

# Psychological Impact of Rheumatic Heart Disease on Affected Children and Their Mothers

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This study was conducted at the pediatric outpatient clinic in Assiut University Hospital on 100 children with rheumatic heart disease (RHD), and 30 children with acute febrile illnesses as controls. Their ages ranged from 8-14 years. The psychological status of patients, controls and mothers of both groups was assessed by the Middlesex Hospital Questionnaire (MHQ). Children with RHD scored significantly higher levels on MHD scales of anxiety, obsession and depression than controls. On the other hand, patients complicated by heart failure (HF) scored significantly lower levels of obsession, depression and hysteria than controls. The psychological response of mothers of children with HF was generally similar to that of their children. The psychological response of mothers showed significantly lower scores of obsession and hysteria than mothers of children without HF, but they scored significantly higher levels of obsession and depression than mothers of controls. RHD appeared to adversely affect the psychological adjustment of the diseased children and their mothers.

(Egypt.J. Psychiat.,1995, 18: 71- 80).

## Introduction

Rheumatic heart disease (RHD) is a residual cardiac damage resulting from an episode of rheumatic fever. It is the most common and serious cardiac disorder in children and young adults limiting their efficiency and crippling them at an age where they are expected to be most contributing and productive to their community (El-Sherif, 1985). RHD has

many deleterious effects on the patient's health and activity attributed to its chronic course with recurrent exacerbations of rheumatic activity, associated valve damage with many complications, e.g. heart failure (HF) and adherence to medical regimens restricting the patient's behaviour and emotional disturbances, e.g. extreme shyness, aggressiveness, excessive day - dreaming, anxiety, extreme docility, persistent nervous habits, as biting finger nails (Youssef, 1976), loneliness, depression, easy provocation, and short attention span (Abdel-Majeed, 1989). However, the effect of RHD on the position of the child in his family, the attitudes of the parents towards their diseased children, the relations and sociability of the child, the presence and nature of any behavioural, thought, affective and psychomotor disorders have not

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been adequately studied (Abdel - Azim et al., 1985).

The aim of this study was to assess the psychological impact of RHD on the affected children and their primary care - givers, i.e. their mothers, to detect any emotional disturbance that would negatively affect their treatment regimen or their quality of life. This would pave the way for suitable psychiatric intervention as a part of the overall management plan of these chronically - ill patients.

### Subjects and Method

The study sample comprised 100 patients with RHD, 12 of them had heart failure (HF) attending the Paediatric Out-patient Clinic in Assiut University Hospital, during the period from first of may till the end of September 1992. Thirty patients with acute febrile illness, e.g. tonsillitis, pharyngitis, bronchitis, etc. were used as controls. Their ages ranged from 8-14 years.

All patients and controls were first evaluated by a specially designed questionnaire to assess the sociodemographic data, educational level, socioeconomic standard, symptoms related to RHD and inquiry about some behavioural problems. Then the psychological status of patients, controls and their mothers was assessed by the Middlesex Hospital Questionnaire (MHQ) (Crown et al., 1966 and 1970). MHQ is composed of 48 items grouped into 6 subscales covering the following psychiatric symptoms: free - floating anxiety, phobic anxiety, obsessive symptoms, somatic symptoms, depressive symptoms and hysteria. The items are answered by 'Yes / No, Sometimes, Never and Little'. The response to each item is scored either '2, 1 or 0'. A score of 9 or more in any subscale is considered sufficient to indicate that the patient has clinically significant psychiatric symptoms.

### Results

Personal characteristics of the studied patients and controls are listed in Table (1), which illustrates that rheumatic heart disease (RHD) was observed significantly more in children with delayed order of birth (66%), in big-sized families (96%), living in overcrowded houses (47%). Age and sex of patients and controls were nearly matched.

Mean scores obtained by RHD children and control group on different MHQ subscales are given in Table (2). Patients with RHD reported significantly higher scores on anxiety, obsession and depression subscales than controls. MHQ scores were divided into two levels of severity of psychiatric symptoms: low level scores (0-8) and high level scores (9-16). There were no significant differences between patients and controls in mean scores at both levels. However, studying the frequency distribution of both levels of psychiatric symptoms shows that a higher proportion of controls (76.7%) suffered depressive symptoms of high level (9-16) than patients with RHD (39%).

Patients with RHD were subgrouped according to the presence of heart failure (HF). Patients with HF had significantly lower mean scores of MHQ scales of obsession, depression and hysteria than those patients without HF (Table 3). Also, the proportion of patients with HF who scored high symptom levels (9-16) was significantly lower than that of patients without HF both in obsession (25% vs. 60.2%,  $Z=2.3$ ,  $p<0.05$ ) and hysteria (8.3% vs. 40.9%,  $Z=2.2$ ,  $p<0.05$ ), as shown in Graph (2).

Inquiring about the presence of behavioural disturbances among patients and controls (Table 4), it was found that nocturnal enuresis, isolation, overdependence, limited sociability and sleep disturbances are all significantly more prev-

alent among RHD children (38%, 41%, 56% and 61%, respectively), compared with the control children (3.3%, 13.3%, 16.7%, 13.3% and 6.7%, respectively). On the contrary, aggressive behaviour was significantly lower among patients than controls (8% vs. 16.7%). There was no significant difference between both groups in stuttering.

Measuring the psychiatric symptoms in mothers of patients and controls (Table 5), there were no significant differences except in depression which was less severe in mothers of RHD children as a group (mean score =  $7.88 \pm 2.6$ ) than in mothers of children with acute febrile illnesses (mean score =  $9.77 \pm 2.3$ ). However, the proportion of mothers of RHD patients who experienced high symptom

levels (9-16 MHQ scores) was significantly higher than that of mothers of controls (Graph 3). This was more evident in anxiety (50% vs. 10%  $Z = 3.9$ ,  $p < 0.01$ ), obsession (75% vs. 30%,  $Z = 4.5$ ,  $p < 0.05$ ), psychosomatic (55% vs. 30%,  $Z = 2.4$ ,  $p < 0.05$ ) and depression (75% vs. 47%,  $Z = 9.0$ ,  $p < 0.01$ ).

Table (6) illustrates that symptoms of obsession and hysteria are significantly higher among mothers of RHD patients without HF than in mothers of RHD patients with HF. High symptom levels (9-16 MHQ scores) were prominent in the first group (Obsession: 99.5% vs. 41.7%,  $Z = 2.8$ ,  $p < 0.01$ ) and hysteria: 50% vs. 8.3%, ( $Z = 3.4$ ,  $p < 0.01$ ).

**Table 1**  
Personal Characteristics of Studied Patients and Control Subjects\*

| Characters             | Patients<br>(n= 100) |      | Control<br>(n= 30) |       | p- value |
|------------------------|----------------------|------|--------------------|-------|----------|
|                        | No.                  | %    | No.                | %     |          |
| <b>Age (in years):</b> |                      |      |                    |       |          |
| ≤ 10 years             | 43                   | 43.0 | 13                 | 43.3  |          |
| > 10 years             | 57                   | 57.0 | 17                 | 56.7  | N.S      |
| <b>Sex:</b>            |                      |      |                    |       |          |
| Male                   | 57                   | 57.0 | 14                 | 46.7  |          |
| Female                 | 43                   | 43.0 | 16                 | 53.3  | N.S.     |
| <b>Birth Order:</b>    |                      |      |                    |       |          |
| First                  | 34                   | 34.0 | 18                 | 60.0  |          |
| Second or more         | 66                   | 66.0 | 12                 | 40.0  | 0.0108*  |
| <b>Family size:</b>    |                      |      |                    |       |          |
| ≤ 4                    | 4                    | 4.0  | 26                 | 86.7  |          |
| > 4                    | 96                   | 96.0 | 4                  | 13.3  | 0.0000*  |
| <b>Crowding index:</b> |                      |      |                    |       |          |
| > 2                    | 47                   | 47.0 | 0                  | 0.0   |          |
| ≤ 2                    | 53                   | 53.0 | 30                 | 100.0 | 0.0000*  |

N.S. Statistically not significant

\* Statistically significant

**Table 2**  
MHQ Mean Scores of Children with Rheumatic Heart Disease  
and Control Group (Score 0-16)

| Psychiatric Symptom | Patients<br>(n= 100) | Control<br>(n= 30) | p- value |
|---------------------|----------------------|--------------------|----------|
|                     | Mean±S.D             | Mean±S.D           |          |
| Anxiety             | 8.85±3.01            | 5.60±1.83          | 0.0010*  |
| Phobia              | 9.46±2.54            | 9.30±2.29          | N.S.     |
| Obsession           | 10.74±2.54           | 7.10±2.37          | 0.0001*  |
| Psychosomatic       | 8.95±2.98            | 7.90±2.54          | N.S.     |
| Depression          | 10.06±2.47           | 8.56±2.15          | 0.0020*  |
| Hysteria            | 8.27±3.35            | 6.93 ±3.43         | N.S.     |

N.S. Statistically not significant

\* Statistically significant

**Table 3**  
MHQ Mean Scores of Children without Heart Failure Com-  
pared with those with Heart Failure

| Psychiatric Symptom | Cases Without<br>Heart Failure<br>(N= 88) | Cases With<br>Heart Failure<br>(N= 12) | p- value |
|---------------------|-------------------------------------------|----------------------------------------|----------|
|                     | Mean±S.D                                  | Mean±S.D                               |          |
| Anxiety             | 7.10±3.10                                 | 5.30±3.90                              | N.S.     |
| Phobia              | 10.00±2.30                                | 9.30±2.90                              | N.S.     |
| Obsession           | 9.10±2.80                                 | 6.30±5.50                              | 0.0017*  |
| Psychosomatic       | 9.90±2.70                                 | 10.00±4.40                             | N.S.     |
| Depression          | 8.10±2.60                                 | 6.30±2.50                              | 0.0274*  |
| Hysteria            | 8.50±3.00                                 | 6.30±3.00                              | 0.0169   |

N.S. Statistically not significant

\* Statistically significant

**Table 4**  
Behavioural Changes in Patients and Control Children

| Abnormal Behaviour        | Patients<br>(n= 100) |      | Control<br>(n= 30) |      | p- value |
|---------------------------|----------------------|------|--------------------|------|----------|
|                           | No.                  | %    | No.                | %    |          |
| Nocturnal enuresis:       | 38                   | 38.0 | 1                  | 3.3  | 0.0003*  |
| Stuttering or stammering: | 38                   | 38.0 | 7                  | 23.3 | 0.1386   |
| Aggressive behaviour:     | 8                    | 8.0  | 5                  | 16.7 | 0.0293*  |
| Isolation:                | 41                   | 41.0 | 4                  | 13.3 | 0.0052*  |
| Overdependence:           | 58                   | 58.0 | 5                  | 16.7 | 0.0000*  |
| Limited activity:         | 56                   | 56.0 | 4                  | 13.3 | 0.0000*  |
| Sleep disturbance:        | 61                   | 61.0 | 2                  | 6.7  | 0.0000*  |

N.S. Statistically not significant

\* Statistically significant

**Table 5**  
MHQ Score of Mothers of Children with Rheumatic Heart  
Disease and Control Group

| Psychiatric Symptom | Mothers of Patients<br>(n= 100) | Mothers of Control<br>(n= 30) | p- value |
|---------------------|---------------------------------|-------------------------------|----------|
|                     | Mean±S.D                        | Mean±S.D                      |          |
| Anxiety             | 6.88±3.27                       | 6.50±2.62                     | N.S.     |
| Phobia              | 9.89±2.40                       | 10.50±2.39                    | N.S.     |
| Obsession           | 8.79±2.89                       | 7.63±2.66                     | N.S.     |
| Psychosomatic       | 9.89±2.64                       | 8.90±2.14                     | N.S.     |
| Depression          | 7.88±2.63                       | 9.77±2.30                     | 0.0010*  |
| Hysteria            | 8.23±3.11                       | 7.10±3.16                     | N.S.     |

N.S. Statistically not significant

\* Statistically significant

**Table 6**  
**MHQ Mean Scores of Mothers of Children without Heart Failure Compared with Mothers of Those with Heart Failure**

| Psychiatric Symptom | Without       | With          | p- value |
|---------------------|---------------|---------------|----------|
|                     | Heart Failure | Heart Failure |          |
|                     | (N= 88)       | (N= 12)       |          |
|                     | Mean±S.D      | Mean±S.D      |          |
| Anxiety             | 8.80±3.00     | 9.50±2.80     | N.S.     |
| Phobia              | 9.50±2.30     | 9.00±3.90     | N.S.     |
| Obsession           | 10.90±2.40    | 9.30±2.90     | 0.0276*  |
| Psychosomatic       | 8.90±3.00     | 9.20±3.30     | N.S.     |
| Depression          | 10.10±2.40    | 9.50±2.70     | N.S.     |
| Hysteria            | 8.60±3.30     | 5.50±2.30     | 0.0023*  |

N.S. Statistically not significant

\* Statistically significant

## Discussion

Rheumatic fever and rheumatic heart disease are problems of major importance in all parts of the world, especially the developing countries (WHO, 1980). Rheumatic heart disease is the most dangerous complication of rheumatic fever, where 33% of the patients with rheumatic fever develop rheumatic heart disease (Gostman, 1985).

In this study, delayed order of birth was observed to be significantly higher in children with rheumatic heart than control group. However, this is in disagreement with Coulehan et al. (1980) who reported insignificant differences between children with rheumatic heart and control group, as regards the order of birth.

Gharib (1969) reported that the widely held impression that rheumatic fever is more common among crowded fami-

lies and among those with low socioeconomic status is not confirmed. However, in this study, most children with rheumatic heart were belonging to large sized families (more than four members). Meanwhile, crowding index of two or more was found in 53% of patients with rheumatic heart versus 30% of the control group. The difference was statistically significant. This is in agreement with Al-Sekait et al. (1991) who found that overcrowding and low socioeconomic status are important factors in the epidemiology of rheumatic heart disease.

Inquiring about some behavioural disturbances in RHD children, it was found that nocturnal enuresis, isolation, over-dependence, sleep disturbances, together with decreased sociability were all significantly higher, while aggression was significantly lower in RHD children than in control group. These findings are comparable to the results of Abdel Azim

et al. (1985), who reported nocturnal enuresis in 13.3%, sleep disturbances, especially night terrors in 53.3%, limited sociability in 40% and aggression in only 13.3% of RHD children. These figures, except for aggression, were significantly lower than those in a control group of choreic patients. These disturbances in RHD children may be attributed to decreased physical activity and limitations imposed by over-protective parents, together with depressive feelings and low self-esteem resulting from the chronic and crippling nature of their illness.

Using Middlesex Hospital Questionnaire scale as a screening test for psychiatric symptoms, it was found that children with rheumatic heart scored significantly higher mean scores on the scales of anxiety, obsession and depression than the control group. This can be explained by the expected psychological sequelae of a chronic potentially handicapping and life-threatening disease (rheumatic heart disease). Anxiety represents fear of the patient from the present distress of his physical illness. This situation imposes upon him uncertainties about the future with a sense of low self-esteem which is enhanced by the decreased physical activity compared with peers leading to depression. As a protection against overwhelming anxiety, some defense mechanisms come into action, e.g. isolation, reaction formation, leading to obsessionality. High scores of depression in rheumatic heart children could reflect genuine traits in these children's personalities, since depressive tendencies are among the frequently reported psychological predispositions towards chronic illness (Greenberg & Dattare 1981). Abdel-Azim et al. (1985) reported a higher prevalence of depression among rheumatic heart children (40%) than in choreic children (20%), but the reverse was observed regarding anxiety.

On classifying both the study group and the control group by their mean scores on MHQ scales into two sub-groups: those with low scores (0-8) and those with high scores (9-16), there was no significant differences between the 2 study groups. This could partially be explained by the extensive use of denial which acts as a protective psychological mechanism against overwhelming anxiety. (Holland, 1973). Denial is usually viewed as an ego defect, yet in the presence of a serious illness, it serves to reject feelings associated with severe events or thoughts and the patient denies either his illness or its dreadful complications (Plumb and Holland, 1981 and Herch, 1985), thus protecting the patient against severe anxiety.

In this study, the use of denial supported by the finding that depression of low scores (0-9) prevails in a significantly higher proportion (61.1%) of cardiac patients than in control patients (23.3%), yet denial masked their depression and prevents it from reaching significantly high level.

On the other hand, rheumatic heart children with heart failure (12%) scored significantly lower levels of obsession, depression and hysteria than those children with compensated cardiac function. These children with heart failure experience more distressing physical symptoms, e.g. dyspnoea. Accordingly, they realize that their physical health and even life is in danger. This alarms and augments their psychological resources in order to cope with these stresses. Also, they receive more attention from their physicians and mothers and become subjected to more medications and investigations. This will throw aside such pathological defense mechanisms of depression and obsession. Also, the protective attitude of their care givers will satisfy their dependent and demanding

tendencies, thus accounting for low hysterical scores.

As a group, mothers of rheumatic heart children scored significantly higher levels of obsession and depression than mothers of acutely ill children (control). The two groups of mothers showed nearly equal responses on other scales, especially anxiety. The expected response of a mother to her child's illness, whatever its nature, is anxiety. This is complicated by obsession and depression in mothers of cardiac children probably because of the mother's knowledge about the chronicity and possible complications of their children's diseases. Also this may represent failure of healthy psychological defense mechanisms, or it can be a sign of faulty functioning in the family of the chronically ill child as was supposed by Fitcher (1988). Much of the adaptation in these dysfunctional families is centered on negative feelings, distancing and often futile attempts at control. The mother feels that she has an impossible assignment, and that she does poorly at her assignment (Beavers et al., 1986). This situation creates a guilty feeling which predisposes to depression in the mother. The mother assumes the responsibility for the care of the household as well as for the chronically ill child (Clements et al., 1990).

It was observed that the psychological responses of mothers of children with heart failure were generally similar to the psychological response of their children. They showed significantly lower levels of obsession and hysteria than mothers of children without heart failure. This could be explained by the mother's admission of the seriousness of their children's condition and consequent realization of danger which acts as a signal to augment the stress response to cope with the reality. This acts to suppress the pathological reactions of obsession, and

depression. Also, the extra-care provided by the hospital milieu at that time and the marked sickness of their children provoke mothers to be supportive without demanding, i.e. to give without waiting to receive support.

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### **L'impact psychologique des maladies cardiaques rhumatismales sur les enfants atteints et leurs mères**

Cette étude a été menée au dispensaire pédiatrique à l'hôpital universitaire d'Assiut sur 100 enfants atteints de maladies cardiaques rhumatismales et 30 enfants, groupe controle, atteints d'autres conditions fébriles. L'âge des enfants s'étalait de 8 à 14 ans. Nous avons évalué les patients, le groupe contrôle et les mères des deux groupes en utilisant le "questionnaire hospitalier de Middlesex". Il semblerait que la maladie cardiaque rhumatismale perturbe l'adaptation psychologique chez les enfants atteints ainsi que leurs mères.

## التأثيرات النفسية لمرض روماتيزم القلب

### على الأطفال المرضى أمهاتهم

أجرى هذا البحث على ١٠٠ طفل يعانون من روماتيزم القلب مقارنة بثلاثين طفلاً من المصابين بأمراض حمية حادة من المترددين على عيادة طب الأطفال بمستشفى أسيوط الجامعي ويهدف هذا البحث إلى دراسة التأثيرات النفسية لمرض روماتيزم القلب على الأطفال المرضى وأمهم، وقد تم قياس الحالة النفسية باستخدام مقياس ميدل سكس. وقد تبين أن الأطفال المرضى يعانون من منسوب مرتفع من القلق والوسواس والإكتئاب أكثر من العينة الضابطة، وعلى النقيض وجد أن الأطفال المصابين بهبوط في القلب كأحد مضاعفات الحمى الروماتيزمية يعانون من الوسواس والإكتئاب والهستيريا بنسب أقل من العينة الضابطة.

وكانت الإستجابات النفسية للأمهات متوازية للإستجابات النفسية لأطفالهن مما يشير إلى أن روماتيزم القلب في الأطفال له تأثير سلبي على الصحة النفسية للأطفال المرضى وأمهم.