratings on each of 3 faces scales appear in table1.overall mean ratings were in the low to moderate ranged from (1.822 to 2.089).There is no significant difference between 3 pain scales at 0.05 level.Gender wise differences in extraction variable shows no significant difference at 0.05 level between three faces pain scales .



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TABLE 1:Pain Scale wise Differences

Extraction								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower	Upper		
					Bound	Bound		
Wongbaker								
faces pain								
scale	90	2.089	1.584	0.167	1.757	2.421	0.00	5.00
bieri et al								
faces pain								
scale	90	2.167	1.904	0.201	1.768	2.565	0.00	6.00
maunuksele								
et al faces								
pain scale	90	1.822	1.435	0.151	1.522	2.123	0.00	6.00
Total	270	2.026	1.653	0.101	1.828	2.224	0.00	6.00

The 2(gender) \times 3(age) \times 3 (faces scale) Anova on children's ratings showed F value as significant as 0.01 level (Table2). Age wise differences of all 3 faces pain scales among 3 different age groups shows more mean value in 3 to 6 yrs old age group children.

TABLE: 2

ANOVA								
EXTRACTION								
	Sum of	Df	Mean	F	Sig.			
	Squares		Square					
Between								
Groups	5.874	2	2.937	1.076	0.343			
Within								
Groups	728.944	267	2.730					
Total	734.819	269						

Tukey HSD post hoc tests (multiple comparisons) revealed that children's ratings were highest when using Bieri et al faces pain scale followed by Wong Baker faces pain scale and Maunuksela et al faces pain scale .Post hoc tests showed significant differences at 0.01 level.Pearson correlation revealed that correlation is significant at 0.01 level in extraction variable group.

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IN VACCINATION

The mean ratings among the 3 pain scales were in the range of 1.900 to 2.033(Table 3) .In gender wise differences females showed more mean ratings (2.159) in Wong Bakers faces pain scale .Age wise differences among the 3 pain scales showed more mean ratings in 3 to 6 yrs old age group children of Bieri et al mean scale, followed by Maunuksela et al faces pain scale and Wong Bakers faces pain scale.ANOVA analysis showed F value significant at 0.01 level(Table 4). Post hoc tests showed significant mean difference at 0.05level. Pearson correlation among 3 faces pain scales showed significant correlation at 0.01 level.

TABLE :3

Pain scale wise differences								
VACCINATION								
	N	Mean	Std. Deviation	Std. Error	95%ConfidenceIntervalforMean		Minimum	Maximum
					Lower	Upper		
					Bound	Bound		
wongbaker								
faces pain								
scale	90	2.033	1.258	0.133	1.770	2.297	0.000	5.000
bieri et al								
faces pain								
scale	90	2.033	1.597	0.168	1.699	2.368	0.000	6.000
maunuksele								
et al faces								
pain scale	90	1.900	1.307	0.138	1.626	2.174	0.000	6.000
Total	270	1.989	1.392	0.085	1.822	2.156	0.000	6.000

TABLE :4

ANOVA								
VACCINATION								
	Sum of	Df	Mean	Б	Sig.			
	Squares	DI	Square	ľ				
Between								
Groups	1.067	2	0.533	0.274	0.761			
Within								
Groups	519.900	267	1.947					
Total	520.967	269						



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TOTAL SAMPLE VARIABLE:-

Age wise differences among the 3 faces pain scales, mean ratings are more in 3-6 yr old age group children of Bieri et al faces pain scale.Post hoc test revealed mean difference is significant at 0.05 levels. No significant difference among gender wise and method wise differences of all 3 face pain scales.

DISCUSSION:-

Findings of the study indicated that, despite high to very high correlations among children's ratings across the 3 faces scales, there were significant mean differences between ratings. Children had significantly higher pain ratings when using Wong Baker faces pain scale (that commence with smiling no pain faces) and Bieri et al faces pain scale (scales with neutral no pain faces). Therefore, the findings in this clinical setting were consistent with the findings of chambers and craig (1998), who also found significantly higher pain ratings when a smiling scale was used to rate hypothetical situations involving negative emotions and pain (Ex: getting an injection)^{[4].}

The Bieri et al and Wong Baker faces pain scales offer seven and six alternatives respectively, whereas the remaining scales provide only 5 options. Among the genders there was noticeable difference in reporting of pain with girls reporting significantly more pain than boys using all 3 faces scales. This is consistent with previous findingsreporting similar gender differences in pain ratings^[4].

Developmental changes in response to painful stimuli occur in infancy.Infact,anticipatory fears of sharp object can be seen in children around 1year of age As a child matures,develops a broader vocabulary,witnesses a variety of environments,his or her ability to communicate feeling becomes increasingly sophisticated^[5].The pain threshold tends to decline and the self management of pain becomes more effective with increasing age^[6].In our study,there is definite difference in severity of pain and discomfort between 3-6 y old patients compared to 7-10year old and 11-15 year old patients.An essential and major part of handling and treating pediatric dental patients is centered around managing their fear ,anxiety and pain.Hence, recording of the same creates an important document. Pain reporting should become a part of daily history taking before extractions in children^[1].

In our study, there is definite difference of pain perception in children when injections/vaccinations are given and after extraction.

Conclusion:

- Self-report is the gold standard in the assessment of pain intensity.
- Pain threshold tends to decline and pain management becomes more effective with increasing age
- Wong Baker faces pain scale yielded ratings that were significantly higher than ratings provided with any other scale

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