RELATIONSHIP OF UNEXPLAINED SOMATIC SYMPTOMS WITH LIFE EVENTS AND TEMPERAMENT IN CHILDREN AND ADOLESCENTS

Dissertation submitted for partial fulfillment of the rules and regulations

DOCTOR OF MEDICINE

BRANCH - XVIII (PSYCHIATRY)

THE TAMILNADU DR.MGR MEDICAL UNIVERSITY

CHENNAI

TAMIL NADU

APRIL 2017

CERTIFICATE

This is to certify that the dissertation titled, "**RELATIONSHIP OF UNEXPLAINED SOMATIC SYMPTOMS WITH LIFE EVENTS AND TEMPERAMENT IN CHILDREN AND ADOLESCENTS"** is the bonafide work of **Dr. PUNYA MULKY**, in part fulfillment of the requirements for the M.D. Branch – XVIII (Psychiatry) examination of The Tamil Nadu Dr. M. G. R. Medical University, to be held in April 2017. The period of study was from March 2016 – Sep 2016.

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CERTIFICATE OF GUIDE

This is to certify that the dissertation titled, "**RELATIONSHIP OF UNEXPLAINED SOMATIC SYMPTOMS WITH LIFE EVENTS AND TEMPERAMENT IN CHILDREN AND ADOLESCENTS"** is the bonafide work of **Dr. PUNYA MULKY**, done under my guidance submitted in partial fulfilment of the requirements for the M.D. Branch – XVIII (Psychiatry) examination of The Tamil Nadu Dr. M. G. R. Medical University, to be held in April 2017.

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DECLARATION

I, **Dr. PUNYA MULKY**, solemnly declare that the dissertation titled, **RELATIONSHIP OF UNEXPLAINED SOMATIC SYMPTOMS WITH LIFE EVENTS AND TEMPERAMENT IN CHILDREN AND ADOLESCENTS** is a bonafide work done by myself at the Madras Medical College, Chennai, during the period from March 2016 - Sep 2016 under the guidance and supervision of **Prof. Dr. SHANTHI NAMBI MD, DPM,** Professor of Psychiatry, Institute Of Child Health, Madras Medical College. The dissertation is submitted to The Tamilnadu Dr. M.G.R. Medical University towards part fulfilment for M.D. Branch XVIII (Psychiatry) examination.

Place:

Date: **Dr. PUNYA MULKY**

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INSTITUTIONAL ETHICS COMMITTEE
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CERTIFICATE OF APPROVAL

To
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Dear Dr.Punya Mulky,

The Institutional Ethics Committee has considered your request and approved your study titled **"RELATIONSHIP OF UNEXPLAINED SOMATIC SYMPTOMS WITH LIFE EVENTS AND TEMPERAMENT IN CHILDREN AND ADOLESCENTS" - NO.18032016.**

The following members of Ethics Committee were present in the meeting hold on **01.03.2016** conducted at Madras Medical College, Chennai 3

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11.Tmt.Arnold Saulina, MA.,MSW.,	:Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

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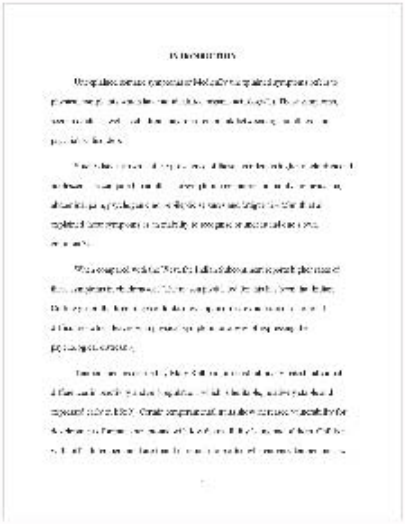


CONTENTS

INTRODUCTION

Unexplained somatic symptoms or Medically unexplained symptoms refers to physical complaints which have no identified organic aetiology(1). These symptoms, seen in adults as well as children, may represent a link between organic illness and psychiatric disorders..

Studies have shown that the prevalence of these disorders is higher in children and adolescents as compared to adults. The symptoms seen more commonly are headache, abdominal pain, psychogenic non-epileptic seizures and fatigue (2-6).Smith et al explained these symptoms as an inability to recognise or understand one's own emotion(7).

When compared with the West, the Indian Subcontinent reports higher rates of these symptoms in children(4,8). The reason postulated for this has been that Indian Culture generally discourages or looks down upon direct expression of emotional difficulties which leaves with physical symptoms as a way of expressing the psychological distress(3).

Temperament as defined by Mary Rothbart, is constitutionally based individual differences in reactivity and self-regulation, which is heritable, relatively stable and expressed early in life(9). Certain temperamental traits show increased vulnerability for development of somatic symptoms, with low distractibility being one of them. Children with difficult temperament are found to report more often whereas easy temperament was found to be a protective

factor. Understanding the temperamental traits will help us in management of the child (10).

A second factor to be considered is stressful life events. Most studies are in agreement with regard to the significant association between life events, especially negative ones, with the somatic symptoms, and there being a trend for somatic symptoms to increase in direct proportion with the number and the severity of the stressful events(3,6). The stressful event may be in school environment and/or in the home environment.There is a need to help the child increase his coping strategies and build up and maintain interpersonal relations to help him deal with the stressors better.

Family related issues involving parental education, parenting styles as well as family psychopathology are known to play a significant role in perpetuating or ameliorating these symptoms. The nuclear family type as well as low literacy rate amongst parents has been held responsible for poor parenting skills(11). Poor parenting skills may involve overindulgent as well as overbearing parenting, both of which will only maintain the symptoms. It has also been noted that the parents of these children and adolescents may have experienced similar symptoms at some point in their life. This may be attributed to modelling or learning by imitation.

Somatic symptoms themselves along with repeated visits to multiple doctors as well as numerous investigations causes a lot of psychological

distress to the child and socio-emotional and financial difficulties to the parents(2).

These symptoms should be dealt with in childhood as there are higher chances of these disorders persisting in adult life and leading to further mental health disorders. Studying about unexplained somatic symptoms in children allows evaluation of the real psychopathological process at its roots, not yet hidden by many defensive and rationalizing attitudes. Moreover environmental features are easier to explore as the familyis involved and can help to understand the process in a deeper way(12).

Research done in this field is equivalent to the tip of the iceberg. There is a need for better characterization of the clinical picture of these children, according to the nature of the symptom (for example, positive or negative; motor, sensory, cognitive, etc.). The accompanying comorbidities, cognitive distortions, psychic organization and attachment style needs to be studied. Rather than trying to find out what is common to the symptom, it is essential to know what is common in terms of the profiles and processes. After all, as said by Ouss(12),

"The symptom is only the final expression of a complex process."

Few studies in the past in India have dealt with somatic symptoms in children and their association with factors like temperament or stressful life events or parenting. No one study has dealt with the association of these

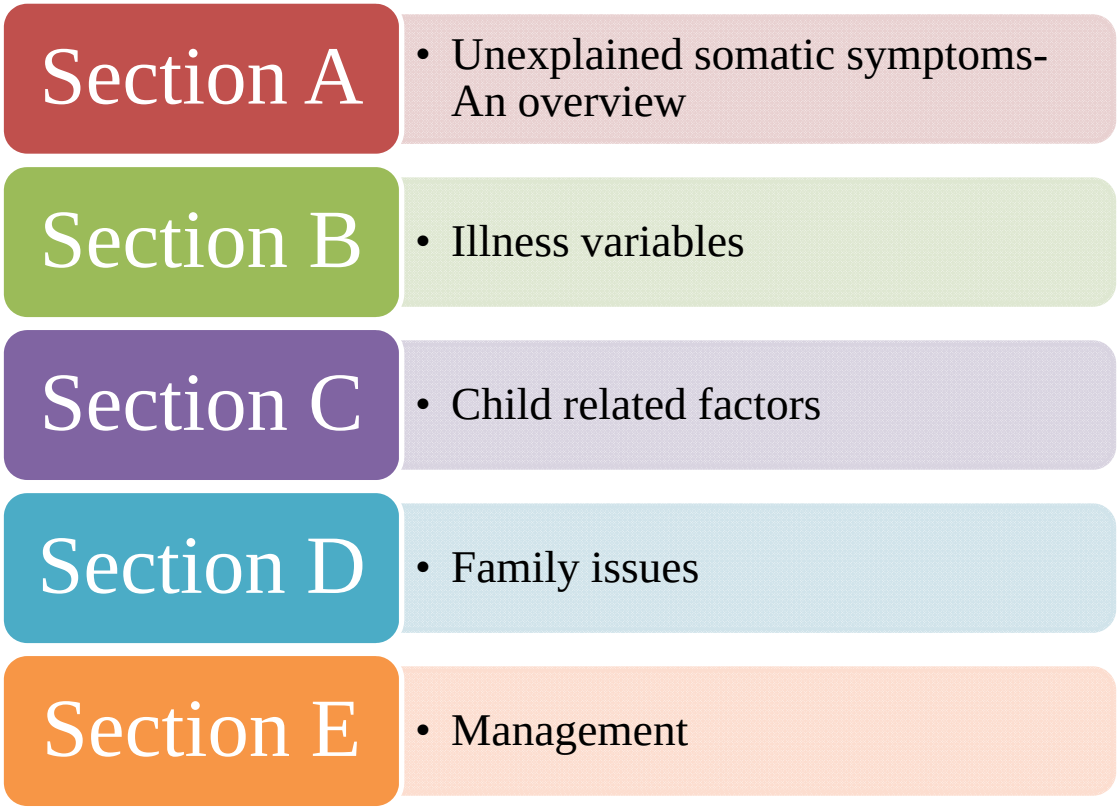
symptoms with all these factors in the same population. According to our literature search, this study is the first of its kind to be done in South India.

“Beliefs are physical. A thought held long enough and repeated enough becomes a belief. The belief then becomes biology.”

-Marilyn Van Derbur.

REVIEW OF LITERATURE

The review of literature has been dealt with in the following 5 sections.



SECTION(A): Unexplained Somatic Symptoms – An Overview

Somatic symptoms occur in many children and adolescents with headache, abdominal pain and fatigue being the most common. Very few of these symptoms have an identified organic aetiology. The symptoms having unexplained aetiology have been termed 'psychosomatic' or 'functional', but now the term mostly used is ***'unexplained somatic symptoms'*** or ***'medically unexplained symptoms'***(2).

The concept of “medically unexplained” symptoms was considered dualistic and time consuming to measure and unreliable as well as there is no clarity whether the relationship between medically unexplained symptoms and outcome is explained by anxiety and depression (13-18). Unexplained somatic symptoms is still a challenge for doctors as there is no clear understanding. A biopsychosocial approach, which encompasses the interaction of physiological, psychological and social factors could help explain the presentation of some somatic symptoms (19-21).Zwaigenbaum and colleagues explained the findings of their study as functional somatic symptoms being an early expression of depressive feelings(22).

Some studies have implied that instead of trying to determine whether the symptoms are ‘unexplained medical symptoms’ or not, rather the total somatic symptom count should be used to predict the outcome of health status and healthcare use. A high somatic symptom score is best seen as a phenomenon of multifactorial aetiology with interacting psychological, social and biological factors (21).

The importance of studying unexplained somatic symptoms in children as explained by Ouss et al is that it allows access to the roots of a pathopsychological process, not yet hidden by many defensive, rationalizing attitudes. Most of the conversive roots in adults are anchored in early child and adolescent experience, and processes, such as attachment behavior and representations, which are difficult to explore many years later. Family

involvement and environmental features are easier to explore, since family is involved, and this can help in understanding such a process(12).

There is a wide variation in the prevalence of these somatic symptoms in children as well as in adults.

Epidemiological as well as clinical studies have shown that the prevalence of unexplained symptoms in children and adolescents was around 3.6-13% in the Western countries but the numbers are slightly higher in Indian children and adolescents(4,8). The prevalence varies from 12.5% as seen by a study in North India by Sethi et al to 14.8% in outpatients and 30.8% in inpatients in a tertiary care centre in South India as seen by Srinath et al(3,4) to as high as 72% in a study by Singh et al in school going children(11). Another study by Gupta et al in North India found the prevalence of unexplained neurological symptoms to be 0.32. In this study, around 83% of children presented with psychogenic nonepileptic seizures with an average age of onset being around 12 years(23). The time of presenting for treatment was around 1 year after the onset of symptoms(6). Regarding adults, Lazare reports from previous studies that 20-25% have had conversion symptoms at some time in their life, 5-16% were referred from other departments for management of conversion symptom and the incidence in the general population of Sweden was found to be around 0.5%(24).

The reason for higher prevalence in Indian children as reviewed by Sethi et al is that these symptoms are looked upon as implicit behaviours which are meant to communicate stress in restrictive societies. Therefore the higher

prevalence of these symptoms in restrictive and conservative societies like India(3). Another study by Srinath et al has postulated that culturally, having a ‘medical illness’ is a much more acceptable and convenient way of expressing underlying psychological distress(4,5).

In a review by Ouss et al, it was noted that these symptoms generally occur at around 12.5 years, with symptoms being rare below 8 years of age(12). Many Indian studies are in agreement with regard to the age at which the children present with complaints. It has been found to be around 10-12 years, which is the early adolescent period (3,4,23).

In Indian studies, the symptoms are found to be especially higher in females(3,4,25), which is attributed to the fact that they face more restrictions from the society and therefore convey psychological distress by the means of physical symptoms. Earlier studies showed these symptoms to be common in females especially those belonging to low socio-economic status but in the recent years the trends are changing(26,27), with the study by Gupta et al finding the symptoms to be 1.2 times more common in males as compared to females(23).

A longitudinal study done by Egger et al showed that the type of somatic symptom may predict different psychiatric diagnosis in different genders. E.g.: abdominal pain predicted anxiety disorders in females but attention deficit hyperactivity disorder and/or oppositional defiant disorder in males. Similarly musculoskeletal pains predicted only depression in boys but

both depression and anxiety in females(28). This may signify separate pathways for males and females.

Many studies especially the ones done earlier in developing countries have found the prevalence of these symptoms to be more in rural communities and lower socioeconomic status. The reason postulated was that rural settings are restrictive societies which don't allow for expression of psychological distress thereby increasing the prevalence of somatic symptoms(3). But the trend was found to be changing with the advent of urbanization, emergence of nuclear families and increasing pressure on children(23). In the study done in South India by Srinath et al, the prevalence was more in urban areas(4).

Another important point noted is that more children are presenting from nuclear families as compared to joint families, which may be due to the fact that in nuclear families, children lack emotional and social support provided by grandparents, cousins, uncles and aunt, which may help the child deal with psychological distress (3,23).

Lazare while explaining the aetiology says it is complex and a multidimensional approach can be adopted wherein simultaneous as well as separate biological, socio-cultural, psychodynamic and behavioural explanations can be given. Among these the most widely accepted is psychodynamic wherein people with certain developmental predispositions respond to stressful life events with conversion symptoms. The stress is supposed to cause the anxiety by awakening the intrapsychic conflict(which is mostly related to aggression, sexuality or dependency) whereas the symptoms

reduce the anxiety. Biological mechanism was proposed as presence of high incidence of conversion symptoms in patients with head injury and other organic brain lesion was noted. Sociocultural causality was put forth as it was seen that certain ethnic and social groups were predisposed to respond to emotional stress with certain conversions.According to the behavioural model, symptoms represent a learned behavioural excess or deficit that either follows a particular event or psychological state or is reinforced by a particular event(24).

A review by Kozlowska et al suggests that these functional or unexplained somatic symptoms are associated with some functional differences in HPA axis, vagal-sympathetic tone imbalances, increase in the immune-inflammatory function, and primed cognitive–emotional responses that lead to an increase in reactivity to threatening stimuli, thereby contributing to the subjective experience of somatic symptoms(29).

"What determines the nature of the symptom?" Some patients show a lack of function (such as paralysis or sensory impairment), and other show positive symptoms (pain, abnormal movements, PNES, etc.). Some suggestions have been made to explain this. The symptom could be determined by a previous organic symptom (such as tendinitis or fracture),or could be ‘‘borrowed’’ from a relative, what Freud andBreuer (1895) called ‘‘somatic compliance’’ (30). This idea can also be linked to Damasio's theory of somatic markers (1994)(31). Somatic markers are associations between reinforcing stimuli, somatic experiences that induce an associated physiologic affective

state, which bias the way in which a further similar experience will be interpreted and thus the decision of how to act (12).

Kozlowska (32) proposes to extend this ethological point of view in the perspective of human development, referring to Crittenden's dynamic-maturational model of attachment, a theory about protecting oneself from danger (33). This model analyses development through 'the interactive effects of genetic inheritance, maturational processes and person-specific experiences to produce individual differences in strategies for keeping oneself safe' (33). They distinguish two types of defensive strategies against fear in animals:

Type A, being an inhibitory,immobilization or ''freezing response'';

TypeB, consisting of activatory, diversion ''appeasement defensebehavior''.

In a convincing way, Kozlowska (34) showed two distinct subtypes of conversion patients: "those using psychological inhibition and those using psychological coercion-preoccupation, whose symptoms fell into discrete clusters."

Kozlowska's proposition of the complex process of conversion

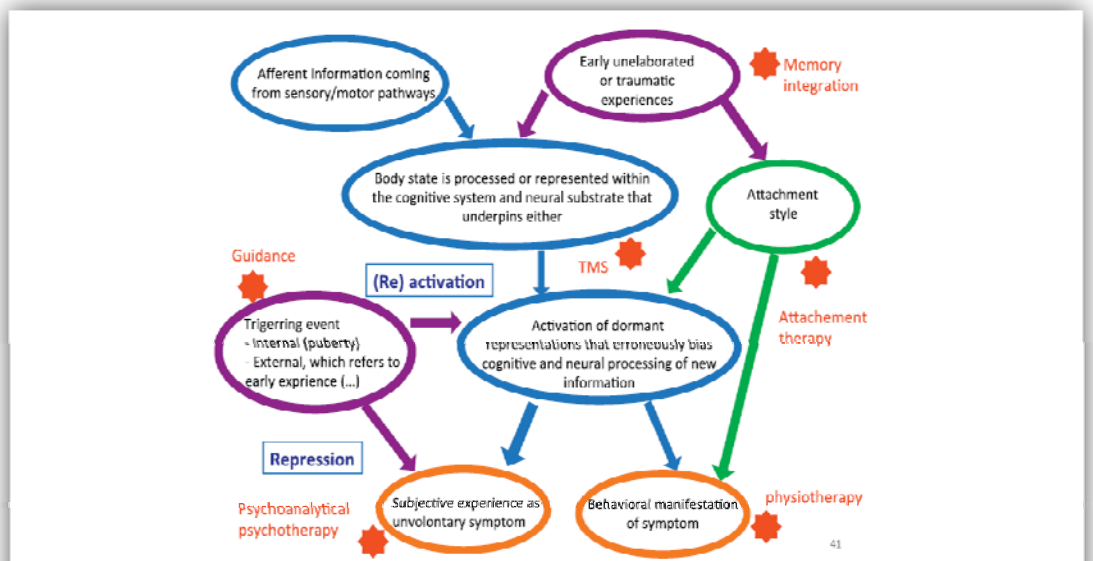


Figure 1 The whole process of conversion symptom production [in blue, the neural and cognitive levels. In purple, environmental level. In green, attachment level. In orange, symptomatic level. Blue rectangles signal processes. Red stars signal therapeutical levels].

The principal interest of this model is to propose a complementarist approach in order to combine different levels (neural, cognitive, environmental, attachment, intra-psychic) (35).

Poikolainen et al have explained that although these symptoms are only rarely associated with organic disease in adolescence(4), the symptoms are frequently an expression of the inability to recognise own emotions (alexithymia)(7,36). Somatic symptoms seem to be clinically important warning signs(29), which may persist into adulthood, herald later mental disorder(37), and lead into high use of health services.

There is a need for better characterization of the clinical presentation, according to the nature of the symptom (for example, positive or negative; motor, sensory, cognitive, etc.). The comorbidities, cognitive functioning,

psychic organization, and attachment style should be evaluated. We need to study what is common to in terms of profiles or processes, rather than what is common to symptoms. The symptom is only the final expression of a complex process(12).

SECTION (B): Illness Characteristics

The most common presenting complaint seen in most studies in the West as well as in India has been psychogenic non-epileptic seizures. In the review by Ouss et al, psychogenic non-epileptic seizures, fainting attacks and motor symptoms were frequent symptoms(12). A Turkish study by Pehlivanturk et al found 82.5% of children reported with psychogenic non-epileptic seizures(6). Some studies also found pain complaints in 34%-68% cases(12).One study by Bujoreanu et al reported pain complaints(58%) like headache, musculoskeletal pain and abdominal pain to be more common followed by psychogenic non-epileptic seizures(40%) and gastrointestinal complaints like nausea and vomiting(23%)(38).

Indian studies also show similar findings. In the study by Sethi et al, Psychogenic non-epileptic seizures were found to be more common(49%) followed by dissociative motor symptoms which was seen in 18% of the children(3). The dramatic presentation of these symptoms were postulated to be the reason why the parents of these children sought treatment earlier and more frequently as compared to other symptoms.

Two studies in South India as well found psychogenic non-epileptic seizures as the most common presentation(5,4). Srinath et al reported that “a typical pseudoseizure generally would be characterized by the child lumping down to the ground and making irregular, nonrhythmic, bizarre movements, throwing the limbs around,or writhing on the ground. The child would become responsive and normal after a few more minutes.” These psychogenic nonepileptic seizures were also accompanied by general muscular weakness and inability to walk. The second most common presentation was abnormal movements like tremors of the limbs followed by fainting spells, which was the third most common presentation(4). Gait disturbances were also seen in some studies(5).

Recurrent abdominal pain was another frequently reported symptom. Walker et al defined ‘Recurrent abdominal pain(RAP)’ as “recurring episodes of abdominal pain severe enough to interfere with the child's activities, but having no identifiable organic aetiology.” It is associated with other non-specific symptoms like headache, fatigue, dizziness and diarrhoea(39). In a study by Apley et al, the prevalence of recurrent abdominal pain was found to be 10-15% in school aged children(40).

Most of the children are referred from respective paediatric speciality outpatient services. In a Danish study by TotStrate et al which focussed on referral patterns in children with functional somatic symptoms, showed that the referred children were having more symptoms and for a longer duration. These children had undergone more investigations, were admitted for a significantly

longer time and were exposed to more treatment options before being referred for inadequate treatment response, which was found to be the most common reason for referral(41). In Indian studies, most of the children had recent onset of the symptoms, and duration of illness before admission was also found to be significantly short as well as the duration of stay which was found to be approximately less than a month(4). Multiple non-psychiatric consultations were obtained before being referred to the psychiatrist.

"Comorbidity is a rule rather than an exception in children".

The common comorbid diagnoses in children with somatic symptoms in the West found to be anxiety while in India it was depression(4,8,12). In a study by Pehlivanturk et al, 45% children and adolescents received a comorbid diagnosis of major depression and /or anxiety disorder at the time of initial interviewing. At follow up, there was a decline of the comorbid disorders to only 35%, which was not found significant(6).Other comorbidities seen were psychoses, conduct disorder, hyperkinetic syndromes, emotional disorder, and infantile autism(4).

In some studies, intelligence of children and adolescence has been cited as a factor in the aetiology of conversion disorder. Both superior intelligence, because it is associated with greater reactivity to environmental events, and borderline intellectual functioning, because it impairs the ability to cope effectively, have been linked to the development of conversion symptoms(25).

Many studies have been done on the course and prognosis of these complaints. Around 85% patients recovered completely with a significant

improvement in functioning in the study by Pehlivanturk et al(6). It was observed that patients who presented within one month of onset of symptoms recovered significantly earlier than those who presented later. In our country,72% were symptom free within one week of consultation and starting treatment whereas 93% showed total remission within 4 weeks of initiating treatment (3,4). Though many studies show rapid remission and overall good outcome of illness(4,42),some have shown opposite findings. Goodyer and Mitchell et al found poor outcome for psychogenic nonepileptic seizures, i.e. the residual physical symptoms were higher as was the usage of the medical services(43). Kotsopaulos and Snow showed that children who have features of anxiety associated with conversion features had poorer outcome as compared to those with conversion alone so they advocated intensive therapy till all the psychiatric symptomatology is cleared(44).

The recovery lasted for long time, especially for those children who did not have premorbid conduct problems, as verified by follow up interviews done over a period of 4 years. The remaining patients who did not recover had significant psychiatric comorbidities. Early diagnosis and good premorbid temperament were found to be favourable prognostic factors. The reason postulated is that children with premorbid conduct problems will have poor therapeutic cooperation.A previous study showed that the duration from onset of symptoms to the diagnosis of conversion was significantly shorter for children and adolescents as compared to adults and paediatric patients also showed a relatively better outcome (18,22). Regarding psychogenic

nonepileptic seizures, contrasting findings are seen. Goodyer and Mitchell showed 63% recovery rate for children with psychogenic nonepileptic seizures as compared to other symptoms which was 90% but the study by Pehlivanturk et al showed a recovery rate of 88% for psychogenic nonepileptic seizures vs. 72% for all other types of symptoms. But many studies agree with the view that recovery rates in children are much better when compared with adults where the rates are around 35-51%(6,43).

Other good prognostic factors were young age of onset, sensory symptoms rather than motor symptoms, presence of a stressful event, good socio-economic status, good paediatric liaison, and co-operative child and family, whereas polysymptomatic, chronic presentation with comorbid psychiatric or medical illness, and serious family pathology are poor prognostic factors. Absence of any other concomitant organic disease or major psychiatric symptoms — especially “depression” (5,6,8,12).

Another important feature of these symptoms are the continuity of these symptoms in adulthood. Even though a lot of studies show quick remission of these symptoms in children, research says that adults who present with functional somatic symptoms often have a childhood history of somatic symptoms (47,48) and mostly they tend to present with the same symptom at follow up. Poilokainen followed up adolescents and tried to identify the predictors of somatic symptoms(36). It found notable continuity in symptoms between adolescence and early adulthood. In adolescents, somatic symptom scores associated positively with trait anxiety, trait depression, immature

defence style, and alcohol or drug use in both sexes(10). In boys, smoking was associated with more symptoms, and in girls, high self-esteem with fewer symptoms. The level of somatic symptoms is significantly predicted by relief smoking in men and in women by the number of negative life events. This is the reason why management of childhood somatic symptoms is necessary(36).

Studies have also followed individual symptoms as well. The outcome was better when pychogenic nonepileptic seizure is the presenting symptom. Since psychogenic nonepileptic seizures are mostly presenting symptoms in children, this may also be a reason for better prognosis in children as compared to adults, though some studies have shown poorer prognosis for psychogenic nonepileptic seizures(43).Follow-up studies in children with recurrent abdominal pain showed that one fourth to one half of these children continue to report abdominal pain several years following their initial evaluations, even though organic pathology is rarely diagnosed (39,40).

Among the prognostic studies reported by Lazare, in adults, Carter et al and Hafeiz et al showed favourable prognosis at follow up while those by Slater and Glithero and Gatfield and Guze showed poor prognosis(24).

The presence of somatic symptoms does not rule out presence of a medical illness. Medical conditions and psychosomatic symptoms or diagnoses are not mutually exclusive. Association of conversion symptoms with previous medically identifiable illness or injury varies from 10 % to 60%(49).In a study by Bujoureanu et al, approximately two-thirds of patients were identified as

having a medical condition, and the majority of these youth reported unexplained symptoms that overlapped with their medical diagnosis (38).

Merskeley stresses on the importance of correctly diagnosing organic disorders because, if there, these disorders are missed then the psychiatrist will be expected to treat a physical disorder with an antidepressant or psychotherapy(50).

Lazare also stressed on the association between conversion symptoms and organic illness(24). They may be associated in two ways:

1. Many patients whose initial diagnosis was conversion was later on changed to an organic illness.
2. Coexistence of organic illness in patients with conversion symptoms.

There are 4 studies on incidence of misdiagnosed conversion disorder.

Sr.No	Studies	Total no of patients in beginning	Years followed	Total pts. followed up till end	No. of cases which converted to organicity
1	Slater and Glithero(51)	99	7-11 years	73	22(30%)
2	Gatfield and Guze(52)	24	$2^{1/2}$ – 10 years	24	5(21%)
3	Raskin et al(53)	50	6-12 months	50	7(14%)
4	Stefanson(54)	64	3.3 years	64	8(13%)

Whitlock in his study on psychiatric inpatients who were diagnosed as hysteria found thepresence of a coexisting organic brain disorder in 63.5% whereas it was 5.5% in the control group(55).

A study by Sharma et al was done in India to explore the usefulness, simplicity and utility of Lazare's criteria as a method for diagnosis of conversion disorder as well as to know about factors relating to organicity in adults with conversion disorder. Despite the fact that a conversion symptom or a functional symptom requires the presence of psychological distress and lack of organic illness, a considerable proportion of the patients have shown an association with organicity. This association may either be a past history of an organic illness, coexisting neurological symptoms or a neurological disease which is detected on long term follow up. In this study, 43% patients showed association with physical illness but the authors could not comment on how these physical factors played a role in the development and maintenance of these functional symptoms(46).

SECTION (C): Child Related Factors

There is paucity of literature regarding the associations between temperament of the child and somatic symptoms.

It has been noted that children with certain temperamental traits were more vulnerable to develop unexplained physical symptoms. Certain studies found them to be more in insecure and sensitive children (56), while others found them in anxious, timid, fussy and apprehensive children (57),and some studies also found perfectionist and high achieving children to have more symptoms(58). Malhotra et al found that children with low distractibility remained in distress for longer periods and hence were less soothable(59). These children took a longer time to come out of psychological distress which

in turn was known to translate into physical symptoms. Early attempts at soothing the child may avoid this conversion of psychological distress into a physical symptom. A study by Raghutaman et al showed an association between low activity, low emotionality, low rhythmicity, low distractibility and the symptoms. A difficult temperament was found to act as a vulnerability factor whereas an easy temperament was a protective factor(10). Wertlieb et al found that children with negative mood and low distractibility made higher use of medical facilities.But yet another Indian study by Prabhuswamy et al found difficult temperament in less than half of the subjects, thereby suggesting that these symptoms may just be a reaction to stress(5).

Another trait associated with symptoms was perfectionism. A study by Bonvanie et al was done on association of functional somatic symptoms with perfectionism in adolescents over a 2 year period, which was a part of the TRAILS study i.e. Tracking Adolescents' Individual Lives Survey(60). Perfectionism may lead to anxiety and depression due to the fact that they have higher expectations from themselves and inability to meet them or control the situation. This anxiety and depression may lead to increased focus on bodily signals and this may lead to an altered interpretation of these signals. Attention and attribution biases towards bodily signals are thought to play an important role in the development of functional somatic symptoms(8). The pathway in which perfectionism may lead to functional somatic symptoms has been explained as perfectionists perceive certain regular events as stressors and are more vulnerable to these and they may be experiencing more distress due to

their use of maladaptive coping strategies like rumination and catastrophizing(8,61,62). A biological method of explaining this association would be that perfectionists face a chronic stress which leads to alterations in the functioning of the HPA axis, which in turn causes altered cortisol stress responses(63), and lower cortisol levels are associated with increased stress.

Kozlowska describes that good, compliant, perfectionistic children obtain relief from pressures to succeed by assuming the sick role. By maintaining the sick role, such children are released from their exemplary functioning without the expression of open rebellion and can also avoid experiencing anxiety about facing failure(29,32).

Moreover the presence of a good premorbid temperament was found to be a favourable prognostic factor (5,6,12).

Research on stressful life events and somatic symptoms in child shows a definite association. Apley et al in his study on children with recurrent abdominal pain noted that the pain episodes are often preceded or exaggerated by a stressful situation such as family disruption or school problems and are accompanied by emotional disturbance(39,56).Negative life events may have a bidirectional relationship with symptoms, i.e. stressful life events may result in increased somatic symptoms, or increased symptoms may precipitate negative life events (e.g., illness or emotional disorder could lead to events such as school failure or loss of friendship). Although a measure of negative life events may not be useful in the differential diagnosis of patients with and without an organic basis for abdominal pain, it appears that such a measure may be useful

in assessing prognosis for patients without organic findings. Among recurrent abdominal pain patients, a high level of negative life events was predictive of continued abdominal pain, and was associated with maintenance of anxiety and somatization symptoms(39).Community studies done in children and adolescents with somatic symptoms show higher levels of stressful life events which show increased association with more number of episodes of illness, frequent illness exacerbations and higher utilization of health services. These negative events need not be restricted to the child or adolescent alone. Studies have shown that negative life events faced by any family member can be stressful for the entire family unit and children especially may be more affected but less expressive about it(64).

Research shows factors which mediate the impact of these negative life events on the symptoms – the child's competence, the somatic symptoms in the parent and the sex of the child. Compas and Phares(1991) found that children who had less competence, both academically as well as socially were more likely to perceive even simple events as threatening and had ineffective coping strategies, which made them more vulnerable to the effects of these events. Higher competence was able to buffer the effects of these negative events. Good peer relations were seen to be helpful for the child in the following ways: peers may help child distract from ongoing negative events, peer related activities may act as an incentive for the child to decrease illness behaviour so as to keep participating in peer related activities and maintain his friendships. Peers may also help in reducing the subjective threat of stressful life events.

Moreover disclosure to a peer may help in the psychological functioning of the child. In children with poor social competence, secondary gain or adopting a sick role to legitimize their failures has been seen. Thus Walker et al summarized that higher level of negative life events had a significant impact on the symptoms of the child and this impact can be ameliorated by better quality of relationships of the child outside his family and higher social competence of the child(64).

Greene, Walker, Hickson, & Thompson, (1985) had compared adolescent patients with various functional pain complaints (abdominal pain, chest pain, and headache) to adolescent patients with other complaints(64). Functional pain patients obtained significantly higher negative life event scores than patients seen for routine check-up, acute minor illness, stable chronic illness, or pain with clinically diagnosed organic cause.

Stress factors are multiple found in 10% to 90% children and adolescents. They may be school stress (12.5% to 58% including bullying or victimization in school, 23.8%), relational stress (52.5%), medical diseases in relatives (25%), parental separation (19%) and death of a relative or friend (16.7%) (12).

In a study done in Turkey, 90% children had the presence of a stressor in their lives, the majority i.e. around 53% reported family problems and peer related issues, followed by 25% reporting health problems or medical illnesses in the family and close environment and academic problems seen in 13% children(6).

Indian studies also reported higher prevalence of psychosocial stressors in these children, ranging from 70-90% (3,4,23).Stresses related to studies was especially found to be more common e.g.: examination, changing of school, difficulty in reading and writing(23). Poor quality teaching, poor monitoring of studies at home, and poor communication between parents and teachers regarding progress of child was noted. Most children were left on their own. Even though tuitions were arranged for some, there was no one to see how helpful they proved to be. Lower educational status of parents and higher expectations from the child, increased the difficulties of children. 53% of these children even recognized a probable connection between the stressor and the symptom(4). All children were found to have two or more stressors and both acute and chronic stressors had an additive effect on the child. An important and different finding of the study by Sharma et al was that unusual status of the child had a significant association with the unexplained somatic symptoms. Unusual status included being only child, precious child(born/adopted several years after marriage), being youngest child, being only son amongst several daughters or vice-versa. This status of the child made the parent over-indulgent and this perpetuated stress(25).

A study done by Singh et al in 1991 was one of the first few from India to study about somatic complaints and life events in about 500 school going children and adolescents between the ages of 11-17yrs. The prevalence in this study was around 72%, with it being higher in girls and showing a significant positive correlation with the number of stressful family life events, especially

financial problems and moving out to a new home. Though this descriptive study is amongst the first few in India to study the role stressful life events may be playing in causation of somatic symptoms in children through various psychic and physiological processes as well as psychological conflicts and poor coping skills, the major drawback being that it ignored school related stressors like academic difficulties, peer related issues and punitive teacher, which may also have a significant impact on the child's life considering the school is another important aspect of the child's life, information obtained from the children was not corroborated by the caregivers and Beautrais's modified version of the Holmes and Rahe's Social Readjustment Rating Scale was used, which has items more suitable for the Western population rather than the Indian children.Nevertheless, it should be given credit due to the fact that it emphasized on a holistic approach and the importance of resolving the family stresses in the treatment of the child with unexplained, vague somatic symptoms (11,65).

In a study by Bonvanie et al on sexual abuse and functional somatic symptoms as a part of the TRAIL's survey, it was seen that sexual abuse predicts higher level of functional somatic symptoms during adolescence with a significant association with contact sexual abuse and functional somatic symptoms as compared to non-contact sexual abuse. The effect of sexual abuse on functional somatic symptoms could be partially explained by symptoms of anxiety and depression. The advantage of this study is that it is amongst the

first to investigate the effects of sexual abuse in adolescents on the spectrum of functional somatic symptoms(66).

The importance of identifying and dealing with the negative life events in childhood is emphasized by Creed et al in a study done in adults which found that childhood psychological abuse, lower educational qualification, general medical illness, anxiety, depression were risk factors for increased somatic symptoms, both explained as well as unexplained. This study also showed that increased somatic symptoms is associated with more impairment. This study implies that instead of trying to determine whether the symptoms are ‘unexplained medical symptoms’, rather the total somatic symptom count should be used to predict the outcome of health status and healthcare use(21).

Presence of unexplained medical symptoms is known to cause significant socio-emotional difficulties and affect the functioning of the child. These symptoms lead to multiple consultations with various specialists, increased school absenteeism and functional disability thereby leading to significant distress to the child as well as the parent(2) and surprisingly the treating doctor as well, as the diagnosis is often difficult to make, made after exclusion of all other possible conditions and the management of such children possesses considerable challenges(23). Frequent absences from school will give rise to academic difficulties, poor relations with peers and social isolation in some. Parents of children with frequent somatic symptoms have to skip work for medical consultations. This may cause impairment at workplace along with financial loss(2).

SECTION (D): Family Issues

The family dynamics have been found to have a significant impact on the symptomatology of these children and adolescents by many studies(3,11,12,23). According to our literature review, only one study by Robinson et al showed no significant association in family functioning with symptoms(67).

Singh et al studied the association of family type and parents' level of education with the somatic symptoms(11). The nuclear family type and the lower literacy rate amongst the mothers of children with more somatic symptoms has been cited as the cause of poor parenting skills. As already mentioned before, children from nuclear families present with these symptoms more often as they face more pressure to perform well academically, are constantly compared with their peers and lack the emotional and social support provided by the joint family set up(23). Moreover, middle socioeconomic status was more frequent amongst these as according to the changing trends, parents belonging to this class are striving hard for attaining financial stability and higher financial status, as a result there are more pressures on the parents and the children as well and parents tend to ignore the emotional needs of the child trying to replace them with material comforts(23). In such a backdrop, the presence of a stressor may lead to manifestation of the psychological distress as a physical symptom (23). But another Indian study showed that in the joint family system, there were repeated clashes between the primary caregivers like

the parents and the surrogate caregivers like the grandparents and uncles as the former were more punitive whereas the latter were more overprotective(25).

Another finding seen in most studies has been the association of somatic symptoms in parents and their children. Mikail &vonBaeyer et al showed that in parents who had somatic symptoms, there was more likelihood of there being these symptoms in their children as well. Beck et al showed that parents' somatic symptoms did have an influence on the somatic symptoms of the child(8). Rutter et al found that boys especially were more susceptible to the effect of negative family life events. A significant association of somatic symptoms in the father and the symptoms of the child were found, but not so much in the mother. The reason for this has been postulated as being due to the fact that men are generally supposed to be strong and do not generally express their distress as compared to females therefore when they do so it must be severe and cause significant impact on the full family as well. This relation may be explained by a family tendency to respond to stress somatically which may be genetic i.e. tendency for stressors to precipitate physiological changes which are manifested as symptoms. This may also be due to the fact that if parents' in a family have higher level of somatic symptoms it may increase the importance of perception of illness and health in the family leading to the somatic sensations of the child being interpreted as somatic symptoms. Modelling of the parents' symptoms may also be one of the reasons. Children may be modelling this behaviour unconsciously by observation of their parents. Modelling which was known as borrowing, was seen in 29-54% children

wherein symptoms were modelled from a family member(12). Not only a parent, children may learn the behaviour by a relative or a friend by identification and imitation(25,68).

Apart from presence of somatic symptoms in family members, presence of psychiatric illness in families is seen in both Western and Indian studies. Among family members,26% were diagnosed with psychiatric disorders and 23% with medical conditions(12).In India, 30% of the children had a positive family history for psychiatric illness(3).

In a study done by Alana Morris and Jane Ogden on understanding the child's unexplained symptoms, some parents attributed the symptoms to controllable causes related to lifestyle like diet and hydration while many others attributed it to uncontrollable causes like biomedical factors and 'psychological factors' or 'state of mind'. Most of the parents were convinced the symptoms were authentic and real and not a fabrication on the part of the child(2).Many parents especially mothers preferred to make sense out of their child's symptoms by attributing a cause to them and ascribing a label to them. Managing their children and their symptoms becomes very stressful for the parents over the time mainly because of not being taken seriously by the doctors as well as their friends and family(2). Mothers tend to manage the ambiguity of somatic symptoms by emphasising on the authenticity of these and by placing the responsibility of these symptoms on external uncontrollable causes and not on the child or the family.

The privileges given to the child may be responsible for maintaining of the symptoms. The culture may be playing an important role in this. Seizures and fainting spells are perceived as life threatening by the people. Moreover it may be an unconsciously preferred symptom as it has higher secondary gains and it is episodic in nature which causes lesser functional impairment in between the attacks (6).

Many studies argue that parents may be responsible for initiating and maintaining their child's symptoms and illness-related behaviour through selective reinforcement and over protectiveness (2). In a study by Walker et al, children with recurrent abdominal pain and gastrointestinal complaints reported greater perceived parental encouragement of illness behaviour for abdominal symptoms when compared with controls and children with emotional problems(64).

These children have been seen to belong to either of the two types of families:

1) Chaotic family with somatic and psychopathological symptoms among family members and
2) Family of high performers with high cognitive level, high academic expectations and higher anxiety about disease and health, with lesser social and psychopathological difficulties(12,49).

In the study conducted in South India by Srinath et al, parenting was noted to be important from two aspects. One, many children reported punitive parenting as a stress factor with it being a probable reason for their current complaints, which like many studies have previously explained maybe the

physical manifestation of the underlying psychological stress, the expression of which is difficult in the Indian culture. Secondly, the obvious distress, worry and anxiety of the parents while reporting to the doctor sometimes with many relatives may serve to act as a reinforcing factor for the existing symptoms(4).

Vineeta Gupta et al showed that family plays a role in maintaining or reinforcing the symptoms in many ways. Unrealistic expectations from the child put undue pressure on the child. Parenting, at either ends of the spectrum, i.e. punitive as well as overprotective parenting has been implied. Sibling rivalry was seen in two cases as being responsible for the child's current symptoms. Sometimes family conflicts, if they are severe enough, even if not involving the child, may cause the child a lot of distress(23).

SECTION(E): Management

Not many studies have focussed on the management of unexplained somatic symptoms in children and adolescents though studies have been done in adults. Those done have focussed on psychotherapy for both the child and the parents(4,6).

Almost all studies(23), emphasized on the importance of a multi-disciplinary approach for these children involving child psychiatrist, child psychologist, paediatrician and parents/guardians of the child. Psychotherapy for the child as well as the parents is recommended with pharmacotherapy if needed. Regular follow up is recommended so as to avoid relapses.

Pehlivanturk et al in Turkey managed the children and adolescents using the following methods:

1. Psychoeducating children and parents about the symptoms;
2. Eliminating wrong beliefs and unrealistic worries;
3. To help them gain insight about factors which initiate or aggravate the symptoms;
4. Reduce the anxiety;
5. Deal with secondary gains;
6. Teach verbal expression of emotions and avoidance of somatic language;
7. Integrative treatment modalities including the whole family were used to develop more effective communication patterns in the family.

Along with the above, the children who were having other psychiatric symptoms were started on psychotropic medications.

In India, Srinath et al showed ‘normalization’ to be the first model to be applied in their study as they considered symptom removal as the first priority. Other models that were or could be applied for these children were the family crisis resolution, individual psychotherapy and family counselling and intervention(4).

According to Lazare, with regard to management, confronting the children that their symptoms are psychological in origin is the least helpful way and leads to a poor doctor-patient relationship. He suggests a more oblique pattern by inquiring into the child’s life, trying to understand the symbolic meaning of symptoms, try to comprehend the unbearable affects against which the symptoms defend and the social communication present in the symptom.

With this, the psychiatrist may be able to help the child explain whatever he has been unable to express. Family and friends may be included in the management(24).

“We might thus question whether we should try to cure defensive symptoms or not; it is often necessary to respect the symptom, until we understand its role. Such respect however does not mean that we do not attempt to cure it. On the other hand, we have to remain aware that if the symptom has any role in the psyche, its rapid disappearance without any psychic elaboration will certainly be followed by the reappearance of another symptom (46).”

Reviewing all of the risk factors for a high total somatic symptom count with individual patients should enable treatment to be focussed on the relevant factors with a view to making it more effective (21,69).

A review article by Kirmayer et al has noted that when an intervention succeeds in treating a particular symptom, the lack of any clear explanation is of no importance or lesser importance to the patient. But when the given treatment fails and symptoms continue to persist, some explanation and psychoeducation offers some reassurance to the caregiver and the patient. It promotes coping strategies and improves resilience. There are times when both, the treatment and the explanation fail to satisfy the patient, it leads to an increase in the suffering more so due to the anxiety of ambiguity and uncertainty(70). Moreover these children have poor self-esteem and self-image. Psychosocial problems should be uncovered and they should be counselled regarding them as well.

Sharpening of parenting skills is essential for the better functioning of the child. Parent management skills should be taught. There is a need to educate families about the importance of better care of physical health during infancy and early childhood to prevent recurrent illnesses and excessive sensitization toward the functioning of one's body. Greater attention to symptoms may also be responsible for perpetuation due to social learning and modelling(5).

AIMS AND OBJECTIVES

AIM

The current study aims to assess the relationship of unexplained somatic symptoms with sociodemographic profile, clinical dimensions, life events, temperament and parenting in children and adolescents.

OBJECTIVES

1. To study the socio-demographic factors, clinical features and the symptom variations and course in children and adolescents with unexplained somatic symptoms.

2. To assess the relationship of these symptoms with the temperament and life events of the child.

3. To assess the relationship of the symptoms with the parental practices and the parental psychopathology.

4. To study the relationship of the symptoms with the global functioning of the child and adolescents.

NULL HYPOTHESIS

1. There is no significant association between unexplained somatic symptoms and the temperament of the child and adolescent.

2. There is no significant association between unexplained somatic symptoms and the various stressful life events faced by the child and adolescent.

3. There is no significant association between unexplained somatic symptoms and the type of parenting and the parental psychopathology.

4. There is no significant association between unexplained somatic symptoms and the global functioning of the child and the adolescent.

MATERIALS AND METHODS

Section (A)

SampleSelection

The current study was a descriptive study, conducted at the Child Guidance Clinic, Department of Child and Adolescent Psychiatry, Institute Of Child Health, Madras Medical College, Chennai.

In the Child Guidance Clinic, for all cases the initial assessment is performed by a junior resident (postgraduate) and then discussed with a senior qualified psychiatrist (Asst. Professor or Head of Department). These children were then sent to the clinical psychologists for further psychological assessment. Following this, a diagnosis is made as per DSM-5 and multi-axial system was used to record the diagnostic information(71). The axes were

(I)Psychiatric diagnosis

(II)Specific developmental delays

(III)Intellectual level

(IV)Significant medical illnesses

(V)Associated psychosocial conditions

(VI)Global functioning

The child and the caregiver are counselled and given medications if necessary and asked to follow up at a later date.

The medical records of all the children who presented to the Department of Child Psychiatry from a period of Jan 2013 - Dec 2015 were reviewed. The

children who presented with somatic symptoms were short-listed, contacted over the phone and asked to come for follow-up.

The children who came for follow up were included in the study.The children who were lost to follow up were either due to inability to contact them or because they did not report after being contacted. The caregivers of children who did not report were contacted twice and asked to come for follow up. Most common reasons cited for not reporting for follow up were the resolution of the symptoms or longer distance from their home.

Sampling

Consecutive sampling has been done.

Study Period

March – September 2016

Selection Criteria

1. Children between 7- 12 years of age.
2. Children who presented to the psychiatry OP with somatic symptoms.
3. Children whose parents(and children if possible) gave informed consent for participation in the study.
4. Children with IQ > 70.
5. Absence of any acute illness.

Section (B): Instruments

1. Socio-demographic data sheet: (Appendix 1)

A semi-structured proforma was designed to elicit information about the socio- demographic details of the children, their clinical features and other characteristics of the illness. Illness variables like remission and relapse of the illness were also included in the proforma. Along with this, factors like presence of modelling of the symptoms, any privileges given to the child which perpetuated the symptom, the attribution of the child as well as the parent were also included.

2. Early Adolescent Temperament Questionnaire - Revised (EATQ-R) Parent Report: (Appendix 2)

The EATQ-R has been designed by Rothbart et al to assess the temperament in adolescents aged 9 - 15 years. This questionnaire is administered to the guardian of the child. It assesses the dimensions of temperament using 8 different temperament scales - activation control, activity level, affiliation, attention, fear, frustration, high intensity pleasure, inhibitory control, shyness and 2 behavioural scales - aggression and depressed mood. These are grouped into 4 factors - Effortful control, Surgency, Negative affect, Affiliation. It has 62 items and takes around 40 minutes to administer. The child is rated on 1 to 5 for each item based on the parent's report(72).

3. Temperament in Middle Childhood Questionnaire (TMCQ):

(Appendix 3)

This questionnaire is a highly differentiated assessment of temperament in middle childhood. It was developed by Jennifer Simonds and Mary Rothbart. It has been designed to measure temperament in children aged 7 to 10 years. In our study, we have used it for children aged 7 and 8 years. It is administered to the parent of the child. It is a 157 item questionnaire which takes around 90 minutes to administer. The TMCQ assesses 17 dimensions of temperament namely - activity level, affiliation, anger/frustration, assertiveness/dominance, attention, discomfort, fantasy/openness, fear, high intensity pleasure, impulsivity, inhibitory control, low intensity pleasure, perceptual sensitivity, sadness, shyness, soothability/falling reactivity, activation control. These 17 dimensions are further grouped into 4 factors - Negative Affectivity, Surgency extraversion, Effortful control, Sociability/Affiliation(73).

4. Life Events Scale for Indian Children (LESIC): (Appendix 4)

This scale was devised by Savita Maholtra for assessing the life events in the Indian cultural setup. It consists of 50 events comprising desirable, undesirable and neutral events. The assessment of stress is made on two time frame parameters i.e. in the last one year and ever in life prior to last one year. The scale is administered to the parent of the child. A stressfulness score is assigned to each event and the informant is asked torate how stressful the event has been for the child on a scale of 0 – 3. It takes around 40 min to administer(74).

5. Parenting Practices Questionnaire (PPQ): (Appendix 5)

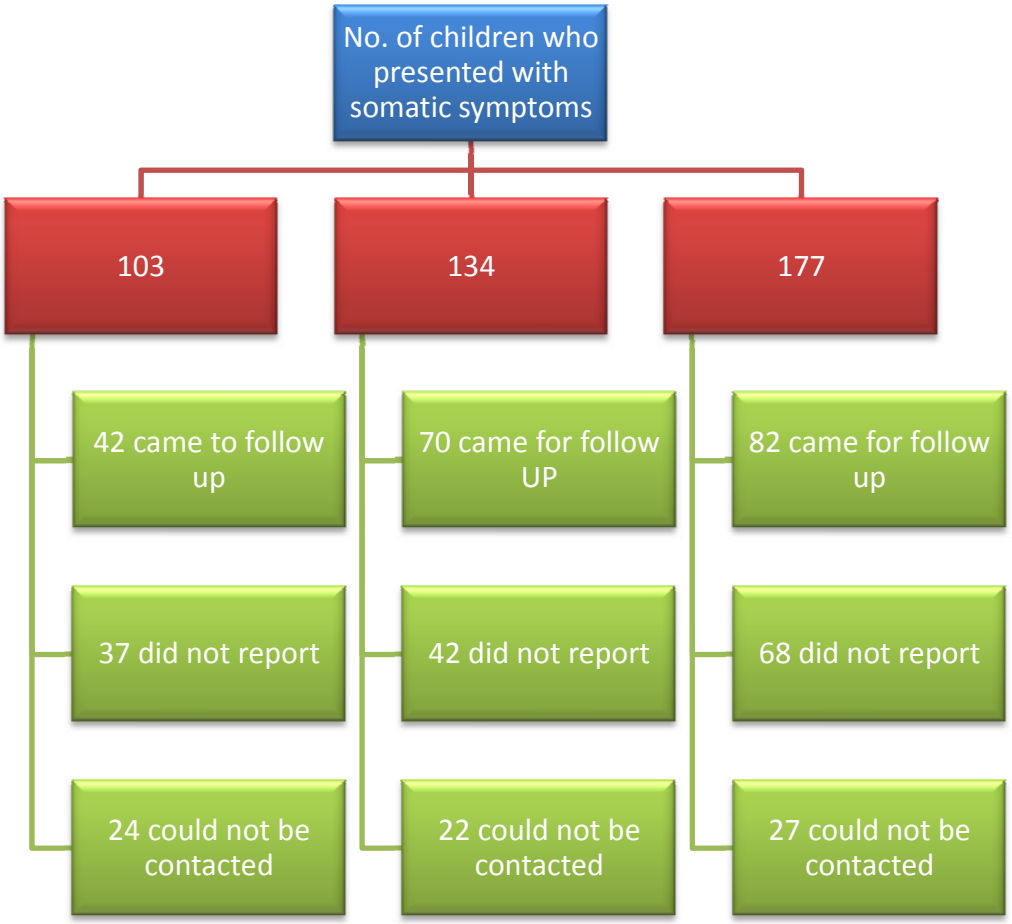
Thescale was developed by Robinson, Mandelco, Olsen & Hart in 1995. It is a 62 item scale which assesses global typologies consistent with D. Baumrind's authoritative, authoritarian and permissive typologies for parents of preadolescent children and identified specific parenting practices occurring within the context of the typologies. It can be administered to either parent and takes around 50 minutes to administer(75).

6. Children's Global Assessment Scale (CGAS): (Appendix 6)

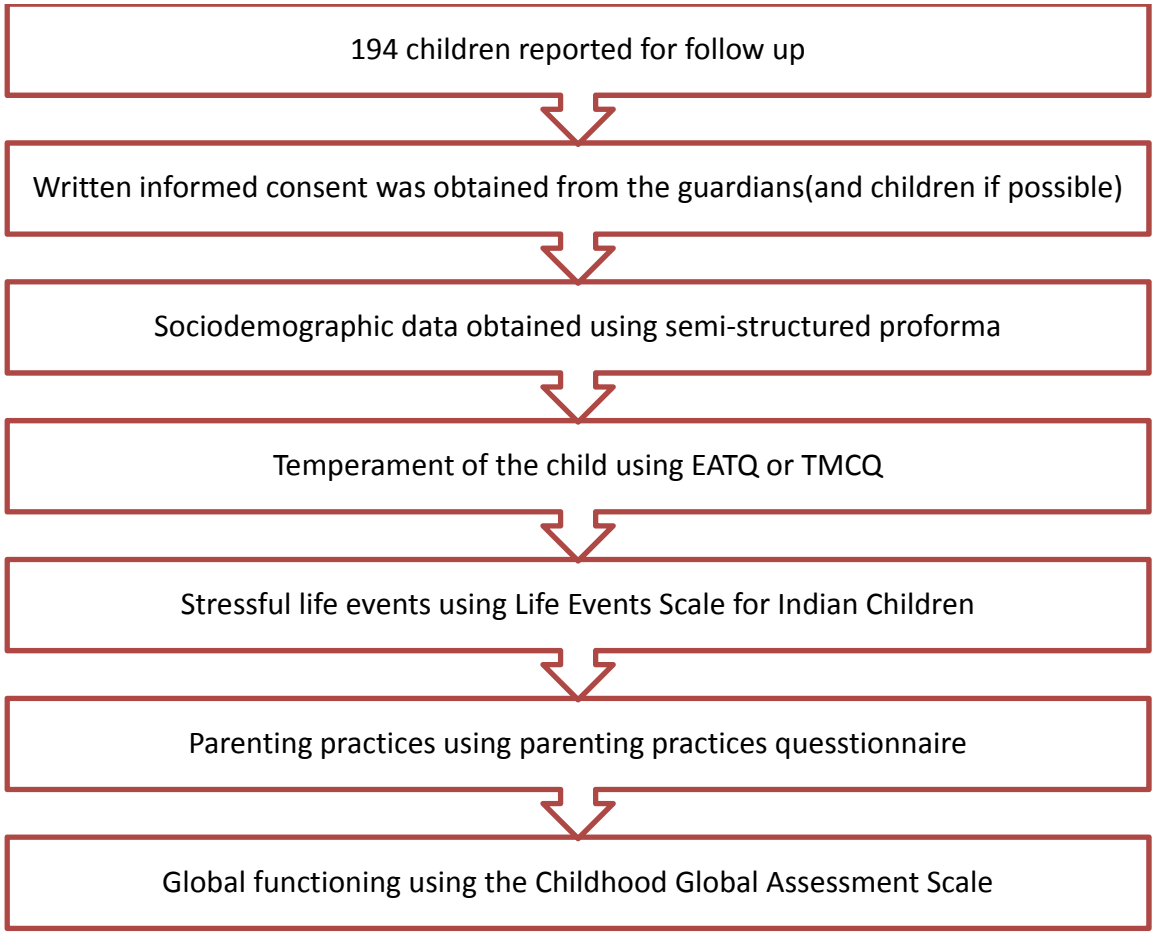
This tool, which is an adaptation of the Global Assessment Scale(GAS), is used to assess the global level of functioning and severity of mental illness in children and adolescents. It was presented and described by Shaffer D, Gould MS, Brasic J et al. Using a number from 1 to 100, the CGAS assesses a child's psychological, social and occupational functioning. The scoring on the scale ranges from positive mental health to severe psychopathology, with a lower score indicating more severe impairment in daily functioning. It reflects the lowest level of functioning of the child during a specified period of time and measures the degree of functional impairment (76).

The total time taken to administer all these tests was around 45-60 minutes per child.

FLOWCHART FOR METHODOLOGY



Therefore, total number of children who reported for follow up and hence were included in this study were 194.


194 children reported for follow up
Written informed consent was obtained from the guardians(and children if possible)
Sociodemographic data obtained using semi-structured proforma
Temperament of the child using EATQ or TMCQ
Stressful life events using Life Events Scale for Indian Children
Parenting practices using parenting practices quesstionnaire
Global functioning using the Childhood Global Assessment Scale

RESULTS

The current study is a descriptive study comprising of children who presented with unexplained somatic symptoms to the Child Guidance Clinic, Institute of Child Health, Madras Medical College, Chennai.

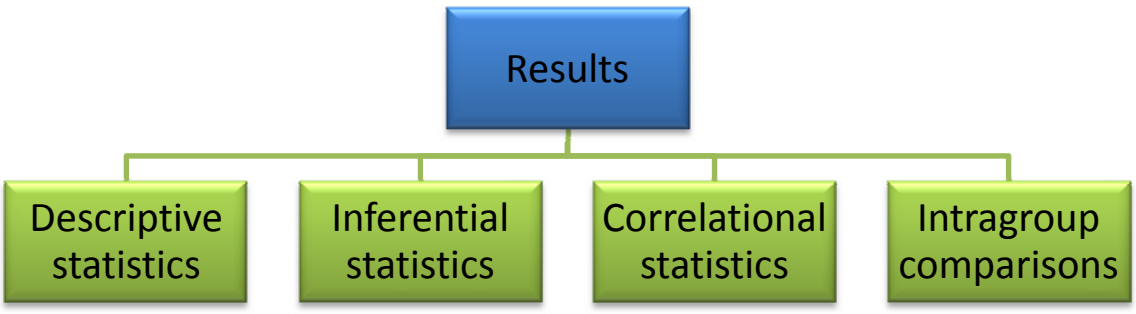
All the statistics were formulated using SPSS Statistics v.20 (free trial version).

41 (42%) children reported for follow up after their initial visit in 2013, 70(52%) children reported after their initial visit in 2014 and 82(46%) reported after their visit in 2015.

194 children who reported for follow up were included in the study.

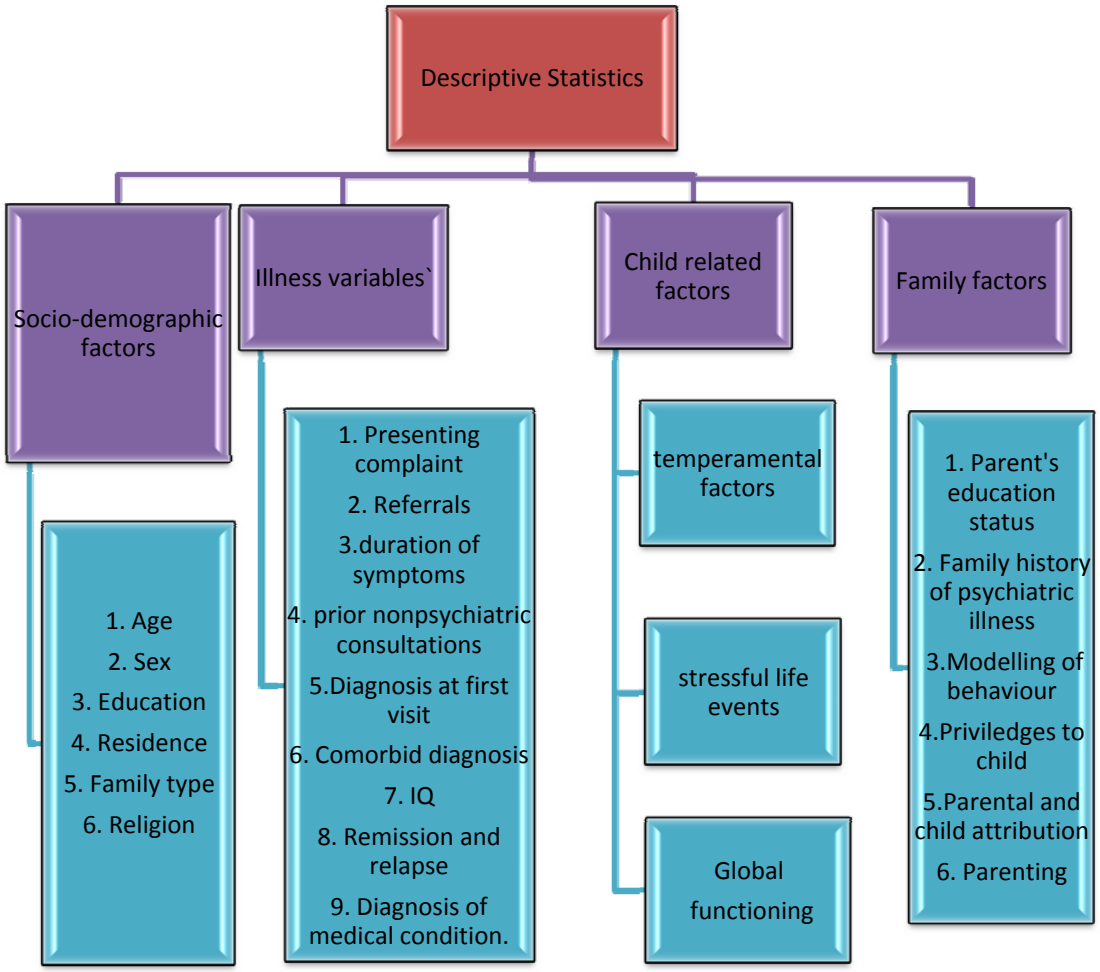
The results of this study have been explained using the following statistics:

Fig 1: Flowchart showing the statistics used in results.



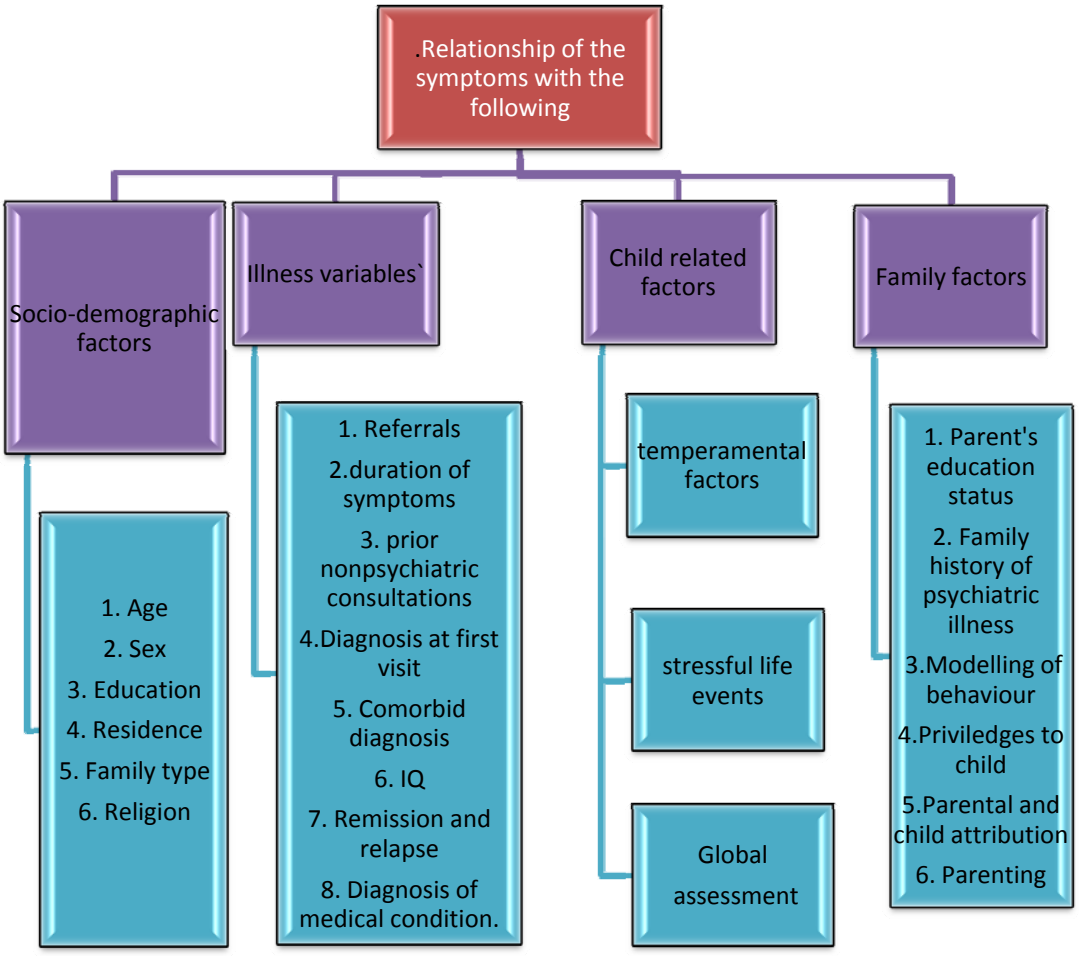
I. DESCRIPTIVE STATISTICS:

Fig 2: Flowchart showing the various descriptive statistics



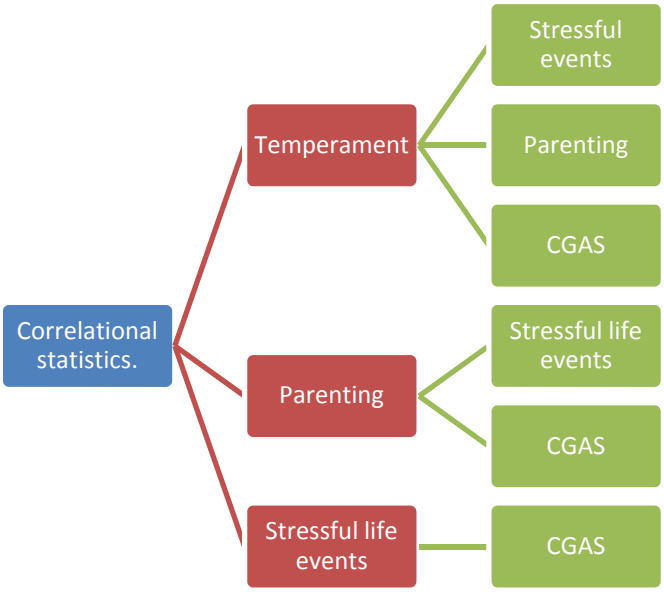
II. INFERENTIAL STATISTICS:

Fig 3: Flowchart showing the various inferential statistics



III. CORRELATIONAL STATISTICS:

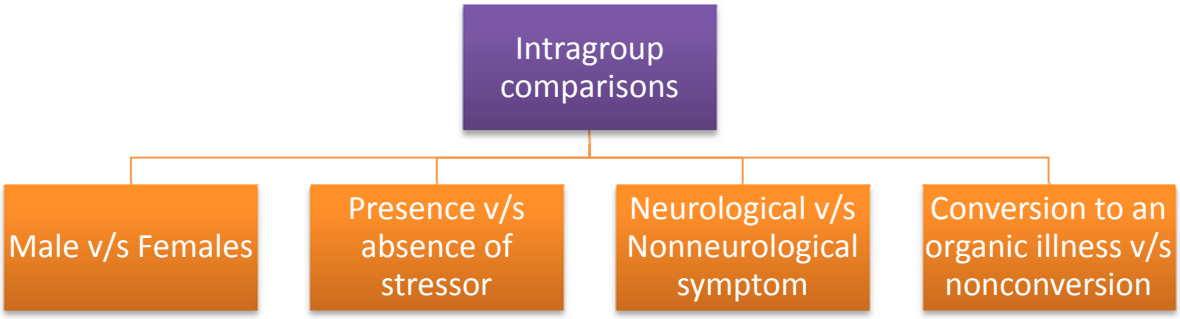
Fig 4: Flowchart showing the various correlational statistics



IV. INTRAGROUP COMPARISONS:

Intragroup comparisons were made after dividing the population according to the following variables and they were compared.

Fig 5: Flowchart showing the various intragroup comparison statistics



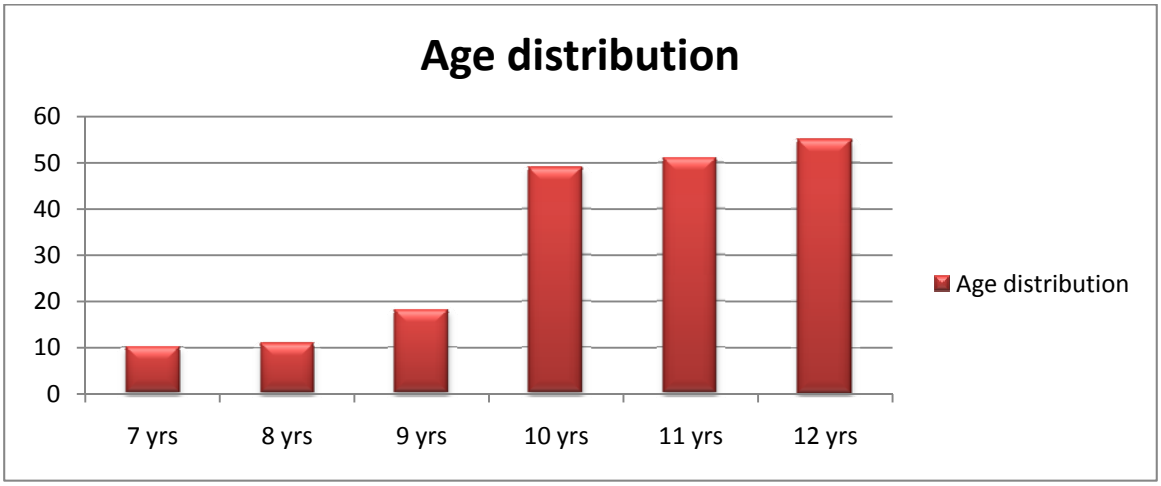
I. DESCRIPTIVE STATISTICS:

1. Socio-demographic data:

(i)Age:

The mean age of the group was 10.47 ± 1.404.

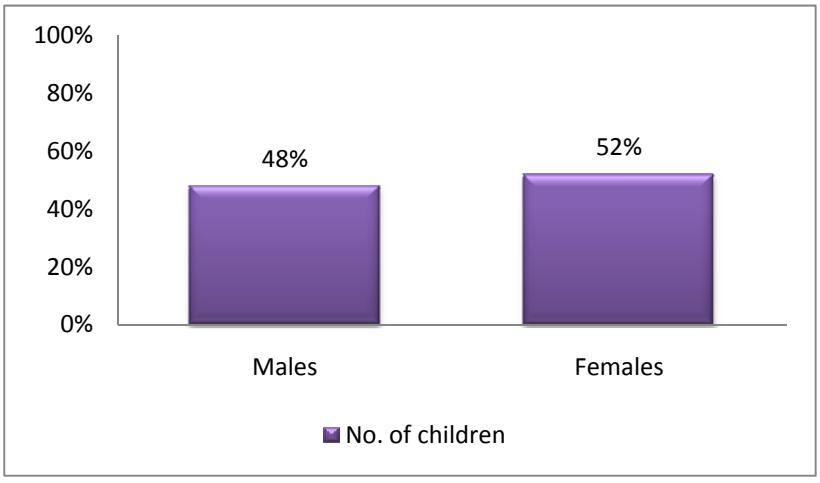
Fig 6: Bar diagram showing the age distribution of the study group



(ii)Gender:

The total number of males in the study was 93(48%) and females was 101(52%).

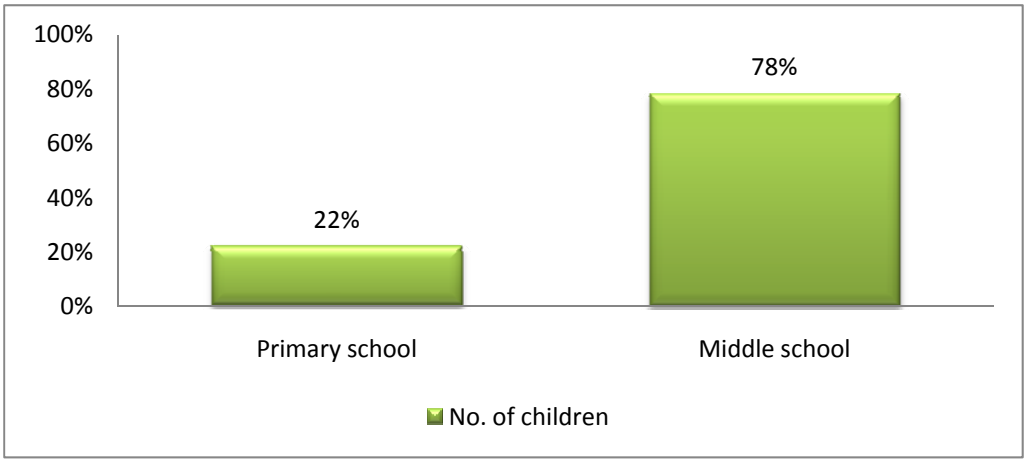
Fig 7: Bar diagram showing the sex distribution of the study group



(iii)Education:

The number of children studying in primary school were 42(22%) and those studying in secondary school were 152(78%).

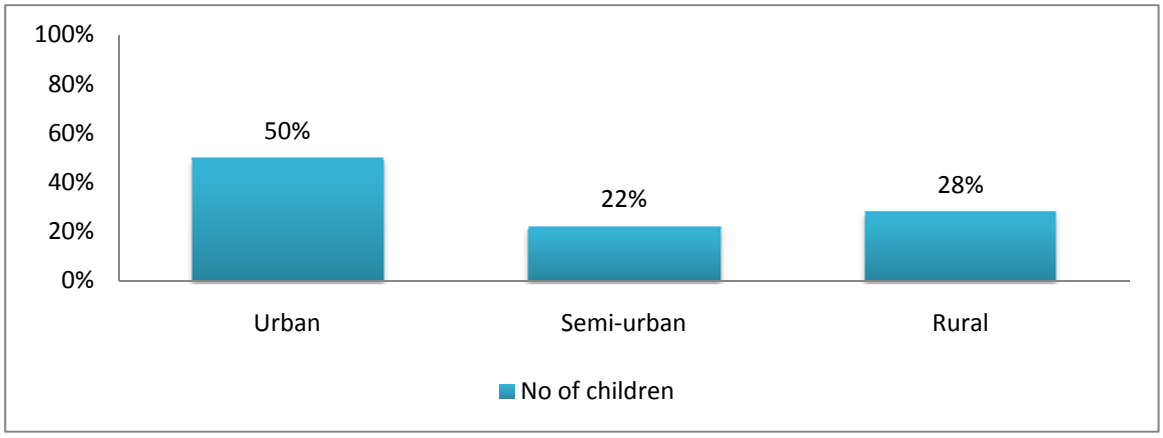
Fig 8: Bar diagram showing the distribution of education of the study group



(iv)Residence:

The total number of children belonging to urban areas was 97(50%), semi-urban areas was 43(22%) and those belonging to rural areas was 54(28%).

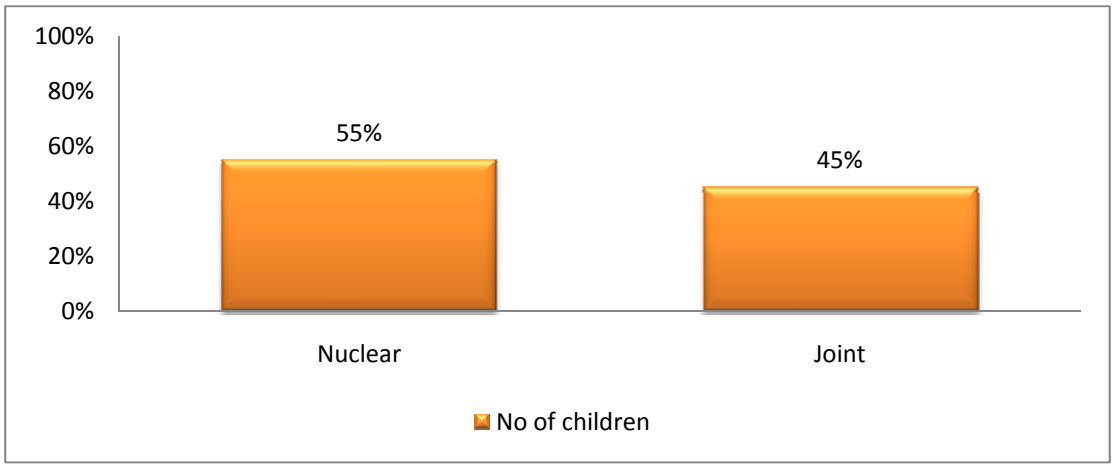
Fig 9: Bar diagram showing the distribution of residence of the study group



(v)Family type:

106(55%) children belonged to nuclear families and 88(45%) to joint families.

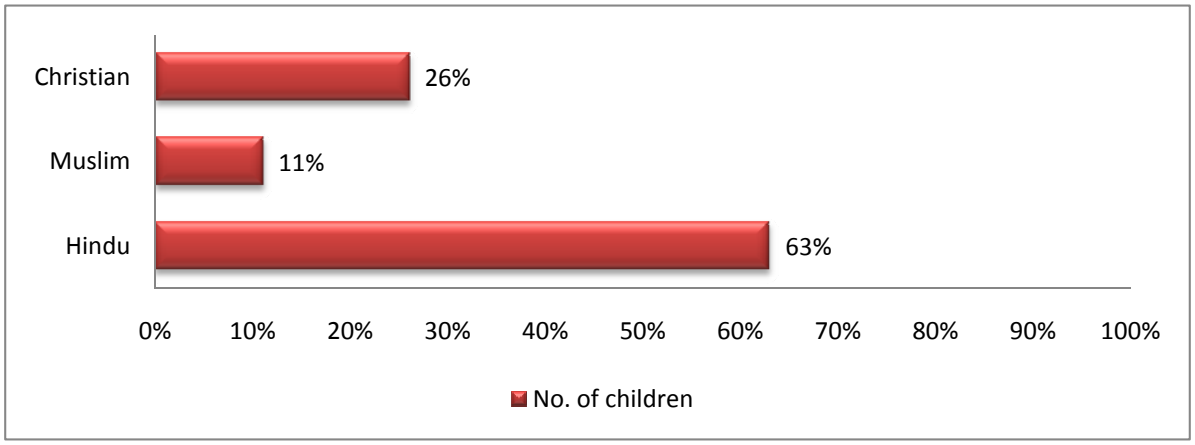
Fig 10: Bar diagram showing the family types of the study group.



(vi)Religion:

The total number of children from families following Hinduism was 122(63%), from those following Islam were 21(11%) and from those following Christianity were 54(26%).

Fig 11: Bar diagram showing the religion distribution of the study group



2. Illness Variables:

(i) Presenting Symptom:

Fig 12: Bar diagram showing the distribution of presenting complaints of the study group

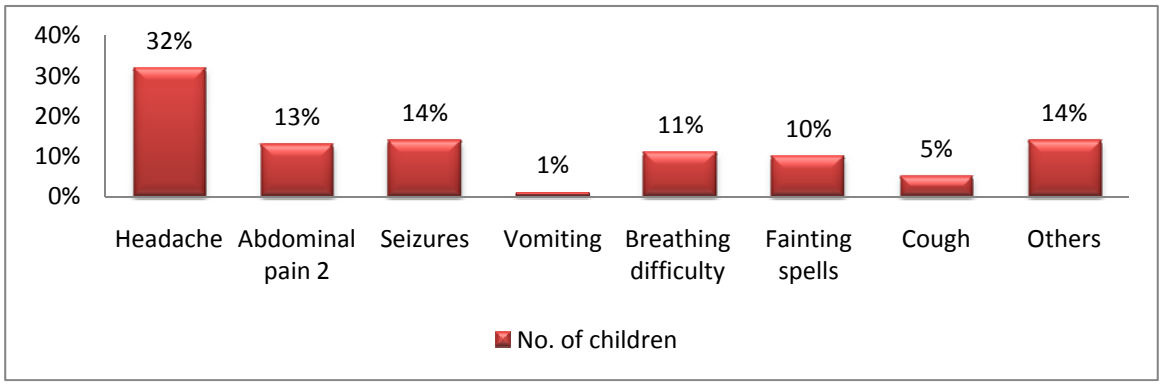


Table 1: Table showing the distribution of presenting symptoms and the system involved

Sr. No	System involved	Symptom	Percentage
1.	Neurological	Headache	32%(61)
		Seizures	14%(28)
		Fainting spells	10%(19)
2.	Gastrointestinal	Abdominal pain	13%(26)
		Vomiting	1%(1)
3.	Respiratory	Cough	5%(10)
		Breathing difficulty	11%/(22)
4.	Others	Others	14%(27)

(ii)Referrals:

Majority of the children were referred to the child guidance clinic from the neurology OP(40%) followed by the general paediatric ward(28%). Few children were referred to other OPs for further evaluation but the majority were managed in the child guidance clinic on an OP basis itself(90%).

Fig 13: Bar diagram showing the referrals of the study group.

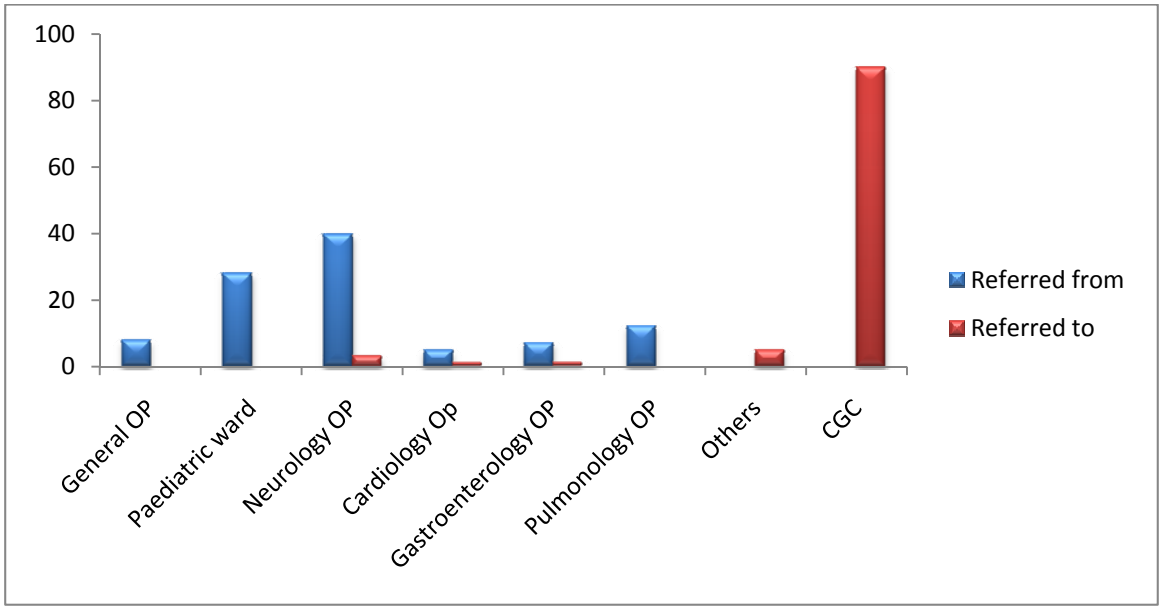


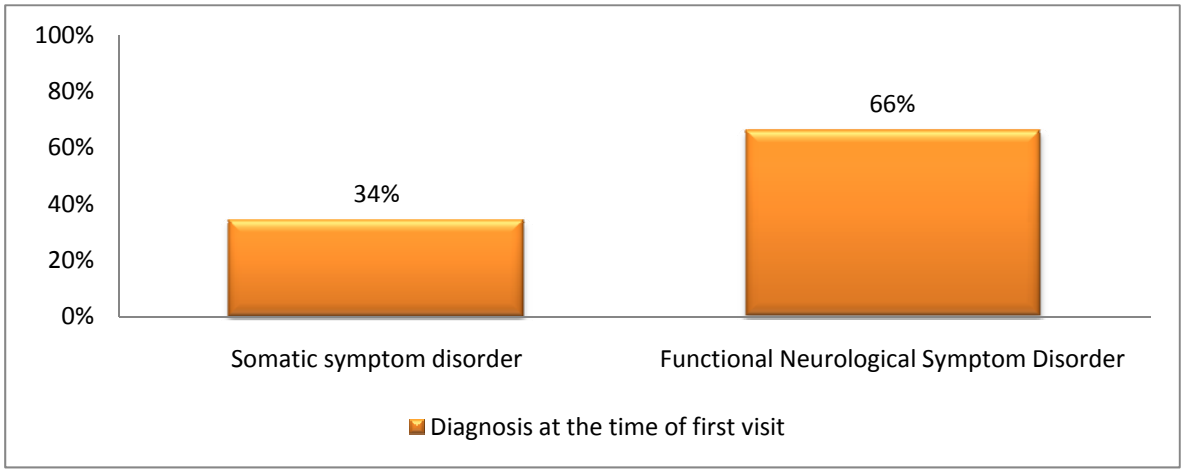
Table 2: Table showing the duration of symptoms and prior consultations.

		Mean	**SD**
(a)	Duration of symptoms	78.14(Days)	81.493
(b)	Prior Non Psychiatric consultations	2.72	0.856

(iii)Diagnosis at first visit:

128(66%) of the children were diagnosed with functional neurological symptom disorder in the first visit whereas 66(34%) were diagnosed as somatic symptom disorder.

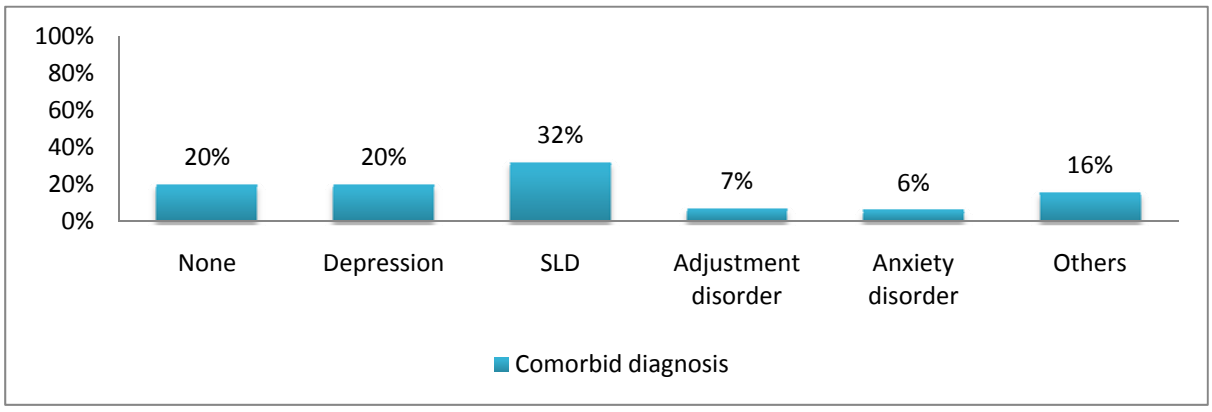
Fig 14: Bar diagram showing the diagnosis at first visit.



(iv) Co-morbid diagnosis:

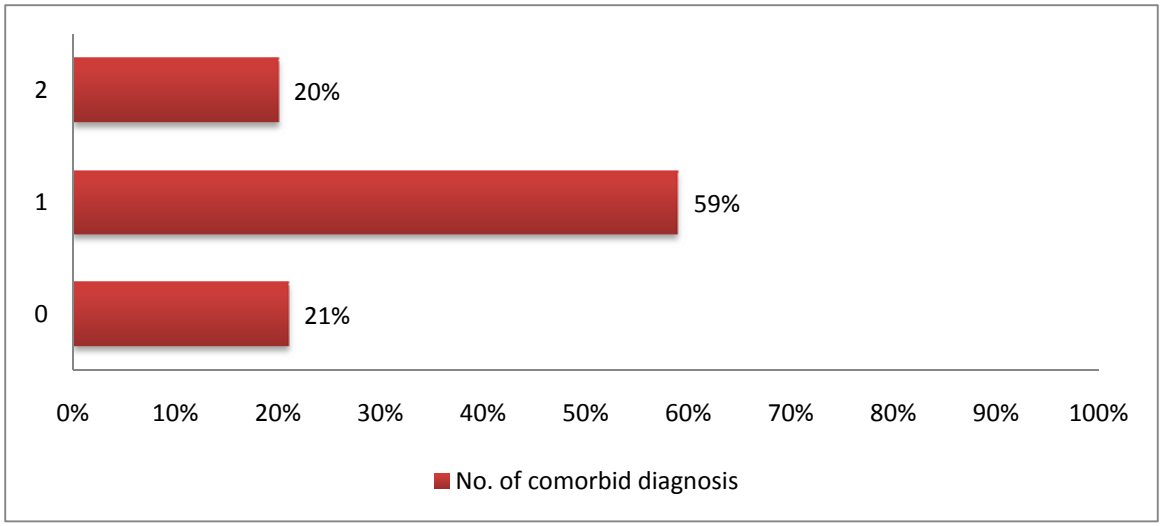
Specific learning disorder[62(32%)] was the most common comorbid diagnosis followed by depression[38(20%)].

Fig 15: Bar diagram showing the comorbid diagnosis of the study group.



59% of the children had 2 comorbid diagnosis while 20% had only 1 diagnosis.

Fig 16: Bar diagram showing the number of comorbid diagnoses of the study group.



(v)IQ:

The mean IQ of these children was 98.05 $\pm$ 6.14.

(vi)Remission and relapse:

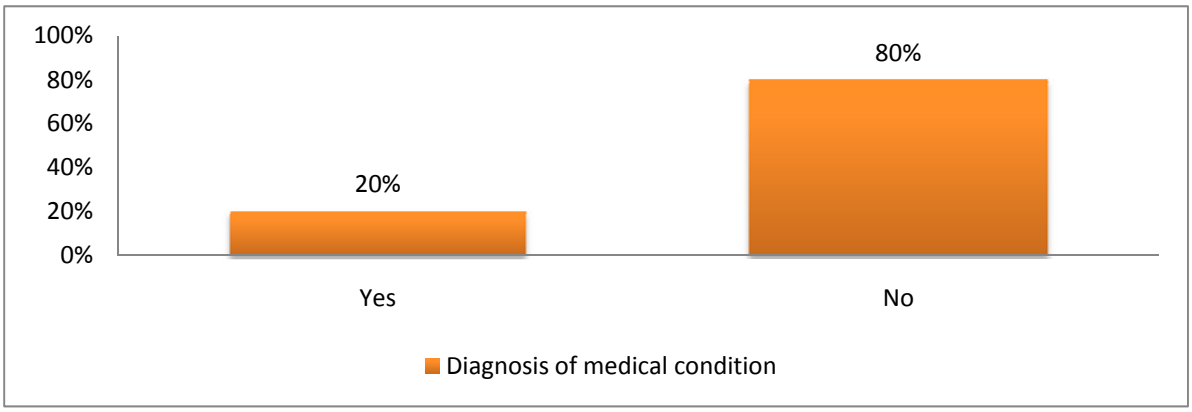
Remission was defined as a period of improvement within 6 months of treatment onset such that the child was asymptomatic.59% of children remitted in all. Out of these remitted patients, 19% remitted within 4 weeks while 80% remitted within 6 months.

Relapse referred to the return of symptoms during remission.42% of the children relapsed, out of which 40% relapsed with their previous symptoms while 2% relapsed with a new substituted symptom.

(vii) Diagnosis of medical condition:

20% of the children were diagnosed with a medical condition during the course of their follow up.

Fig 17: Bar diagram showing the diagnosis of medical condition in the course of study.



3. Child related factors:

(i)Temperament:

Table 3: Table showing the various temperamental dimensions.

	N	Mean	Std. Deviation
EFFORTFUL CONTROL	194	2.903	.5477
SURGENCY	194	2.957	.6199
NEGATIVE AFFECT	194	3.147	.6173
AFFLIATIVENESS	194	2.898	.5350
Total	194		

(ii)Life events:

55% of the children reported with the presence of a stressor.

Fig 18: Bar diagram showing the presence of a stressor.

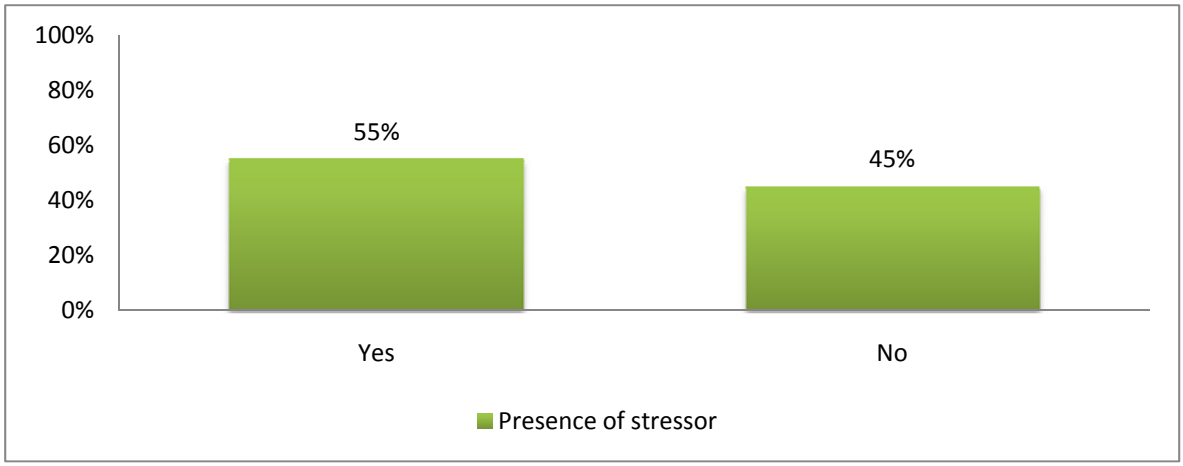


Table 4: Table showing the presence of stressful events.

	N	Mean	Std. Deviation
NO. OF STRESSFUL LIFE EVENTS	194	2.55	2.531
TOTAL STRESS SCORE	194	300.72	302.201

(iii)CGAS:

The mean CGAS score was 62.51 $\pm$ 7.793.

4. Family factors:

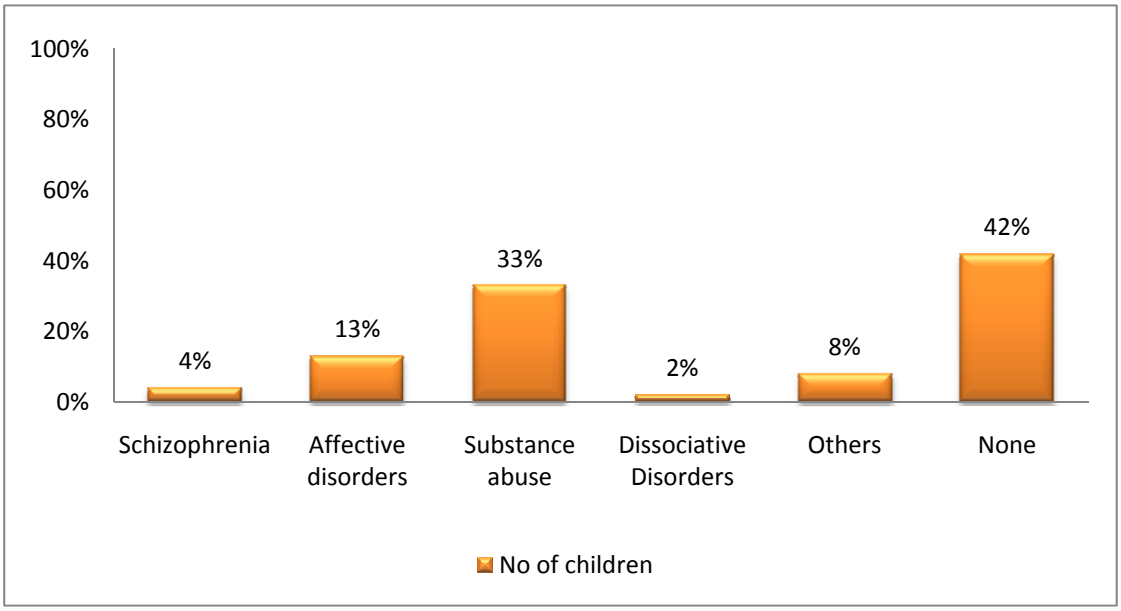
(i)Parent's educational status:

The mean years of education of the fathers of these children was found out to be 8.81 ± 2.502 while that for the mothers was around 5.21 ± 2.872.

(ii)Family history of psychiatric illness:

Majority of the children had a family history of psychiatric illness(58%). Substance abuse especially alcohol abuse was found in the fathers of 63(33%) children.

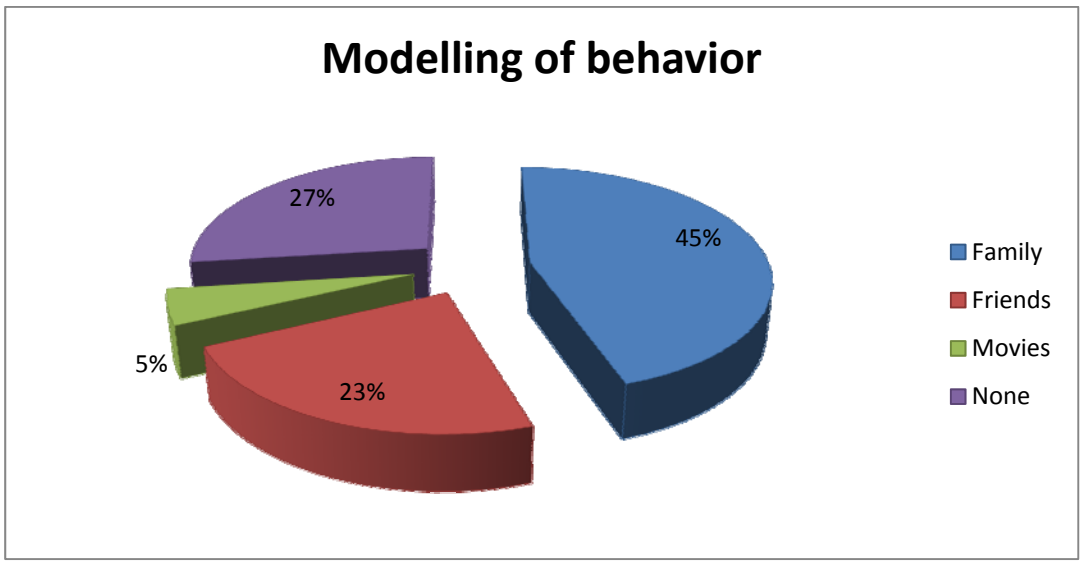
Fig 19: Bar diagram showing the conversion to an organic illness in the course of study.



(iii)Modelling of behaviour:

27% children did not report any modelling of behaviour. 45% said their behaviour and symptoms were modelled after their family members and 23% after their friends.

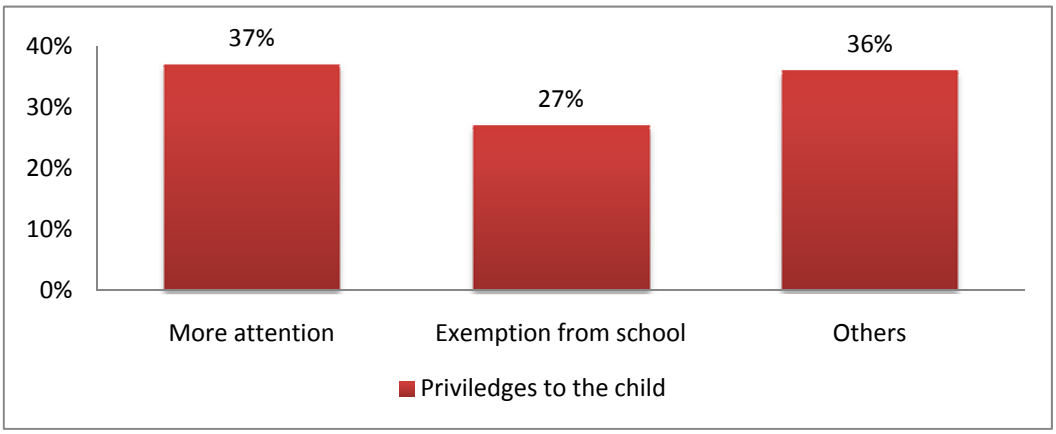
Fig 20: Bar diagram showing the modelling of behaviour of the children.



(iv) Privileges received by the child:

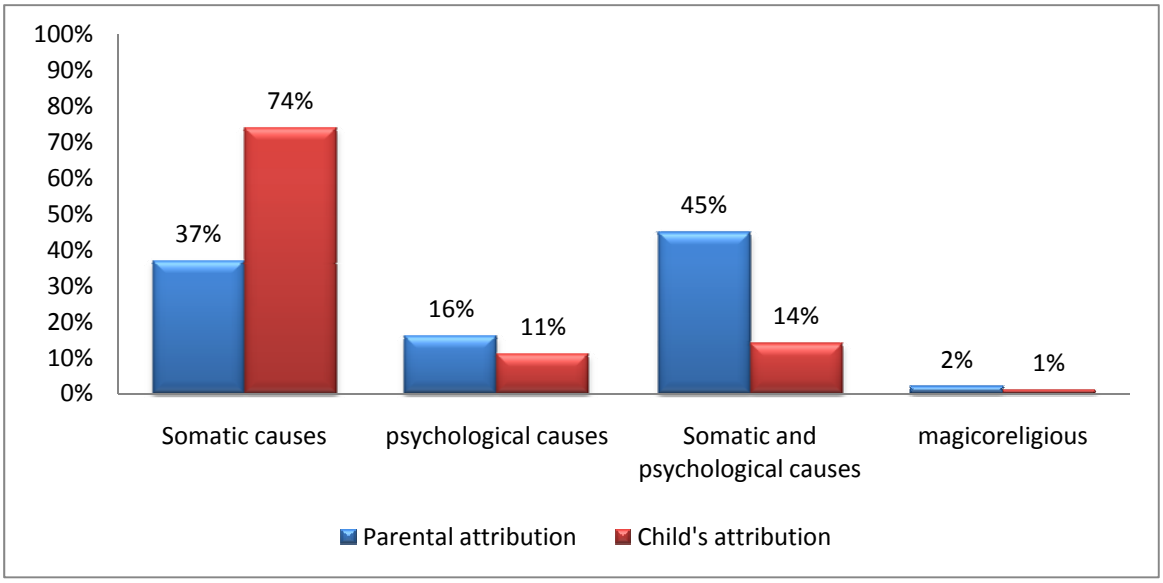
Children received a lot of privileges owing to their symptoms, the most common being paid more attention as compared to their siblings in terms of time and material benefits.

Fig 21: Bar diagram showing the privileges received by the children.



(v) Parents' and child's attribution:

Fig 22: Bar diagram showing the conversion to an organic illness in the course of study.



Parents mostly attributed their children's symptoms to both somatic and psychological causes(45%) while children attributed their symptoms to mostly somatic aetiology(74%) rather than psychological factors(11%).

(vi) Type of parenting:

Fig 23: Bar diagram showing the type of parenting among children in the study.

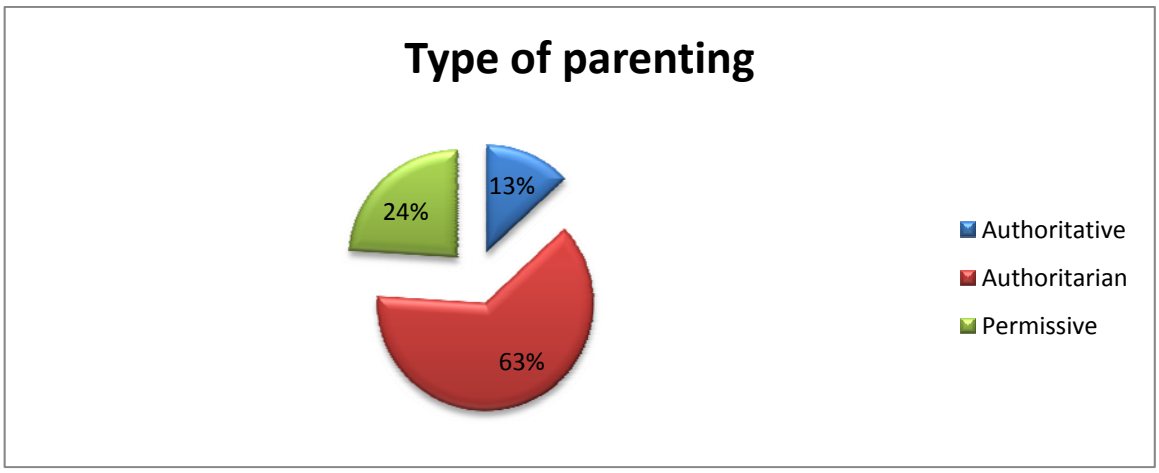
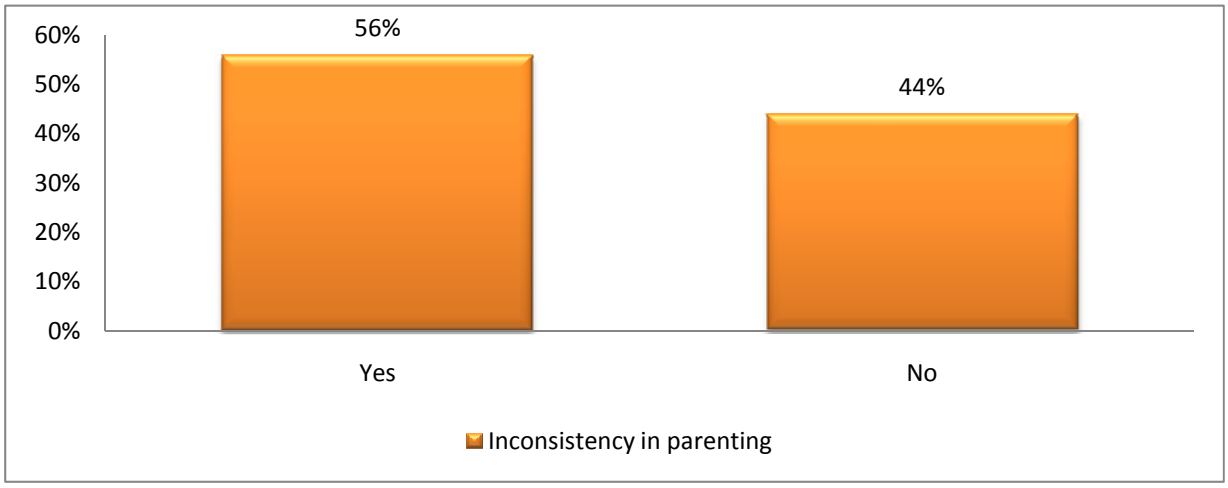


Fig 24: Bar diagram showing the presence of inconsistency in parenting.



II. INFERENTIAL STATISTICS

1. Symptoms with socio-demographic variables:

Symptoms were compared with the socio-demographic variables using chi square tests.Symptoms did not vary significantly with the age, sex, education status, residence and religion.

Family type was found to correlate more significantly with the presenting symptoms with these symptoms being more common in children from nuclear families, especially neurological symptoms.

Table5: Table showing the association between the symptoms and family type.

		FAMILY TYPE		**Total**
		NUCLEAR	**JOINT**	
Symptoms	Neurological	67	41	108
	Gastrointestinal	19	8	27
	Respiratory	10	22	32
	Others	10	17	27
Total		106	88	194

$\chi 2(3, N = 194) = 15.52, p<0.001$

2. Symptoms with illness variables:

(i) Symptoms and referrals:

The number of children referred from Neurology Outpatient department and the Paediatric Inpatient Ward was significantly higher as compared with other speciality Outpatient Departments.

Table 6: Table showing association between symptoms and referrals.

		REFERRED FROM						Total
		Paediatric General OP	Paediatric Inpatient ward	Neurology OP	Cardiology Op	Gastro enterol ogy OP	Pulmon ology OP	
Sympt om	Neurological	8	22	73	5	0	0	108
	Gastrointestinal	1	15	0	0	11	0	27
	Respiratory	3	5	0	3	0	21	32
	Others	4	13	4	2	2	2	27
Total		16	55	77	10	13	23	194

$\chi 2(15, N = 194) = 219.48, p < 0.001$.

(iii)Symptoms and duration of illness:

There was significant association between the symptoms and the duration of symptoms with children mostly presenting with a duration of less than 2 months.

Table 7: Table showing association between symptoms and duration of symptoms:

		Duration of Symptoms			Total
		<2 months	2-6 months	>6 months	
Symptoms	Neurological	64	27	17	108
	Gastrointestinal	17	4	6	27
	Respiratory	27	5	0	32
	Others	22	4	1	27
Total		130	40	24	194

$\chi 2(6, N = 194) = 14.3, p = 0.03$.

(iv)Symptoms and Number of prior consultations:

The symptoms and the prior non-psychiatric consultations showed no significant association.

(v)Symptoms and Comorbid diagnosis:

There was a significant association between the symptoms and presence of a comorbid diagnosis. When the comorbidities were compared individually, Specific Learning Disability showed significant association with the symptoms.ADHD,Anxiety disorders, ODD and Adjustment Disorder as a group showed a significant association while depression showed no significant association with symptoms.

Table 8: Table showing the association between symptoms and comorbid diagnosis.

		Co morbid diagnosis				Total
		None	Depression	SLD	Other Comorbidities	
Symptom	Neurological	21	24	41	22	108
	Gastrointestinal	5	2	12	8	27
	Respiratory	7	6	4	15	32
	Others	6	6	5	10	27
Total		39	38	62	55	194

$\chi 2(9, N = 194) = 17.58, p=0.04$

The association of the symptoms with the individual comorbidities are tabulated below.

Table 9: Table showing the association of symptoms with individual comorbidity.

Sr.no	**Comorbidity**	**Chi-square**	**Df**	**Sig**
1	Specific Learning Disorder	12.09	3	<0.001**
2	Depression	3.15	3	0.37
3	Other comorbidities	9.81	3	0.02*

(vi) Symptoms and IQ:

IQ of these children did not seem to have any significant association with the symptoms.

(vii) Symptoms and Remission and relapse:

The symptoms did not have any significant association with remission of symptoms or their relapse.

(viii)Symptoms and Diagnosis of medical condition:

There was no significant association between the symptoms and the diagnosis of a medical condition in these children during the follow up period.

3. Symptoms with Child related factors:

(i) Relation with temperamental factors:

Low effortful control, high negative affect and low affiliativeness showed a significant association with symptoms while surgency did not show any significant association.

Table 10: Table showing the association of symptoms with individual temperamental dimensions.

Sr.no	Temperamental Dimension	Chi-square	Df	Sig
1	Effortful Control	12.83	3	0.005*
2	Surgency	1.32	3	0.72
3	Negative Affect	17.99	3	<0.001**
4	Affiliativeness	21.53	3	<0.001**

(ii) Relation with stressful life events:

Symptoms showed a significant association with the presence of stressor. But no association was found between the symptoms and the number of stressful life events. Include table which is not significant

Table 11: Table showing the association of symptoms with presence of stressor.

		STRESSOR		Total
		yes	no	
Symptom	Neurological	67	41	108
	Gastrointestinal	15	12	27
	Respiratory	18	14	32
	Others	7	20	27
Total		107	87	194

$\chi 2(3, N = 194) = 11.41, p = 0.03$

(iii) Relation with CGAS:

Childhood Global Assessment Scale showed a significant association with the symptoms.

Table 12: Table showing the association of symptoms with CGAS.

		CGAS		Total
		<60	>60	
Symptom	Neurological	58	50	108
	Gastrointestinal	17	10	27
	Respiratory	11	21	32
	Others	5	22	27
Total		91	103	194

$\chi 2(3, N = 194) = 15.55, p = 0.001$

4. Symptoms and family factors:

(i) Symptoms and parents' educational status:

No such association was found between the parents' education and the symptoms.

(ii)Symptoms and family history:

Presence of family history of psychiatric illness was not significantly associated with the symptoms.

(iii) Symptoms and modelling of behaviour:

The modelling of behaviour was significantly associated with the symptoms showing that children and adolescents who have seen a family member or a friend with similar somatic complaint are more likely to model their behaviour on them as compared to children and adolescents who have not.

Table 13: Table showing the association of symptoms with presence of stressor.

		Modelling present		Total
		Yes	No	
Symptom	Neurological	88	20	108
	Gastrointestinal	21	6	27
	Respiratory	21	11	32
	Others	14	13	27
Total		144	50	194

$\chi 2(3, N = 194) = 11.45$ $p = 0.01$.

Table 14: Table showing the association of symptoms with modelling.

		Modelling			Total
		Friends	Family	Movies	
Symptom	Neurological	57	25	6	88
	Gastrointestinal	13	8	0	21
	Respiratory	12	6	3	21
	Others	6	7	1	14
Total		88	46	10	144

$\chi 2(6, N = 194) = 6.2$ $p = 0.04$.

(iv) Symptoms and privileges given to the child and attributions:

There is no significant association between the symptoms and privileges given to the child and symptoms the parents' and child's attribution.

(v) Symptoms and parenting:

Authoritative parenting style was significantly higher in these children.

Table 15: Table showing the association of symptoms with type of parenting.

		Type of parenting			Total
		Authoritative	Authoritarian	Permissive	
Symptom	Neurological	11	76	21	108
	Gastrointestinal	4	22	1	27
	Respiratory	6	13	13	32
	Others	5	11	11	27
Total		26	122	46	194

$\chi 2$ (6, *N* = 194) =21.71, *p=0.001*.

Furthermore, Inconsistency in parenting had a significant correlation with the symptoms.

Table 16: Table showing the association of symptoms with inconsistency in parenting.

		INCONSISTENCY in parenting		Total
		YES	NO	
Symptom	Neurological	64	44	108
	Gastrointestinal	20	7	27
	Respiratory	13	19	32
	Others	12	15	27
Total		109	85	194

$\chi 2$(3, *N* = 194) =8.58, *p=0.03*

III. CORRELATIONAL STATISTICS:

1. Correlating temperament with life events and parenting:

(i) Temperament with stressful life events:

The various temperament dimensions were compared with the stressful life events.

Spearman correlation showed a negative correlation between no of stressful life events and the total stress score with effortful control and affiliativeness and a positive correlation with negative affect.

Table 17: Table showing the correlation between temperament and stressful events.

	Effortful control	Surgency	Negative affect	Affliativeness	Lesic no. of stressful life events	Lesic stress score
Effortful control	1.000	-.333**	-.388**	.622**	-.201**	-.178*
	.	.000	.000	.000	**.005**	**.013**
Surgency	-.333**	1.000	.262**	-.537**	-.029	.078
	.000	.	.000	.000	.686	.281
Negative affect	-.388**	.262**	1.000	-.383**	.249**	.170*
	.000	.000	.	.000	**.000**	**.018**
Affliativeness	.622**	-.537**	-.383**	1.000	-.151*	-.182*
	.000	.000	.000	.	**.035**	**.011**
Lesic no. of stressful life events	-.201**	-.029	.249**	-.151*	1.000	.552**
	.005	.686	.000	.035	.	.000
Lesic stress score	-.178*	.078	.170*	-.182*	.552**	1.000
	.013	.281	.018	.011	.000	.

(ii) Temperament with parenting:

The temperamental dimensions were also compared with the parenting, Authoritative parenting showed significant correlation with effortful control. Authoritarian parenting showed a positive correlation with effortful control and affiliativeness and a negative correlation with negative affect. Permissive parenting showed the opposite results.

Table 18: Table showing the correlation of temperament with parenting.

	Effortful Control	Surgency	Negative Affect	Affliativeness	Authoritative	Authoritarian	Permissive Parenting
Effortful Control	1.000	-.333**	-.388**	.622**	.151*	-.376**	.311**
	.	.000	.000	.000	.035	**.000**	**.000**
Surgency	-.333**	1.000	.262**	-.537**	-.080	.081	-.052
	.000	.	.000	.000	.265	.262	.470
Negative Affect	-.388**	.262**	1.000	-.383**	-.039	.233**	-.266**
	.000	.000	.	.000	.593	**.001**	**.000**
Affliativeness	.622**	-.537**	-.383**	1.000	.109	-.299**	.260**
	.000	.000	.000	.	.132	**.000**	**.000**
Authoritative	.151*	-.080	-.039	.109	1.000	-.087	.065
	.035	.265	.593	.132	.	.229	.366
Authoritarian	-.376**	.081	.233**	-.299**	-.087	1.000	-.745**
	.000	.262	.001	.000	.229	.	.000
Permissive Parenting	.311**	-.052	-.266**	.260**	.065	-.745**	1.000
	.000	.470	.000	.000	.366	.000	.

(iii) Temperament with CGAS:

Spearman's correlation showed a significant correlation between Childhood Global Assessment Scale scores and all the various temperamental dimensions. CGAS correlated positively with effortful control and affiliativeness and negatively with surgency and negative affect.

Table 19: Table showing the correlation of global functioning with temperament.

	Cgas	Effortful Control	Surgency	Negative Affect	Affliativeness
Cgas	1.000	.353**	-.171*	-.244**	.342**
	.	**.000**	**.017**	**.001**	**.000**
Effortful Control	.353**	1.000	-.333**	-.388**	.622**
	.000	.	.000	.000	.000
Surgency	-.171*	-.333**	1.000	.262**	-.537**
	.017	.000	.	.000	.000
Negative Affect	-.244**	-.388**	.262**	1.000	-.383**
	.001	.000	.000	.	.000
Affliativeness	.342**	.622**	-.537**	-.383**	1.000
	.000	.000	.000	.000	.

2. Correlating parenting with life events and functioning:

(i)Parenting and life events:

The parenting variables when correlated with the stress scores showed a significant correlation between authoritarian and permissive parenting and stress scores.

Table 20: Table showing the parenting with stressful life events.

	Authoritative	Authoritarian	Permissive	Lesic No. Of Stressful Life Events	Lesic Stress Score
Authoritative	1.000	-.087	.065	-.040	-.017
	.	.229	.366	.578	.809
Authoritarian	-.087	1.000	-.745**	.252**	.231**
	.229	.	.000	**.000**	**.001**
Permissive Parenting	.065	-.745**	1.000	-.163*	-.159*
	.366	.000	.	**.023**	**.027**
Lesic No. Of Stressful Life Events	-.040	.252**	-.163*	1.000	.977**
	.578	.000	.023	.	.000
Lesic Stress Score	-.017	.231**	-.159*	.977**	1.000
	.809	.001	.027	.000	.

(ii) Parenting and Global functioning:

Authoritative and permissive parenting showed a significant correlation with the childhood global assessment scale.

Table 21: Table showing the correlation of parenting with global functioning.

	Authoritative	Authoritarian	Permissive	CGAS
Authoritative	1.000	-.087	.065	-.034
	.	.229	.366	.635
Authoritarian	-.087	1.000	-.745**	-.221**
	.229	.	.000	**.002**
Permissive Parenting	.065	-.745**	1.000	.145*
	.366	.000	.	**.043**
Cgas	-.034	-.221**	.145*	1.000
	.635	.002	.043	.

3. Stressful life events and Global functioning:

A significant negative correlation between stress scores and the Childhood Global Assessment Scale thus proving that higher the stress on children lower the global level of functioning.

Table 22: Table showing the correlation of stress scores with global functioning.

			LESIC STRESS SCORE	CGAS
Spearman's rho	LESIC STRESS SCORE	Correlation Coefficient	1.000	-.325**
		Sig. (2-tailed)	.	**<.001**
		N	194	194
	CGAS	Correlation Coefficient	-.325**	1.000
		Sig. (2-tailed)	<.001	.
		N	194	194
**. Correlation is significant at the 0.01 level (2-tailed).				

IV. INTRAGROUP COMPARISONS:

1. Based on gender:

The following variables were found to be significant between males and females.

Table 23: Table showing the variables significantly different between males and females

Sr.no	Variable	Chi square	Df	Sig
1.	Relapse	6.48	2	0.04*
2.	Priviledges to the child	9.59	2	0.008*
3.	Parenting	6.09	2	0.04*
4.	Diagnosis of medical condition	4.39	1	0.04*

2. Based on Stressor:

Groups were compared depending on the presence and absence of stressors. The following were found to be significant.

Table 24: Table showing the significant factors between groups depending on the presence of a stressor.

Sr. No	Variable	Chi Square	Df	Sig
1	Symptoms	11.41	3	0.01*
2	Family history	8.09	1	0.004*
3	Priviledges	7.6	2	0.02*
4	Effortful control	5.05	1	0.03*
5	Inconsistency in parenting	5.26	1	0.02*
6	CGAS	6.49	1	0.01*

Independent t tests were used as the data showed normal distribution. The number of prior consultations, effortful control, negative affect and CGAS scoring was found to be significant.

Table 25: Table showing the significant factors between the groups depending on presence of stressor.

	STRESSOR	N	Mean	Std. Deviation	Std. Error Mean	Sig
NO. OF Prior Consultations	Yes	107	2.58	.765	.074	0.01*
	No	87	2.89	.933	.100	
EFFORTFUL CONTROL	Yes	107	2.836	.5400	.0522	0.04*
	No	87	2.986	.5488	.0588	
NEGATIVE AFFECT	Yes	107	3.240	.6130	.0593	0.02*
	No	87	3.033	.6067	.0650	
	No	87	50.06	15.747	1.688	
CGAS	Yes	107	60.90	7.228	.699	<0.001*
	No	87	64.49	8.042	.862	

3. Based on diagnosis of a medical illness:

The groups were compared based on whether an organic condition was diagnosed during follow up.The following were found to be significant.

Table 26: Table showing the variables significantly different between children diagnosed with a medical illness and those who weren't.

Sr.No	Variable	Chi Square	Df	Sig
1	Other comorbidity	4.40	1	0.04
2	Parental attribution	11.99	3	0.007

Independent t test was used as the data was normally distributed. Only the IQ of the children was significantly different in the two groups.

Table 27: Table showing the variables significantly different between children diagnosed with a medical illness and those who weren't.

	DIAGNOSIS OF A MEDICAL CONDITION	N	Mean	Std. Deviation	Std. Error Mean	Sig
IQ	Yes	38	99.84	8.235	1.336	0.04*
	No	156	97.62	5.459	.437	

4.Based on the symptom:

The groups were compared based on the symptom they presented with- neurological symptoms or non-neurological symptoms. The following were found to be significant between the two groups.

Table 28: Table showing the variables significantly different between children presenting with a neurological symptoms and non-neurological symptoms.

Sr.No	Variable	Chi Square	Df	Sig
1	Family type	5.38	1	0.02*
2	Duration of symptoms	6.68	2	0.03*
3	Referral	98.80	5	<0.001**
4	Modelling	6.70	1	0.01*
5	Other comorbidities	7.63	1	0.006*
6	SLD	7.11	1	0.008*
7	Affiliation	7.71	1	0.005*
8	Parenting	5.92	2	0.04*
9	Stressor	4.66	1	0.03*
10	CGAS	4.51	1	0.03*

Independent t test was used as the distribution was normal. The duration of the symptoms, prior consultation, effortful control, affiliativeness, authoritarian parenting, number of stressful life events, total stress score and global functioning was found to be significant between the two groups.

Table 29: Table showing the variables significantly different between children presenting with a neurological symptoms and non-neurological symptoms.

	Presence of Neurological symptom	N	Mean	Std. Deviation	Std. Error Mean	Sig
DURATION(IN DAYS)	Yes	108	99.81	101.835	9.799	0.02*
	No	86	66.60	94.552	10.196	
NO. OF PNC	Yes	108	2.56	.899	.087	0.005*
	No	86	2.91	.761	.082	
EFFORTFUL CONTROL	Yes	108	2.830	.5435	.0523	0.03*
	No	86	2.995	.5421	.0585	
AFFLIATIVENESS	Yes	108	2.799	.5087	.0490	0.003*
	No	86	3.023	.5440	.0587	
AUTHORITARIAN	Yes	108	73.01	18.519	1.782	0.006*
	No	86	64.94	22.116	2.385	
LESIC NO. OF STRESSFUL LIFE EVENTS	Yes	108	2.93	2.560	.246	0.02*
	No	86	2.08	2.426	.262	
LESIC STRESS SCORE	Yes	108	342.47	306.060	29.451	0.03*
	No	86	248.29	290.600	31.336	
CGAS	Yes	108	61.20	7.936	.764	0.009*
	No	86	64.15	7.328	.790	

DISCUSSION

The aim of our study was to assess the relationship of unexplained somatic symptoms with life events, temperament and parenting in children and adolescents.

The sample was taken from Child Guidance Clinic, Department of Child and Adolescent Psychiatry, Institute of child health, Chennai.

Socio-demographic Factors:

The mean age was found to be 10.47 $\pm$ 1.40 in our study. In many Western studies, the symptom onset is seen around 12 years of age(77), with it rarely occurring before 8 years(12). As a result we chose the study group to be between 7-12 years of age. The findings of our study were found to be in accordance to prior Indian studies where children presented with the unexplained symptoms at around 10-12 years of age(3,4,23).

48% of the sample comprised of males and 52% comprised of females. Many studies in the West as well as in our country showed a dominance of female children presenting with the symptoms.The reasons postulated for these higher numbers are higher sensitivity and lower tolerance in girls, or difficulty expressing psychological distress in restrictive and conservative societies like our country. Another reason may be the subconscious need for warmth and care of the parents, who are generally biased towards the male child in our country. They feel assumption of sick role may help them gain the support and care of their parents. But the trends are changing now with increasing numbers

being seen in males. This fact is supported by the findings from Gupta el al's study, which found the prevalence of these symptoms to be 1.2 times higher in males as compared to females. The findings of our study are in accordance with previous Indian studies, wherein the somatic complaints were more frequent in girls as compared to boys, ranging from 45-60%(3,4,11).

In our study, we further compared the48% males and 52% females. Relapse of the symptoms was found to be higher in females, which may be due to high sensitivity, lower tolerance and tendency to react to various events physically based on past experiences. Diagnosis of a medical condition during follow-up which better explained the symptoms was significantly lower in females. This is further explains the fact that women face more psychological distress and tend to express it somatically(12).

Around 50% of the children belonged to the urban areas in this study and 28% from the rural areas. As per our literature research, studies from the West have not explored the association of symptoms and residence and economic status of the families of these children. But studies from India focus more on the background, residence and socioeconomic status as they are found to have a profound influence on the children. Many Indian children and adolescents(around 50- 70%) are seen to report from rural areas. They explain this phenomenon by the fact that rural areas being more restrictive do not allow for expression of psychological distress which may translated as physical symptoms(3). Another reason postulated may be the poverty, poor basic amenities, poor educational opportunities in rural areas may act as a chronic

stressor for these children. But the trend is found to be changing due to increasing urbanization which brings along problems like working parents with less time to spare for the child which leads to more attention seeking behaviour among the children. The study by Srinath et al found more children reporting from urban areas(4).

Majority of the children in our study were from nuclear families(55%). A significant association was found between the family type and the symptoms which is in accordance with the past studies(3,4,23). The studies from the West don't focus on the family type as much as the Indian studies do. Children from nuclear families lack the social and emotional support provided by the extended family comprising of grandparents and cousins, they face more pressure socially as well as academically and are constantly compared with their peers(23). This may lead the children to express their distress through physical symptoms. The joint family setup has been seen to have its own share of problems, with the child being exposed to inconsistent parenting. The grandparents are more permissive while the parents are more punitive, which sends mixed signals to the child, thereby confusing him, who thereafter prefers to express his distress through means of somatic symptoms.

Illness variables:

The most common somatic symptoms were neurological symptoms, accounting for 56% of the cases. Amongst these, headache was found to be the most common with 32% of the children and adolescents presenting with it,

followed by seizures seen in 14% and fainting spells seen in 10%. As per the literature review, only one study found pain complaints like headache, musculoskeletal pains, abdominal pains to be more common(38).Remaining studies done in Western countries as well as in India(3,4,6,12) found psychogenic nonepileptic seizures to be more common. The reason for headache being more common in our study may be that children suffering from unexplained headache are referred to multiple specialists like Otorhinolaryngologist and neurologist, which may end up reinforcing the behaviour of the child. Seizures and fainting attacks are seen as life threatening and requiring immediate attention which may again be a reinforcing factor for the child. For both headache and seizures, the symptoms may be unconsciously preferred due to higher secondary gains and they are episodic in nature with periods of lesser functional impairment in between(6). Abdominal pain in our study was mostly seen in young females, which may be attributed to modelling related to abdominal pain in menarche.

The study group was further divided into two groups based on those who presented with neurological symptoms and those with non-neurological ones. Nuclear family type was found to be more common. The duration of symptoms for the neurological group was shorter because parents tend to seek immediate consultation for symptoms like seizures and fainting attacks which are seen as potentially dangerous. The number of referrals are greater thereby reinforcing the behaviour of the child. The number of comorbidities as well as stressors are higher leading to poor functioning of the child.

40% were referred from the neurology OP and the paediatric ward and many of these children reported to within 2 months of symptom onset. Most of the children had a minimum of 2 to 3 prior non psychiatric consultations before they were referred to the child guidance clinic. A Danish study done by TotStrate on referral patterns showed the children who had greater number of referrals had more symptoms for a longer duration, underwent more investigations, and were exposed to more treatment options before being referred whereas in our study the children were referred early within 2 months of symptom onset if no organic illness has been detected(41). This may due to the study place which was a tertiary care centre with better referral services.

Comorbidity was present in 79% of the children, with specific learning disability being the most common(32%), followed by major depressive disorder being diagnosed in 20% of the children. Research shows that comorbidity is a rule rather than an exception in these children. Western studies found anxiety to be more common whereas Indian studies found depression(5,8,12).In the present study, the association between SLD and symptoms was found to be significant whereas there was no significant association between depression and symptoms. The present study throws light on Specific Learning Disability as an important factor affecting the child which is not highlighted in previous studies. In the present study, every child has been assessed by a psychologist for Learning Difficulties. Specific Learning Difficulty may reduce the child's self-esteem due to inability to cope up with the regular academic demands and constant comparison with peers, which

predisposes to low mood thereby explaining the 21% of children in our study who reported with SLD and depression. The significant association between SLD and somatic symptoms may be bidirectional with the learning difficulty acting as a stressor for the child, thereby pushing them to express their psychological difficulties via physical symptoms or the symptom may be causing significant functional impairment for the child leading to frequent school absenteeism and thereby learning difficulties. This association needs to be explored more.

The intelligence of the children was not seen to be significantly associated with the symptoms in this study.The mean IQ was found to be 98 $\pm$ 6.14, which was in the normal range. The reason may be that we included children with an IQ above 70 so that they could understand the questions asked.In contrast, an Indian study done by Sharma et al showed children with higher IQ had more reactivity to the environment as well as minor bodily distress whereas children with below average intelligence had poor coping strategies(25).

Remission was defined as a period of improvement within 6 months of treatment onset such that the child was asymptomaticwhereas relapse referred to the return of symptoms during remission. 59% of the children remitted, out of which 19% remitted within the first 4 weeks and around 80% within 6 months. Relapse rate was around 42%.Mostly the remission rate is higher around 70-90% as per most Western and Indian studies(3,4,6). But some studies showed poor prognosis(43,44) especially if there is presence of

comorbid anxiety and depression. Higher remission rates may be due to the stressor being addressed during follow up.

In the course of their illness, 20 % of the children were diagnosed with a medical illness which gave a better explanation to their presenting symptoms. The association of organic illnesses and somatic symptoms studied showed either a conversion of somatic symptoms into an organic illness or a coexistence of both. A study by Sharma et al showed 43% association of symptoms with organic illnesses. But no study has been found which has studied the prevalence of conversion of these symptoms into an organic illness. This finding stresses on the importance of always being on the lookout for a medical illness which may be difficult to diagnose at first and becomes clear as the disease progresses. If not correctly diagnosed, it may lead to a lot of children being unnecessarily treated with antidepressants.

We compared children who were diagnosed with a medical illness during follow up with those who weren't and we found it was significantly higher in males and children who presented with comorbidities like adjustment disorder, anxiety disorder, ADHD and other disorders.

Child related factors:

The temperament of the child is heritable, stable, seen early in life and is responsible to the reaction of the child to various life events. In this study, it was seen that low effortful control, lower affiliation and higher negative affect, which can be better categorised as difficult temperament was found to be

significant in these children. Difficult temperament is known to be a vulnerability factor while easy temperament, a protective factor. This may be explained as a child with difficult temperament may have maladaptive behaviour strategies and when faced with negative life events may choose to express maladaptive behaviour pattern physically. Prior studies showed two important temperamental traits which had an influence on symptoms: low distractibility and perfectionistic attitude. Low effortful control which comprises attention, activation control and inhibitory control can be equated to distractibility, making our study findings similar to prior studies. Children with low effortful control take longer time to come out of an emotional distress, thereby translating their symptoms into somatic complaints. For perfectionistic children, it is seen that they tend to perceive even regular events as stressful and experience more distress due to maladaptive coping strategies like catastrophizing and rumination. In contrast to these findings, Prabhuswamy et al in his study attributed his symptoms to be a reaction to stress, and not to temperament, as the children with difficult temperament constituted only half of the study population.

It was also noted in this study that the number of stressful life events were significantly more in children with lower effortful control and affiliation and higher negative affect. The relationship between stressful events and temperament has been explained by Tschann et al who found that children with difficult temperament when faced with stressful life events tend to present with

more internalising and externalizing behaviour problems(11) and tend to express their distress physically.

The temperamental dimensions of effortful control, negative affect and affiliativeness were also found to correlate significantly with the authoritarian and permissive parenting styles in these children. Authoritarian parenting, which is characterized by high demands and low responsiveness, tended to make the children more fearful, depressed and at times aggressive, thereby leading to high negative affect. Conversely, aggressive behaviour and a difficult temperament may make the parents adopt an authoritarian parenting style in order to discipline the child. Therefore, we see a bidirectional relationship between the two. Permissive parenting, characterized by low demands and high responsiveness, on the other hand makes the child more demanding leading to low effortful control. Such children when faced with negative life events have poor coping skills and thereby tend to express their emotions physically. Therefore, temperament did have a significant association with symptoms mediated by parenting. This finding stresses on the importance of good, consistent parenting which may help build the temperament and character of the child.

Stressful life events were seen in 55% of the children, with them having faced about 2-3 negative life events at the time of reporting. Stressful events, single handedly as well as in combination with other factors have shown a significant impact on the symptoms. Children with maladaptive behaviours, poor coping skills and family dysfunction, when exposed to one or more

stressful life events are unable to deal with it and resort to expressing their problems somatically. This study also throws light on an important fact that the severity of the stressor is more important than the number of stressors faced by the children. Many Western and Indian studies found that there is a definite association between negative life events and somatic symptoms with a wide variation ranging from 10-90%, with the prevalence being higher in India. Stressors may be related to school like bullying, examinations, change of school, punitive teacher, separation from a close friend or to the family like sibling rivalry, domestic violence, financial problems or poor health of a family member. Addressing the stressor may help deal with the presenting symptoms. Furthermore, authoritarian and permissive parenting showed a significant correlation with stress scores. This may be due to the fact that poor parenting has also been considered as a stressor in many studies.

When the children in our study were compared depending on the presence or absence of stressor, it was seen that neurological symptoms are more associated with stressors. Family history of psychiatric illness leading to observation and modelling was found to be significant in children with stressors. Poor general and mental health of a family member can itself act as a stressor for the child. A significant association between inconsistent parenting is seen as well. Based on the above two findings, we can state that the stressors in our study revolved more around the family and lead to functional impairment in these children.

The Global functioning scores for these children were found to lie between 55 and 70, which indicates about moderate impairment. Our study is in accordance with most studies, both in the West as well as India, showing that these symptoms do cause significant impairment in various areas of the child's life. Frequent absenteeism from school may lead to poor academic performance and social isolation thereby leading to poor peer relationships.

Parent related factors:

Most of the fathers had studied till secondary school while mothers had studied till middle school. Most studies have not found any significant association of somatic symptoms and parental education except one study by Singh et al which found that children whose mothers had a lower literacy rate had more somatic symptoms due to poor parenting skills. Educational status alone would not lead to poor parenting. But that coupled with financial difficulties, substance abuse and family dysfunction may better explain poor parenting skills.

A positive family history was found in 58% of the children, with alcohol abuse in fathers being more common. More than family history of psychiatric illness, it was the presence of somatic symptoms in the parents which was found to be more significant(8).This association is seen more for paternal somatic symptoms rather than maternal somatic symptoms because men tend to report fewer somatic symptoms and when fathers do report of complaints, it is given more importance(78). Our study did not touch upon somatic symptoms in

parents. But regarding family history, our findings are slightly higher than other Western and Indian studies, where the rates are around 26-30% (3,12).

Modelling of behaviour was seen in 73% of children, with 45% reporting modelling from family members, 23% from friends and 5% from movies. The numbers in our study are slightly higher as compared to the West(29-54%)(12). Modelling from family members may be for secondary gains. This may be because the culture encourages and helps maintain the expression of these symptoms. Increased clustering of somatic symptoms can also be attributed to familial tendency to react to stress somatically, which may be genetic.

The privileges received by the child were studied in order to understand the secondary gains which helped in perpetuating and maintaining this behaviour. 37% of the children said they were paid more attention as compared to their siblings, whereas 27% were allowed to miss school. Privileges do act as secondary gains and help in maintaining symptoms(16). The reduction of unnecessary privileges and usage of reinforcement techniques is another important point which should be kept in mind while managing the child.

Furthermore, the attribution of these children and their parents were studied in a view to understand their knowledge of the symptoms. Children mostly attributed their symptoms to somatic causes(74%), whereas 45% parents attributed it to both somatic and psychological factors. In another study done by Alana Morris et al, the parents, especially mothers attributed the symptoms to controllable causes like diet and lifestyle or uncontrollable causes

like psychological factors but they did not attribute it to fabrication on part of the child at any point of time(2). Understanding the attributions of both the parents and children will help focus on specific areas during management.

63% of the parents were found to be authoritarian, while 24% were permissive. Moreover inconsistency in parenting was seen in 56%. Many studies support this finding. Punitive methods as seen in authoritarian parenting serve to act as a stress factor for the child, which may lead them to express their psychological distress physically. Moreover as explained before punitive methods may also encourage maladaptive behaviour strategies. On the other extreme, permissive parenting may lead to reinforcement of the behaviour thereby helping in maintaining the symptoms(Srinath et al).According to our literature review, only one study by Robinson et al showed no significant associations between family functioning and unexplained somatic symptoms.

To conclude, two important factors in the present study, i.e. temperament and parenting are present in the child pre-morbidly and they significantly influence the course of the illness. A child with difficult temperament may cause the parents to react in a punitive manner or the punitive parenting may lead to a maladaptive behaviour pattern. Presence of both difficult temperament and poor parenting makes the child more vulnerable. This vulnerable child when faced with learning difficulties and exposed to multiple negative life events has reduced self-esteem and resorts to physical expression of psychological distress. All these three factors interacting together then lead to subsequent impairment in functioning of the child.

CONCLUSION

1. Most of the children who reported for our study presented with neurological symptoms. Headache was most common followed by seizures, the reason being these symptoms are perceived as potentially life threatening and are accompanied by more secondary gain.

2. Specific learning disability was found to be the single most common and significant comorbidity in these children, which may either act as a stressor for the child or it may be result from frequent absenteeism on part of the child due to these symptoms. Either way, there is need for remedial education in these children.

3. Unexplained somatic symptoms were seen more in children with low effortful control, high negative affect and low affiliation. This difficult temperament makes the children more vulnerable to the effects of emotional distress.

4. Poor parenting skills in a child with difficult temperament will make the child more vulnerable and lead to a reduction in self-esteem of the child.

5. The presence of negative life events in the background of difficult temperament and poor parenting further pushes the child to somatically express their psychological distress.

6. All these factors interplaying single handedly or together will lead to a functional impairment in the child.

LIMITATIONS

1. This study was carried out in a tertiary care hospital psychiatric setting which limits the generalizability of the findings.

2. Assessment of temperament, stressful life events and parenting would definitely have resulted in some recall bias.

3. Descriptive study design. No comparison group used.

4. Compared to number of children and adolescents who presented with unexplained somatic symptoms to the clinic in 3 years, the number included in our study is relatively small.

5. No structured assessment was used for diagnosis of these somatic symptoms, only clinical interviews were used.

FUTURE DIRECTIONS

1. Clinical guidelines are needed for systematic referral of children with somatic symptoms to child guidance clinics.

2. Structured assessment and management schedules are required for these children.

3. More studies in inpatient population are needed.

4. Individual symptoms need to be assessed and medication and psychotherapy should be tailored according to the symptom.

5. Culturally appropriate Cognitive Behaviour Therapy should be given to these children and the results should be documented.

6. These children should be followed up in adults to identify somatisation and be appropriately managed

7. Long term follow up should also assess quality of life of these children.

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APPENDIX 1

SOCIO-DEMOGRAPHIC PROFORMA

1. NAME:

2. AGE:

3. SEX: 1-MALE

2-FEMALE

4. EDUCATION: 1- PRIMARY SCHOOL I – 4 TH STD

2-MIDDLE SCHOOL 5 – 8 TH STD

5. RESIDENCE: 1- URBAN

2- RURAL

3- SEMI-URBAN

6. FAMILY TYPE: 1- NUCLEAR

2- JOINT

7.RELIGION: 1- HINDU

2- MUSLIM

3- CHRISTIAN

4- OTHERS

8. SYMPTOMS: 1- HEADACHE

2- ABDOMINAL PAIN

3- SEIZURES

4- VOMITING

5- BREATHING DIFFICULTY

6- FAINTING SPELLS

7- OTHER SYMPTOMS

8- COUGH

SYMPTOMS: 1-NEUROLOGICAL=HEADACHE+SEIZURES+FAINTING SPELLS

2-GASTROINTESTINAL=ABDOMINAL PAIN+VOMITING

3-RESPIRATORY=BREATHING DIFFICULTY+COUGH

4-OTHERS

9. DURATION OF SYMPTOMS:1- < 2 MONTHS

2- 2-6 MONTHS

3- >6 MONTHS

10. REFERRED FROM: 1- DIRECT PRESENTATION

2- GENERAL OP

3- PAEDIATRIC WARD

4- NEUROLOGY OP

5- CARDIOLOGY OP

6- GASTROENTEROLOGY OP

7- PULMONOLGY OP

11. REFERRED TO,IF ANY: 1- NONE

2- NEUROLOGY OP

3- CARDIOLOGY OP

4- GASTROENTEROLOGY OP

5- PULMONOLOGY OP

6- PAEDIATRIC SURGERY OP

7- OTHERS

12. NO. OF PRIOR NON-PSYCHIATRIC CONSULTATIONS:

13. DIAGNOSIS AT FIRST ADMISSION: 1- SOMATIC SYMPTOM DISORDER

2- FUNCTIONAL NEUROLOGICAL SYMPTOM DISORDER

14.COMORBID DIAGNOSIS:0- NONE

1- DEPRESSION

2-SLD

3-OTHERS INCLUDING ANXIETY DISORDERS

15. NO. OF CO MORBID DIAGNOSIS:

16.IQ:

17. REMISSION OF SYMPTOM: 1- COMPLETE

2- PARTIAL

18.REMISSION WITHIN: 1- 1 - 7 DAYS

2- 1 – 4 WKS

3- 1 - 6 MONTHS

19. RELAPSE OF SYMPTOM: 1- NONE

2- SAME SYMPTOM

3- SUBSTITUTED

20.DIAGNOSIS OF MEDICAL ILLNESS:1-YES

2-NO

21.TEMPERAMENT:

22.PRESENCE OF STRESSOR: 1- YES

2- NO

23. LIFE EVENTS SCALE FOR INDIAN CHILDREN: NO. OF LIFE EVENTS -

STRESS SCORE -

24. CGAS

25. FATHER’S EDUCATION (IN YEARS):

26. MOTHER’S EDUCATION (IN YEARS):

27. FAMILY HISTORY OF PSYCHIATRIC ILLNESS: 1-YES

2-NO

28. TYPE OF FAMILY ILLNESS: 1- SCHIZOPHRENIA

2- AFFECTIVE DISORDERS

3- SUBSTANCE ABUSE

4- DISSOCIATIVE DISORDERS/CONVERSION

5- OTHERS

6- NONE

29. MODELING OF BEHAVIOUR,IF ANY: 1- FROM FAMILY

2- FRIENDS

3- MOVIES

4- NONE

30. PRIVILEDGES TO THE CHILD: 1- MORE ATTENTION

2- EXEMPTION FROM SCHOOL

3- OTHERS

31.PARENTS ATTRIBUTE ILLNESS TO: 1- SOMATIC CAUSES

2- PSYCHOLOGICAL CAUSES

3- SOMATIC AND PSYCHOLOGICAL CAUSES

4- MAGICORELIGIOUS

32.CHILD ATTRIBUTES ILLNESS TO: 1- SOMATIC CAUSES

2- PSYCHOLOGICAL CAUSES

3- BOTH

4- MAGICORELIGIOUS

33.TYPE OF PARENTING:1-AUTHORITATIVE

2-AUTHORITARIAN

3-PERMISSIVE

34.INCONSISTENCY IN PARENTING:1-YES

2-NO

Information to Parents/Guardians

Title: RELATIONSHIP OF UNEXPLAINED SOMATIC SYMPTOMS WITH LIFE EVENTS AND TEMPERAMENT IN CHILDREN AND ADOLESCENTS

Principal Investigator: Dr. Punya Mulky

Name of Participant:

Site: Institute of Child Health & Children's Hospital, Chennai.

Your child and you are invited to take part in this research. The information in this document is meant to help you decide whether or not to take part. Please feel free to ask if you have any queries or concerns.

What is the purpose of this research?

Children and adolescents reporting to the psychiatry OP with unexplained somatic symptoms are relatively common with most of these children being referred from other departments. It has been argued that since the Indian culture discourages direct expression of emotional distress, and that physical symptoms are a common way of expressing psychological distress, more and more children with psychological problems are reporting with somatic symptoms. These disorders cause significant socio-emotional difficulties, loss of school and work days in children and caregivers. We want to assess how the life events and the temperament of the child affect the course and outcome of the somatic symptoms so as to help in management of these symptoms.

We have obtained permission from the Institutional Ethical Committee.

The study design

All children between the age group of 5- 15 years and their parents, who come for follow- up will be assessed for the severity of the symptoms, remission of symptoms, parental practices, presence of any stressful life events, and temperament of the child with the help of scales, which will require around 40-45 minutes.

Study Procedures

The study involves reviewing case records from Jan2013- Dec2015, short- listing children with somatic symptoms, contacting them over the phone and asking them to come for follow- up. Children and their parents who report for follow up will be evaluated in detail for clinical characteristics of the symptoms, their variations and remission as well about

physical and psychological co morbidities. To understand about various life events and stressors, Life Events Scale for Indian Children and Adverse Childhood Experiences Scale will be given which will take around 20-25 min. Evaluation of the Temperament will be done using Childhood Temperamental Assessment Schedule which requires around 10-15 min and parental practices will be assessed using Parental Handling Questionnaire which will take around 10-15 min. The assessments will be done during the period of your follow- up visit.

Confidentiality of the information obtained from you

You have the right to confidentiality regarding the privacy of your child's medical information (personal details, results of physical examinations, investigations, and your medical history). By signing this document, you will be allowing the research team investigators, other study personnel, Institutional Ethical Committee and any person or agency required by law like the Drug Controller General of India to view your data, if required.

The information from this study, if published in scientific journals or presented at scientific meetings, will not reveal your child's identity.

How will your decision to not participate in the study affect your child?

Your decision to not let your child participate in this research study will not affect your child's medical care or your relationship with the investigator or the institution. Your child will be taken care of and will not lose any benefits to which he/she is entitled.

Can you decide to stop participating in the study once you start?

The participation in this research is purely voluntary and you have the right to withdraw your child's participation from this study at any time during the course of the study without giving any reasons. However, it is advisable that you talk to the research team prior to discontinuing from the study.

Signature of Investigator Signature of the Guardian

Date Date

INFORMED CONSENT FORM

Title of the study:" Relationship of unexplained somatic symptoms with life events and temperament in children and adolescents".

Name of the Participant:
_____.

Name of the Principal (Co-Investigator): Dr. Punya Mulky

Name of the Institution: Institute Of Mental Health

Name and address of the sponsor / agency (ies) (if any): No

Documentation of the informed consent

I _____ have read the information in this form (or it has been read to me). I was free to ask any questions and they have been answered. I am the guardian of my child who is below 18 years of age and, exercising my free power of choice, hereby give my consent to include my child as a participant in
"Relationship of unexplained somatic symptoms with life events and temperament in children and adolescents".

1. I have read and understood this consent form and the information provided to me.
2. I have had the consent document explained to me.
3. I have been explained about the nature of the study.
4. I have been explained about my rights and responsibilities by the investigator.
5. I have informed the investigator of all the treatments my child is taking or has taken in the past _____ months including any native (alternative) treatment.
6. I have been advised about the risks associated with my child's participation in this study.*****
7. My child has not participated in any research study within the past _____month(s). *****
8. My child has not donated blood within the past _____ months—Add if the study involves extensive blood sampling. *****
9. I am aware of the fact that I can opt out of the study at any time without having to give any reason and this will not affect my child's future treatment in this hospital. *****
10. I am also aware that the investigator may terminate my child's participation in the study at any time, for any reason, without my consent. *****
11. I hereby give permission to the investigators to release the information obtained from me and my child as a result of participation in this study to the sponsors, regulatory authorities, Govt. agencies, and IEC. I understand that they are publicly presented.
12. I have understand that my child's identity will be kept confidential if his/her data are publicly presented
13. I have had my questions answered to my satisfaction.
14. I have decided to allow my child participate in the research study.

I am aware that if I have any question during this study, I should contact the investigator. By signing this consent form I attest that the information given in this document has been clearly explained to me and understood by me, I will be given a copy of this consent document.

For children:

Name and signature / thumb impression of the parent/guardian

Name _____ Signature_____
Date_____

Name and Signature of impartial witness (required for illiterate patients):

Name _____ Signature_____
Date_____

Address and contact number of the impartial witness:

Name and Signature of the investigator or his representative obtaining consent:

Name _____ Signature_____
Date_____

Name and Signature of the investigator or his representative obtaining consent :

Name _____ Signature_____
Date_____

APPENDIX 2

EARLY ADOLESCENT TEMPERAMENT QUESTIONNAIRE- REVISED (EATQ) PARENT FORM

Your son or daughter:	Almost always untrue	Usually untrue	Sometimes true, sometimes untrue	Usually true	Almost always true
1) Worries about getting into trouble.	1	2	3	4	5
2) When angry at someone, says thing s/he knows will hurt that person's feelings.	1	2	3	4	5
3) Has a hard time finishing things on time.	1	2	3	4	5
4) Thinks traveling to Africa or India would be exciting and fun.	1	2	3	4	5
5) If having a problem with someone, usually tries to deal with it right away.	1	2	3	4	5
6) Has a hard time waiting his/her turn to speak when excited.	1	2	3	4	5
7) Often does not seem to enjoy things as much as his/her friends.	1	2	3	4	5
8) Opens presents before s/he is supposed to.	1	2	3	4	5
9) Would be frightened by the thought of skiing fast down a steep slope.	1	2	3	4	5
10) Feels like crying over very little on some days.	1	2	3	4	5
11) If very angry, might hit someone.	1	2	3	4	5
12) Likes taking care of other people.	1	2	3	4	5
13) Likes to be able to share his/her private thoughts with someone else.	1	2	3	4	5
14) Usually does something fun for awhile before starting her/his homework, even though s/he is not supposed to.	1	2	3	4	5
15) Finds it easy to really concentrate on a problem.	1	2	3	4	5
16) Thinks it would be exciting to move to a new city.	1	2	3	4	5
17) When asked to do something, does it right away, even if s/he doesn't want to.	1	2	3	4	5
18) Would like to be able to spend time with a good friend every day.	1	2	3	4	5
19) Tends to be rude to people s/he doesn't like.	1	2	3	4	5
20) Is annoyed by little things other kids do.	1	2	3	4	5

21) Gets very irritated when someone criticizes her/him.	1	2	3	4	5
22) When interrupted or distracted, forgets what s/he was about to say.	1	2	3	4	5
23) Is more likely to do something s/he shouldn't do the more s/he tries to stop her/himself.	1	2	3	4	5
24) Enjoys exchanging hugs with people s/he likes.	1	2	3	4	5
25) Tends to try to blame mistakes on someone else.	1	2	3	4	5
26) Is sad more often than other people realize.	1	2	3	4	5
27) Can generally think of something to say, even with strangers.	1	2	3	4	5
28) Wouldn't be afraid to try a risky sport like deep sea diving.	1	2	3	4	5
29) Expresses a desire to travel to exotic places when s/he hears about them.	1	2	3	4	5
30) Worries about our family when s/he is not with us.	1	2	3	4	5
31) Gets irritated when I will not take her/him someplace s/he wants to go.	1	2	3	4	5
32) Slams doors when angry.	1	2	3	4	5
33) Is hardly ever sad, even when lots of things are going wrong.	1	2	3	4	5
34) Would like driving a racing car.	1	2	3	4	5
35) Has a difficult time tuning out background noise and concentrating when trying to study.	1	2	3	4	5
36) Usually finishes her/his homework before it’s due.	1	2	3	4	5
37) Likes it when something exciting and different happens at school.	1	2	3	4	5
38) Usually gets started right away on difficult assignments.	1	2	3	4	5
39) Is good at keeping track of several different things that are happening around her/him.	1	2	3	4	5
40) Is energized by being in large crowds of people.	1	2	3	4	5
41) Makes fun of how other people look.	1	2	3	4	5
42) Doesn't criticize others.	1	2	3	4	5
43) Wants to have close relationships with other people.	1	2	3	4	5
44) Is shy.	1	2	3	4	5
45) Gets irritated when s/he has to stop doing something s/he is enjoying.	1	2	3	4	5

46)	Usually puts off working on a project until it is due.	1	2	3	4	5
47)	Is able to stop him/herself from laughing at inappropriate times.	1	2	3	4	5
48)	Is afraid of the idea of me dying or leaving her/him.	1	2	3	4	5
49)	Is often in the middle of doing one thing and then goes off to do something else without finishing it.	1	2	3	4	5
50)	Is not shy.	1	2	3	4	5
51)	Is quite a warm and friendly person.	1	2	3	4	5
52)	Sometimes seems sad even when s/he should be enjoying her/himself like at Christmas, or on a trip.	1	2	3	4	5
53)	Doesn't enjoy playing softball or baseball because s/he is afraid of the ball.	1	2	3	4	5
54)	Likes meeting new people.	1	2	3	4	5
55)	Feels scared when entering a darkened room at night.	1	2	3	4	5
56)	Wouldn't want to go on the frightening rides at the fair.	1	2	3	4	5
57)	Hates it when people don't agree with him/her.	1	2	3	4	5
58)	Gets very frustrated when s/he makes a mistake in her/his school work.	1	2	3	4	5
59)	Is usually able to stick with his/her plans and goals.	1	2	3	4	5
60)	Pays close attention when someone tells her/him how to do something.	1	2	3	4	5
61)	Is nervous being home alone.	1	2	3	4	5
62)	Feels shy about meeting new people.	1	2	3	4	5

APPENDIX 3

TEMPERAMENT IN MIDDLE CHILDHOOD QUESTIONNAIRE (TMCQ)

	My Child…	Almost always untrue	Usually untrue	Sometimes true, sometimes untrue	Usually true	Almost always true	Does Not Apply
1	Likes poems.	1	2	3	4	5	NA
2	Likes to be physically active.	1	2	3	4	5	NA
3	Likes going down high slides or other adventurous activities.	1	2	3	4	5	NA
4	Greatly enjoys playing games where s/he can win.	1	2	3	4	5	NA
5	Is bothered by pain when s/he falls down.	1	2	3	4	5	NA
6	Can stop him/herself when s/he is told to stop.	1	2	3	4	5	NA
7	Is easily distracted when listening to a story.	1	2	3	4	5	NA
8	Has a hard time settling down after an exciting activity.	1	2	3	4	5	NA
9	Likes rough and rowdy games.	1	2	3	4	5	NA
10	Likes the crunching sound of leaves in the fall.	1	2	3	4	5	NA
11	Is afraid of fire.	1	2	3	4	5	NA
12	Likes to think of new ideas.	1	2	3	4	5	NA
13	Is afraid of heights.	1	2	3	4	5	NA
14	Can't help touching things without getting permission.	1	2	3	4	5	NA
15	Is always on the move.	1	2	3	4	5	NA
16	Tends to say the first thing that comes to mind, without stopping to think about it.	1	2	3	4	5	NA
17	Looks around the room when doing homework.	1	2	3	4	5	NA
18	Would like to be friends with lots of people.	1	2	3	4	5	NA
19	Is very difficult to soothe when s/he has become upset.	1	2	3	4	5	NA
20	Can make him/herself do homework, even when s/he wants to play.	1	2	3	4	5	NA

21	Prefers playing outdoors to indoors when weather permits.	1	2	3	4	5	NA
22	Interrupts others when they are talking.	1	2	3	4	5	NA
23	Would rather play a sport than watch TV.	1	2	3	4	5	NA
24	Tends to become sad if plans don't work out.	1	2	3	4	5	NA
25	Says the first thing that comes to mind.	1	2	3	4	5	NA
26	Can say hello to a new child in class, even when feeling shy.	1	2	3	4	5	NA
27	Sometimes appears to be downcast for no reason.	1	2	3	4	5	NA
28	Has a hard time speaking when scared to answer a question.	1	2	3	4	5	NA
29	Cheers up quickly.	1	2	3	4	5	NA
30	Cries when given an injection.	1	2	3	4	5	NA
31	Becomes sad when told to do something s/he does not want to do.	1	2	3	4	5	NA

	My Child…	Almost always untrue	Usually untrue	Sometimes true, sometimes untrue	Usually true	Almost always true	Does Not Apply
32	Likes to play quiet games.	1	2	3	4	5	NA
33	Would like to spend time with a good friend every day.	1	2	3	4	5	NA
34	Likes the sound of poems.	1	2	3	4	5	NA
35	Cries sadly when a favorite toy gets lost or broken.	1	2	3	4	5	NA
36	Notices the color of people's eyes.	1	2	3	4	5	NA
37	Likes to get out of the house and do something physical.	1	2	3	4	5	NA
38	Becomes quite uncomfortable when cold or wet.	1	2	3	4	5	NA
39	Can take a Band-Aid® off when needed, even when painful.	1	2	3	4	5	NA
40	Can stop him/herself from doing things too quickly.	1	2	3	4	5	NA
41	Enjoys exciting and suspenseful TV shows.	1	2	3	4	5	NA
42	Usually stops and thinks things over before deciding to do something.	1	2	3	4	5	NA
43	Likes to run.	1	2	3	4	5	NA
44	Notices the sound of birds.	1	2	3	4	5	NA
45	Likes exploring new places.	1	2	3	4	5	NA
46	Can make him/herself run fast, even when tired.	1	2	3	4	5	NA
47	Becomes self conscious when around people.	1	2	3	4	5	NA
48	Likes to make up stories.	1	2	3	4	5	NA
49	Becomes tearful when tired.	1	2	3	4	5	NA
50	Enjoys making her/his own decisions.	1	2	3	4	5	NA
51	Is warm and friendly.	1	2	3	4	5	NA
52	Would find moving to a new, big city exciting.	1	2	3	4	5	NA
53	Gets very angry when another child takes his/her toy away.	1	2	3	4	5	NA
54	Likes reading or listening to make believe stories.	1	2	3	4	5	NA
55	Is shy with new people.	1	2	3	4	5	NA

56	Has an easy time waiting to open a present.	1	2	3	4	5	NA
57	Notices odors like perfume, smoke, and cooking smells.	1	2	3	4	5	NA
58	Likes to make others feel good.	1	2	3	4	5	NA
59	Can generally think of something to say, even with strangers.	1	2	3	4	5	NA
60	Is followed by other children.	1	2	3	4	5	NA
61	Gets angry when called in from play before s/he is ready to quit.	1	2	3	4	5	NA
62	Can tell if another person is sad or angry by the look on their face.	1	2	3	4	5	NA
63	Is scared of injections by the doctor.	1	2	3	4	5	NA
64	When s/he cries, tends to cry for more than a couple of minutes at a time.	1	2	3	4	5	NA

	My Child…	Almost always untrue	Usually untrue	Sometimes true, sometimes untrue	Usually true	Almost always true	Does Not Apply
65	Enjoys exciting places with big crowds.	1	2	3	4	5	NA
66	Is energetic.	1	2	3	4	5	NA
67	Likes listening to music.	1	2	3	4	5	NA
68	Remains upset for hours when someone hurts his/her feelings.	1	2	3	4	5	NA
69	Is bothered by loud or scratchy sounds.	1	2	3	4	5	NA
70	Has a hard time making him/herself clean own room.	1	2	3	4	5	NA
71	Enjoys drawing pictures.	1	2	3	4	5	NA
72	Calls out answers before being called on by a teacher or group leader.	1	2	3	4	5	NA
73	Enjoys looking at books.	1	2	3	4	5	NA
74	Makes up mind suddenly.	1	2	3	4	5	NA
75	Is afraid of burglars or the "boogie man."	1	2	3	4	5	NA
76	When a child is left out, can ask that child to play.	1	2	3	4	5	NA
77	Touches fabric or other soft material.	1	2	3	4	5	NA
78	When working on an activity, has a hard time keeping her/his mind on it.	1	2	3	4	5	NA
79	Has a hard time waiting his/her turn to talk when excited.	1	2	3	4	5	NA
80	Has a hard time paying attention.	1	2	3	4	5	NA
81	Is bothered by light or color that is too bright.	1	2	3	4	5	NA
82	Needs to be told by teacher to pay attention.	1	2	3	4	5	NA
83	Often rushes into doing new things.	1	2	3	4	5	NA
84	Is first to speak up in a group.	1	2	3	4	5	NA
85	Is afraid of sleeping over at someone's house.	1	2	3	4	5	NA
86	Likes quiet reading time.	1	2	3	4	5	NA
87	Gets angry when s/he can't find something s/he is looking for.	1	2	3	4	5	NA
88	Is very careful and cautious when crossing the street.	1	2	3	4	5	NA
89	Has a hard time working on an assignment s/he finds boring.	1	2	3	4	5	NA
90	Is afraid of loud noises.	1	2	3	4	5	NA

91	Goes to school nurse's office for very minor complaints.	1	2	3	4	5	NA
92	Likes the feel of warm water in a bath or shower.	1	2	3	4	5	NA
93	Does a fun activity when s/he is supposed to do homework instead.	1	2	3	4	5	NA
94	Gets angry when s/he has trouble with a task.	1	2	3	4	5	NA
95	Likes to look at trees.	1	2	3	4	5	NA
96	Likes to play so wildly and recklessly that s/he might get hurt.	1	2	3	4	5	NA

	My Child …	Almost always untrue	Usually untrue	Sometimes true, sometimes untrue	Usually true	Almost always true	Does Not Apply
97	Is told by others to "cheer up" and be happier.	1	2	3	4	5	NA
98	When with other children, is the one to choose activities or games.	1	2	3	4	5	NA
99	Gets angry when s/he makes a mistake.	1	2	3	4	5	NA
100	Her/his feelings are easily hurt.	1	2	3	4	5	NA
101	Can make him/herself get out of bed, even when tired.	1	2	3	4	5	NA
102	Likes active games.	1	2	3	4	5	NA
103	Can apologize or shake hands after a fight.	1	2	3	4	5	NA
104	Has a big imagination.	1	2	3	4	5	NA
105	When angry about something, s/he tends to stay upset for five minutes or longer.	1	2	3	4	5	NA
106	Places great importance on friends.	1	2	3	4	5	NA
107	Seems to feel down when unable to accomplish a task.	1	2	3	4	5	NA
108	Gets into trouble because s/he does things without thinking first.	1	2	3	4	5	NA
109	Notices small changes in the environment, like lights getting brighter in a room.	1	2	3	4	5	NA
110	Has temper tantrums when s/he doesn't get what s/he wants.	1	2	3	4	5	NA
111	Notices things others don't notice.	1	2	3	4	5	NA
112	Has a hard time going back to sleep after waking in the night.	1	2	3	4	5	NA
113	Likes to sit under a blanket.	1	2	3	4	5	NA
114	Notices even little specks of dirt on objects.	1	2	3	4	5	NA
115	Enjoys playing chase.	1	2	3	4	5	NA
116	Likes to pretend.	1	2	3	4	5	NA
117	Gets nervous about going to the dentist.	1	2	3	4	5	NA

118	Is shy.	1	2	3	4	5	NA
119	Likes to go high and fast on the swings.	1	2	3	4	5	NA
120	Needs to be told to pay attention.	1	2	3	4	5	NA
121	Would think that skiing or snowboarding fast sounds scary.	1	2	3	4	5	NA
122	Usually wins arguments with other children.	1	2	3	4	5	NA
123	Likes to run his/her hand over things to see if they are smooth or rough.	1	2	3	4	5	NA
124	Grabs what s/he wants.	1	2	3	4	5	NA
125	Becomes upset when hair is combed.	1	2	3	4	5	NA
126	Enjoys riding bicycle fast and recklessly.	1	2	3	4	5	NA
127	Likes to run around outside.	1	2	3	4	5	NA
128	Decides what s/he wants very quickly and then goes after it.	1	2	3	4	5	NA

	My Child…	Almost always untrue	Usually untrue	Sometimes true, sometimes untrue	Usually true	Almost always true	Does Not Apply
129	Would like to confide in others.	1	2	3	4	5	NA
130	Usually rushes into an activity without thinking about it.	1	2	3	4	5	NA
131	Likes to be in charge.	1	2	3	4	5	NA
132	Can make him/herself take medicine or eat food that s/he knows tastes bad.	1	2	3	4	5	NA
133	Feels sad frequently.	1	2	3	4	5	NA
134	Likes hugs and kisses.	1	2	3	4	5	NA
135	Likes to plan carefully before doing something.	1	2	3	4	5	NA
136	Acts insecure with others.	1	2	3	4	5	NA
137	Feels nervous for a long time after being scared.	1	2	3	4	5	NA
138	Is quite upset by a little cut or bruise.	1	2	3	4	5	NA
139	Can make him/herself pick up something dirty in order to throw it away.	1	2	3	4	5	NA
140	Is afraid of the dark.	1	2	3	4	5	NA
141	Is able to keep secrets.	1	2	3	4	5	NA
142	Is bothered by bath water that is too hot or too cold.	1	2	3	4	5	NA
143	Has a hard time slowing down when rules say to walk.	1	2	3	4	5	NA
144	Tends to feel sad even when others are happy.	1	2	3	4	5	NA
145	Loves pets and other small animals.	1	2	3	4	5	NA
146	Gets mad when provoked by other children.	1	2	3	4	5	NA
147	When s/he sees a toy or a game s/he wants, is eager to have it right away.	1	2	3	4	5	NA

148	Likes to feel close to other people.	1	2	3	4	5	NA
149	Gets distracted when trying to pay attention in class.	1	2	3	4	5	NA
150	Notices when parents are wearing new clothing.	1	2	3	4	5	NA
151	Likes to make things.	1	2	3	4	5	NA
152	Has a hard time getting moving when tired.	1	2	3	4	5	NA
153	Is very frightened by nightmares.	1	2	3	4	5	NA
154	Is likely to cry when even a little bit hurt.	1	2	3	4	5	NA
155	Enjoys winning arguments.	1	2	3	4	5	NA
156	Likes just being with other people.	1	2	3	4	5	NA
157	Can make him/herself smile at someone, even when s/he dislikes them.	1	2	3	4	5	NA

11. Not being sent to school (against child's wish)	42	_____	_____	_____
12. Serious illness of brother/sister requiring hospital treatment.	42	_____	_____	_____
13. Loss of job by parent.	43	_____	_____	_____
14. Mother beginning full time work.	45	_____	_____	_____
15. Witnessing a serious mishap (traffic accident, fire) or death procession.	55	_____	_____	_____
16. Examinations	45	_____	_____	_____
17. Close brother or sister leaving home.	49	_____	_____	_____
18. Change of school.	49	_____	_____	_____
19. Change in father's job requiring increased absence from home.	48	_____	_____	_____
20. Physical punishment by parents.	48	_____	_____	_____
21. Problems with teacher or school work.	49	_____	_____	_____
22. Quarrel between parents/parent and neighbour/relative.	47	_____	_____	_____
23. Prison sentence of parent.	50	_____	_____	_____
24. Death of a grand parent.	51	_____	_____	_____
25. Birth of a brother or sister.	50	_____	_____	_____
26. Increase in number of arguments with parents.	51	_____	_____	_____
27. Suspension from school.	53	_____	_____	_____
28. Increase in number of arguments between parents.	54	_____	_____	_____
29. Expulsion form school.	58	_____	_____	_____
30. Beginning school.	58	_____	_____	_____
31. Excessive use of alcohol by parent leading to undesirable behaviour.	60	_____	_____	_____
32. Death of child's close friend or relative.	60	_____	_____	_____
33. Change in child's popularity with friends.	57	_____	_____	_____
34. Being kept down a year at school.	60	_____	_____	_____
35. Attaining menarche/puberty.	63	_____	_____	_____
36. Being responsible for another child's death (accidental or homicidal).	68	_____	_____	_____

37. Being sent to a hostel.	67			
38. Seeing the sexual activity of parents.	67			
39. Serious illness of parent requiring hospital treatment.	67			
40. Psychiatric disturbance of parent.	69			
41. Being a battered child.	74			
42. Marriage of parent to step parent.	72			
43. Discovery of being an adopted child.	72			
44. Serious illness of child requiring hospital treatment.	73			
45. Death of a brother or sister.	77			
46. Acquiring a visible deformity.	76			
47. Sexual assault on child.	78			
48. Divorce of parents.	83			
49. Separation of parents.	86			
50. Death of a parent.	94			

Where will you place the event(s) you told me in the beginning, (if it is not already covered by the list of questions above) in the above list in terms of its seriousness and impact on the child/family.

APPENDIX 5

PARENTING PRACTICES QUESTIONNAIRE (Mothers' Form)

Make two ratings for each item; (1) rate *how often your spouse* exhibits this behavior with your child and
(2) *how often you* exhibit this behavior with your child.
SPOUSE EXHIBITS BEHAVIOR: *I EXHIBIT THIS BEHAVIOR*:
1 = Never 1 = Never
2 = Once In Awhile 2 = Once In Awhile
3 = About Half of the Time 3 = About Half of the Time
4 = Very Often 4 = Very Often
5 = Always 5 = Always

[He] [I]
1. [He encourages] [I encourage] our child to talk about the child's troubles.
2. [He guides] [I guide] our child by punishment more than by reason.
3. [He knows] [I know] the names of our child's friends.
4. [He finds] [I find] it difficult to discipline our child.
5. [He gives praise] [I give praise] when our child is good.
6. [He spanks] [I spank] when our child is disobedient.
7. [He jokes and plays] [I joke and play] with our child.
8. [He withholds] [I withhold] scolding and/or criticism even when our child acts contrary to our wishes.
9. [He shows] [I show] sympathy when our child is hurt or frustrated.
10. [He punishes] [I punish] by taking privileges away from our child with little if any explanations.
11. [He spoils] [I spoil] our child.
12. [He gives] [I give] comfort and understanding when our child is upset.
13. [He yells or shouts] [I yell or shout] when our child misbehaves.
14. [He is] [I am] easy going and relaxed with our child.
15. [He allows] [I allow] our child to annoy someone else.
16. [He tells] [I tell] child o ur expectations regarding behavior before the child engages in an activity.
17. [He scolds and criticizes] [I scold and criticize] to make our child improve.
18. [He shows] [I show] patience with our child.
19. [He grabs] [I grab] our child when he/she is being disobedient.
20. [He states] [I state] punishments to our child and does not actuall y do them.
21. [He is] [I am] responsive to our child's feelings or needs.
22. [He allows] [I allow] our child to give input into family rules.
23. [He argues] [I argue] with our child.
24. [He appears] [I appear] confident about parenting abilities.
25. [He gives] [I give] our child reasons why rules should be obeyed.
26. [He appears] [I appear] to be more concerned with own feelings than with our child's feelings.
27. [He tells] [I tell] our child that we appreciate what the child tries or accomplishes.
28. [He punishes] [I punish] by putting our child off somewhere alone with little if any explanations .
29. [He helps] [I help] our child to understand the impact of behavior by encouraging our child to talk about the
consequences of his/her own actions.
30. [He is] [I am] afraid that disciplining our child for misbehavior will cause the child to not like his/her parents.

31. [He takes] [I take] our child’s desir es into account before asking the child to do something.
32. [He explodes] [I explode] in anger towards our child.
33. [He is] [I am] aware of problems or concerns about our child in school.
34. [He threatens] [I threaten] our child with punishment more often than actually giving it.
35. [He expresses] [I express] affection by hugging, kissing, and holding our child.
36. [He ignores] [I ignore] our child’s misbehavior.
37. [He uses] [I use] physical punishment as a way of disciplining our child.
38. [He carries] [I carry] out discipline after our child misbehaves.
39. [He apologizes] [I apologize] to our child when making a mistake in parenting.
40. [He tells] [I tell] our child what to do.
41. [He gives] [I give] into our child when the child causes a co mmotion about somethi ng.
42. [He talks it over and reasons] [I talk it over and reason] with our child when the child misbehaves.
43. [He slaps] [I slap] our child when the child misbehaves.
44. [He disagrees] [I disagree] with our child.
45. [He allows] [I allow] our child to interrupt others.
46. [He has] [I have] warm and intimate times together with our child.
47. When two children are fighting, [he disciplines] [I discipline] children first and asks questions later.
48. [He encourages] [I encourage] our child to freely express (himself)(herself) even when disagreeing with
parents.
49. [He bribes] [I bribe] our child with rewards to bring about compliance.
50. [He scolds or criticizes] [I scold or criticize] when our child’s behavior doesn’t meet our expectations.
51. [He shows] [I show] respect for our child’ s opinions by encouraging our child to express them.
52. [He sets] [I set] strict well-established rules for our child.
53. [He explains] [I explain] to our child how we feel about the child’s good and bad behavior.
54. [He uses] [I use] threats as punishment with little or no justification.
55. [He takes] [I take] into account our chil d’s preferences in making plans for the family.
56. When our child asks why (he)(she) has to conform, [he states] [I state]: because I said so, or I am your parent
and I want you to.
57. [He appears] [I appear] unsure on how to solve our child’s misbehavior.
58. [He explains] [I explain] the consequences of the child’s behavior.
59. [He demands] [I demand] that our child does/do things.
60. [He channels] [I chan nel] our chil d’s misb ehavior into a more acceptable activity.
61. [He shoves] [I shove] our child when the child is disobedient.
62. [He emphasizes] [I emphasize] the reasons for rules.

APPENDIX 6

CHILDREN'S GLOBAL ASSESSMENT SCALE

CHILDREN'S GLOBAL ASSESSMENT SCALE

David Shaffer, M.D., Madelyn S. Gould, Ph.D., Hector Bird, M.D., Prudence Fisher, B.A.
Adaptation of the Adult Global Assessment Scale
(Robert L. Spitzer, M.D., Nathan Gibbon, M.S.W., Jean Endicott, Ph.D.)
Specified time period: 1 month

100-91 DOING VERY WELL

Superior functioning in all areas (at home, at school and with peers), involved in a range of activities and his many interests (e.g., has hobbies or participates in extracurricular activities or belongs to an organised group such as Scouts, etc.). Likeable, confident, everyday worries never get out of hand. Doing well in school. No symptoms.

90-81 DOING WELL

Good functioning 'in all areas. Secure in family, school, and with peers. There may be transient difficulties and "everyday" worries that occasionally get out of hand (e.g. mild anxiety associated with an important exam, occasionally "blow-ups" with siblings, parents or peers).

80-71 DOING ALL RIGHT –minor impairment

No more than slight impairment in functioning at home, at school, or with peers. Some disturbance of behaviour or emotional distress may be present in response to life stresses (e.g., parental separations, deaths, birth of a sib) but these are brief and interference with functioning is transient, such children are only minimally disturbing to others and are not considered deviant by those who know them.

70-61 SOME PROBLEMS - in one area only

Some difficulty in a single area, but generally functioning pretty well, (e.g., sporadic or isolated antisocial acts, such as occasionally playing hooky petty theft; consistent minor difficulties with school work, mood changes of brief duration, fears and anxieties winch do not lead to gross avoidance behaviour; self-doubts). Has some meaningful interpersonal relationships. Most people who do not know the child well would not consider him/her deviant but those who do know him/her well might express concern.

60-51 SOME NOTICEABLE PROBLEMS – in more than one area

Variable functioning with sporadic difficulties or symptoms in several but not all social areas. Disturbance would be apparent to those who encounter the child in a dysfunctional
setting or time but not to those who see the child in other settings.

50-41 OBVIOUS PROBLEMS – moderate impairment in most areas or severe in one area.

Moderate degree of interference in functioning in most social areas or severe impairment functioning in one area, such as might result from for example , suicidal preoccupations and ruminations, school refusal and other forms of anxiety, obsessive rituals major conversion symptoms, frequent anxiety attacks, frequent episodes of aggressive or other antisocial behaviour with some preservation of meaningful social relationships.

40-31 SERIOUS PROBLEMS – major impairment in several areas and unable to function in one area

Major impairment in functioning in several areas and unable to function in one of these areas, i.e., disturbed at home, at school, with peers, or in the society at large, e.g., persistent aggression without clear instigation; markedly withdrawn and isolated behaviour due to either mood or though disturbance, suicidal attempts with clear lethal intent. Such children are likely to require special schooling and/or hospitalisation or withdrawal from school (but this is not a sufficient criterion for inclusion in this category).

30-21 SEVERE PROBLEMS - unable to function in almost all situations.

Unable to function in almost all areas, e.g., stays at home, in ward or in bed all day

without taking part in social activities OR severe impairment in reality testing OR serious impairment in communication (e.g., sometimes incoherent or inappropriate).

20-11 VERY SEVERELY IMPAIRED -considerable supervision is required for safety. Needs considerable supervision to prevent hurting others or self, e.g., frequently violent, repeated suicide attempts OR to maintain personal hygiene! OR gross impairment in all forms of communication, e.g., severe abnormalities in verbal and gestural communication, marked social aloofness, stupor, etc.

10-1 EXTREMELY IMPAIRED - constant supervision is required for safety. Needs constant supervision (24-hour care) due to severely aggressive or self-destructive behaviour or gross impairment in reality testing, communication, cognition, affect, or personal hygiene.