

Symptom Severity, Disability, and Parental Emotional Availability in Children with Functional Somatic Symptoms: A Cross-Sectional Study in Kerala, India

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ABSTRACT

Introduction: Functional somatic symptoms (FSS) are persistent physical complaints without identifiable organic or biochemical abnormalities and are common reasons for healthcare seeking among children and adolescents. This study aimed to correlate somatic symptoms with functional disability, parental illness encouragement, and perceived parental emotional availability in children diagnosed with FSS.

Methods: This cross-sectional descriptive correlational study was conducted in the Clinical Psychology outpatient department of a tertiary hospital and included 66 consecutive children aged 8–17 years with FSS. Following ethical approval, data were collected through structured interviews using the Children's Somatic Symptoms Inventory, Functional Disability Inventory, Illness Behaviour Encouragement Scale, and LUM Emotional Availability of Parents scale.

Results: The mean age was 11.80 ± 2.16 years, with males forming 51.5%. Low, moderate, and high symptom severity were noted in 45.5%, 42.4%, and 12.1% respectively. Moderate and severe disability were observed in 43.9% and 15.2%. FSS showed a significant positive correlation with functional disability ($r=0.487$, $p<0.001$). Parental reinforcement of illness behaviour showed no significant association with somatic symptoms or disability ($p>0.05$). Emotional availability of both parents correlated negatively with symptom severity and disability, with paternal emotional availability emerging as a significant negative predictor.

Conclusion: Enhance parental emotional availability within management.

Keywords: Somatization, Impairment, Illness Behaviour Encouragement, Parental Emotional Availability

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INTRODUCTION

Functional somatic symptoms (FSS), also known as somatic symptoms or medically unexplained symptoms are physical symptoms that do not show any observable structural or biochemical abnormalities after extensive physical examination and diagnostic investigations. Researches indicate that functional somatic symptoms are frequently seen in school-aged children, with 25% reporting chronic or recurrent pain and 10% expressing chronic fatigue.^{1,2} A study conducted among British secondary students identified headache, low energy, muscle pain, nausea, stomach pain, fainting, hot and cold spells, chest pain, weakness, and low back pain as the frequently reported symptoms by children.³ An Indian study done among children referred to psychiatry department with unexplained physical symptoms identified head ache (26.7%), fainting (18.33%) and body aches (15%) as the predominant symptoms.⁴ A recent study done in a pediatric referral hospital reported that about two percentage of admissions was due to somatic symptom related disorders (SSRD) and the presenting symptoms involved many body systems and in 84.6% of these admissions necessitated inter-specialty consultations.⁵ Literature on FSS point out that in children, these are linked to emotional problems, impairments or disability in physical, psychosocial and role functioning.^{6,7,8}

Children's persistent symptoms make the parents distressed, forcing them to seek treatment from many doctors and trying many methods to make the child comfortable. Early studies have found that child's symptom complaints can increase with parental attention and decrease with distraction techniques.⁹ Parental protectiveness seems to increase pain, disability, and somatic complaints in children with functional abdominal pain as well as act as a predictor for the development of functional somatic symptoms.^{10,11} Parental attitudes like complaisant and permissive attitudes are found to be associated children's somatic symptoms.¹² Children with functional abdominal pain reports high parental illness behaviour encouragement responses like making the child free from responsibilities and giving special attention and privileges than children with common cold.¹³

The essential factors determining a child's development, functioning and ensuing mental health are good parenting, parent-child relationships as well as healthy family environment.¹⁴ Faulty father-child and mother-child relationships have been identified in children with somatic symptoms.¹⁵ Emotional availability is a key factor in the quality of parent-child relationship and it refers to parents' sensitivity, responsiveness, emotional closeness, and ability to share positive and negative affect with the child as measured by the Lum Emotional Availability of Parents Scale. Perceived parental emotional availability is important for better psychological health. Perceived emotional availability of the mother was

found to be connected with controlling and disorganized attachment behavior, problem behaviors in school, and depressive features among children.¹⁶ Low parental emotional availability may impair children's stress regulation and emotional expression, increasing vulnerability to functional somatic symptoms through psychophysiological mechanisms. Perception of parental emotional availability has been studied among children and adolescents with different mental health problems like autism spectrum disorders and anorexia nervosa.^{17,18} But it has not been studied in children with FSS. From the review of literature, the investigators identified scarcity of studies especially Indian studies, investigating the influence of these parental factors on children's somatic symptoms and the related impairments. The current study aimed to correlate between symptom severity, functional disability, parental illness encouragement behaviour and parental emotional availability in children with functional somatic symptoms.

METHODOLOGY

Design and Setting: This cross-sectional study was conducted in the Clinical Psychology department of Amrita Institute of Medical Sciences, which is a tertiary hospital situated in central Kerala, in Kochi.

Participants: The study population was children aged between 8-17 years with functional somatic symptoms referred to the Clinical Psychology department from various paediatric departments of the same hospital. A team of doctors including a paediatric rheumatologist evaluated and excluded medical causes for symptoms. Children who are accompanied by their mothers were selected for the study. Children having intellectual subnormality, psychiatric conditions, on continuous medications, having any kind of abnormalities in the respective laboratory investigations like anaemia, elevated CRP levels, Vitamin D deficiency etc. were excluded from the study.

Sample size estimation: It was done based on pilot study. Based on the correlation coefficients- functional somatic symptoms and emotional availability of father ($r=-0.54$), functional somatic symptoms and emotional availability of mother ($r=-0.47$), functional disability and emotional availability of father ($r=-0.47$) functional disability and emotional availability of mother ($r=-0.43$), obtained from the pilot study, conducted in 30 sample and with 80% power and 95% confidence level, the minimum sample size came to 25, 33, 33 and 40 respectively. Therefore, the overall minimum sample size required came to 40 and the researchers selected 66 children who met the criteria. The formula used was

$$n = \frac{[Z_{1-\alpha/2} + Z_{1-\beta}]^2}{1/2LN(1+r/1-r)} + 3$$

Initially, 102 children were referred with a provisional diagnosis of FSS. Of these, 10 were excluded

due to the presence of identified organic pathology, and 15 were excluded because they exhibited severe anxiety or depression. An additional five children were excluded as they did not attend the assessment accompanied by their mother, and six were excluded as they were unwilling to participate in the study. After applying these exclusion criteria, a total of 66 children met the eligibility requirements and were finally selected for inclusion in the study sample.

Measures

Childs and parents' profile: This covered data of the child like age, gender, standard, number of siblings, ordinal position etc and a few data regarding the parents like their education, occupation, family income and presence of chronic illness in parents.

Children's Somatic Symptoms Inventory (CSSI-24) (Child report): Its former name was Children's Somatization Inventory. This was used for identifying the specific functional somatic symptoms in the children during the past two weeks. A 5-point scale was used for scoring the responses; '0 = not at all, 1 = a little, 2 = some, 3 = a lot, and 4 = a whole lot'.¹⁹ Total score ranges from 0 to 96 and the clinical reference points for the scale are; low (score <18), moderate (19-31), and high ≥ 32 .²⁰ The published Cronbach's α for the CSSI-24 is 0.91²¹. The Malayalam version of CSSI-24 was used in the current study and its Cronbach's α was 0.83.

Functional Disability Inventory (FDI) (Child report): It is a 15-item, standardized, 5-point Likert scale which gave data on physical and psychosocial impairments related to bodily symptoms, during the last two weeks. The total score ranges from 0 to 60 and it was interpreted as no/minimal disability (0-12), moderate disability (13-29), and severe disability (≥ 30). The FDI-child report has an established test-retest reliability of 0.74.²² The Cronbach's alpha for the translated version in the current study is 0.87.

Illness Behaviour Encouragement Scale (IBES) (Child report). This 12-item scale was used to rate the parent's reinforcing responses to the child's illness behaviour. There are two categories of parental reinforcing responses; making the child free from responsibilities and giving attention and privileges. The child's responses are scored on a 5-point Likert scale; never = 1, hardly ever = 2, sometimes = 3, often = 4, and always = 5. High scores suggest more involvement of parents in illness behaviour encouragement.²³ The IBES child report, Malayalam version has an internal consistency, Chronbach's alpha, 0.79.

Lum Emotional Availability of Parents (LEAP). This 15-items standardized tool measured the child's perception of emotional availability of both parents separately, and each item was rated on a scale ranging from 1 to 6 (never to always). The total score spans from 15 to 90 and higher scores indicate that parents are more emotionally available. The scale has established reliability, Cronbach's alpha coefficient

of 0.98.²⁴ In the current study, the Malayalam versions of LEAP-father and LEAP-mother have the Cronbach's α coefficients, 0.91 and 0.896 respectively.

All the tools were translated to Malayalam (using simple words) and backtranslated to English by respective language experts and the researchers ensured the similarity between the retranslated and the original versions of the tools with the help of experts. Before the data collection, these Malayalam tools were administered to five children of different ages (within 8-17 years) and were found easily understandable.

Procedures: The Institutional Review Board of Amrita Institute of Medical Sciences, Kochi, issued the ethical approval for this study (IRB-AIMS-2019-172A, dated 21-05-2019). The eligible children and their mothers were individually approached by the principal investigator and informed consent from the mother and child's assent were obtained after explanation about the study and ensuring confidentiality. The Children's and parent's profiles were filled by the mothers. The principal investigator administered the Malayalam versions of the instruments to the children by reading out the items along with their response options and marking the child's responses in the corresponding options. All the participants responded to all the items and there was no missing data. It took 15 to 20 minutes for data collection from one child. Data collection period was from June 2021 to June 2023.

Statistical Analysis: Using IBM SPSS version 26, the data analysis was carried out. The data on CSSI and FDI showed non-normal distribution whereas data on IBES and LEAP followed normal distribution in the Kolmogorov-Smirnov test. To find the relationship of CSSI and FDI scores with scores of IBES and LEAP-father, and mother, Spearman's rho correlation coefficient was computed. Pearson's correlation coefficient was computed to correlate between IBES, LEAP-father and LEAP-mother scores. Chi-square and Fisher's exact tests were used to find the association between categorical variables. Bonferroni correction for multiple chi-square tests was done, to control family-wise error rate. Comparison of normally distributed quantitative data between categories, was carried out by using independent t test and ANOVA. Hierarchical multiple regression analyses were performed to examine the independent predictors of symptom severity and functional disability. Additionally, a post-hoc power analysis was performed to evaluate the statistical power of the study. A significance level, $p < 0.05$ was fixed for all the tests.

RESULTS

Sample Characteristics: Sixty-six children participated in the study and the sample characteristics are presented in Table: 1. The mean (SD) age was 11.803 (2.157). Most of the children (44%) were from 11-

Table 1: Personal characteristics of children with functional somatic symptoms (n = 66)

Sample characteristics	Children (%)
Age (Mean $\pm$ SD)	11.803 $\pm$ 2.157
CSSI (Mean $\pm$ SD)	21.848 $\pm$ 8.767
Age group	
8-10 years	22 (33.3)
11-13 years	29 (44.0)
14-17 years	15 (22.7)
Gender	
Male	34 (51.5)
Female	32 (48.5)
Standard	
Lower primary	11 (16.7)
Upper primary	32 (48.5)
High school to plus 2	23 (34.8)
Ordinal position	
First child	34 (51.5)
Second child	29 (43.9)
Third child	3 (4.6)
Area of residence	
Urban	14 (21.2)
Rural	52 (78.8)
Type of family	
Joint	30 (45.5)
Nuclear	36 (54.5)
Type of syllabus	
State syllabus	38 (57.6)
CBSE/ ICSE syllabus	28 (42.4)
No. of doctors consulted in the last six months	
Median (IQR)	3 (3-5)
Chronic illness in Mother	
Yes	21 (31.8)
No	45 (68.2)
Chronic illness in father	
Yes	18 (27.3)
No	48 (72.7)

13 years' age group, males constituted 51.5% and another 51.5% were first children of their families, and 69.7% were from rural areas. Children from nuclear family constituted 54.5%, and most of them were studying the Kerala state syllabus (57.6%). Children have consulted many number of doctors in the last six months (median=3, IQR= 3-5) for their symptoms. Twenty-one participant's (31.8%) mothers had chronic illnesses and 18 (27.3%) children's fathers had chronic illnesses.

Figure:1 depicts that low symptoms (score<18), moderate symptoms (19-31) and high symptoms ($\geq$ 32) were reported by 45.5%, 42.4% and 12.1% of the sample respectively.

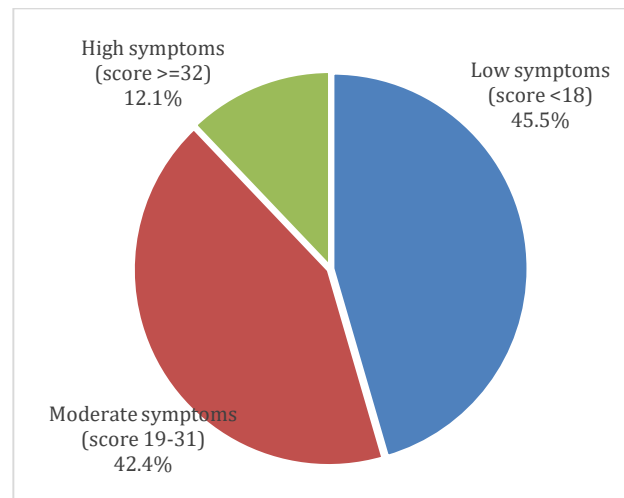
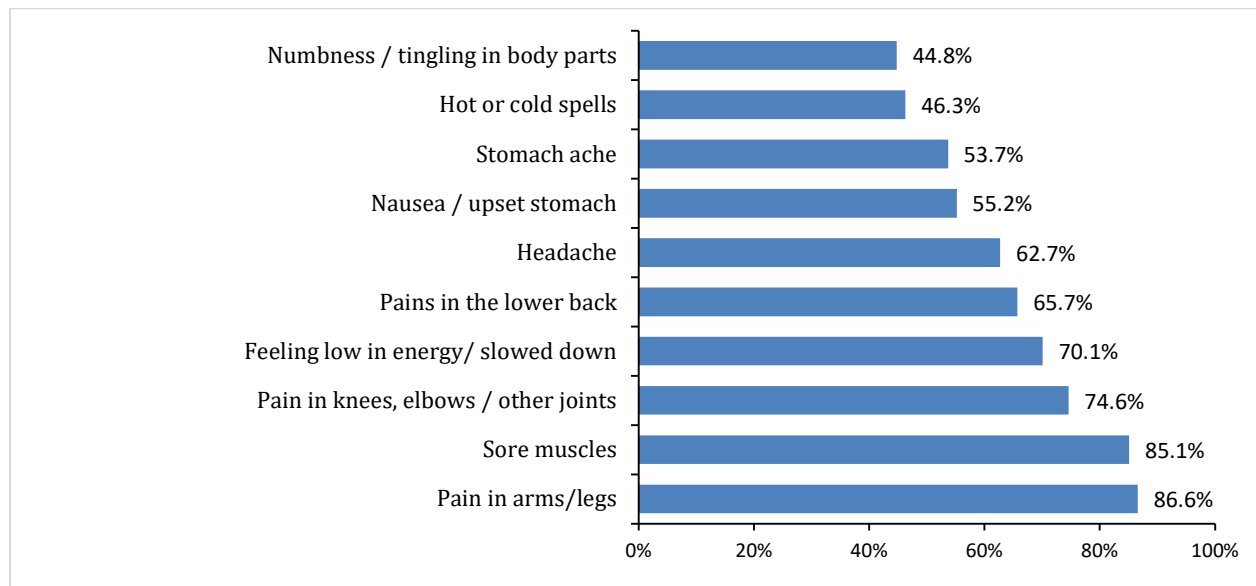
**Figure 1: Severity of FSS among the participants (n=66)****Figure 2: Most reported somatic symptoms by the participants**

Figure 2 depicts that pain in arms and legs was the highest reported symptom by the subjects (86.6%), followed by sore muscles (85.1%), pain in knees, elbows and other joints (74.6%). Feeling low in energy and slowed down was reported by 70.1% of the participants.

No or minimal (score 0-12), moderate (13-29) and severe ($\geq$ 30) disability were reported by 40.9%, 43.9% and 15.2% of the children respectively (Fig 3).

In Table:2, the Spearman's rho correlation shows significant positive correlation between somatic

symptoms and functional disability ($r=0.487$, $p<0.001$). But these two variables did not show any correlation with parental illness behaviour encouragement (IBES) total score or its two component scores ($p>0.05$). Child perceived father's and mother's emotional availability correlated negatively with child's somatic symptoms (father $r=-0.469$ $p<0.001$, and mother, $r=-0.370$, $p<0.01$) and functional disability (father, $r=-0.314$, $p<0.05$, mother $r=-0.334$, $p<0.01$). Child perceived fathers' and mothers' emotional availability showed positive correlation ($r=0.659$, $p<0.001$). Also, the IBES total score and its two component scores showed positive correlations.

In order to identify the least scored items of Lum Emotional Availability of Parents scale by the children, the mean percentage of each item was calculated (Table 3). Regarding the perceived paternal emotional availability, the lowest scored items were, father: spends time with the child to know about the child's interests (mean=3.89, SD=1.59), is emotionally available to the child (mean=4.11, SD=1.42) and is available at any time to talk (mean=4.21, SD=1.51) with mean percentage of 64.8%, 68.5% and 70.0% respectively. The least scored items for the mother were, mother: values the child's ideas or opinions

(mean=4.46, SD=1.20), spends extra time with the child to know about the child's interests (mean=4.53, SD=1.57) and talks with the child about the child's likes (mean=4.74, SD=1.28) with mean percentages of 74.3%, 75.5% and 79% respectively.

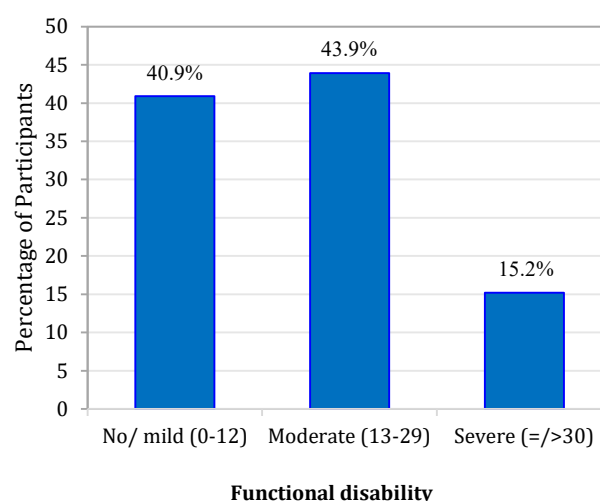


Figure 3: Functional disability among the participants

Table 2: Correlation between functional somatic symptoms, disability, parental illness behaviour encouragement and parental emotional availability

Variables	1	2	3	3a	3b	4	5
1 Somatic symptoms [#]	-						-
2 Functional disability [#]	0.487(<0.001)	-					-
3 IBES-Total [†]	0.145(0.245)	0.211(0.090)	-				-
3a IBES- Free from responsibility [†]	0.073(0.559)	0.114(0.362)	0.759(<.001)	-			-
3b IBES- Attention and privileges [†]	0.161(0.195)	0.217(0.080)	0.886(<.001)	0.380(0.002)	-		-
4 Emotional availability of father [†]	-0.469(<0.001)	-0.314(0.010)	0.194(0.118)	0.036(0.776)	0.233(0.059)	-	-
5 Emotional availability of mother [†]	-0.370(0.002)	-0.334(0.006)	0.222(0.096)	0.142(0.255)	0.157(0.120)	0.659(<0.001)	-

Values are Pearson's or Spearman's correlation coefficients (r) with p-values in parentheses.

[#] Nonnormally distributed, [†] Normally distributed, IBES- Parental Illness Behaviour Encouragement Scale

Table 3: Item wise mean and mean percentage scores of perceived parental emotional availability in children with functional somatic symptoms (n=66)

Items of Emotional Availability Scale	Father		Mother	
	Mean ± SD	Mean%	Mean ±SD	Mean%
Supports me	4.86 ±1.25	81.0	5.22±1.10	87.0
Consoles me when I am upset	4.70 ±1.42	78.3	5.36±1.23	89.3
Shows she/he cares about me	4.8 ±1.42	80.0	5.01±1.35	83.5
Shows a genuine interest in me (eg: pays attention and is curious about me)	4.7 ±1.30	78.3	5.27±1.14	87.8
Remembers things that are important to me	4.43 ±1.39	73.8	5.24±1.09	87.3
Is available to talk at any time	4.21 ±1.51	70.0	5.13±1.17	85.5
Asks questions in a caring manner	4.37 ±1.28	72.8	5.21±1.07	86.8
Spends extra time with me just because she/he wants to know my interests	3.89 ±1.59	64.8	4.53±1.57	75.5
Is willing to talk about my troubles	4.31±1.61	71.8	5.01±1.34	83.5
Pursues talking with me about my interests (eg: tries to talk to me about what I like)	4.51±1.37	75.0	4.74±1.28	79.0
Values my input (eg: cares about my ideas)	4.30 ±1.39	71.7	4.46±1.20	74.3
Is emotionally available to me	4.11 ±1.42	68.5	5.04±1.28	84.0
Makes me feel wanted	5.0 ±1.37	83.3	5.31±1.22	88.5
Praises me (eg: tells me good things about myself)	4.71±1.21	78.5	4.96±1.22	82.7
Is understanding	4.71±1.21	78.5	5.31±1.05	88.5
Total (maximum score: 90)	67.62±14.14	75.1	75.77±11.75	84.2

Table 4: Association between severity of FSS and selected characteristics of children

Variables	Functional somatic symptoms		χ^2 value	<i>p</i> value
	Low symptoms (n=30) (%)	Moderate & high symptoms (n=36) (%)		
Child characteristics				
Age in years				
8-12	21 (51.2)	20 (48.8)	1.451	0.228
13-17	9 (36.0)	16 (64.0)		
Gender				
Male	16 (47.1)	18 (52.9)	0.073	0.787
Female	14 (43.8)	18 (56.3)		
Ordinal position				
1 st child	15 (44.1)	19 (55.9)	0.051	0.822
2 nd or 3 rd child	15 (46.9)	17 (53.1)		
Area of residence				
Urban	6 (42.9)	8 (57.1)	0.048	0.826
Rural	24 (96.2)	28 (53.8)		
Type of family				
Joint	14 (46.7)	16 (53.3)	0.033	0.857
Nuclear	16 (44.4)	20 (55.6)		
Staying with				
Both parents	21 (42.4)	28 (57.1)	0.518	0.472
One parent	9 (52.9)	8 (47.1)		
Parent characteristics				
Mother's education				
Up to secondary	10 (58.8)	7 (41.2)	3.873	0.144
Higher secondary	6 (28.6)	15 (71.4)		
Above higher secondary	14 (50.0)	14 (50.0)		
Father's education				
Up to secondary	18 (58.1)	13 (41.9)	3.859	0.145
Higher secondary	5 (31.3)	11 (68.8)		
Above higher secondary	7 (36.8)	12 (63.3)		
Mother's occupation				
Home maker	17 (41.5)	24 (58.5)	0.695	0.404
Employed	13 (52.0)	12 (48.0)		
Father's occupation				
Unskilled	7 (36.8)	12 (63.2)	0.814	0.666
Skilled/professional	10 (50.0)	10 (50.0)		
Self-employed	13 (48.1)	14 (51.9)		
Chronic illness in mother	9 (42.9)	12 (57.1)	0.084	0.772
Chronic illness in father‡	4 (22.2)	14 (77.8)	5.388*	0.027

*Significant, $p < 0.05$ *Fisher's test

The chi-square test for finding the association between children's somatic symptoms and the child and parent characteristics (Table: 4) showed that children's somatic symptoms was associated only with paternal chronic illness ($\chi^2 = 5.388$, $p = 0.027$). But when Bonferroni correction for multiple chi-square tests was done, this p value was above the cut off; 0.004, and hence it cannot be considered as significant.

The chi-square test showed (Table: 5) that children's functional disability was associated only with number of siblings ($\chi^2 = 4.363$, $p < 0.05$). However, when Bonferroni correction for multiple chi-square tests was done, this p value was above the cut off, 0.005, and hence cannot be considered as significant.

ANOVA and student's t tests were carried out to find the association of children perceived emotional availability of both parents with the child characteristics. Variables which showed significant association were given in Table: 6. Older, first-born and urban children reported low emotional availability of father

and children having two or more siblings and children studying CBSE or ICSE syllabus reported low maternal emotional availability ($p < 0.05$).

Partial correlations were computed to examine the relationships between parental emotional availability and child outcomes while controlling for paternal chronic illness. After adjusting for paternal illness, child symptoms remained correlated significantly with greater functional disability ($\rho = 0.464$, $p < 0.001$). In addition, paternal emotional availability showed a statistically significant negative correlation with child symptoms ($\rho = -0.492$, $p < 0.001$), and disability ($\rho = -0.324$, $p < 0.01$) even after controlling for paternal illness, suggesting that lower paternal emotional availability independently predicted higher symptom levels. Similarly, maternal emotional availability remained significantly negatively correlated with somatic symptoms ($\rho = -0.41$, $p < 0.001$), indicating that both parents' emotional availability uniquely influencing child's symptoms beyond the effect of paternal chronic illness.

Table 5: Association of functional disability with selected characteristics of children

Characteristics	Functional disability		χ^2 value	p value
	No/minimal disability (n=27) (%)	Moderate & severe disability (n=39) (%)		
Child characteristics				
Gender				
Male	13 (38.2)	21 (61.8)	0.207	0.649
Female	14 (43.8)	18 (56.3)		
No. of siblings ‡				
Nil/1	25 (47.2)	28 (52.8)	4.363*	0.037
2/>2	2 (15.4)	11 (84.6)		
Ordinal position				
1 st child	12 (35.3)	22 (64.7)	0.915	0.339
2 nd or 3 rd child	15 (46.9)	17 (53.1)		
Area of residence ‡				
Urban	3 (21.4)	11 (78.6)	2.79	0.13
Rural	24 (46.2)	28 (53.8)		
Type of family				
Joint	11 (36.7)	19 (63.3)	0.409	0.522
Nuclear	16 (44.4)	20 (55.6)		
Parent characteristics				
Mother's education				
Up to secondary	6 (35.3)	11 (64.7)	0.299	0.861
Higher secondary	9 (42.9)	12 (57.1)		
Above higher secondary	12 (42.9)	16 (57.1)		
Father's education				
Up to secondary	17 (54.8)	14 (45.2)	4.848	0.089
Higher secondary	4 (25.0)	12 (75.0)		
Above higher secondary	6 (31.6)	13 (68.4)		
Chronic illness in mother	11 (52.4)	10 (47.6)	1.677	0.195
Chronic illness in father ‡	4 (22.2)	14 (77.8)	3.575	0.059

*Fisher's test, * Significant, p<0.05

Table 6: Association between perceived emotional availability of parents and child characteristics

Sample characteristics	n	Mean (SD)	Tests	P value
Emotional availability of father				
Age in years				
8-10	22	70.28 (10.11)	F=4.002	0.023
11-13	29	70.1 (12.24)		
14-17	15	58.93 (19.27)		
Ordinal position				
1 st child	34	64.21 (13.33)	t=2.073	0.042
2 nd or 3 rd child	32	71.25 (14.27)		
Place of residence				
Urban	14	59.36 (17.56)	t= 2.567	0.013
Rural	52	69.85 (12.35)		
Emotional availability of mother				
No. of siblings				
Nil/ one	53	77.25 (9.25)	t=2.109	0.039
Two/ more	13	69.77 (18.13)		
Type of syllabus				
State syllabus	38	79.03 (8.06)	t=2.749	0.008
CBSE and ICSE	28	71.36 (14.43)		

Table 7: Partial correlation (Spearman's rho) computed between somatic symptoms, functional disability, and emotional availability of parents, controlling for paternal illness

Variables	Somatic symptoms	Functional disability	Emotional availability- Father	Emotional availability- Mother
Somatic symptoms total	-			
Functional disability	0.464 (<0.001)	-		
Emotional availability of father	-0.492 (<0.001)	-0.324 (0.009)	-	
Emotional availability of mother	-0.411 (<0.001)	-0.358 (0.003)	0.660 (<0.001)	-

Values are Pearson's or Spearman's correlation coefficients (r) with p-values in parentheses.

Note: Controlling for illness in father

Table 8: Hierarchical Multiple Regression coefficients for independent predictors of symptom severity

Model	B	t	p value	95.0% Confidence Interval for B	
				Lower Bound	Upper Bound
(Constant)	37.0	5.3	<0.001	23.1	51.0
Functional disability	0.29	3.2	0.002	0.1	0.5
Emotional availability of father	-0.2	-3.0	0.004	-0.3	-0.1
Illness in father	-3.7	-1.8	0.72	-7.7	0.3

Dependent Variable: CSSI Total

A hierarchical multiple regression was conducted to examine whether parental emotional availability predicts child symptom severity (CSSI Total) after controlling for child's age, maternal education, and paternal chronic illness, only functional disability, Illness in father, and Emotional availability of father were retained. The model was statistically significant, $F(3, 62) = 12.99$, $p < 0.001$, explaining 38.6% of the variance in child symptom severity ($R^2 = .386$, Adjusted $R^2 = .356$). Paternal emotional availability remained as a statistically significant negative predictor, $B = -0.20$, $t(62) = -3.0$, $p = .004$, even after controlling for functional disability (FDI child Total, $B = 0.29$, $p = 0.002$) and paternal illness ($B = -3.7$, $p = .072$).

DISCUSSION

This study was done to correlate between symptom severity, functional disability, parental illness behaviour encouragement and parental emotional availability among children with functional somatic symptoms attending the outpatient department of clinical psychology of a referral hospital. Sixty-six children participated in this study. The mean age of the participants was 11.803 ± 2.157 and 55.5% was males. The participants of the current study have consulted several doctors (median=3, IQR=3-5) in the last six months for their somatic symptoms. Previous studies conducted among children with functional somatic symptoms have reported increased medical consultation rates including emergency department utilization.^{5,25,26,27} Majority of participants (45.5%) experienced low symptoms. Moderate and high symptoms were reported by 42.4% and 12.1% respectively. Pain in arms and legs was the mostly reported symptom by the subjects (86.6%), followed by sore muscles (85.1%) and pain in knees, elbows and other joints (74.6%). Feeling low in energy and slowed down was reported by 70.1% of the participants. Similar to previous studies, pain symptoms were reported predominantly by the participants of this study.^{5,6} Regarding the functional disability, moderate and severe disability were reported by 43.9% and 15.2% of children respectively and this may be because of the pain symptoms interfering with activities of daily living, school and leisure. Higher levels of disability have been reported in children with recurrent functional abdominal pain and somatoform pain disorder.^{28,29}

The primary objective of the study was to correlate between symptom severity, functional disability, parental illness encouragement behaviour and parental

emotional availability in children with functional somatic symptoms. The current study observed a positive correlation between severity of FSS and the functional disability of children ($r=0.487$, $p<0.01$). Previous studies have reported similar findings.^{6,20,30} Both symptom severity and disability of children did not correlate with child reported parental illness encouragement total score as well as its two components (making the child free from responsibilities and providing attention and privileges) scores. Researchers could not find any study in the literature that directly assessed the relationship between illness behaviour encouragement by parents, severity of FSS and associated functional impairment in children. But a comparative study reported high levels of parental illness encouragement in children with functional abdominal pain than children with organic illness.¹³

Another eye-opening finding is the negative correlation shown by the severity of somatic symptoms and the related disability with the perceived emotional availability of both parents. That means, variations in the elements of emotional availability like sensitivity, emotional closeness, sharing of both positive and negative feelings, responsiveness, support, physical presence, valuing child's opinions etc. in the parent-child relationship play an important role in aggravating or reducing the somatic symptoms as well as the related disability. So, it is evident that the quality of father-child and mother-child relationships are crucial factors in case of children's somatic symptoms. Due to the cross-sectional nature of the study, we cannot determine whether low emotional availability precedes or results from child symptoms. Emotional availability of parents act as a moderator or protective factor on child stress response.³¹ Poor psychological health in adolescents is found to be connected to father-child and mother-child interactions with lower grades of emotional availability.³² Low parental emotional availability has been reported in children with autism spectrum disorders and anorexia nervosa, but no studies were detected in the literature which assessed the parental emotional availability in children with functional somatic symptoms.^{33,34} Previous researches have established a relationship for childhood somatization with faulty parent-child relationship and lack of communication within the family.^{14,35} This finding necessitates parents to be more emotionally available to their children. Skill-building programmes and emotion coaching sessions for parents may help in developing and expressing connection behaviours, identifying and responding contingently to the children's emotional cues and in-

creasing warmth and responsiveness in the relationship with their children.³⁶ A positive correlation was observed between the child reported emotional availability of father and mother in the present study. It means that each parent is complementing the other in their relationship with the child. Similar findings have been reported in a recent research study done in children with anorexia nervosa.³³

The study brought out some other interesting findings also. The severity of children's symptoms and presence of chronic illness in father were found to be associated. but such association was not found with maternal chronic illness which needs to be studied further. According to social learning theory, children and adolescents learn illness behaviour from the ill family members through modelling and reinforcement behaviours.³⁷ The association between parental illness and children's somatic symptoms is well established in previous studies.^{38,39} Older (above 13 years of age), first born and urban children perceived low levels of emotional availability of father. Similarly, children with more than one sibling and studying CBSE/ ICSE syllabus reported low maternal emotional availability. More research is needed in this regard to explain the dynamics and influence of these factors on parental emotional availability. In the partial correlation analysis, lower emotional availability of both parents was uniquely influencing child's symptoms beyond the effect of paternal chronic illness. However, regression results reveal that perceived emotional availability of father is a significant independent negative predictor of the severity of functional somatic symptoms in children highlighting its protective role in psychosomatic outcomes. This is a thought provoking finding which suggests that the quality of father-child relationship plays an important regulatory role in children's psychosomatic functioning and it should be addressed in the management of such children.

STRENGTHS AND LIMITATIONS

This study was conducted exclusively on a clinical sample of children presented with functional somatic symptoms. Studies are limited which measure the constructs like parental illness encouragement and parental emotional availability in this group of children. Limitations include small sample size which limits the generalization of study findings and we mainly focused on child-reported data. Child report versions were used on the assumption that children are the most important informant in case of internalizing problems like somatization. But relying solely on child self-reports may inflate correlations due to shared method variance; future studies may include parent-rated outcomes.

CONCLUSION

The study demonstrated a positive relationship between severity of somatic symptoms and the func-

tional disability. The highlight of this study is that the symptom severity and associated disability in children with FSS increase with low grades of emotional availability of both father and mother. Hence assessment of parental emotional availability also must be considered in the assessment and evaluation of children with this condition. If the parents continue to remain emotionally unavailable to the children, it can adversely affect even the treatment outcome. So parental education regarding the importance of emotional availability and the ways to be emotionally available to their children must be incorporated in the management of these children. Skill-building programmes and emotion coaching sessions for parents have been found helping in developing and expressing connection behaviours, identifying and responding contingently to the children's emotional cues and increasing warmth and responsiveness in the relationship with their children. Parents may be suggested for daily activities like spending minimum 15 minutes' face-to face purposeful interaction with the child focusing on child's likes and interests and to explore the feelings, being available to the child to talk with, asking for the child's opinions and ideas and valuing them etc.

Recommendations for future research includes similar studies may be conducted with larger samples. In the post-hoc power analysis, with $n=66$, the study had approximately 65-70% power to detect a medium correlation ($r=0.3$) at $\alpha=0.05$. To achieve 80% power 85 participants will be required; therefore, future studies should use larger samples. Comparative studies may be done between children with FSS and normal children to identify the role of parental emotional availability in the development of FSS in children. Effect of parental skill building programmes on the child's somatic symptoms and psychosocial impairments and perceived parental emotional availability can also be studied.

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Availability of Data: The data supporting the findings of this study are available from the correspond-

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