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PARENTAL REPORT OF DENTAL PAIN AND DISCOMFORT IN VERY YOUNG CHILDREN IN KASHMIR :VALIDATING THROUGH DENTAL DISCOMFORT QUESTIONNAIRE (DDQ)

Paediatric Dentistry

Dr Mohsin Sidiq MDS Pedodontics And Preventive Dentistry, Assistant Professor, Government Dental College And Hospital, Srinagar

Dr. Sana Farooq MDS Pedodontics And Preventive Dentistry , Lecturer , Government Dental College And Hospital, Srinagar

Dr. Nazia Lone MDS Pedodontics And Preventive Dentistry, Professor And HOD, Department Of Pedodontics And Preventive Dentistry Government Dental College And Hospital, Srinagar

Dr Insha Showkat MDS Pedodontics And Preventive Dentistry, Registrar, Government Dental College And Hospital, Srinagar

Dr Nadia Irshad MDS Pedodontics And Preventive Dentistry, Tutor, Government Dental College And Hospital, Srinagar

Dr Fozia Mir Tutor MDS Pedodontics and Preventive Dentistry, Government Dental College and Hospital Srinagar

ABSTRACT

Introduction: Dental Discomfort Questionnaire (DDQ) can be used as a reliable tool by healthcare workers to report pain in preschoolers as variations in cognition of children their ability to report and verbalize pain. **Materials and Methodology:** A cross sectional study was conducted in Government Dental College and Hospital ,Srinagar on 100 children aged between 2-5 years in Department of Pedodontics and Preventive Dentistry and the correlation between DDQ scores with DMFT /dmft scores and demographic data was evaluated. **Results:** A significant association $p<0.001$ was seen between pain and presence of dental decay in the study population of children Children having ECC reported a higher DDQ score as compared to those who were caries free and this difference was found to be statistically significant ($p=0.001$) after using Mann Whitney U test. **Conclusion:** Dental Discomfort Questionnaire was proven as a reliable pain assessment tool to screen the Kashmiri children for caries related toothache with good psychometric properties and thus the shortcoming of young children not being able to self report pain is solved.

KEYWORDS

Dental Discomfort Questionnaire, Early Childhood Caries, Pain

INTRODUCTION :

Pain which is a consequence of dental caries negatively impacts the quality of life not only for the children but also their families and its seen that untreated dental caries in primary teeth affects 5 73,000,000 children worldwide .[1] Difficulty in communicating pain by preschoolers is a major hinderance of recognising pain as they have underdeveloped cognition because of which they perceive , report, react and remember pain differently thus making it challenging for the child to be given appropriate preventive measures for relief.[2]

Dental discomfort questionnaire (DDQ) can be used as a reliable tool for assessing pain discomfort in very young patients who are not able to self report their pain as pain is best assessed by self reporting .[3]

The aim of the study is to analyse the parental report of dental pain and discomfort in preschool children in Kashmir and to identify clinical as well as the social demographic factors associated using DDQ which is an assessment tool for very young children who are not able to report pain themselves. In this study we have analysed the possible difference of pain related to decayed and non decayed tooth.

MATERIALS AND METHODOLOGY :

A cross sectional study consisting of 100 very young children age between 2 to 5 years were randomly selected from OPD of Department of Paediatric and Preventive Dentistry of Government Dental College and Hospital Srinagar, Kashmir after ethical clearance under no : GDC/Pedo/1443 was obtained from the said institution. Children included in the study were boys and girls of age group 2 to 5 years with no systemic illness, children were of verbal or pre verbal zone, parents should understand English or Vernacular language. The exclusion criteria were those children who were specially abled, medically compromised, having definitely negative Frankl behaviour rating scale , age five years or more and who had developed improper cognitive abilities.

Oral Examination: The investigator was calibrated to carry intraoral examination of children before the start of the study to evaluate both dental caries (WHO Index,1997) as well as clinical manifestations of advanced dental caries (PUFA / pufa Index,2010). PUFA scores presence of visible pulpal involvement as p ,ulceration of oral mucosa (u), presence of fistula as (f) or abscess as (a) were obtained visually without use of any instrument. CPI ball end probe was utilized for the dental caries examination as described by WHO by the examiner.

Two examiners performed history taking and clinical examination by calculating DMFT/ dmft and pufa index Caries examination was based on the "WHO" criteria where the DMFT/dmft scores were measured (World Health Organization, 1997) and dental caries as frank cavitation was defined as a break of 0.5 mm or more into the enamel. The examiners excluded incipient or questionable caries in the DMFT/dmft scores. Filled teeth were defined as those with any type of restorations excluding sealants. Missing deciduous teeth were assumed to have been extracted as a result of caries unless exfoliation could be expected based on the age of the child.

The demographic data was taken from the parent / caregiver and education level of the mother /primary caregiver were recorded and DDQ scores were calculated along with dmft scores .The data entry analysis was done using SPSS software where p value of less than 0.005 was the level of significance and was considered statistically significant.

Questionnaire: A pretested questionnaire consisting of two parts where the first part consists of information related to Socioeconomic status and second part consists of DDQ (Dental Discomfort Questionnaire) was recorded for each participant. The potential responses in DDQ scores were never (0), sometimes (1) and often (2) and the total score range was set between 0-16.

Dental Discomfort Questionnaire :

Name: Age/Sex : Respondent : Mother /Father /Caregiver
Number of family members in the house: Family structure : Nuclear /Non nuclear
Education : High school /Graduation / Post Graduation
Caries status : dmft of PATIENT PUFA
Mobility of anterior teeth : Absent / present
Erupting first molar
Toothache: During meals /Daytime/Night time

Tooth	Tooth ache	No tooth ache
Decayed		
Non decayed		

	NEVER (0)	SOMETIMES (1)	OFTEN (2)

1.Problems with brushing upper teeth			
2.Put away something sweet to eat			
3.Problems with brushing lower teeth			
4. Bites with molar instead of front teeth			
5.Chewing at one side			
6.Problems chewing			
7. Reaching for cheek while eating			
8.Crying suddenly at night			
9. Crying during meals			
10.Earache at night			
11. Earache at daytime			
12. Earache during eating			

Total Score :

RESULTS :

The study population comprised of 100 children with an age range of 2 years to 6 years. The proportion of 2 year, 3 years, 4 years, 5 years & 6 years old children were 9.0%, 15%, 40%, 26% & 10% respectively as shown in Table1 and Figure 1. Out of them, 48% were males & 52% were females.

Table 1: Demographic Profile Of The Study Population

		Frequency	Percent
Age of the child	2 years	9	9.0%
	3 years	15	15.0%
	4 years	40	40.0%
	5 years	26	26.0%
	6 years	10	10.0%
Gender of the child	Male	48	48.0%
	Female	52	52.0%
Respondent	Father	45	45.0%
	Mother	49	49.0%
	Caregiver	6	6.0%
No of family members	4-8	88	88.0%
	9-15	12	12.0%
Family structure	Nuclear	70	70.0%
	Non-nuclear	30	30.0%
Education	High school	40	40.0%
	Graduate	47	47.0%
	Post graduate	13	13.0%

The data about DDQ was retrieved from accompanying person of children, which was 45% times father, 49% times mother and 6% times caregiver. Majority of children belonged to nuclear families having 4-8 members. Majority of parent respondents were educated till graduate level as shown in Figure 1.

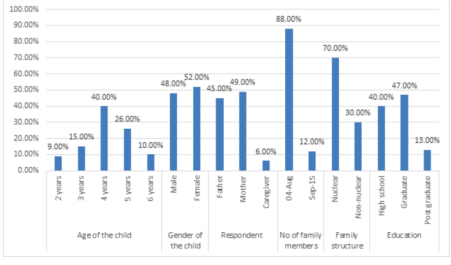

Figure 1

The clinical findings in the study group was that mobility of anterior teeth was present only in the 9% of the participants and dmft >0 was noted in 91% of the study group.

Table 2: Clinical Findings In The Study Population

		Frequency	Percent
Molar eruption	Absent	95	95.0%
	Present	5	5.0%
Mobility of anterior teeth	Absent	91	91.0%
	Present	9	9.0%
Dmft	dmft=0	9	9.0%
	dmft>0	91	91.0%

The frequency distribution of the responses to the various items of the Dental Discomfort questionnaire is expressed in the Figure 2.

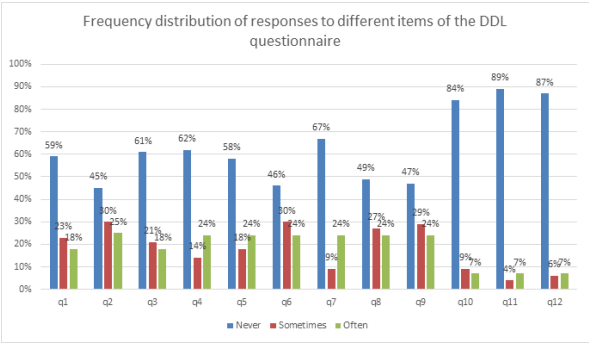

Figure 2: Frequency distribution of responses to different items of the DDL questionnaire

The association of responses to the individual items and presence or absence of toothache among children having decayed tooth/teeth is given in Table 3.

All the items of the questionnaire except the last two items were found to be associated with the presence of toothache among children with tooth decay as shown in Table 3.

Table 3: Association of responses to individual items and presence or absence of toothache among children having decayed tooth/teeth

Behaviours from the DDQ (sometimes or often)		Children with decayed teeth without toothache (N=20)	Children with decayed teeth with toothache (N=80)	P value
Q1	n	2	39	**0.002, S**
	%	10.0%	48.8%	
Q2	n	4	51	**0.001, S**
	%	20.0%	63.8%	
Q3	n	2	37	**0.004, S**
	%	10.0%	46.3%	
Q4	n	2	36	**0.004, S**
	%	10.0%	45.0%	
Q5	n	2	40	**0.001, S**
	%	10.0%	50.0%	
Q6	n	2	52	**0.001, S**
	%	10.0%	65.0%	
Q7	n	0	33	**<0.001, S**
	%	0.0%	41.3%	
Q8	n	0	51	**<0.001, S**
	%	0.0%	63.8%	
Q9	n	0	53	**<0.001, S**
	%	0.0%	66.3%	
Q10	n	0	16	**0.037, S**
	%	0.0%	20.0%	
Q11	n	0	11	0.114, NS
	%	0.0%	13.8%	
Q12	n	0	13	0.065, NS
	%	0.0%	16.3%	

A significant association p<0.001 was seen between pain and presence of dental decay in the study population of children as shown in Table 4 using Chi square test.

Table 4: Association of pain with presence of dental decay among the study population

			Pain in decayed tooth		Total
			Absent	Present	
Dmft	dmft=0	N	9	0	9
		%	100.0%	0.0%	100.0%
	dmft>0	N	11	80	91
		%	12.1%	87.9%	100.0%
Total		N	20	80	100
		%	20.0%	80.0%	100.0%
P value			<0.001, S		

Chi Square Test

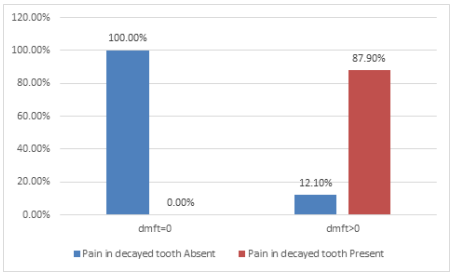

Figure 3: Graphical Association of pain with presence of dental decay among the study population.

Children having ECC reported a higher DDQ score as compared to those who were caries free and this difference was found to be statistically significant (p=0.001) as shown in Table 5 and Figure 4 using Mann Whitney U test.

Table 5: Association of DDQ score with the presence and absence of ECC

Dmft	N	DDQ score		
		Mean	Std. Deviation	P value
dmft=0	9	1.1111	2.20479	0.001, S
dmft>0	91	7.2747	7.32585	

Mann Whitney U test

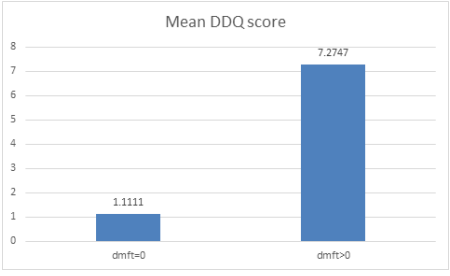

Figure 4:

Children having ECC reported a higher DDQ score as compared to those who were caries free and this difference was found to be statistically significant (p=0.001) as shown in Table 5.

Table 6: Association of DDQ score with the status of molar eruption

Molar erupted	N	DDQ score		
		Mean	Std. Deviation	P value
No	95	7.0737	7.25118	0.001, S
Yes	5	.0000	.00000	

Children having unerupted molars reported a higher DDQ score as compared to those who had molars erupted and this difference was found to be statistically significant as reported in Table 6.

Table 7: Association of DDQ score with the presence and absence of mobility in anterior teeth

Mobility in anterior teeth	N	DDQ score		
		Mean	Std. Deviation	P value
No	91	6.6923	7.01695	0.981, NS
Yes	9	7.0000	9.66954	

The mean DDQ scores were found to be comparable among children having presence or absence of mobility in anterior teeth as shown in Table 7.

DISCUSSION:

Pain experienced in a child is innately subjective and is influenced by the interplay of physiologic, psychologic, developmental and behavioral factors. In children between 2 to 5 years cognitive and emotional immaturities in young children make it difficult for them to present with a reliable description of pain thus making toothache recognition highly complex. So it became mandatory to device methods to identify pain experience in this age bracket in order to provide effective and timely treatment in case of dental pain.[4]

Childs cognitive development causes development of different assessment tools for different ages as the subjective pain assessment tools like visual analog scale , Faces scale aren't reliable for reporting pain in very young children. So DDQ which is an observational pain assessment tool was introduced for pre school children to rate intensity of pain in very young children. The underlying principle behind DDQ is that toothache leads to difficulty in sleeping, eating ,negative behaviour and fact that at very young age children aren't able to verbalize pain and this scale was first validated in Netherland than Brazil.[5]

This is the first study done on Kashmiri children aged between 2 to 5 years to evaluate dental pain using validated pain assessment tool. Strong association was found between dental pain and both cavitated dental caries and monthly household income. So this study will help in establishing public health policies for very young children in Kashmir and awareness in the general masses for introducing oral health measures at a very young age .

Costa et al in 2011 stated DDQ score were shown more by children with dental caries and tooth ache rather than children without caries and toothache which is similar to our study in Kashmiri population were children with ECC reported a higher DDQ score as compared to those who were caries free and this difference was found to be statistically significant (p=0.001).[6] **Rosli MNA, Ghani NMA, Supaat S** in 2018 calculated DDQ scores on 107 children in Malaysia and the behaviour of children putting away sweet things after tasting was 21% and biting with molars instead of front teeth was 16%.[7]

Felipak PK et al in 2019 reported about Brazilian children whose mother/ primary caregiver presented lower level of education and were from non nuclear families presented higher prevelance of dental pain or discomfort.[8] **Izabella Barbosa Fernandes et al in 2018** concluded greater frequencies of dental pain in 1-3 Year older children from families with low monthly income and dental caries with or without pulp involvement.[9]

Penmetsa et al in 2019 stated that there was a significant difference in the total mean DDQ scores of children with Autism spectrum disorder when they were compared with control group.[10] Children with high DDQ-8 had high DMFT/dmft score and a significant correlation was found when total DDQ-8 scores were compared with DMFT score.

There is a general agreement that children begin to report about their own health around 6 years and most preschool OHRQoL measurement tools utilize parents as proxy reporters for children.[11]

Krekmanova L et al in 2012 conducted a study to analyse the relationship between pain and discomfort, as measured by the DDQ, and dental health, as well as oral hygiene habits and dietary habits and evaluated the occurrence of oral pain and discomfort, using the Dental Discomfort Questionnaire (DDQ), in children and adolescents with intellectual or physical disabilities, and compared it with controls. The study concluded children and adolescents with intellectual or physical disabilities experienced oral discomfort and pain more often than matched controls and dental health expressed as DMFT could not be related to the DDQ responses.[12]

The limitation of the study is that the sample size was small and can be done on larger section .

CONCLUSION :

Dental Discomfort Questionnaire was proven as a reliable pain assessment tool to screen the Kashmiri children for caries related toothache with good psychometric properties. It can be used by researchers, non dental health care worker, parents as aid in recognizing when a child has a tooth ache .

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