

Psychological Problems in Siblings of Children and Adolescents with Inflammatory Bowel Disease*

Ingemar Engström**

The mental health of twenty siblings of children and adolescents with inflammatory bowel disease (IBD) was compared with a matched group of siblings of healthy children and adolescents. No significant differences were found as regards general psychopathology or behaviour problems. However, significant differences were found in certain areas, especially with regard to peer relations, mood and reliance. Self-esteem was also lower among the siblings of such IBD patients and they tended towards depression and physiological anxiety symptoms. There was no significant correlation between the degree of severity or the duration of the disease and psychopathology in the siblings. The results show that the mental health of siblings of children and adolescents with IBD may merit the attention of paediatricians.

Introduction

The presence of a child with a chronic physical disease in a family may imply emotional and social consequences of a stressful nature for such children as well as for their families (Coddington, 1972; Pless & Pinkerton, 1975; Sargent, 1983). These consequences may at times be more detrimental or serious than the physical illness itself (Lavigne & Ryan, 1979).

Most studies of families with chronically ill children have focused primarily on parents and have usually reported negative psychological outcomes (Crain et al., 1966; Travis, 1976; Featherstone, 1980; McCollum, 1981). Parental adjustment problems have been reported in studies of, e.g., cystic fibrosis (Lawler et al., 1966), diabetes mellitus (Swift et al., 1967) and spina bifida (Dorner, 1973).

Studies on the psychosocial effects of a child's chronic illness on his or her siblings have reported remarkably inconsistent findings (Cadman et al., 1988). **Several authors have pointed out that much of the research to date has suffered from methodological shortcomings** (Breslau et al., 1981; McKeever, 1983) and only rarely have the siblings themselves taken part in the investigations.

Bearing these weaknesses in mind, one may say that most studies in the area have found a high rate of psychiatric and behaviour problems among the siblings of chronically ill children. This is true of the siblings of children with mental retardation (Farber, 1959), handicaps (Berggreen, 1971; Pozanski, 1973), cystic fibrosis (Allan et al., 1974; Falkman, 1977), diabetes (Crain et al., 1966), congenital heart disease (Apley et al., 1967), and leukaemia (Binger et al., 1969). Apley et al. (1967), for example, found that 27% of the siblings of congenital heart disease patients had unspecified behaviour problems, 13% had psychosomatic disorders and 24% had both types of problems. Binger et al. (1969) found that 50% of the siblings of leukaemia patients had severe coping difficulties.

However, other investigations (Gayton et al., 1977; Vance et al., 1980; Shapiro, 1983) reported that the level of psychosocial difficulties was not higher among siblings of children with nephrotic syndrome, cystic fibrosis, and physical handicaps.

A few studies have used multiple objective measures, straightforward sampling procedures, control groups, and reliable and valid instruments. Tew and Laurence (1973) found that siblings of patients with spina bifida were more than four times as likely to

* *Acknowledgements:* This research was financially supported by the Sven and Dagmar Salén Foundation. The author is grateful to Dr. Bo L. Lindquist for helpful comments about the manuscript.

** Department of Child and Youth Psychiatry, University Hospital, S-751 85 Uppsala, Sweden.

show signs of maladjustment in school than the siblings of healthy control subjects. In a study of siblings of children with Down's syndrome and children with cleft palates and their respective controls, Gath (1974), on the other hand, found no increase in the incidence of adjustment problems. Lavigne et al. (1979) compared the adjustment of siblings of plastic surgery patients, congenital heart disease patients, leukaemia patients, and healthy control subjects. Using the Louisville Behaviour Checklist (LBC), they found more symptoms of irritability and social withdrawal among the patient groups, but no significant differences in total psychopathology. The highest levels of pathology were noted among the groups with handicaps which were visible (cleft palates and similar types of conditions). The results reported by Breslau et al. (1981), who studied siblings of patients with cerebral palsy, cystic fibrosis, myelodysplasia, and multi-handicapped children compared to a general population, accorded with these findings. Thus, no significant group differences were observed in the Psychiatric Screening Inventory (PSI) on the total scores, but on the subscale level there were more mentation problems, fighting, and delinquency among the patient group than among the controls. In his study on siblings of children with pervasive developmental disabilities, diabetes and healthy controls, Ferrari (1984) concluded that "siblings of ill children are not uniformly at greater risk for psychosocial impairment". However, some areas were identified where the siblings had more adjustment problems, such as somatic complaints. In a study by Cadman et al. (1988), some 200 siblings of chronically ill children were compared to about 2000 siblings of healthy children. The method consisted of a short questionnaire which was filled in by parents, teachers, and the children themselves. This yielded an odds ratio of 1.4 (0.8–1.9) for psychiatric disorders, with a preponderance of emotional disorders including mainly anxiety, depression, and obsessive-compulsive symptoms. No differences were found with regard to conduct disorders, somatization disorders, and attentional deficit disorders.

A commonly stated theoretical assumption is that normal siblings tend to be neglected because of the disproportionate amount of parental attention given to the sick child (McMichael, 1971; Grave, 1976). Subsequently, younger children with their own needs for care (Tew et al., 1973) and female siblings, who are assumed more often to undertake domestic responsibilities (Gath, 1974; Burton,

1975), are supposed to be particularly at risk. This hypothesis, however, has received little empirical support and there is no conclusive evidence that parents of sick or disabled children neglect the needs of their other children.

Siblings of children and adolescents with inflammatory bowel disease (IBD) have hardly been examined in this respect. McMahon et al. (1973) interviewed 23 siblings of IBD patients (mean age 24.0 years [range 16–48 years]) and found them to be well adjusted. A few of them were adolescents. However, the report is difficult to interpret since the interview was unstructured and there was no control group.

Wood et al. (1988) investigated 41 siblings of children with Crohn's disease (CD) and 24 siblings of children with ulcerative colitis (UC), using the Children's Behaviour Checklist (CBCL). Their results indicated that CD siblings had psychological problems more often than did the UC siblings. They also found that siblings of the sickest CD patients displayed more "internalizing" behaviours than did the siblings of the healthiest CD patients and all of the siblings of the UC patients.

Since the knowledge of psychological problems in the siblings of children and adolescents with IBD is scanty and inconsistent, it was considered important to further elucidate this question. On the basis of earlier findings, the hypothesis was that IBD siblings would show more psychosocial adjustment difficulties and behaviour problems than siblings of healthy children.

Methods

Subjects

The subjects were siblings of children and adolescents with Crohn's disease (CD) or ulcerative colitis (UC) recruited through the Department of Paediatrics and the Division of Gastroenterology, Örebro Medical Center Hospital, Örebro, Sweden. Siblings meeting the following criteria for inclusion were studied: (1) age between 7 and 18 years; (2) brother or sister with a clear diagnosis of Crohn's disease (CD) or ulcerative colitis (UC). When there were several siblings in the family who met the inclusion criteria, the one closest in age to the patient was selected. A total of 20 families, out of 24 eligible, agreed to participate in the study.

A comparison group consisting of siblings of healthy children was recruited from primary and secondary schools, using the following selection criteria: (1) matched to the IBD sibling group for age, sex, and choice of subjects in school; (2) having at least one healthy brother or sister between 7 and 18 years of age. The second criterion was chosen to avoid having single children in the study.

By using an anamnestic interview of the children, it was ensured that none of the children had a chronic disease. This was verified by examining their files, if any, in the hospital. Informed consent was given by the parents and the children who also agreed to provide access to all relevant medical files. The study was approved by the Medical Research Ethics Committee of Uppsala and Örebro, Sweden.

Procedures and Instruments

The psychosocial assessment of the children was made, using the following methods:

- 1) Child Behaviour Checklist (CBCL; Achenbach 1988).
- 2) Frisk well-being scale (Frisk, 1986).
- 3) Rotter sentence completion test (Rotter, 1950).
- 4) Jag tycker jag är (JTJÄ; Ouviainen-Birgerstam, 1985) = "I Think I Am."
- 5) Children's Depression Inventory (CDI; Kovacs, 1982).
- 6) Revised Children's Manifest Anxiety Scale (RCMAS; Castaneda et al. 1956).
- 7) Raven's matrices (Raven, Court & Raven, 1983).

Questionnaires 1–2 were completed by the mothers while questionnaires 2–7 were completed by the children. A thorough description of all the instruments is available in Engström (forthcoming).

Besides these questionnaires a 1–3-hour in-depth interview was carried out with each child using the *Child Assessment Schedule* (CAS; Hodges et al., 1981). This schedule yields a diagnosis according to DSM-III-R classification (American Psychiatric Association, 1987) for mental disorders. The interview of the IBD siblings also included a number of questions concerning their knowledge of their sibling's disease and whether they were worried about their own physical health at present and in the future. All interviews were carried out personally by the author on home visits. The interviewer had no prior knowledge of the data on

the children or about their answers to the questionnaires.

Statistical analyses

Since most of the applied measures of psychosocial and behavioural factors yield results on ordinal scales, nonparametric statistical methods were considered to be the most appropriate. The Wilcoxon signed ranks test for dependent samples was used to compare the means between the groups. Probability levels below 1% were considered significant, whereas levels between 1% and 5% were referred to as tendencies. In group comparisons of nominal data, the χ^2 -test, with Yates' correction for continuity, whenever appropriate, was used. The correlation analysis was made using the Spearman rank-order correlation coefficient (r_s).

Results

A primary analysis of results from the CD siblings ($n = 9$) compared with results from the UC siblings ($n = 11$) yielded no significant differences. The two subgroups were therefore combined in a composite IBD group.

Demographic data

The mean age of the children was 14.6 years (range 8–18) in the sibling group and 14.8 (range 8–18 years) in the comparison group. There were eight boys and twelve girls in each group. Ten of the siblings were of the same sex and ten were of the opposite sex. They all attended school. No significant group differences were found concerning overall socioeconomic standards, parent's educational level, mean birth order, or mean number of children in the family.

Psychological adjustment

The behaviour problems of the children, according to their mothers, and measured by the CBCL scale, showed no significant differences between the groups. This was true of the total score as well as of the subscale scores on external and internal symptoms. The E-I score was not significantly different.

Social competence

The CBCL social competence scores showed no significant differences between the groups, either the total score or the subscale scores.

themselves significantly lower on Reliance ($p < 0.001$) and tended to differ significantly on Mood ($p < 0.02$) and Peer Relations ($p < 0.04$). The mothers, on the other hand (Figure 2), rated them significantly lower only on Peer Relations ($p < 0.01$).

Well-being

The total scores on the Frisk well-being scale were somewhat lower in the IBD sibling group, but the differences were not statistically significant (Table 1). The profiles, however, showed some differences. The IBD sibling group (Figure 1) rated

Emotional adjustment

The Rotter's sentence completion test showed no significant group difference on the total adjustment scores. None of the subjects in either group had a value which exceeded the psychopathological cut-off score (= 135).

Table 1. Mean scores on Frisk well-being scale.

	IBD siblings Mean (CI) ^a	Comparison Mean (CI)	Z ^b	p
<i>Total well-being score</i>				
Children's replies	20.1 (16.9–23.3)	23.5 (20.8–26.2)	-1.55	NS
Mothers' replies	23.9 (21.5–26.3)	25.9 (23.5–28.3)	-1.09	NS

^a Confidence intervals with 95% limits.

^b Wilcoxon signed ranks test for dependent samples.

* $p < 0.05$
*** $p < 0.001$

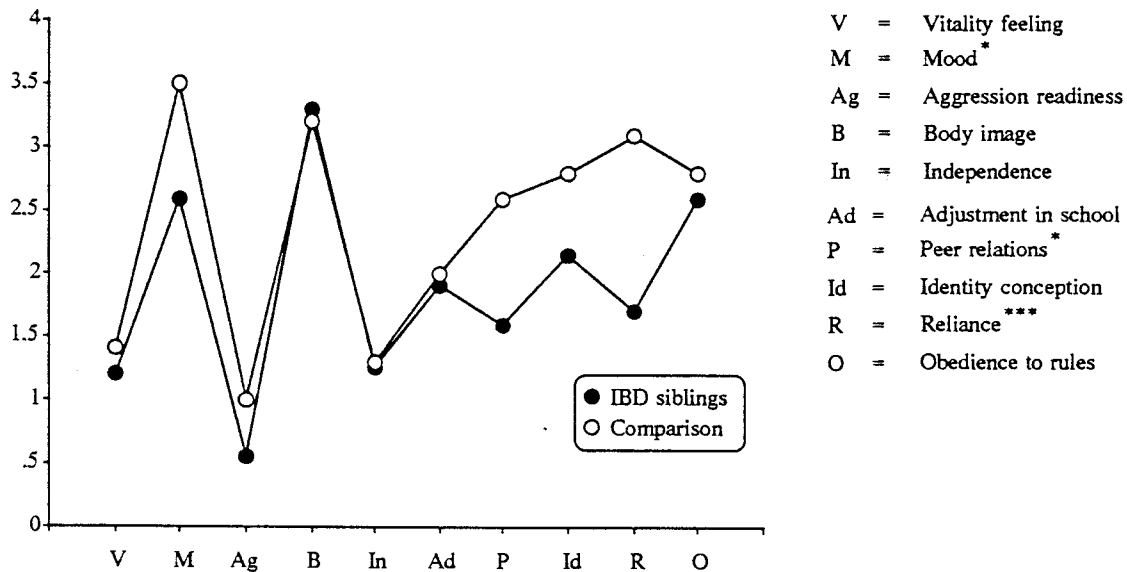


Figure 1. Profiles of the Frisk well-being scale – children's replies.

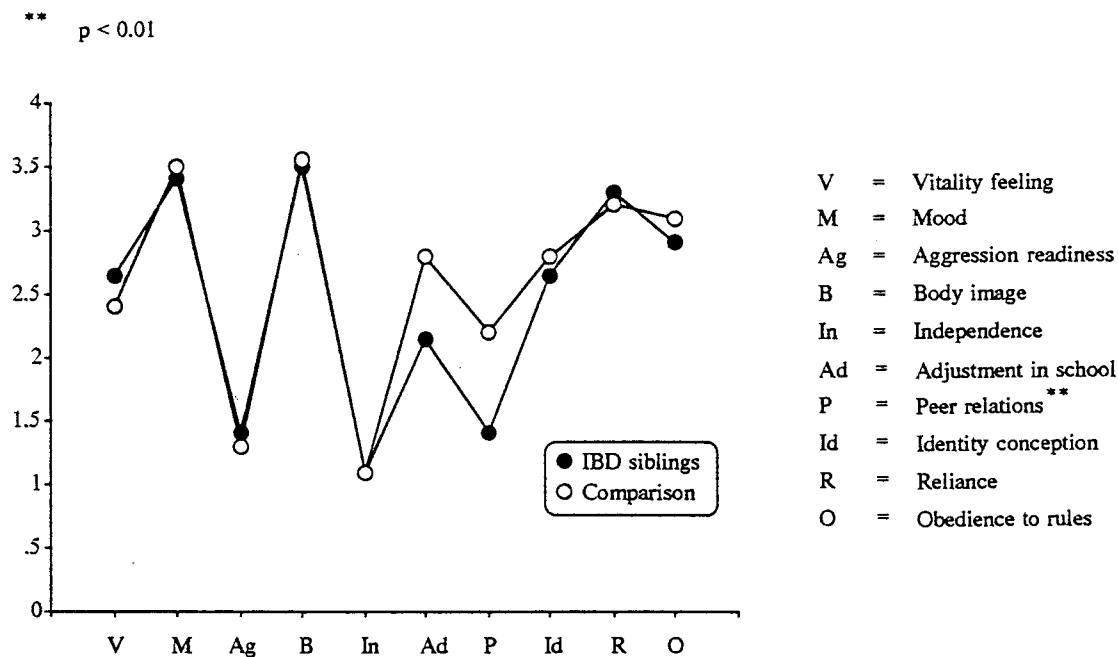


Figure 2. Profiles of the Frisk well-being scale – mothers' replies.

Psychiatric disorders

The CAS interview is structured to yield a DSM-III-R diagnosis. In each group, two (10%) children fulfilled the criteria for a psychiatric disorder, all of them being considered mild cases. Two children in the sibling group and one in the comparison group had a depressive disorder and one in the control group had an anxiety disorder.

Self-esteem

The children's self-esteem, measured by the JTJÅ ("I Think I Am"), showed a significant group difference (Table 2), with the IBD siblings scoring significantly lower than the comparison group on the total score ($p < 0.01$). The subscores denoted Mental Characteristics and Relations with Others tended to differ significantly ($p < 0.05$), whereas the subscales measuring Physical Characteristics, Skills and Talents and Relations with Parents showed no significant differences.

Depression

The sibling group tended to score significantly higher ($p < 0.05$) on the depression scale (CDI) than did the comparison group (Table 3).

Anxiety

The results of the RCMAS test (Table 3) showed no differences between the groups either on the total score or on three of the subscales, including the Lie scale. The only significant difference was found on the Physiological Anxiety subscale ($p < 0.01$) where the sibling group scored higher.

Cognitive abilities

On Raven's matrices measuring cognitive abilities no differences were detected.

Table 2. Means of self-esteem scores, JTJÄ ("I Think I Am").

	IBD siblings Mean (CI) ^a	Comparison Mean (CI)	Z ^b	p
JTJÄ total score	64.6 (52.8–76.3)	70.6 (60.8–80.5)	-2.656	0.008
<i>Subscales:</i>				
Physical characteristics	12.2 (8.8–15.6)	12.4 (9.1–15.7)	-1.081	NS
Skills and talents	8.8 (6.2–11.5)	9.0 (6.4–11.6)	-1.342	NS
Mental characteristics	13.5 (10.5–18.6)	16.2 (10.9–18.7)	-2.076	0.038
Relations with parents	14.6 (10.5–18.6)	14.8 (10.9–18.7)	-1.000	NS
Relations with others	15.4 (13.0–17.9)	18.2 (16.1–20.4)	-2.270	0.023

^a Confidence intervals with 95% limits.^b Wilcoxon signed ranks test for related samples.Table 3. Means of depression and anxiety scores measured by CDI and RCMAS (*Children's Depression Inventory* and *Revised Children's Manifest Anxiety Scale*).

	IBD siblings Mean (CI) ^a	Comparison Mean (CI)	Z ^b	p
CDI score	7.2 (5.0–9.3)	4.5 (3.1–5.9)	-2.002	0.045
RCMAS total score	6.0 (4.0–7.9)	4.4 (2.6–6.2)	-1.051	NS
<i>Subscales:</i>				
Physiological anxiety	2.2 (1.5–2.8)	1.0 (0.5–1.5)	-2.696	0.007
Worry and oversensitivity	2.5 (1.4–3.6)	2.5 (1.2–3.8)	-0.048	NS
Concentration anxiety	1.3 (0.6–2.0)	0.9 (0.4–1.4)	-0.846	NS
Lie scale	2.8 (1.7–4.0)	3.2 (1.9–4.4)	-0.545	NS

^a Confidence intervals with 95% limits.^b Wilcoxon signed ranks test for related samples.

Knowledge and worries about their siblings' disease

Only seven of the twenty IBD siblings could name the disease affecting their sibling. Very few knew anything about the disease and its symptomatology except that it had something to do with the stomach and occasionally caused diarrhoea. Only three had seriously talked with their parents and/or their siblings about the disease. About half of the IBD siblings expressed some worries about the prospects for their own physical health. Some of them spoke openly about their fears of developing the same disease as their sibling.

Relations between severity and duration of the disease and psychological problems of the sibling

To assess whether the level of psychological problems in the IBD siblings was associated with disease activity in the patient, the total scores of all variables were compared for the seven sickest versus the seven healthiest of the IBD patients. This comparison revealed no significant differences between the groups. The association between the duration of the disease and the psychological problems of the siblings was also weak, $r_s = 0.10$ for the CBCL and $r_s = 0.13$ for the CAS results.

DISCUSSION

The results of this study indicate that, in general, the siblings of children with inflammatory bowel disorder (IBD) showed no signs of greater psychological impairment or behavioural problems than did the siblings of healthy children. This was determined by the behaviour problem checklist, according to the mothers, and by the interview with the children (CAS). The occurrence of a psychiatric disorder in 10% of the children accords with earlier findings in another healthy children group (Engström & Lindquist, 1991). Based on this pattern of overall negative results, the hypothesis that siblings of children with IBD manifest a greater number of psychosocial adjustment difficulties and behaviour problems was not clearly supported by the data.

However, when evaluating the more specific methods, some interesting differences were noted between the groups. On the self-esteem inventory (JTJÄ), the subscales measuring the children's estimates of their own mental characteristics showed significantly lower scores in the sibling group, which is in accordance with the reports by Caldwell and Guze (1960) and Voysey (1972). It was also noted that the siblings considered their relations with others to be poorer than did the matched comparison group, a fact that was also noted in the Frisk well-being questionnaire. Thus they seemed to feel inferior to peers and others in their social environment. The same was not true within their family where they seemed to get along better. These findings, mirroring social insecurity and withdrawal, may result from a family climate that draws the family members closer together because of a chronic disease in one of the members (Minuchin et al., 1979). The results accord with Lavigne et al. (1979), who found a higher score on the subscale in the Louisville Behaviour Checklist measuring social withdrawal.

Another striking finding is that the IBD siblings scored low on the subscale for reliance. Considering the discrepancy between the children's and the mothers' replies in this respect, it may be concluded that the mothers have not fully understood this aspect of their child's well-being. Moreover, some of the siblings openly expressed a fear of becoming ill themselves, partly because of the unknown etiology of IBD which may contribute to a general feeling of insecurity.

The test measuring different kinds of anxiety (RCMAS) showed a highly significant difference

on the Physiological Anxiety subscale. This may be interpreted as a tendency among the siblings to notice even minor physiological signs and symptoms which may be due to a fear, conscious or unconscious, of developing the same or another chronic disease themselves.

The psychosocial consequences found in the siblings bore no relation to the severity or the duration of the disease. This may be a little surprising, since inflammatory bowel diseases vary from extremely serious cases with multiple hospital visits, continuous medication and surgery, to very mild cases who may feel completely healthy. Nevertheless, the psychological consequences noted were evenly spread in the group and did not correlate at all with the severity or the duration of the disease. This has also been found in studies of other chronic diseases (Lavigne et al., 1979; Breslau et al., 1981). A possible explanation for this may be that the stress imposed on a family with a chronically ill child is not related to the severity or the duration of the disease in a linear fashion. Since the family often has no yardstick for comparison, the presence of a chronic disease like IBD, with its unpredictable course and unknown etiology, entails a certain amount of stress regardless of its severity or duration. Another possible interpretation is that a serious disease may actually enhance adaptive coping processes in a family that are beneficial to its overall functioning. It may set off a positive growth process like those we observe in crises of other kinds.

In conclusion, this study has shown that siblings of children and adolescents with IBD were not more likely than the matched comparison subjects to show an elevated incidence of overall psychopathology. However, in certain areas, significant differences were found, especially with regard to peer relations and feelings of reliance. The self-esteem was also significantly lower among the IBD siblings, and tendencies of depression and physiological anxiety were found. This pattern of insecurity and social withdrawal may have resulted from the presence of a chronically ill child in the family, and it may interfere with the emotional growth and development of these children.

These findings have to be interpreted with caution, because of the limited samples. The high participation rate and the use of validated instruments nevertheless make an interpretation of the findings possible. In any study using a large number of measures, statistically significant results might actually have occurred by chance. In fact, in a study using approximately 20 outcome measures, like this

study, it is expected that one would be significant at the 5% significance level on the basis of chance alone. It was therefore considered appropriate to use a significance level of 1% and to refer to probabilities on the 1–5% level as tendencies. In spite of the large number of negative results, several of the positive findings were highly significant, well beyond the 5% level, and the results cannot be accounted for merely by chance.

These findings indicate that attention should routinely be paid to the psychosocial well-being of all family members, including the brothers and sisters, whenever a chronically ill child requires treatment. **It is important to inform the siblings adequately about the medical condition of the sick child. However, the siblings should be assessed as individuals without any prior bias concerning their psychosocial status, since this varies considerably.**

Résumé

On a comparé l'état de santé psychique de vingt frères et soeurs d'enfants et de jeunes, souffrant de maladie intestinale inflammatoire chronique (IBD) à un groupe semblable de frères et soeurs d'enfants et de jeunes en bonne santé. On n'a pas trouvé de différences notables en ce qui concerne la psychopathologie générale ou les problèmes généraux de comportement. Cependant, dans certains domaines, on a constaté des différences notables, surtout en ce qui concerne les relations avec les camarades, l'état d'humeur et le sentiment de sécurité. On a trouvé aussi que l'estime de soi était plus faible chez les frères et soeurs du groupe IBD, ainsi que des tendances à la dépression et à l'anxiété physiologique. Il n'y avait pas de corrélation notable entre le degré de gravité ou la durée de la maladie IBD et la psychopathologie des frères et soeurs. Les résultats signifient que l'état de santé psychique des frères et soeurs d'enfants et de jeunes souffrant de IBD peut avoir besoin d'être remarqué en pédiatrie.

Zusammenfassung

Der psychische Zustand von zwanzig Geschwistern von Kindern und Jugendlichen mit chronischer inflammatorischer Darmkrankheit (IBD) wurde mit einer Kontrollgruppe von Geschwistern von gesunden Kindern und Jugendlichen verglichen. Kein signifikanter Unterschied konnte nachge-

wiesen werden weder in der generellen Psychopathologie noch im allgemeinen Verhalten. In gewissen Gebieten wurden aber doch signifikante Unterschiede nachgewiesen, besonders bezüglich Kameradschaftsverhältnisse, Stimmungslage und Sicherheitsgefühl. Das Selbstgefühl war auch schwächer bei den IBD-Geschwistern, und man sah Tendenzen zu Depression und physiologischen Angstsymptomen. Es gab keine Korrelation zwischen Grad und Dauer der Krankheit und Psychopathologie der Geschwister. Das Resultat bedeutet, daß der psychische Zustand der Geschwister von Kindern und Jugendlichen mit IBD in der Pädiatrie beachtet werden sollte.

References

- Achenbach, T.M. (1988). *Manual of the Child Behavior Checklist (CBCL)*. Burlington, VT: University Associates of Psychiatry.
- Allan, J., Townley, R., & Phelen, P. (1974). Family response to cystic fibrosis. *Australian Paediatric Journal*, 10, 136–146.
- American Psychiatric Association (1987). *DSM-III-R. Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., revised). Washington, DC: American Psychiatric Association.
- Apley, J., Barbour, R.F., & Westmacott, I. (1967). Impact of congenital heart disease on the family. *British Medical Journal*, 103, 462–468.
- Berggreen, S.M. (1971). A study of the mental health of the near relatives of twenty multi-handicapped children. *Acta Paediatrica Scandinavica*, 60 (Supplement 215), 1–24.
- Binger, C.M., Ablin, A.R., Feuerstein, R.C., Kushner, J.H., Zoger, S., & Mikkelsen, C. (1969). Childhood leukemia. Emotional impact on patient and family. *New England Journal of Medicine*, 280, 414–418.
- Breslau, N., Weitzman, M., & Messenger, K. (1981). Psychologic functioning of siblings of disabled children. *Pediatrics*, 67, 344–353.
- Burton, L. (1975). *The Family Life of Sick Children*. London: Routledge and Kegan Paul.
- Cadman, D., Boyle, M., & Offord, D.R. (1988). The Ontario child health study: Social adjustment and mental health of siblings of children with chronic health problems. *Journal of Developmental and Behavioral Pediatrics*, 9, 117–121.
- Caldwell, B., & Guze, S. (1960). A study of parents and siblings of institutionalized and non-institutionalized retarded children. *American Journal of Mental Deficiency*, 64, 845–861.

- Castaneda, A., McCandless, B.R., & Palermo, D.S. (1956). The children's forms of the Manifest Anxiety Scale. *Child Development*, 27, 317-326.
- Coddington, R. (1972). The significance of life events as etiologic factors in the disease of children. I: A study of a normal population. *Journal of Psychosomatic Research*, 16, 205-213.
- Crain, A., Sussman, M., & Weil, W. (1966). Family interaction, diabetes and sibling relationships. *International Journal of Social Psychiatry*, 12, 35-43.
- Dorner, S. (1973). Psychological and social problems of families of adolescent spina bifida patients: a preliminary report. *Developmental Medicine and Child Neurology*, 15 (Supplement 29), 24-31.
- Engström, I. Mental health and psychological functioning in children and adolescents with inflammatory bowel disease: A comparison with children having other chronic illnesses and with healthy children. Submitted to *Journal of Child Psychology and Psychiatry*.
- Engström, I., & Lindquist, B.L. (1991). Inflammatory bowel disease in children and adolescents: a somatic and psychiatric investigation. *Acta Paediatrica Scandinavica* (in press).
- Falkman, C. (1977). Cystic fibrosis. A psychological study of 52 children and their families. *Acta Paediatrica Scandinavica*, 66 (Supplement 269), 1-93.
- Farber, B. (1959). Effects of a severely mentally retarded child on family integration. *Social Research on Child Development*, 24, 2-30.
- Featherstone, H. (1980). *A Difference in the Family*. New York: Basic Books.
- Ferrari, M. (1984). Chronic illness: Psychosocial effects on siblings. I. Chronically ill boys. *Journal of Child Psychology and Psychiatry*, 24, 459-476.
- Frisk, M. (1986). *The Frisk well-being scale for children*. Unpublished manuscript. Uppsala: Department of Child and Youth Psychiatry, Uppsala University (in Swedish).
- Gath, A. (1974). Sibling reactions to mental handicap: a comparison of the brothers and sisters of mongol children. *Journal of Child Psychology and Psychiatry*, 15, 187-198.
- Gayton, W.F., Friedman, S.B., Tavormina, J.F., & Tucker, F. (1977). Children with cystic fibrosis. I. Psychological test findings of patients, siblings and parents. *Pediatrics*, 59, 888-894.
- Grave, G.D. (1976). The impact of chronic childhood illness on sibling development. In G.D. Grave & I.B. Pless (Eds.), *Chronic Childhood Illness: Assessment of Outcome* (pp. 225-242). Bethesda: DHEW Publications.
- Hodges, K., Kline, J., Fitch, P., McKnew, D., & Cytryn, L. (1981). The Child Assessment Schedule: a diagnostic interview for research and clinical use. *Catalog of Selected Documents in Psychology*, 11, 56.
- Kovacs, M. (1982). *The Children's Depression Inventory: A Self-Rated Depression Scale for School-Aged Youngsters*. Unpublished manuscript, University of Pittsburgh.
- Lavigne, J.V., & Ryan, M. (1979). Psychologic adjustment of siblings of children with chronic illness. *Pediatrics*, 63, 616-627.
- Lawler, R.H., Nakielny, N., & Wright, N.Y. (1966). Psychological implications of cystic fibrosis. *Canadian Medical Association Journal*, 94, 1043-1046.
- McCollum, A.T. (1981). *The Chronically Ill Child*. New Haven: Yale University Press.
- McKeever, P. (1983). Siblings of chronically ill children: A literature review with implications for research and practice. *American Journal of Orthopsychiatry*, 53, 209-218.
- McMahon, A.W., Schmitt, P., Patterson, J.F., & Rothman, E. (1973). Personality differences between inflammatory bowel disease patients and their healthy siblings. *Psychosomatic Medicine*, 35, 91-103.
- McMichael, J.K. (1971). *Handicap: A Study of Physically Handicapped Children and their Families*. London: Staples Press.
- Minuchin, S., Rosman, B., & Baker, L. (1979). *Psychosomatic Families: Anorexia Nervosa in Context*. Cambridge, MA: Harvard University Press.
- Ouvinen-Birgerstam, P. (1985). *Jag tycker jag är. Manual*. Stockholm: Psykologiförlaget (in Swedish).
- Pless, I.B., & Pinkerton, P. (1975). *Chronic Childhood Disorder: Promoting Patterns of Adjustment*. London: Henry Kimpton Publishers.
- Pozanski, E. (1973). Emotional issues in raising handicapped children. *Rehabilitation Literature*, 34, 322-326.
- Raven, J.C., Court, J.H., & Raven, J. (1983). *Manual for Raven's Progressive Matrices and Vocabulary Scales*. London: H K Lewis & Co. Ltd.
- Rotter, B. (1950). *Manual. The Rotter Incomplete Sentences Book*. New York: The Psychology Corporation.
- Sargent, J. (1983). The sick child: family complications. *Journal of Development and Behavioral Pediatrics*, 4, 50-56.
- Shapiro, J. (1983). Family reactions and coping strategies in response to the physically ill or handicapped child. *Social Science and Medicine*, 14, 913-931.
- Swift, C., Seidman, F., & Stein, H. (1967). Adjustment problems in juvenile diabetics. *Psychosomatic Medicine*, 29, 555-561.
- Tew, B.J., & Laurence, K.M. (1973). Mothers, brothers and sisters of patients with spina bifida. *Developmental Medicine and Child Neurology*, 15, 69-76.
- Travis, G. (1976). *Chronic Illness in Childhood: Its Impact on Child and Family*. Stanford: Stanford University Press.

- Vance, J.C., Fazan, L.E., Satterwhite, B., & Pless, L.B. (1980). Effects of nephrotic syndrome on the family: a controlled study. *Pediatrics*, *65*, 948–955.
- Voysey, M. (1972). Impression management by parents of disabled children. *Journal of Health and Social Behavior*, *13*, 180–189.
- Wood, B., Boyle, J.T., Watkins, J.B., Nogueira, J., Zimand, E., & Carroll, L. (1988). Sibling psychological status and style as related to the disease of their chronically ill brothers and sisters: Implications for models of biopsychosocial interaction. *Journal of Developmental and Behavioral Pediatrics*, *9*, 66–72.