

## Relationship of Parental Responses to Pain Catastrophization, Pain Intensity and Functional Limitations in Children with Functional Pain

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### ABSTRACT

**Introduction:** Pain is primarily a psychological experience. Based on social learning theory, studies have examined association between parental behaviours and child's functioning in various pain situations. **Objectives:** 1) to examine relationship of parental responses to pain catastrophization, functional disability and pain intensity in children with functional pain complaints. 2) to explore psychosocial problems associated with functional pain. **Methodology:** Participants were 43 children diagnosed with functional pain, referred from Paediatric units of Kasturba Hospital, Manipal. Measures examining parental responses to pain, pain catastrophization, pain intensity, functional limitations and psychosocial problems were administered. **Results:** Analyses revealed significant associations between pain catastrophization and some of its types and functional disability. On the whole, statistically significant relationship between parental responses and pain catastrophization was not observed. But, on gender based analysis, solicitous parental response predicted pain rumination aspect of pain catastrophization in females. Among psychosocial problems, school and family problems were predominant. **Conclusions:** This study highlighted the role of pain catastrophization in predicting functional limitations in children and role of parental attention in increasing pain rumination in females. Hence, intervention should target the exaggerated pain perceptions, parental attention and psychosocial problems to ameliorate the functional limitations.

**Keywords:** Parental response, Catastrophization, Pain intensity, Functional limitations

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Children often present with a number of symptoms where no serious medical/organic cause is found. Such unexplained pain related symptoms of children are a major concern for the parents as it interferes with daily functioning of the individual. According to von Baeyer & Walker (1999), the most prevalent pain disorders of childhood and adolescence are medically unexplained functional pain syndromes including functional abdominal pain, headache, back pain and musculoskeletal pain.

### *Need for the Study*

Research on functional pain highlights different variables such as parental behaviours, temperament of the child, secondary gain, and copying style as mediating children's pain experience. Several styles of parental responses, such as encouragement found to have its influence on children's pain expression. Therefore, understanding the way that the parents respond to children's pain and its functional implication would give sufficient information for the effective treatment for the child with functional pain.

## **REVIEW OF LITERATURE**

We speak of pain when describing a wide variety of things such as a cut, a toothache, a muscle ache, or even when we have been disappointed or at the loss of a loved one. In the absence of tissue damage also one may experience pain. Evans et al (2008) presented a conceptual model that incorporates a number of parent and child specific characteristics, such as parental responses, coping and gender role socialization as well as broader socio-demographic factors such as parent and child age and sex, family functioning, socioeconomic status, and race/ethnicity that are associated with increased risk for child pain and pain-related disability. From a broad social learning perspective such as vicarious learning, modeling, and reinforcement, it was shown that parents can have a direct impact on their offspring's pain experiences (Palermo & Chambers, 2005). Peterson et al, (2004) reported that both parent and child psychosocial factors may serve as risk or supportive factors to either exacerbate or minimize children's functional disability.

### *Functional Pain in Children*

Children may often complain of different types of pain in which there are no underlying organic pathology that could explain the pain. These include headaches, abdominal pain, musculoskeletal pain and chest pain along with vomiting, fatigue, and dizziness. The different types of functional pains occur without a clear organic cause, meaning that it cannot be validated by routine medical examinations, and that the pain has a significant impact on the child's daily life, psychological development and adjustment. There are also different categories within the various types of functional pains. For example, recurring abdominal pain in childhood is divided into functional abdominal pain, recurrent abdominal pain, idiopathic pain, psychogenic pain, psychosomatic pain, chronic nonspecific pain and psychophysiological abdominal pain. The most widely spread

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term has been recurrent abdominal pain which was first introduced by the landmark study of Apley and Naish, (1958). Brattberg (1994) opined that headache is the most frequently reported pain in children followed by abdominal and musculoskeletal pain. On the other hand, American Academy of Pediatrics suggested that Functional abdominal pain (FAP) is one of the most common types of pain syndromes in childhood and accounts for approximately 2–4% of all pediatric visits (Schulte, I.E., Petermann, F., & Noeker, M. 2010).

### ***Parental Behaviors in Response To Pain***

Social consequence of pain plays a major role in pain expression and its maintenance. Fordyce et al (1986) suggested that consequences such as positive attention from others may serve as rewards that reinforce symptoms. Peterson, C., & Palermo, T. (2004). examined the relationship between two specific types of parental protective behaviors such as provision of attention and activity restriction and found that parental protective behavior influence in predicting child functioning. Walker et al (2006) conducted an experimental study assessing the influence of parental attention and distraction on symptom complaints by children with and without chronic functional abdominal pain and found that parental attention increased symptom complaints by female pain patients to a much greater extent than for male pain patients. The implication of the study was that clinician can implement distraction than attention to reduce their children's symptom complaints.

### ***Pain Catastrophization***

The term “catastrophizing” was initially used to describe the excessively negative thinking of individuals with depression. Beck, A., Steer, R., & Carbin, M. (1988) considered it as a ‘cognitive distortion’ that could contribute to the development or exacerbation of symptoms of depression. Various studies on catastrophization proved the fact that the tendency to “catastrophize” during painful stimulation contributes to more intense pain experience and increased emotional distress. In the context of pain, Sullivan M, (2000) defined catastrophizing as an exaggerated negative “mental set” brought to bear during actual or anticipated pain experience. The function of catastrophization is to solicit the empathy, proximity and support of other individuals. According to Sullivan M, (2000), pain catastrophizing is a multidimensional construct comprising elements of magnification, rumination and helplessness and it has been found an important risk factor for chronic pain and disability. Not only in adults, but also in children, catastrophisation was shown to play an important role in pain experience and expression. Langer et al., (2009) investigated whether catastrophic thinking about pain by children with functional abdominal pain is associated with health outcomes in the child. They selected 132 parent-child dyads recruited from a pediatric gastroenterology (GI) clinic and the community as participants. The age range of the participants was 7–17 with a diagnosis of abdominal pain and the study demonstrated that catastrophic thinking among children with chronic, nonorganic abdominal pain predicted child functional disability, depression, and

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anxiety. These results suggest that catastrophic cognitions play an important role in how children and parents cope and respond to functional abdominal pain, and may have implications for assessment and treatment in the clinical setting.

### ***Functional Disability***

The term Disability refers to the activity restrictions or limitations that are associated with a physical or mental impairment (Sullivan et al., 2001). Functional pain can be temporarily disabling by limiting the day to day activities of the child.

## **METHODOLOGY**

### ***Aim***

- To find the relationship of parental responses to pain catastrophization, pain intensity and functional status of child with functional pain.

### ***Objectives***

1. To determine the relationship of parental response to pain catastrophization, pain intensity and functional limitations.
2. To examine the relationships among pain catastrophization, functional limitations and pain intensity
3. To determine the co-occurring psychosocial problems of children with functional pain.

## **MATERIALS AND METHODS**

### ***Research Design***

The present study has a cross sectional design

### ***Study Centre***

The samples for this study were recruited from the Department of Paediatrics, Department of Paediatrics surgery, Department of Psychiatry and Department of Clinical psychology.

### ***Sampling Design***

A purposive sampling method is used for the study

### ***Sample Size***

Sample consisted of 43 children diagnosed with functional pain and their parents from the Department of Paediatrics, Department of Paediatrics Surgery and department of Psychiatry, KMC, Manipal. They had undergone prior medical evaluation to rule out any organic etiology and the sample was selected on the basis of Convenience Sampling.

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### *Inclusion Criteria*

1. Children with various pain complaints as determined by the pediatrician/ Physician
2. Children in the age group 8 to 14 years.
3. At least one parent should be present at the time of assessment
4. Parents who can read and write either English, Kannada or Malayalam
5. Children who can read and write either English, Kannada or Malayalam

### *Exclusion Criteria*

1. Positive physical or lab findings that could explain the child's various pain.
2. Children having history of any organic or chronic physical problem
3. Children having Mental retardation as ascertained by clinical examination
4. Any co-morbid psychiatric disorders as determined by the clinical investigation

### *Measures*

The following measures were used for collecting data in the present study

1. Semi structured Interview format
2. The Inventory of Parent/Caregiver Responses to the Children's Pain Experience (IRPEDNA): ( Huguet, A., Miró, J., & Nieto, R. (2008).)
3. Pain Catastrophizing Scale (Sullivan, M. (2009)
4. Functional Disability Inventory (FDI (Claar, R., & Walker, L. (2006).
5. Visual Analogue Scale (VAS). (McCaffery & Pasero C,1999)

- 1. Semi structured Interview Format:** The semi structured interview consisted of a detailed investigation of psychosocial problems in the areas of family school and peers. Face to face interview was done with child along with parents. There were 59 questions out of which 28 questions were pertaining to family and 29 questions were pertaining to school and 10 questions were related to peer problems. The family problems were subcategorized into fear of punishment by parents, strict discipline, and disturbed relationship of parents, illness of or loss of family members, financial problems of family, and disturbance due to family structure and finally drug abuse of family members. The school related problems were categorized into language related problems, academic difficulty, fear of school, disturbed relation with teachers, home work and study aids, and frequent change of school. Peer problems were categorized into disturbed relation with class mates, lack of close friends, and isolation from peers, problems in heterosexual relation, argument and physical fights.
- 2. The Inventory of Parent/Caregiver Responses to the Children's Pain Experience (IRPEDNA):** The Inventory of Parent/Caregiver Responses to the Children's Pain Experience or IRPEDNA is a self-administered questionnaire with three subscales: (1) solicitousness, (2) discouragement, and (3) promotion of well-behaviors and coping. The

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structure (3 Subscales) and its content (37 items) are based on the social learning model of parental/caregiver influence. All the items reflect actions and behaviors that parents/caregivers may enact after observing the children's pain behaviors. The respondents are required to answer how often they enacted each of the reactions included in the inventory when their child was in pain.

3. **Pain Catastrophizing Scale:** Catastrophic thinking about pain was assessed with the Dutch version of the *Pain Catastrophizing Scale for Children (PCS-C)*. This instrument is an adaptation of the adult Pain Catastrophizing Scale. The PCS-C consists of 13 items describing different thoughts and feelings that children may experience when they are in pain. Children rate how frequently they experience each of the thoughts and feelings when they are in pain, using a 5-point scale (0 = "not at all", 4 = "extremely"). The PCS-C yields a total score that can range from 0 to 52, and three subscale scores for rumination, magnification and helplessness.
4. **Functional Disability Inventory (FDI):** Pain-related disability was assessed with the Dutch version of the *Functional Disability Inventory (FDI)*. The FDI is a self-report inventory for children that measures the child's perceived difficulty in performing a number of activities in the domains of school, home, recreation, and social interactions during the past two weeks. It consists of 15 items to be rated on a 5-point scale (0 to 4), and yields total scores that can range from 0 to 60.
5. **Visual Analogue Scale (VAS):** Pain severity was assessed by means of a *Visual Analogue Scale (VAS)* developed by McCaffery & Pasero, (1999). Children rated their "most severe pain" in the past two weeks on a 100 mm VAS with the end points "no pain" and "a lot of pain".

### *Procedure*

For the present study the Institute ethics committee clearance was obtained. Samples were recruited from the various departments of Kasturba Hospital, Manipal such as Department of pediatrics and Department of Pediatric surgery, based on the inclusion and exclusion criteria. A written consent was taken from the participants after explaining briefly about the study. All consenting participants were first administered the socio-demographic Performa by the investigator. Following this, *The Inventory of Parent/Caregiver Responses to the Children's Pain Experience (IRPEDNA)*, *Pain Catastrophizing Scale*, *Functional Disability Inventory (FDI)*, *Visual Analogue Scale (VAS)* were administered. A *semi structured clinical interview for children and adolescents* was also conducted for eliciting co-occurring problems in the areas of family, school and peers. 48 samples were screened for the study out of which 5 samples were excluded following inclusion exclusion criteria. Out of 5 cases 2 were excluded due to the ultrasonography findings of pancreatitis, an inflammatory condition in duodenum. In another case, child was showing dissociative behaviour and pain was secondary to the dissociation and finally one case was excluded due to the absence of parents for interview. Thus a total of 43

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participants were recruited in the study. The administration procedure took around one hour for each participant. After administering each protocol, the researcher checked for any missed items and subject was reassured that the information will be kept confidential.

### *Statistical Analysis*

The data was analyzed using the Statistical Package for Social Sciences (SPSS version 16.0). Descriptive statistics was used to compute the socio-demographic variable and related data.

### *Correlation*

To find the extent of relationship or agreement between two variables Correlation is used. Correlation analysis was done to see the association between parental responses, pain catastrophization, pain intensity and functional limitation. Correlation coefficient was found out to see the relation of parental response subscales such as solicitousness, discouragement, and promotion of well-behaviors and coping to that of dependent variables such as pain catastrophization, pain intensity and functional limitation. The correlation between the subscales of parental responses to that of subscales of pain catastrophization such as rumination, magnification and helplessness were also found.

### *Linear regression*

In the present study, linear regression was employed to carry out the prediction analysis for the variables which are found to be significant in the correlation analysis.

## **RESULTS**

Table 1 shows the distribution of gender and education in the sample. A slight predominance of females as compared to males was seen in the sample. It was seen that 23.3% children in the sample were studying in lower primary school, 41.9 % were in upper primary school and 34.9 % were in high school. In the sample, 18.6% (8) had acute pain, 58.1% (25) had chronic pain and 23.3 % (10) had sub-acute pain. It was observed that majority of the children in the sample were diagnosed as having functional abdominal pain (46.5%). The second most common diagnosis was that of functional headache (32.6%). The other types of functional pain together accounted for 21% of the sample.

*Table 1: Socio demographic and clinical variables across the sample*

<b>Variables</b>	<b>n (%)</b>
<b>Gender</b>	
Male	46.5% (20)
Female	53.5% (23)
<b>Education</b>	
Lower Primary School	23.3% (10)
Upper Primary School	41.9% (18)
High School	34.9% (15)

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<b>Variables</b>	<b>n (%)</b>
<b>Course of Pain</b>	
Acute Pain	18.6% (8)
Chronic Pain	58.1% (25)
Sub-acute Pain	23.3% (10)
<b>Types of Pain</b>	
Functional Abdominal Pain	46.5 (20)
Functional Headache	32.6 (14)
Other Functional Pain	21 (9)

Table 2 shows the means and SD of the sample on Parental Response, Solicitousness, Discouragement, Promotion of Well-Behaviours, Pain Catastrophization, Rumination, Magnification, Helplessness, Functional Disability and Pain Intensity. Of the different types of Parental responses to the child's pain, Solicitousness ( $40.53 \pm 10.820$ ) was the most commonly used response followed by Promotion of Well-behaviours ( $31.19 \pm 8.072$ ). Discouragement was the least used parental response ( $18.62 \pm 6.554$ ). The Mean of Pain Catastrophization ( $20.74 \pm 10.666$ ) scores, falls within the moderate category. Helplessness ( $10.93 \pm 6.288$ ) is the most commonly resorted to mode of Pain Catastrophization, while the other two modes, Magnification ( $1.98 \pm 2.099$ ) and Rumination ( $7.84 \pm 3.709$ ) were not as common. Both Functional Disability ( $17.86 \pm 11.985$ ) and Pain Intensity ( $6.51 \pm 1.564$ ) were within moderate ranges.

**Table 2. Mean and SD of the sample on Parental Response, Solicitousness, Discouragement, Promotion of Well-Behaviours, Pain Catastrophization, Rumination, Magnification, Helplessness, Functional Disability and Pain Intensity**

<b>Variable</b>	<b>Total sample (n =43)</b>	
	<b>Mean</b>	<b>SD</b>
Parental responses	90.35	21.070
Solicitousness	40.53	10.820
Discouragement	18.62	6.554
Promotion of Well behaviors	31.19	8.072
Pain catastrophization	20.74	10.666
Rumination	7.84	3.709
Magnification	1.98	2.099
Helplessness	10.93	6.288
Functional disability	17.86	11.985
Pain intensity	6.51	1.564

Table 3 shows the associations between types of Parental response (Solicitousness, Discouragement and Promotion of Well behaviours) and over all Pain catastrophization, its types (Rumination, Magnification, Helplessness), Pain Intensity and Functional limitations. Analysis revealed that there were no significant correlations between these variables in the whole sample

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**Table 3. Correlations between the types of Parental Responses (Solicitousness, Discouragement and Promotion of Well behaviours) and over all Pain catastrophization, it's types (Rumination, Magnification, Helplessness,) Pain Intensity and Functional limitations among the total sample.**

	<b>Pain catastrophization</b>	<b>Rumination</b>	<b>Magnification</b>	<b>Helplessness</b>	<b>Pain intensity</b>	<b>Functional limitation</b>
Solicitousness	.128	.203	.205	.029	-.144	-.036
Discouragement	.128	.183	.250	.027	-.037	-.075
Promotion of well behaviour	.135	.164	.198	.065	-.151	-.002

\*  $p < .05$ ; \*\*  $p < .001$

Table 4 shows the relationship between Pain Catastrophization, it's types (Rumination, Magnification, Helplessness), Pain Intensity and Functional Limitation. Analysis showed that there was a significant moderately positive correlation between Functional Limitation and over all Pain Catastrophization. This implies that higher pain catastrophization is associated with higher functional limitations.

**Table 4, Correlations between Pain Catastrophization, Rumination, Magnification, Helplessness, Pain Intensity and Functional Limitation in the total sample.**

<b>Variable</b>	<b>Pain intensity</b>	<b>Functional limitation</b>
Pain catastrophization	.048	.344*
Rumination	.064	.193
Magnification	.011	.329*
Helplessness	.040	.359*

\*  $p < .05$

Table 5 shows the associations between types of Parental response (Solicitousness, Discouragement and Promotion of Well behaviours) and over all Pain catastrophization , its types (Rumination, Magnification, Helplessness,) Pain Intensity and Functional limitations among females.

Analysis revealed that there is a significant moderate positive correlation between Solicitousness and Rumination. This indicates that the higher levels of parental solicitousness to the child's pain is associated with higher ruminations about the pain female children. The remaining variables do not show significant correlations.

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**Table 5, Correlations between types of Parental response (Solicitousness, Discouragement and Promotion of Well behaviours) and Pain catastrophization, Rumination, Magnification, Helplessness, Pain Intensity and Functional limitations among females.**

	<b>Pain catastrophization</b>	<b>Rumination</b>	<b>Magnification</b>	<b>Helplessness</b>	<b>Pain intensity</b>	<b>Functional limitation</b>
Solicitousness	.390	<b>.467*</b>	.324	.299	-.116	.299
Discouragement	-.005	-.013	.143	-.044	.175	-.010
Promotion of well behaviour	.143	.219	.162	.080	-.036	.102

\*  $p < .05$ ; \*\*  $p < .001$

In order to find the co-occurring psychosocial problems of children with functional pain, problem areas were categorized into family, school and peer and the descriptive statistics was used to find the number of children affected by problem areas and its percentage.

The frequency and percentage of the children affected by the problem areas of family, school and peer are given in table 3.10. The table shows that 49% of children are affected by the school related problems and 40% are affected by the family problems and only 9.8 % of children are affected by peer related problems.

**Table 6, Frequency and Percentage of children affected by the problem areas of Family, School and Peer.**

<b>Variable</b>	<b>Frequency(f)</b>	<b>Percentage (%)</b>
Family	29	40 %
School	35	49 %
Peer	7	9.8%

## **DISCUSSION**

The present study was designed to explore the relationship of parental responses to pain catastrophization, pain intensity and functional limitation of child with functional pain.

Among the different functional pains, functional abdominal pain and functional headache are the most common pain complaints reported in children Bandell et al, (2001). The present study also shows that the major pain problems reported among children in the sample are abdominal pain and headache. The present study shows that the number of girls is slightly more as compared to male which is consistent with the previous study. Some earlier studies in the context of functional abdominal pain have reported that the occurrence is slightly higher among females, with the female-to-male-ratio increasing with age ( Hyams et al, 1996). Current study accounted for a higher number of sample studying in the upper primary school constituting of fifth, sixth and seventh grade. The majority of the samples in the present study were from Upper primary School.

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### ***Relationship of Parental Response to Pain Catastrophization, Pain intensity and Functional limitation.***

The first objective of the study was to find the relationship of Parental Response to Pain Catastrophization, Pain intensity and Functional limitation in children diagnosed with functional pain.

The most commonly used Parental response in the sample under study was Solicitousness, while Discouragement was the least used one. In the present study, a moderate amount of pain catastrophization was observed among the children in the sample. Of the various subtypes of this variable, Helplessness and rumination was experienced to a moderate degree, while magnification was experienced to a mild degree. A moderate level of Functional Disability was also observed among the children in the sample. The pain reported in the study was also of moderate to severe intensity.

### ***Relationship of parental response to Pain catastrophization***

In the present study parental responses such as solicitousness, discouragement and promotion of well behaviours and coping were studied to find its relation to pain catastrophization. Solicitous behaviour indicates how parents or caregivers solicitously attend to the children's pain behaviors by giving them something pleasant (positive reinforcement) or by eliminating something unpleasant (negative reinforcement) contingent upon pain behavior (Huguet et al, 2008). In the present study no significant relation was found between parental responses to pain catastrophization for the whole group. However, in females it was found that parental solicitousness was not only associated but also predicted increased rumination related to pain. In general it has been established that parent symptom-related talk, a form of solicitous response is strongly related with symptom complaints for those children with high levels of catastrophizing (Williams et al, 2010). In this study, parental solicitousness significantly positively predicted increased pain catastrophization, particularly more pain related preoccupation. However, the same was not extended to the whole population.

### ***Relationship of parental response to Pain intensity***

In the present study pain intensity experienced by children are categorized into mild, moderate and severe. The study showed that at an average, children experienced moderate pain. Harrison, D.,(2014) compared different measures of pain intensity and reported that average children expressed 4- 5 on 0-10 point intensity scale that needed medical care. None of the Parental responses were seen to be related to pain intensity in this study.

### ***Relationship of parental response to functional limitation***

Walker & Greene, (1991) describes functional disability as the extent of restriction in performing 15 daily activities in the domains of school, home, recreation, and social interaction. Sample

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activities include walking to the bathroom, being at school all day, and reading and doing homework. The present study did not show any significant association between parental protective behaviours and functional disability. The reason for this could be that parents and children who were assessed in our sample had sought medical consultations at various reported and been informed about the absence of any physical diagnoses. There is also the possibility of physicians as a part of their management would have advised the parents to attend to pain behaviour and motivate children to assume their day to day activities. Therefore, the relationship between parental responses, especially solicitousness and functional disability may not have emerged.

### ***The relationship among pain catastrophization, functional limitation and pain intensity***

The second objective of the study was to examine the relationship among pain catastrophization, functional limitation and pain intensity.

### ***Pain catastrophization and pain intensity***

Sullivan et al, (2004) defined catastrophization as an exaggerated negative mental set brought to bear during actual or anticipated painful experience. It can have adaptive and maladaptive impact. Research that has emerged for the past two decades indicates that individuals who catastrophize are more attentive to pain signals and more expressive of their current physical and emotional distress (Sullivan et al., 2004).

Pain catastrophization can also be expressed as helplessness and pessimism in dealing with the pain experience. In the present study it was found that pain intensity was not associated with pain catastrophization. In the literature there are conflicting studies about association between pain catastrophization and pain intensity. Sullivan et al, (2004) found that pain catastrophizing is unique in its explanatory ability for pain ratings.

### ***Pain catastrophization and functional limitation***

The present study also shows that over all pain catastrophization not only is related to but also predicts functional disability. Individuals who catastrophize may have pain schemas that contain highly negative information about the experience of pain and their ability to cope with such pain; once activated, these schemas are likely to adversely influence both cognitive and affective functioning (Sullivan et al,2004). Their feelings of inability to cope may hinder them from carrying out normal activities.

### ***Co-occurring psychosocial problems of children with functional pain.***

The third objective of the study was to determine the co-occurring psychosocial problems of children with functional pain. On exploration of the psychosocial problems in the areas of family, school and peer, it was seen that 81.4% of children with functional pain had school

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related issues and 67.4% had family problems followed by 16.3% with peer related problems. Major family related concerns included parental discord, financial difficulties, over involvement of parents, staying away from parents. In the case of school related problems, academic difficulties were predominant. Though not much peer problems were reported, the major concerns were being teased by the peers and feeling of being isolated from the peers.

### **SUMMARY AND CONCLUSION**

The present study was carried out with the aim of finding the relationships among parental responses to pain catastrophization, pain intensity and functional limitation of the child with functional pain. The sample had included 43 children recruited from Kasturba Hospital. The children and their parents who fulfilled the specified inclusion and exclusion criteria in the study, and consented to participate were given a brief introduction about the nature and purpose of the study, and were informed regarding the rationale of the study. Subsequently, the Intake Form for the socio-demographic details, semi-structured interview format, The Inventory of Parent/Caregiver Responses to the Children's Pain Experience (IRPEDNA), Pain Catastrophizing Scale (PCS-C), Functional Disability Inventory (FDI), Visual Analogue Scale (VAS) were administered.

#### *The findings of the present study were as follows*

1. There was a significant positive correlation between Pain catastrophization and Functional disability. Among the children with functional pain, as pain catastrophization increased the functional disability also increased.
2. Significant positive correlations were also observed between the subtypes of pain catastrophization specifically, helplessness and magnification, and functional disability.
3. Helplessness, a subtype of Pain catastrophization, was found to positively predict Functional disability.
4. Among females diagnosed with functional pain Solicitousness, a type of Parental response, was found to be positively related to Rumination, a subtype of Pain catastrophization.
5. It was also observed that among females, Parental Solicitousness positively predicted Rumination.
6. Pain catastrophization was found to be significantly positively correlated with Functional disability among males. This implies that as higher pain catastrophization may be associated with higher levels of functional disability.
7. Among males, Helplessness was also found to be positively related to Functional disability. As helplessness increases functional disability also increases.
8. It was also observed that Helplessness was positively predictive of Functional disability among males.
9. Irrespective of the gender of the child, Parental responses to pain, in the form of Solicitousness, Discouragement and Promotion of well-behaviours/coping, were not

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significantly associated with Pain catastrophization, pain intensity and functional limitation.

10. Pain intensity and functional limitations were also not found to be significantly associated with each other.

### CONCLUSION

The present study makes an attempt to examine the relationships among Parental responses (solicitousness, discouragement and promotion of well-behaviours/coping), pain catastrophization, pain intensity and functional limitation. The study highlights that while pain catastrophization is associated with functional disability; parental response is not associated with pain catastrophization, pain intensity and functional disability. However, solicitousness was found to predict rumination only among females. While among males, helplessness was found to be predictive of functional disability.

#### *Limitations*

1. The small sample size makes it difficult to generalize the findings to the rest of the population.
2. Since the findings were based on self report measures that rely on individual being an accurate reporter of his/her own and others' behavior, it is prone to biases and distortions.
3. The samples were sent for the study only after medical and, in some cases even psychological consultations.. This might lead to a shift in the pattern of interaction between the parents and the children.
4. Due to the small size of the sample, study had low power which in turn would have led to non detection of significant relationships among variables.

#### *Implications*

1. Exaggerations of pain related complaints, specifically overrated perception of pain related helplessness among children could lead to increased functional limitations. Hence, intervention could be designed to target these signs of catastrophization in order to decrease the related functional limitations.
2. Parental encouragement can exacerbate pain related preoccupation. Therefore, targeting parental solicitousness may be helpful in reducing pain catastrophization
3. Though causal inference from this data could not be done, the presence of various psychosocial problems may influence outcome related to functional pain. Therefore Psychological intervention should target and resolve this problem.

#### *Future Suggestions*

Further research with large sample size is needed to understand the various psychosocial factors that act as causal factor for the presenting problem in the Indian population. As there are

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individual differences in the way children respond to similar problem, it is important to study the temperamental characteristics, parental modeling, parenting styles and attachment pattern that may contribute to the maintenance of functional pain. It would also be interesting to find whether psychosocial stressors such as scholastic or family problems may account for functional pain related outcomes.

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