*J. Indian Assoc. Child Adolesc. Ment. Health 2006; 2(4): 100-107*

# Original Article

## Psychopathology in the Adolescent Offspring of Parents with Panic Disorder and Depression

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**ABSTRACT**
**Aim:** To study the prevalence of psychiatric diagnosis and psychopathology in adolescent offspring of parents with panic disorder, depression and normal controls
**Methods:** Adolescent offspring (11-16 years) of parents with a diagnosis of panic disorder and major depression, and normal controls were interviewed using Missouri Assessment of Genetics Interview for Children (MAGIC), Scale for Childhood Anxiety Related Emotional Disorders (SCARED), Strengths and Difficulties Questionnaire (SDQ) and the Children's Global Assessment Scale (CGAS).
**Results:** Thirty three adolescent offspring of parents with panic disorder, 47 of parents with unipolar depression, and 37 of normal controls were interviewed. A diagnosis of simple phobia was made significantly more often in adolescent offspring of parents with panic disorder compared to controls. Adolescent offspring of parents with depression had significantly higher rates of panic disorder and depression compared to controls. The total scores on SCARED and SDQ were significantly higher among the offspring of parents with panic disorder and depression compared to controls and the former were more functionally impaired.
**Conclusions:** There was an excess prevalence of psychopathology and a greater degree of functional impairment in adolescent offspring of parents with panic disorder and depression compared to adolescent offspring of normal controls.
**Key Words**: Adolescent, offspring, panic disorder, depression.

## INTRODUCTION

Studies have reported that children of parents with panic disorder and depression are at a greater risk of developing psychiatric disorders; especially internalizing disorders.[1] Specificity of transmission of the increased vulnerability is not clearly established. Most studies have reported an overlap in the vulnerability of developing anxiety disorders / depression in children of parents with panic disorder or depression.[2] However, a study assessing psychopathology in children of parents with panic disorder and animal phobia found a specific transmission of parental symptomatology. [1]

Studies carried out on pre-adolescent offspring of parents with panic disorder and depression had some inherent short-comings, which makes the assessment of adolescent offspring more attractive. Diagnoses in the above studies were established based on interviews with parents or the children. Interviews with children less than 9 years can be unreliable,[3] and agreement between diagnosis of disorders based on parents' and children's report of internalizing symptoms has consistently been found to be low.[4] Furthermore, childhood onset anxiety

disorders can be transient,[5] while anxiety disorders during the adolescent years tend to persist in later adulthood. Another methodological issue addressed in the present study was that of dimensional assessment of psychopathology. While, most studies have used a categorical approach in examining the increased vulnerability among children of parents with anxiety disorders and depression, authors have argued that it may be more informative to examine children on a continuum of severity of psychopathology.[6]

## METHODS

Patients with a diagnosis of panic disorder and depression attending the outpatient psychiatric clinic in a general hospital were contacted. Adolescent offspring (11-16 years) of patients with panic disorder / depression consenting to participate were the subjects of the study and those of relatives of hospital staff constituted the normal controls. Adolescents being treated for chronic medical illnesses were not included in the study. The sample was chosen as per convenience. Written informed consent was obtained from both the parents and the adolescents. Adolescents identified to have psychiatric problems were offered help at the child guidance clinic. The institutional ethics review board approved the study.

One hundred and seventeen adolescent offspring of 79 parents were interviewed. Thirty three (28%) adolescents were offspring of parents with panic disorder, 47 (40%) of parents with unipolar depression and 37 (32%) of normal controls. At the time of interview, the parent's panic disorder/depression was in remission. If a parent had more than one adolescent in the specified age group all such subjects were included in the study. There was no attrition of children once the parent had consented to participate. The three study groups did not differ in terms of percentage of individuals who refused consent. Seventy nine parents were interviewed; of these, the father was interviewed in 29% of the cases, and the mother in 71% (the parent with the disorder was interviewed in all cases in the psychopathology group). The mean age of parents in the sample was 35.8 years (S.D=9.8).

Parents' psychiatric diagnosis was established according to ICD-10 diagnostic criteria using the Composite International Diagnostic Interview (CIDI) by a trained investigator.[7] The parents were recruited from a larger cohort participating in a study on phenomenology of panic attacks.[8] The spouse was screened using General Health Questionnaire 28-item version (GHQ 28) to rule out psychological distress.[9,10] Normal controls were also screened using GHQ 28. The investigator who was blind to the diagnostic status of parents (AB) conducted face-to-face interview with the adolescents using instruments that have been detailed below.

The Missouri Assessment of Genetics Interview for Children (MAGIC) is based on the Diagnostic Interview for Children and Adolescents (DICA).[11] It is a semi-structured interview with full symptom endorsement information for attention deficit hyperactivity disorder (ADHD),

oppositional defiant disorder (ODD), conduct disorder (CD), generalized anxiety disorder (GAD), panic disorder, major depressive disorder, dysthymia, mania, obsessive compulsive disorder and substance abuse. Symptoms from three diagnostic classification systems (DSM-III-R, DSM-IV, and ICD-10) are included. There are three versions of the interview: a parent, a child self-report and adolescent self-report version. We used the adolescent self-report version. MAGIC has been used in previous studies in India and one of the investigators (AB) was trained in its administration.[12] The Scale for Childhood Anxiety Related Emotional Disorders (SCARED) is a self-report measure.[13] It is recommended as a screening tool for anxiety disorders in clinical samples of children aged 9 to 18 years. It has 38 items rated on a 3-point scale. Total scores and scores for each of the 5 factors - somatic/panic, general anxiety, separation anxiety, social phobia, and school phobia - are obtained. Studies have shown it to have good internal consistency, test retest reliability and cross cultural validity and the scale has been used in previous studies in India.[14,15] The Strengths and Difficulties Questionnaire (SDQ) is a brief behavioral screening questionnaire for 3-16 year olds.[16] The SDQ consists of 25 items on psychological attributes divided among 5 scales - prosocial behavior, hyperactivity, conduct problems, emotional symptoms, and peer problems. A total score is also obtained. It can be scored by parents / teachers, and for 11-16 year olds, by the adolescents themselves. We used SDQ as a measure of behavioral and externalizing symptoms. The Children's Global Assessment Scale (CGAS) is an adaptation of the Global Assessment Scale and is designed to reflect the lowest level of functioning for a child or adolescent during a specified time period.[17] Its value range from 1, representing the most functionally impaired child, to 100, representing the healthiest. Scores above 70 on the CGAS indicate normal function.

Chi square test and Fisher's exact test were used to examine binary data. One-way analysis of variance followed by the Newman-Keuls test was used to compare SCARED, SDQ and CGAS scores across the diagnostic groups. Data were analyzed using SPSS (Version 10.1).

## RESULTS

There were 63 boys (54%) and 54 girls (46%) in the sample. There were no significant differences in the gender and age of adolescent offspring of parents with panic disorder (13.08±1.78 years), depression (13.43±2.11 years) and normal controls (13.03±1.76 years). Almost all the adolescents were from an urban background (98%). There were no significant differences in the parental income among the three groups.

Table 1 shows the frequency of psychiatric diagnoses in adolescents according to DSM-IV diagnostic criteria as identified on MAGIC interview. Simple phobia was significantly higher in adolescent offspring of parents with panic disorder as compared to controls. Adolescent offspring of parents with depression had significantly higher rates of panic disorder and depression compared to controls. There was no significant difference in the prevalence of psychiatric diagnosis among adolescents between the two diagnostic groups.

**Table 1: Offspring's diagnosis in parents with panic disorder and depression and controls**

| | Parents' Diagnosis | | |
|---|---|---|---|
| **Children's Diagnosis** | **Panic Disorder (n=33, %)** | **Depression (n=47, %)** | **Normal Controls (n=37, %)** |
| ADHD | 5 (15.2%) | 6 (12.8%) | 1 (2.7%) |
| ODD | 3 (9.1%) | 0 | 0 |
| CD | 1 (3%) | 2 (4.3%) | 0 |
| Alcohol Use Disorder | 1 (3%) | 1 (2.1%) | 0 |
| Depressive Disorder (Major Depression or Dysthymia) | 2 (6.1%) | 7 (14.9%) * | 0 |
| Separation Anxiety Disorder | 5 (15.2%) | 6 (12.8%) | 2 (5.4%) |
| Panic Disorder | 2 (6.1%) | 5 (10.6%) ** | 0 |
| GAD | 0 | 0 | 0 |
| Simple Phobia | 17 (51.5%) *** | 16 (34%) | 7 (18.9%) |
| Social Phobia | 7 (21.2%) | 9 (19.1%) | 3 (8.1%) |
| OCD | 0 | 0 | 0 |

* Fisher's exact test (p= 0.016), ** Fisher's exact test (p= 0.049), *** Chi square ($\chi 2 = 8.23$, df=2, p=0.004)
ADHD: Attention deficit hyperkinetic disorder; OCD: obsessive compulsive disorder; ODD: oppositional defiant disorder; GAD: generalized anxiety disorder; CD: conduct disorder.

On SCARED, the total scores were significantly higher among the adolescents of parents with depression (7.98± 9.103) and panic disorder (10.56±8.740) compared to controls (3.14±4.309) (F=8.24, df=2,112, p<. 05). There was no significant difference between the two psychopathology groups (Table 2). The total SDQ scores were significantly higher among the adolescent offspring of parents with depression (8.07±5.571) and panic disorder (5.72±6.600) compared to controls (1.19±1.969) (F=18.42, df=2, 112, p<0.05). However, there was no significant difference between the two psychopathology groups. In the two psychopathology groups put together, emotional problems were most common (n=30, 37.5 %) followed by conduct problems (19, 23.8%) and hyperactivity (n=15, 18.8 %).

**Table 2: Comparison of SDQ, SCARED and CGAS scores in offspring of parents with panic disorder and depression and controls**

| Score | Parent Diagnosis | Mean | SD | F value |
|---|---|---|---|---|
| SDQ Total | C (n=37)<br>PD (n=32)<br>D (n=46) | 1.19<br>5.72*<br>8.07* | 1.969<br>6.600<br>5.571 | 18.42* |
| SCARED Total | C (n=37)<br>PD (n=32)<br>D (n=46) | 3.14<br>10.56*<br>7.98* | 4.309<br>8.740<br>9.103 | 8.24* |
| CGAS | C (n=37)<br>PD (n=32)<br>D (n=46) | 91.27<br>69.44*<br>71.09* | 5.75<br>11.46<br>11.78 | 53.19* |

Generalized Linear Model Analysis adjusting for Gender of child, *Mean score significantly different from the control group (p<.001)
C – Normal controls, PD – Panic disorder, D – Depression.

The mean CGAS scores were significantly lower among adolescent offspring of parents with depression (71.09±11.78) and panic disorder (69.44±11.46) compared to offspring of normal controls (91.27±5.75) ($F=53.19$, $df=2, 112$, $p<0.05$). There were no significant differences in the mean CGAS scores between the two psychopathology groups. Adjusting for gender of the child did not significantly alter the differences on mean total SCARED scores ($F=8.24$), mean total SDQ scores ($F=18.42$) and the mean CGAS scores ($F=53.19$) across the three groups.

## DISCUSSION

The present study revealed that there was an excess prevalence of psychiatric diagnoses in adolescent offspring of parents with panic disorder and depression compared to adolescent offspring of normal controls. The presence of greater psychopathology (on SDQ and SCARED) and impairment (CGAS) in the former group suggests the need for intervention with sub-threshold childhood emotional symptoms / disorders. Finally, there were no significant differences in the rates or type of psychopathology between the adolescent offspring of parents with panic disorder and those with depression.

The finding that the prevalence of diagnosable psychiatric illness among adolescent offspring of parents with depression and panic disorder was significantly higher compared to normal controls is in agreement with earlier observations.[18,19] However, the prevalence rates of diagnosable psychiatric illness were lower compared to Western studies. This could be related to the small size or possible bias (convenience) in our sample, but cultural factors could also be imputed. It has been reported that Indian parenting style is authoritarian and parents do not encourage free verbal expression of emotions; consequently, their children's psychological distress may be expressed in physical or somatic terms. [20,21] As most diagnostic instruments rely heavily on cognitive and mood symptoms of internalizing disorders, children with 'somatic symptoms' may not be identified by these questionnaires. This is corroborated by various epidemiological studies in India that have consistently reported a lower prevalence of childhood and adolescent psychopathology, particularly so for emotional or internalizing disorders compared to findings from Western countries.[22,23]

Among the various psychiatric disorders, simple and social phobias were the most frequently diagnosed psychiatric conditions among the adolescent offspring of parents with depression and panic disorder. In fact, the prevalence rates of simple and social phobia were higher than that reported in similar studies from the West.[24,25] The high rate of identification of phobias may be related to the fact that our diagnostic instrument (MAGIC) has questions pertaining to various phobias but does not include impairment criteria. The use of impairment criteria leads to a drop in prevalence rates of childhood and adolescent psychiatric disorders.[23,26]

A greater number of adolescent offspring of parents with depression and panic disorder had internalizing symptoms compared to those with conduct problems or hyperactivity. These findings are in agreement with earlier studies.[27]

Weissman and coworkers propounded that there is a specific and independent transmission of panic disorder and early onset major depressive disorder, and that depression would be the most frequent diagnosis in children of parents with depression.[27] We did not find any significant differences in the prevalence and type of psychopathology in the adolescent

offspring of parents with depression and panic disorder. Our results are supported by studies that show that childhood emotional disorders have low stability, that there is high co-morbidity between anxiety and depression in children, and that depressive symptoms may be the first manifestation of an evolving anxiety disorder in adolescents.[5,28,29] Thus, parental anxiety and / or depression may be a risk factor for childhood internalizing disorders, but questions about specificity remain unanswered.

The finding from the present and other studies that children of parents with depression and panic disorder are at greater risk to develop psychopathology assumes importance given that early intervention may prevent the later development of disorders.[30] None of the children in the present study had made contact with mental health professionals. There seems to be an urgent need for awareness building concerning childhood emotional problems among caregivers. Clinicians who treat adults with panic disorder and depression should enquire into the mental health of their offspring with the aim of preventing the onset of anxiety and depression in these adolescents.

This study has certain limitations. The sample size was small. We did not take into account the influence of severity of psychopathology and co-morbidity in parents on the prevalence and type of psychopathology in adolescent offspring. The control group which consisted of children of hospital staff may not constitute a representative sample of the general population. The exclusion of psychiatric disorders in the normal control group and in the spouse of the parent in the psychopathology groups would have been more accurate if a structured clinical interview had been used instead of GHQ.

**REFERENCES**


1. Weissman M, Wickramaratne P, Warner V, John K, Prusoff B A, Merikangas K R, et al. Assessing psychiatric disorders in children - discrepancies between mothers' and children's reports. Arch Gen Psychiatry 1987; 44:747-753.
2. Unnewehr S, Schneider S, Florin I, Margraf J. Psychopathology in children of patients with panic disorder or animal phobia. Psychopathology 1998; 31:69–84.
3. Biederman J, Faraone SV, Hirshfeld-Becker DR, Friedman D, Robin JA, Rosenbaum JF. Patterns of psychopathology and dysfunction in high risk children of parents with panic disorder and major depression. Am J Psychiatry 2001: 158: 49–57.
4. Edelbrock C, Costello AJ, Dulcan MK, Kalas R, Conover NC. Age differences in the reliability of the psychiatric interview of the child. Child Development 1985; 56: 265–275.
5. Last CG, Perrin S, Hersen M, Kazdin AE. A prospective study of childhood anxiety disorders. J Am Acad Child and Adolesc Psychiatry 1996; 35: 1502–1510.
6. Fonseca AC, Perrin S. Clinical phenomenology, classification and assessment of anxiety disorders in children and adolescents. In Silverman WK, Treffers P (eds): Anxiety Disorders in Children and Adolescents. Research, Assessment and Intervention. Cambridge, UK: Cambridge University Press; 2001: 126-158.
7. Robins L.N, Wing J, Wittchen H.U, Helzer J.E, Babor T.F, Burke J et al. The Composite International Diagnostic Interview. An epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. Arch Gen Psychiatry 1988; 45: 1069-1077.
8. Iby N, Srinivasan K. A phenomenological study of panic attacks in patients from India. Psychopathology 2003; 36: 92-97.
9. Goldberg DP, Hillier VP. A scaled version of the General Health Questionnaire. Psychol Med 1979; 9: 139 – 145.

10. Sriram TG, Chandrashekar CR, Isaac MK, Shanmugam V. The General Health Questionnaire – comparison of the English Version and a Translation of the Indian Version. Soc Psychiatr Psychiatr Epidemiol 1989; 24: 317–320.
11. Todd RD, Joyner CA, Heath AC, Neuman RJ, Reich W. Reliability and stability of a semi-structured dsm-iv interview designed for family studies. J Am Acad Child and Adolesc Psychiatry 2003; 42:1460-1468.
12. Jaideep T, Janardhan Reddy YC, Srinath S. Co morbidity of attention deficit hyperactivity disorder in juvenile bipolar disorder. Bipolar Disord 2006; 8: 182-187.
13. Birmaher B, Khetrapal S, Brent D. The Scale for Childhood Anxiety Related Emotional Disorders. Scale construction and psychometric characteristics. J Am Acad Child and Adolesc Psychiatry 1997; 36: 545–553.
14. Muris P, Schmidt H, Engelbert P, Perold M. DSM-IV defined anxiety disorder symptoms in South African children. J Am Acad Child and Adolesc Psychiatry 2002, 41: 1360-1368.
15. Srinivasan K, Ashok MV, Vaz M, Yeragani VK. Decreased chaos of heart rate time series in children of patients with panic disorder. Depression Anxiety 2002; 15: 159-167.
16. Goodman R. The Strengths and Difficulties Questionnaire: A research note. J Child Psychol Psychiatry 1997; 38: 581-586.
17. Shaffer D, Gould MS, Brasic J, Ambrosini P, Fisher P, Bird H, et al. A Children's Global Assessment Scale. Arch Gen Psychiatry 1983; 40: 1228–1231.
18. McKnew DH, Cytryn L, Efron AM, Gershon ES, Bunney WE Jr: Offspring of patients with affective disorders. Br J Psychiatry 1979; 134: 148–152.
19. Turner S M, Beidel D C, Costello A. Psychopathology in the offspring of anxiety disorders patients. J Consult Clin Psychology 1987 55: 229-235.
20. Malhotra S, Chaturvedi SK. Patterns of childhood psychiatric disorders in India. Indian J Pediatrics 1984: 51: 235-240.
21. Srinath S, Bharat S, Girimaji S, Seshadri S. Characteristics of a child inpatient population with hysteria in India. J Am Acad Child and Adolesc Psychiatry 1993; 32: 822-825.
22. Bhola P, Kapur M. Children and adolescent psychiatric epidemiology in India. Indian J Psychiatry 2003; 45: 208-217.
23. Srinath S, Girimaji SC, Gururaj G, Seshadri S, Subbakrishna DK, Bhola P, et al. Epidemiological study of child and adolescent psychiatric disorders in urban and rural areas of Bangalore, India. Indian J Medical Res 2005; 122: 67-79
24. Beardslee WR, Keller MB, Lavori PW, Klerman GK, Dorer DJ, Samuelson H. Psychiatric disorder in adolescent offspring of parents with affective disorder in a non referred sample. J Affect Disord 1988; 15: 313-322.
25. Beidel DC, Turner SM. At risk for anxiety: psychopathology in the offspring of anxious parents. J Am Acad Child and Adolesc Psychiatry 1997; 36: 918-924.
26. Hackett R, Hackett. L, Bakta P, Gowers S. The prevalence and association of psychiatric disorder in children in Kerala, South India. J Child Psychol Psychiatry 1999; 49: 801-807.
27. Weissman M, Wickramaratne P, Adams P, Lish JD, Horwath E, Charney D. The relationship between panic disorder and major depression: a new family study. Arch Gen Psychiatry 1993; 50:767–780.
28. Last CG, Strauss CC, Francis G. Co morbidity among childhood anxiety disorders. J Nerv Ment Dis 1987, 175: 726-730.
29. Kovacs M, Devlin B: Internalizing disorders in childhood. J Child Psychol Psychiatry 1998; 39: 47-63.
30. Aronen ET, Kurkela SA. Long-term effects of an early home-based intervention. J Am Acad Child and Adolesc 1996; 35: 1665-1672.

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**Notification of Conflict:** The authors of this paper have no competing interests.
**Author's contributions:** Dr.Amritha Bhat was involved in the conception and design of the study, acquisition of the data, analysis and interpretation, drafting and revising the manuscript and has given final approval of the version to be published. Dr.K.Srinivasan was involved in the conception and design of the study, analysis and interpretation, drafting and revising the manuscript and has given final approval of the version to be published. Dr.K.Srinivasan will serve as the guarantor for the study.
**Acknowledgement:** Dr. Amritha Bhat is the recipient of the Senior Research Fellowship from the Council of Scientific and Industrial Research, New Delhi.