

Factors associated with outcome in management of defecation disorders

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SUMMARY Simple, incentive based behaviour modification, with or without a modest programme of psychotherapy involving outpatient visits every four to six weeks, seems to be associated with a useful cure rate in children with lower bowel function disorders.

Appreciable social disadvantage seems to be the most important factor mitigating against a successful outcome, associated with non-compliance with treatment. Failure to respond to treatment was associated with important psychological problems. These were more common in the socially disadvantaged groups.

Children from satisfactory social backgrounds who have lower bowel disturbances can be effectively treated by fairly simple programmes. More elaborate and expensive strategies should be reserved for those whose psychosocial circumstances make it possible to predict a less satisfactory outcome.

Faecal soiling with or without faecal retention is a common cause of referral to general paediatric outpatient services and accounts for some 25% of the gastroenterological workload. Primary or secondary referral to child psychiatry services is also considerable. Methods of treatment include pharmacological,^{1,2} behavioural,³ behavioural and medical,^{4,5} dietary,⁶ psychological,⁷ and surgical.⁸ The diversity of treatment is a reflection both of the multifactorial nature of the problem and the difficulty encountered in applying recommended management programmes in clinical practice because of the considerable demands they make on valuable outpatient time.

The published results of treatment show cure rates of between 45% and 70% and failure rates of between 25% and 35%, depending on selection of cases, criteria of assessment of outcome, and (possibly) intensity of treatment. In view of the non-fatal and self limiting nature of the problem the issue of cost effectiveness is a major one. A regimen with a high success rate that overwhelms available resources or diverts attention from more serious matters would clearly be unsatisfactory. This study was devised not to find a regimen with an optimal cure rate but to test the effectiveness of fairly modest programmes of behaviour therapy or psychotherapy, or both, that would not seriously tax the resources of busy district paediatric or child psychiatry services. For example, one British study

involved weekly or biweekly visits in comparison with the monthly or six weekly visits employed here.

We report our experience with 47 children who presented with faecal soiling, with or without constipation, who were treated by incentive based behavioural modification, plus or minus psychotherapy, and consider factors that might predict the outcome for a non-intensive approach. In particular, we wish to draw attention to social background as a prognostic indicator, a factor not previously reported.

Material and methods

The subjects of this study, 26 boys and 21 girls, from 47 separate families, were referred by general practitioners and other paediatricians. None had previously been treated by psychotherapy or behaviour modification techniques. They were typical of cases referred to a paediatric outpatient service. All the children were assessed clinically by one individual (LST) and then by a child psychiatrist (OMU). After psychological assessment the children were assigned on an alternate basis into either the behaviour modification group, who were not seen further by the psychiatrist, or the psychotherapy group, who continued to see the psychiatrist at regular intervals as well as receiving behaviour modification.

Twenty six of the children received behaviour

therapy only, and in 21 psychotherapy was offered in addition. Children with identified organic bowel disease or who had neurological handicaps were excluded from the study.

One year after the beginning of treatment (the period of the study) the parents were sent a postal questionnaire, which sought to elicit the response to treatment. This survey included all patients who 'dropped out' of this study at any stage. They were asked whether they considered the child cured, improved, or unchanged and asked how often the child defecated; whether and how often soiling occurred; and whether and how often laxatives were needed. These answers were made as objective as possible by requesting parents to place ticks in appropriate boxes. This response was then graded into three categories—cured, improved, and no response, on the basis of the parents' answers to the questionnaire, compared with the clinical assessment before allocation to treatment groups. Assessment of results were thus made by the parents at home and not by the professionals involved.

The criteria for the classification of the results of treatment were:

- (1) Cured. At least five normal stools each week without soiling. Only occasional use of laxatives (less than once a week).
- (2) Improved. At least three stools each week and soiling less than once a week.
- (3) Non-responders. Less than three stools each week or soiling more than once a week. These children were considered as failing to improve, despite the fact that in most cases there was less soiling than at the beginning of treatment.

For some statistical analyses 'Cured' and 'Improved' subjects were grouped together as 'Responders'.

Social class classification. Children were classified on the basis of paternal occupation, according to the guidelines of the Department of Health and Social Security, into three groups. Group 'A' (social classes 1, 2, and 3) comprised the children of non-manual workers, group 'B' (social class 4) those of skilled manual workers, and group 'C' (social classes 5 and 6) those of unskilled or semiskilled manual workers and individuals whose social class was indeterminate because of long term unemployment and single parent families. In one case social class could not be allocated because of insufficient information.

Behaviour modification techniques. This was carried out by the paediatrician. All the children in the study were placed on a star chart regimen. Children were offered varying coloured stars for 'sitting on the toilet' and 'remaining unsoiled for a full day'. In

some cases stars were awarded to encourage children who were reluctant to take bran in their diet. A contract was negotiated between the child and parent (usually the father) for an award to be made at the discretion of the paediatrician. The child was to understand that the giving of the award would depend on response to treatment. 'Demystification', alleviation of guilt, and the use of explanatory diagrams generally followed the lines recommended by Levine and Bakow.⁹

The children were seen at six weekly intervals by the paediatrician (LST) for between three months and one year and were subjected to shows of affection and interest, which included careful and serious inspection of the charts. Failure to keep a star chart on two successive visits resulted in a firm statement of displeasure. Two further failures at six week intervals led to the stopping of treatment and discharge with the option of psychiatric referral. Discharge of cured patients was at the discretion of the parents.

Psychotherapy

The children allocated to the psychotherapy group were seen by the child psychiatrist at roughly monthly intervals for periods between two and 12 months. Treatment was organised along the following lines:

- (1) At each appointment the mother (and also the father in four of the cases) was seen for 15–30 minutes to explore her feelings in respect of the child's bowel problem and its effect on the family and her own relationship with the child. Whenever possible the mother's own history was explored and other emotional problems discussed where relevant—for example, expressions of grief, anger, depression, etc.
- (2) The child was seen for between 15–30 minutes for play, including picture drawing, games, and the sharing of their own toys and belongings, which they often brought with them. Their feelings concerning their problem were also explored. The behavioural star chart was also often brought, and this was reviewed and the child praised and encouraged according to progress.
- (3) Mother and child were seen together—sometimes early in treatment, sometimes later, depending on their relationship and success with management of the problems—to assess the overall progress.

Direct management of constipation. In cases where constipation was severe with large faecal masses the children were initially admitted to the ward for

bowel retraining. Enemas were only used if defecation was made impossible by severe impaction. They were then continued on whatever laxative they had been on before referral. Where no laxative had previously been used the child was offered a twice daily dose of lactulose. If there was no accumulation of faeces no laxatives were prescribed. No other laxatives were used in this study, and in general their use was minimised, with the parents encouraged to stop the treatment with laxatives as soon as a regular bowel habit was established. In none of the children were suppositories used at any time. Anorectal manometry and biopsy examinations of the rectal mucosa to exclude Hirschsprung's disease were carried out on the children as part of a previously reported study to ascertain whether they were of value.¹⁰ All the children were encouraged to take a high residue diet and in particular were asked to take bran with their breakfast cereal.

Compliance with treatment. Any child who defaulted from more than two successive offered appointments or failed to produce star charts on more than two successive visits was offered a further opportunity to accept treatment. If this offer failed to elicit a response the child was classified as non-compliant. Thus all families who 'dropped out' before treatment was completed were included in this category. Adverse social factors included poor housing (six cases), unemployment (five), parental separation (four) and unsupported single family (one). Emotional problems included severe marital difficulties (five), excessive anxiety (four), overprotection manifesting as excessive medical consultation or unwarranted school absence with parental consent, or both (four), general parental inadequacy

(four), and bereavement (one). There was evidence of previous child abuse in five cases, and in four cases the child had been assessed because of other behaviour problems.

Results

The results of treatment in the group offered behaviour modification did not differ from those offered additional psychotherapy (Table 1). They have therefore been pooled for further analysis.

Seventeen (36%) children were classified as non-responders one year after beginning treatment. Table 1 shows the effect of social class group on response. In one case there was insufficient information for social classification. Four non-responders were in social class group A, four in group B, and eight in group C. Table 1 also shows the details of the three response groups. The age distributions are not significantly different (Student's *t* test). Comparison of groups A and B with group C is significant both for 'Cured' *v* 'Non-responders' and 'Cured and Improved' *v* 'Non-responders'.

The effect of compliance on outcome is shown in Table 2A. Seventeen of the children were considered to be non-compliant with treatment, and nine of these were in the non-responding group. The overall rate of non-compliance for the 47 children was 36%. The proportion of children who were cured was significantly higher in the compliant group. Non-compliance was more likely in social class group C (Table 2B). Of those who did not comply, four were 'drop outs' from the study and 13 failed to keep adequate 'star charts'. The 'drop outs' occurred at one, two, three, and four months. Two were subsequently found to be cured.

Table 1 Age distribution and response to treatment according to social class group

		Social class group			Total
		A	B	C	
Response:					
Cured	n	8	12	2	22
	Range	3-9	3-14	2-6	2-14
	Mean	5.25	6.5	4	5.7
Improved	n	3	2	3	8
	Range	4-8	(6)	(5)	4-8
	Mean	6.3	6	5	5.75
Non-responders	n	4	4	8	16
	Range	7-10	7-11	3-8	3-11
	Mean	8.25	7	5.75	6.7
Total	n	15	18	13	46
	Range	3-10	3-14	2-8	
	Mean	6.27	6.4	5.3	

Age distribution (Student's *t* test) not significant. Response to treatment (χ^2 test): Cured: A+B *v* C by Fisher's exact test, $p=0.014$. Cured and improved: A+B *v* C by Fisher's exact test, $p=0.021$. Cured: A *v* B not significant.

Table 2 Relations of response to treatment, compliance, and social class

A Compliance and response to treatment		
Response to treatment	Compliance	Non-compliance
Cured	19	3
Improved	3	5
Non-responders	8	9
Total	30	17

Cured v Non-responders by Fisher's exact test, $p=0.011$.
Cured + Improved v Non-responders not significant.

	Social class group			Total (n=46)
	A	B	C	
Compliant	10	16	3	29 (63%)
Non-compliant	5	2	10	17 (37%)
Compliance rate of social group (%)	67	89	23	

A+B v C by Fisher's exact test, $p=0.007$.
A v B not significant.

The response to treatment of those who did comply show that good results (cures) in social class groups A, B, and C were 70% (seven cases), 69% (11 cases), and 33% (one case), respectively. The overall cure rate in the complying group was 63%, while in the non-complying group it was 18%. Of the four children whose parents were offered but refused psychotherapy, two made a good response to behaviour therapy alone and two failed to respond.

The duration of treatment in the response groups was: four to 12 months in the cured group, with a mean of eight months; the full 12 months followed by all in the improved group; and one to 12 months in the non-responders group, with a mean of nine months.

The relation between manometric findings and response is shown in Table 3. There was no significant correlation between the variables measured and outcome.

Among 29 responders there were 10 families with at least one adverse psychosocial factor present,

Table 3 Manometric findings and prognosis. Values are means

	Responders	Non-responders
Conscious rectal sensitivity threshold	131.6	102.9 [†]
Rectoanal inhibitory response threshold	27.3	26.3 [†]
Critical volume	120.5	108.5 [†]

[†]Mann Whitney U test not significant.

whereas among 17 non-responders 13 families had at least one adverse factor ($\chi^2=7.56$, $p<0.02$). The total number of adverse factors among the responders was 10 (no more than one for each family), whereas among the non-responders there were 33 adverse factors. Five families had three adverse factors, seven had two, and one had one. The tendency for two or more adverse factors to be present among non-responders was highly significant ($p<0.001$ by Fisher's exact test).

Six out of 15 families in social group A (40%), eight out of 18 in social group B (44%), and 10 out of 13 in social group C (77%) has at least one adverse psychosocial factor. The difference between groups A, B, and C is not significant ($\chi^2=3.17$, $p>0.05$). More than one adverse factor was present in three out of 33 families in groups A and B and in nine out of 13 in group C. This difference was highly significant ($\chi^2=14.51$, $p<0.001$).

Discussion

Simple advice and dietary manipulation by an available and sympathetic paediatrician may suffice to treat many children with lower bowel dysfunction. Formalised behaviour modification with or without psychotherapy on the modest scale practised in this study seems to have a beneficial effect, but it would require a longer controlled study to confirm this with certainty. The higher 'cure' rate in the compliant group in this study is evidence of benefit. The amount of treatment—that is, total number of sessions—offered to each patient varied considerably, depending on how rapidly they responded to treatment, the presence of relapses, and default rate.

Studies giving the results of treatment of defecation disorders are uncommon.¹¹ The assumption that a combination of laxative management combined with various forms of behaviour modification or psychotherapy, or both, is effective in treating these children is based on surprisingly little assessable data. Inpatient management has been claimed to yield excellent results in disturbed children from poor social backgrounds but such regimens, involving in one series a hospital stay of at least five months,⁵ cannot for practical reasons be applied to all children with soiling. The regimen followed by Levine and Bakow⁹ in which a physician was available by phone daily would also involve resources not available to most units.

The results of outpatient treatment vary surprisingly little. Such differences as do exist can be accounted for in part by differences in assessment of criteria for success. In particular, 'cure rates' where there is least margin for methodological differences

Table 4 Comparison of various reported results of treatment

Reference	No	Cure rate (%)	Improvement (%)			Frequency of visits
			Great	Some	No Change	
Current study	47	46.9	17	36.1*		4-6 weekly
Levine <i>et al</i> ⁹	127	44.1	23.7	11.8	20.4	‡
Hein <i>et al</i> ¹⁷	23			30.1*		4 weekly
Berg <i>et al</i> ¹²	59§	70.1			29.9‡	1-2 weekly

These figures have been recalculated from the published data to make it possible to compare results.

*Includes defaulters.

‡No of defaulters not stated.

‡Physician available by telephone every morning.

§Outpatients 4-8 weekly.

§Includes 10 non-constipated soilers omitted from authors' calculations.

are remarkably similar in comparable series (Table 4). Only the study of Berg and Jones reports a cure rate above 60%.¹² The 87% cure rate was achieved in children with faecal retention but excluding non-retentive soilers. The present study includes the latter (10 cases in all with a cure rate of 10%). The Berg and Jones study is unusual in being the only one to report results in an 'all or none' fashion. Patients were either cured or failed to respond. All other studies have found a gradation of response with at least some children responding well but continuing to have occasional problems. These authors provided very intensive treatment, seeing their patients once a week or fortnight for a year before accepting failure. This represents a considerable allocation of resources that would be difficult to provide on a general basis and seems inappropriate to an unselected group of soilers as, compared with the far less intensive approach adopted in our study, the cure rate only increased from 47% to 70%, particularly when the number who improved significantly in our study (17%) is added to those completely cured. A more selective approach would seem to be indicated, with the type of regimen outlined by Berg and Jones reserved for those who fail to respond to the less intensive programme or for children identified in advance as likely to be non-responsive. A careful psychosocial assessment before beginning treatment would seem to be useful.

The psychosocial aspects of constipation in children have been previously stressed.^{7 13 14} With aggressive soiling problems, long term success is usually achieved when the parent and child have separate professionals. In this project a psychiatric social worker was not available. It is the writers' impression that if the specialised medical and psychological treatments were readily available to children with such bowel problems, even when they are very young and especially if the parents are

anxious, the more severe and protracted forms of aggressive soiling could be avoided.

Levine has analysed the life events in the background of 102 constipated children and found little in the way of common factors,¹⁵ though in a later study he noted an excess of behaviour problems in the group of non-responders.⁹ Severe emotional problems or non-compliance with treatment, or both, have been the main factors considered. To this list may be added children from families of low education/occupational skills. There seems to be a definite threshold of response separating children of parents of skilled manual workers and those from unskilled and often disadvantaged backgrounds. Our analysis of published studies confirms previous observations that most methods of treatment will produce good results in well motivated patients. Our data show additionally that response to treatment may be predetermined by social background. Less intensive forms of management are not likely to be effective in those families with appreciable psychosocial problems. The study of Levine and Bakow states specifically that there was 'little intergroup variability in socioeconomic status based on parental occupation and educational attainment using Green's scoring methods' but presents no data.⁹ Our findings differ from their conclusion but confirm their observation that non-compliance is the principle factor in the therapeutic failure. Davis *et al* report a failure rate of 37% (4/11) among a group of children with 'working class' parents but do not differentiate between skilled as opposed to unskilled occupations.¹⁶ Future reports of management of defecation disorders should include a careful analysis of social background.

The commonest single factor noted in previous studies—namely, interparental conflict—was present in nine families and seems to be a factor in poor response to management. Whether it is social or emotional problems that determine the poorer

outcome would require a larger series than ours to resolve, but it does seem that families with greater intellectual and material resources are better able to cope with difficulties, such as parental conflict, in the interest of the child. Our data show that not only is there a tendency for non-responding children to come from families with psychosocial problems but that these problems tend to be multiple in that group. A combination of social disadvantage and emotional problems is likely to lead to non-compliance with treatment and therefore to a poor outcome.

In the light of these observations, how should children with soiling problems be managed? About half the cases referred will respond to a programme of low intensity. The outlook for children from homes with poor psychosocial backgrounds is less good, and possibly they should be referred at once to a psychiatric service that has specialist social work support and inpatient facilities. The decision to involve fathers in the treatment regimen in this study was based on the fact that it was usually the mother who brought the child to the clinic and it was thought useful to involve the whole family in the 'game' that would lead ultimately to a normal defecation pattern. A future study might include a comparison of this approach with one that directly involves only the presenting parent.

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