can only have clinic facilities in one-third of all settlements, it will remain a challenge to the centralized health services to supply adequate health education and vaccination coverage for all.

The effects of an intensive health education programme on the coverage rate of a vaccination programme will be evaluated in detail and the results will be presented in a following paper.

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Psychological effects of in-centre haemodialysis on the dialysand's adolescent children

L. SCHLEBUSCH, N. K. NAIDOO, J. KALLMEYER

Summary

A perusal of the literature on the psychological aspects of haemodialysis reveals that the patient, his spouse and his children are affected. Most studies have dealt with patients on home dialysis. This study was designed to ascertain in psychological terms the effect that the in-centre dialysing parent has on his adolescent children. The results indicate that the children of parents on hospital-based haemodialysis appeared to react to the parents' altered state of health. They were more self-sufficient and less well-adjusted as regarded home and social relations than were controls. The results are discussed in terms of the psychological management of the patient and his family.

Psychological implications of haemodialysis

The psychological aspects of a machine-dependent continuation of life have been amply reported in the literature on haemodialysis patients but not in relation to their adolescent children and other family members.

The psychological implications of chronic haemodialysis can be burdensome: the patient is given an added lease of life which may be at the expense of quality. He must in some way come to terms with having an irreversible illness, a shortened life-expectancy and unending dependency. It has been noted that not since the development of the artificial external respirator for bulbar poliomyelitis have so many patients been so completely dependent upon a machine, a group of professionals and a procedure. In addition, the patient must come to terms with living a limited and restricted life whether haemodialysis is performed at home or in hospital. Haemodialysis is essentially time-consuming, and may result in financial loss with its attendant difficulties. Although the patient is kept from death by haemodialysis, he still has renal failure and may be anaemic. With dialysis the patient may experience improvement in the predialysis uraemic syndrome, with remission of many psychological symptoms. Haemodialysis, however, makes the patient feel better while not making him feel well, and the patient goes through various phases in his adaptation to dialysis. Depression, anxiety, irritability, sexual dysfunction, disillusionment with his dependency on machines and medical staff, restriction due to and complications of arteriovenous shunts and fistulas, inability to plan for the future, frustration of drives and a number of other
psychological problems may still be experienced. These are often seen as normal reactions to an abnormal existence.

Even the screening process for treatment is stressful. The patient accepted for haemodialysis cannot but be aware of the minute scrutiny by the selection team. When selected, he may regard himself as 'one of the chosen few', but experience ambiguous feelings. He is glad to have been selected, yet he experiences some measure of guilt or anxiety that others with uraemia will go untreated.

In a study by Winckowski\textsuperscript{11} on the coping behaviour of adolescents with fathers on dialysis, most adolescents reported great stress related to knowledge of their father's condition. Although the most serious problem was coming to terms with the father's shortened life-expectancy, the majority of adolescents had not discussed the problems with family, friends or professionals. In addition, it was found that the adolescents put much energy into conducting themselves well so as not to cause discomfort to their parents.

Other investigators\textsuperscript{12-14} reporting on children of patients on haemodialysis tend to agree that the children are adversely affected. According to Beard,\textsuperscript{15} children may become withdrawn and depressed and fail at school as a result of their parents' maintenance on dialysis. Children may also be affected by the changing lifestyle when the parent is no longer able to participate in various activities, such as sport. Tsaltas\textsuperscript{16} found that children of patients on home dialysis tended to be problem students, and reported that two-thirds required the attention of teachers for behavioural problems. These children all exhibited disorders of psychomotor activity, reduced academic achievement and constriction of affect. There was, however, no clear evidence that these children were depressed because of exposure to home dialysis per se. The most disturbed children seemed to be responding to parents who were depressed or to partial object loss. Evans\textsuperscript{17} found that some patients preferred in-centre dialysis in order to appear more normal to their children. He suggests that social support is of primary importance to the outcome of home dialysis, and that this should be considered in the assessment of patient suitability for it. He also noted that the children of patients on home or in-centre dialysis may have different reactions according to their knowledge of and experience with the procedure.

The emotional trauma experienced by the patient on dialysis extends to the spouse and children. Although there have been a few articles that discuss the role of children,\textsuperscript{17} there is a surprising dearth of literature in the area.\textsuperscript{18} The few investigators who have studied this aspect stress the effect of home dialysis on the patients' children. As regards the effect of in-centre dialysis on the children, not only is there little published research but methodology is often inadequate, for example in terms of objective measurement of psychological parameters and suitability of control groups.

The rationale for the present study arises from these considerations. Improved data on the psychological effects of in-centre haemodialysis on the patients' children are needed. The present study therefore assesses the personality and adjustment of adolescent children with a parent on haemodialysis at a medical facility.

**Patients and methods**

The study was conducted at the Renal Unit and Department of Psychiatry of Addington Hospital, Durban. The Renal Unit has facilities for 80 in-centre haemodialysis patients but is currently dialysing 32 patients. Dialysis is usually carried out three times a week, averaging 5 hours per dialysis per patient. Only 4 in-centre patients on dialysis had adolescent children and were therefore included in the study. Three of the patients were males and 1 was a female, their ages ranging from 36 to 51 years and length of time on dialysis from 7 months to 4 years. One patient belonged\textsuperscript{1} to occupational prestige class II (salaried professionals and high managerial executives), 1 to occupational prestige class III (semi-professionals, lower executives and administrative workers) and 2 to class IV (owners of substantial businesses). The adolescent children of these dialysands constituted the experimental group, consisting of 4 girls and 4 boys ranging in age from 13 to 18 years. They were matched with controls for age, sex and socio-economic status. All controls were drawn from families in which the siblings and parents enjoyed good physical and mental health.

Since it was desirable to obtain psychological data in an objective way, two standardized, structured psychometric instruments, the High School Personality Questionnaire (HSPQ) and the Personal, Social, Home and Formal Relations Questionnaire (PHSF), were used in this study in addition to a clinical interview. The HSPQ\textsuperscript{19} provides an objective, quantitative analysis of all the major personality dimensions and yields a composite picture of the individual personality. The PHSF\textsuperscript{20} is designed to measure 4 dimensions of adjustment in personal, home, social, and formal relations by means of 11 components. A built-in validity check for response bias, the desirability scale, constitutes a twelfth component of the PHSF. In order to control for possible bias the questionnaires were all individually administered to each subject by the same investigator (NKN). The data were analysed by a non-parametric statistical procedure, the Wilcoxon matched-pairs signed-ranks test.

**Results**

The experimental group scored significantly lower than the control group ($P<0.05$) on 2 of the 4 dimensions of the PHSF scale (home relations and social relations), indicating poorer adjustment in these areas. Additional analysis of the 11 components separately also revealed a statistically significant difference ($P<0.05$) on component 8, i.e. the sociability-G factor (see Discussion); the experimental group scored significantly lower here, indicating that this group tended to be less spontaneous in social group interaction.

On the HSPQ the experimental group scored statistically significantly higher on the Q factor (group dependent v. self-sufficient) than the control group ($P<0.05$), indicating that this group was more self-sufficient than the control group. It was not possible to statistically analyse the responses of the two sexes separately because of the small sample size. A few trends did, however, emerge. There was a tendency for the boys in the experimental group to score higher on factor D, which means that they were more excitable. The girls in the experimental group scored higher than controls on factor G, indicating more conscientiousness (higher super-ego strength/guilt-proneness).

**Discussion**

In view of the psychological problems experienced by the haemodialysis patient it seems evident that his child must be affected, even if the child is not exposed to the dialysis itself, as in home dialysis. Olsen\textsuperscript{21} notes that families in a crisis must go through a reorganization period during which roles and rules may be changed, with individual members, e.g. the children, often experiencing considerable stress.

In comparison with the controls, we found very little personality change in the adolescent children of the dialysands but marked changes in adjustment. From a clinical perspective, the psychological processes involved tended to be confirmed. Several possible explanations can be advanced for these findings. Possibly one shortcoming may be the small size of the population sampled, which necessitated the grouping of male and female adolescents together. Unfortunately, the sample size was dic-
tated by the small number of dialysands with adolescent children available. This problem also did not let the experimental design make allowance for possible time-adjustment to dialysis, which may have influenced the responses of the adolescents. Results of the study, augmented by clinical observations derived from the clinical interviews and our own experience, nevertheless allow a balance to be struck and some conclusions to be drawn.

Our findings indicate that the adolescent children of patients on hospital-based haemodialysis appear to react unfavourably to the change in environment resulting from the presence of a chronically ill parent. They appear to experience some measure of maladjustment in home and social relations. Home relations, as measured by the PHSF, pertain to family togetherness, parental relationships, socio-economic conditions and personal freedom. 19 It has been noted that in the 'dialysis family' there appears to be minimal communication in tension-provoking areas, with conspicuous omission of the children. 22 These stresses may disrupt relations within the family, as evidenced in our experimental group.

The PHSF social relations scale measures a person's engagement in harmonious and informal relations within his social environment. 19 Sociability-G on the PHSF, in particular, assesses the degree to which a person has need for, and spontaneously participates in, social group interaction. Our results indicate that the children of haemodialysis patients experience difficulty in such social relations. These findings are congruent with other investigations into the altered lifestyle of the dialysis family. Because of the dietary, fluid intake and other restrictions, as well as the psychological problems associated with haemodialysis, difficulties in social participation are inevitable. Dialysis families feel that adjustment involves a narrowing of their social world. 22 Their children experience some difficulty in socializing. The children of haemodialysis patients in our study appeared to be more self-sufficient than the controls (children with normal, healthy parents). If one considers the time that the dialysing parent spends on the machine, the general feeling of malaise and the social, financial and psychological problems sometimes experienced, then it seems likely that both parents are unable to devote much time or energy to nurturing and guiding their children. In addition, our findings indicated a trend towards boys being more excitable and girls being more conscientious and guilt-prone as concomitant personality factors in this process.

Finally, in an analysis of the results we did notice a tendency of the scores to questionnaire responses in children of the same family to be similar, as well as a relationship between difficulties with patients' adjustment to haemodialysis and the general adjustment of their adolescent children. Because of the small sample studied, this and other areas require further research and possible confirmation with larger, statistically more appropriate sample sizes.

Most studies agree that haemodialysis can be very stressful to the patient and that psychotherapy has a place in the management of this. 18,20,24 It is also clear from the literature and the present study that this stress and the dialysand's altered state of existence similarly impose stress on his family. The families of dialysis patients and their management have been discussed in the literature on many occasions 25-29 but largely in terms of home dialysis and the spouse of the dialysand. We believe, however, that psychotherapeutic management of the patient on dialysis should include his family and particularly his children, regardless of whether the patient is on home dialysis or in-centre dialysis; it could be done on an individual, group or family basis, depending on the situation. Psychological assessment of the entire family before acceptance of a patient for dialysis might also be of value, since dialysis is not necessarily a patient- and hospital-based problem.

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REFERENCES