

Psychiatric Aspects of Diabetes—a Physician's View

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Classification of Diabetes

A raised blood sugar level no more defines a single entity than does a raised bilirubin or a low haemoglobin. Diabetes is a heterogeneous group of disorders whose only common factor is hyperglycaemia (Tattersall *et al*, 1980). The classification of diabetes is being revised, although the changes are of more relevance to epidemiologists than clinicians. Previous standards of normal glucose tolerance were set too low, so that some people were labelled diabetic who had no symptoms and have proved on follow-up not to be at risk of developing complications such as retinopathy (i.e. they had a non-disease). Epidemiological evidence suggests that the cut-off point for 'true' diabetes (i.e. a condition which leads to complications and shortening of life span) is a blood glucose level two hours after a 50 G oral glucose load of 11.1 mMol/L (National Diabetes Data Group, 1979). This corresponds to a fasting blood glucose level of 7 mMol/L or below. Hence, a single blood glucose value, either in the fasting state or two hours after a 50 G glucose load, is enough to diagnose diabetes and glucose tolerance tests should hardly ever be necessary.

There are at least 50 known causes of diabetes (Tattersall *et al*, 1980) although together they account for less than 5 per cent of all cases. The rest are best classified as either insulin-dependent (type I) or non-insulin dependent (type II). These are distinct clinical disorders although each may be aetiologically heterogeneous; type I diabetes usually starts before the age of 30 years and is caused by physical destruction of the insulin-producing beta cells of the pancreas. This process is not always complete and some patients retain a small amount of natural insulin secretion which cannot be measured routinely but is important since it is under normal physiological control and can compensate for quite gross errors in insulin dose and diet.

By contrast, in the totally insulin-deficient diabetic, insulin dose, food and exercise must be carefully balanced to avoid the extremes of high and low blood sugar. Omission of insulin in these patients will usually lead to ketoacidosis within 24 hours whereas patients who still have some endogenous insulin secretion are able to omit one or more doses without becoming seriously ill.

Hence, from a psychiatric view point, the most important thing is whether or not the patient is treated with insulin. Failure of compliance in the tablet or diet treated patient is relatively innocuous, at least in the short term, whereas the insulin-dependent diabetic can precipitate a serious illness (ketoacidosis) by stopping his treatment, or cause himself to become unconscious from hypoglycaemia by missing a meal. It is for these reasons that insulin-treated diabetes has been described as the manipulator's delight (Tattersall, 1977).

Emotional Factors in Aetiology

In the past, prominent psychoanalysts such as Menninger (1935) and Dunbar *et al* (1936) claimed that diabetes was in part a psychosomatic disease caused by emotional stress. The theoretical basis for this contention was the experiments of Cannon (1911) who showed that glycosuria was part of the so-called 'stress reaction' and could be induced by fright or rage. Cannon's theories have been substantiated and expanded over the past 50 years and there is no doubt that stress does stimulate the release of hormones which oppose the action of insulin and lead to mild hyperglycaemia. However, normal beta cells are virtually inexhaustible and patients who lack cellular insulin receptors can sustain insulin levels 20 times higher than normal for a number of years. Thus, there is no possibility that even substantial emotional stress could be a direct cause of diabetes. The 'evidence' adduced by the psychoanalysts was based on in-depth analysis of a few selected diabetics together with anecdotal reports of people found to have diabetes after stressful experiences. None of these studies included control groups and, since at least 1 per cent of the general population have undiagnosed diabetes, it is inevitable that 1 per cent of accident victims will have glycosuria when tested in hospital!

There is a strong genetic predisposition to all common types of diabetes and although environmental stress might convert this to overt disease, no mechanisms have ever been proposed or evidence produced (Hauser and Pollets, 1979).

The 'Diabetic Personality'

Dunbar (1943) described the person prone to diabetes as weak, irritable, subject to frequent mood

swings, hypochondriacal and prone to changes in behaviour, ranging from over demanding dependency to explosive rebellion. In this and similar publications it is unclear whether these characteristics ante-dated the onset of diabetes or whether they are merely the result of having the disease for a number of years. The routine of tests, injections and meticulous attention to diet is tedious, complicated and demanding and may have a profound effect on the patient's mental state. Attending a diabetic clinic and seeing one's fellow sufferers with blindness or amputations might make even the most stable personality somewhat hypochondriacal. Furthermore, mood swings and explosive rebellion are well known symptoms of hypoglycaemia as are the bizarre dreams (Fletcher, 1980) which may have provided grist for many a psychoanalyst's mill.

The emotional trauma at diagnosis of insulin-dependent diabetes is probably greater than for any other chronic disease. The patient has to accept that he has an incurable condition whose treatment requires daily injections, a diet in which some of the choice foods are excluded and where meals have to be eaten rigidly on time. He must monitor the effects of treatment with urine or blood tests and cannot escape confronting his own success or failure. He will soon learn from observation at the diabetic clinic or discussion with friends that, although treatment with insulin can abolish symptoms, it cannot guarantee a normal life span.

The pressure on the diabetic patient has increased in recent years; twenty years ago few doctors were convinced that diabetic control was worthwhile whereas, there is now fairly general agreement that 'to maintain blood glucose levels as close to those in the non-diabetic as possible' is the single most important factor in the prevention of long-term complications (Cahill *et al.*, 1976; Tchobroutsky, 1978). As a result of this new philosophy, many insulin-treated diabetic patients are being expected to take charge of their own destiny and hence presumably exposed to more anxiety. For example, it is now common place for patients to measure their own blood sugar levels from finger prick samples up to six times a day (Walford *et al.*, 1978; Sönksen *et al.*, 1978; Peterson *et al.*, 1979). An increasing number of patients, especially in North America, are being treated with portable insulin pumps which have to be worn continuously (Pickup *et al.*, 1978; Tamborlane *et al.*, 1979).

Few would disagree that to overcome these problems while living a 'normal' life requires considerable force of personality and it is a continual surprise to those working in diabetic clinics how well most of their patients cope with a burden which is shouldered uneasily by medical and para-medical people (Well-

born and Duncan, 1980). Patients react to diabetes with the personality resources available to them although previous psychological weaknesses may be unmasked or reinforced. Another important determinant of how the patient reacts is how he sees his own sick role and how his family and community respond to illness (Mechanic, 1961).

The interaction of diabetes with personality and life situation can be artificially divided into childhood, adolescence and adulthood.

Childhood

At all stages of life, but most deeply in childhood, diabetes affects not only the patient but also his family. There is little doubt that emotional stability in a home where parents take a realistic view of their child's handicap is the best guarantee of stable diabetic control and a child who does not constantly use his illness to his own ends. The most common maladaptive parental attitudes have been classified by Vandenberg (1971), Pond (1979) and Craig (1981) and will not be detailed here. Over-anxiety or rejection are the most common pure maladjustments although individual cases are usually an intricate mixture of the two.

Severe anxiety is significantly more common among mothers of diabetic children than mothers of controls (Sterky, 1963). Anxiety is a relatively normal reaction and only occasionally progresses to a point where the child is smothered and overwhelmed. However, severe maternal anxiety may lead to family discord; the father is often excluded to the detriment of the marriage itself. Siblings resent the attention paid to the diabetic child and may take it out on him. Finally, the diabetic child may react in two ways. Firstly, he can submit and remain tied to the apron strings. These children use diabetes as their shield against growing up and, abetted by their parents, are never well enough to participate in normal activities, stay the night away from home, etc. Secondly, the child may rebel, which invariably involves striking out at the cause of the initial frustration, diabetes.

Adolescence

Adolescence is difficult for healthy people and the added complication of diabetes tends to make normal adjustment problems worse (Tattersall and Lowe, 1981). The mental anguish of the diabetic teenager is usually expressed silently in diabetic terms (hypoglycaemia, ketoacidosis or 'Uncontrollability') in a way which suggests that he, like his doctor, sees himself less as a person than as a metabolic problem. Perhaps this is over fanciful—it may simply be a question of using the weapon closest at hand.

Many diabetic teenagers at some time or another

falsify or refuse to do urine tests, go on eating binges, 'break' syringes so that they cannot inject themselves, 'forget' appointments, quarrel with parents and doctors or become seclusive and socially ill adapted. They may show varied combinations of hostility, rebelliousness, negativistic behaviour and provocative attitudes and performances (Stearns, 1959). This is usually more annoying than dangerous and happily tends to die out in the late teenage years.

Adulthood

The emotional problems of the person who develops diabetes in adult life tend to be less dramatic since most have developed mature ways of coping with frustration and anger. Nevertheless, many adult insulin-dependent diabetics will have emotional problems related either to the illness itself or its complications—blindness, impotence etc. Mills *et al* (1973), in a study of 60 Australian adult insulin-dependent diabetics, characterized the group as insecure, tense, conventional and glum. Fear of vascular complications and severe hypoglycaemia were common worries to both patients and their relatives (Sanders *et al*, 1975).

In conclusion, far from there being a typical 'diabetic personality', diabetes is so common that a large clinic will contain patients with almost every known personality type and/or mental handicap or illness.

Selected Psychological Problems

The following reflections are anecdotal but reflect my own experience in a large clinic.

Low intelligence

Diabetes seems to be more common in patients with Down's Syndrome and other forms of mental deficiency although the evidence is conflicting (Rimoin and Rotter, 1981). We have six children with Down's Syndrome and insulin-treated diabetics attending our clinic and find that low intelligence is not a bar to success if the patient has an attendant of normal intelligence and if the goals of treatment are realistic. Diet is the greatest stumbling block since most of these 'children' attend day centres where sweets are temptingly and easily available. It is usually best to accept that diet can only be approximate and that perfect control cannot be achieved. Patients with Down's Syndrome seem to get great satisfaction from proving that they can inject themselves and, unlike the intelligent adolescent, compliance is usually excellent.

Personality disorder and alcoholism

Insulin treatment in a patient with a personality disorder or alcoholism is a nightmare. To those with

personality disorders it is tantamount to a weapon with which to attack and manipulate the world. The following case history illustrates the problem:

A 56-year-old man died from a myocardial infarction in 1978. Between the ages of 8 and 16 he attended a residential school for backward children where he was labelled as 'high grade feeble minded'. He joined the Army in 1939 but was quickly discharged as unsuitable. Between 1945 and 1966 he had 13 admissions to mental hospitals (total 3.8 years) with a variety of psychiatric diagnoses covering the spectrum from imbecility and character disorder to schizophrenia and depression. Interestingly, he was treated on six occasions with insulin coma therapy. Between 1954 and 1970 he had 15 medical admissions with backache, 'fits' and epigastric pain. The only year between 1945 and 1970 when he was not in hospital at least once was spent in prison. In 1970 he developed ketosis-prone insulin-dependent diabetes and thereafter never attended hospital except at the diabetic clinic. As might have been expected from his previous record, his diabetic life was not without its problems. Between 1970 and his death in 1978 he was admitted four times with diabetic ketoacidosis and treated 136 times in casualty for hypoglycaemic coma (Tattersall, 1979).

Successful treatment with insulin demands an ordered life style and regular meals, requirements conspicuously absent from the life of the alcoholic. By contrast, those with mildly obsessional personalities do well.

Anorexia nervosa

Diet is a *sine qua non* of the treatment of diabetes and some patients may come to think of food as poison. It is therefore rather surprising that there has only been one report of co-existent diabetes and anorexia nervosa (Fairburn and Steele, 1980), although other cases are known to the author. The most surprising thing about these patients is that all were able to keep their diabetes under meticulous control while starving themselves.

Pregnancy

The treatment of diabetic pregnancy has been revolutionized over the past 30 years, with a reduction in perinatal mortality from over 33 per cent to below 3 per cent (Peacock *et al*, 1979). The main factor in this improvement is meticulous blood glucose control throughout the pregnancy. Most units find the management of diabetic pregnancy highly rewarding and take great pride in it. Hence, the pregnant woman gets lavish attention for six months or more but, after delivery, reverts to being an ordinary patient. This may be interpreted as rejection and we and others (Jovano-

vic *et al*, 1980) have noticed a higher than average incidence of *post partum* depression.

Needle phobias

Most laymen (and doctors) regard the prospect of self injection with something approaching terror. Yet it is exceptionally rare for diabetic patients to be unable to give their own injections, and most children manage competently from the age of 6 or 7 years upwards. When patients do complain about injections, the problem is more often psychological than mechanical. Many diabetic clinics do not recognize this and attempt to tackle the problem by supplying injection aids. Management of true needle phobia is difficult; behaviour therapy has been tried, although no formal trial is known to me.

Hypoglycaemia

Severe hypoglycaemia is the great fear of most insulin-treated diabetics. The most dreaded attack is that in which adrenergic warning symptoms are absent and the first signs mental, i.e. those of neuroglycopenia. After such an attack, patients feel humiliated by their loss of self control which is often accompanied by bizarre or aggressive behaviour. They often comment that 'people thought I was going mad' and indeed, when faced with a relative's complaint about the odd behaviour of the diabetic it is often extremely difficult to know whether the problem is hypoglycaemic or psychiatric. Physicians who are familiar with the protean manifestations of hypoglycaemia usually assume that any neuropsychiatric symptom is due to hypoglycaemia until proved otherwise. Reversible neuropsychological consequences of hypoglycaemia may range from mental dullness, anxiety and depression to hemiplegias and convulsions (Gale, 1980), and we have described patients who were rehabilitated by reduction of insulin dose, having previously been written off as having dementia or idiopathic epilepsy (Gale and Tattersall, 1979a).

How often hypoglycaemia is harmful in the sense of producing permanent brain damage is controversial. Kinsey (1941) found 38 deaths from hypoglycaemia in a survey of 12,234 patients who had received insulin shock therapy—a reminder that severe hypoglycaemia has sometimes been considered beneficial! All physicians know of cases of severe brain damage from intentional massive insulin overdoses, but the real issue is whether lesser degrees of hypoglycaemia, however frequent, have adverse neurological sequelae. In my view this question can only be resolved by longitudinal studies in which patients are assessed when they start insulin treatment and again five and ten years later. No such study has ever been done and, until it is, cross-sectional studies such as that of Bale

(1973) will always be open to the interpretation that patients with the lowest IQ's had more frequent and severe hypoglycaemic reactions because innate low intelligence made them less capable of managing their disease.

Hypoglycaemia may be more harmful to the developing than to the mature brain. There is a huge literature on EEG changes in diabetic children but, as Gale (1980) comments, "those who have struggled through it will raise a weary eyebrow when told that 10 to 15 per cent of the control population also had 'abnormal' records" (Haumont *et al*, 1979). It is worth making the point that the EEG may remain abnormal for up to a week after a severe hypoglycaemic reaction, and then revert to normal.

On balance, the onus of proof is probably on those who maintain that hypoglycaemia is relatively harmless. Nevertheless, those who see large numbers of diabetic patients would be sceptical that permanent easily observable neuropsychiatric damage is a common consequence of hypoglycaemia.

Brittle Diabetes

If the psychiatrist is asked to see a diabetic patient, it is likely that the referral letter will describe that patient as a 'brittle diabetic'. The epithet 'brittle' was first used by Woodyatt (1938) to describe insulin-treated patients who fluctuate rapidly and apparently unpredictably between extremes of hyperglycaemia and hypoglycaemia. The expression is now widely used and misused; at worst it becomes an excuse or term of abuse after attempts at improved control have failed and the physician and patient have become thoroughly exasperated with one another (Gale and Tattersall, 1979b).

Many attempts have been made to define brittle diabetes in terms of blood glucose swings or other physiological characteristics such as the presence or absence of endogenous insulin secretion but I think it is more useful to reserve the term for a small but conspicuous minority of patients whose lives are 'constantly disrupted by episodes of hypo or hyperglycaemia whatever the cause' (Tattersall, 1977). In time, the physiological, psychological and social problems of these patients get inextricably intertwined and unstable diabetes may become a way of life. Their problems have been well summarized by Haunz (1950) who said that "they are frequently mentally depressed with reactions of futility and frustration for obvious and rather justifiable reasons. The resultant personality disorder often breeds carelessness in their self-management, and they may drift from physician to physician in a vain search for one who knows the whole answer. In time they are apt to acquire the reputation of being undesirable patients as

their lives become a vicious pendulum swinging alternately between severe hyperglycaemia and ketosis and hypoglycaemic shocks”.

There are many possible causes of unstable diabetes which have been summarized elsewhere (Tattersall, 1977; Gale and Tattersall, 1979b). No analysis of a large group of brittle diabetics has ever been done to apportion the contribution of each of the possible causes. Nevertheless, most physicians would agree that organic causes are rare and that most cases have an emotional origin. Unstable diabetes is usually associated with either an emotionally disturbed patient or a disturbed environment and, it is the opinion of most authors that these are the commonest causes of brittleness (Joslin, 1959; Oakley *et al*, 1968; Malins, 1968; Greydanus and Hofman, 1979; Craig, 1981). In theory, the psychological disturbance might be a consequence of poor control rather than its cause, but instability is often episodic, and my experience is echoed by Malins (1968) who wrote ‘conversation with some of these reformed characters is instructive as they reveal the extent of their deviations from the prescribed treatment’.

The ability of the diabetic child to use ketosis as a refuge from unpleasantness at home or school was noted by Loughlin and Mosenthal (1944), a third of whose children with frequent admissions for ketosis came from homes broken by divorce, separation or widowhood or from homes where the mother was out all day and in which meals were haphazard. Most of the children frankly stated that they liked the hospital better than their home. In a more systemic survey Rosen and Lidz (1949) studied 12 patients who had been admitted more than twice with ketoacidosis and were able to establish that in each case the condition had been knowingly induced by deliberately stopping diet, insulin or both. Motivation varied and the same individuals disrupted their diabetes for different reasons on different occasions. In the final analysis, however, all were using their disease as a means of escape from an untenable life situation either by attempted suicide or by seeking shelter in hospital. It is often thought that emotional disturbance only complicates diabetes developing in early life but more than half the patients studied by Rosen and Lidz had developed diabetes after the age of 20. Few suffered from psychiatric syndromes which could be easily classified, although the authors commented that it would have been difficult to find 12 more emotionally disturbed people outside a psychiatric hospital.

Similar cases have been documented by Stearns (1959) who emphasised that the motivation for such potentially self-destructive behaviour may represent the need for self punishment, attention seeking or the urge to punish others. How often the behaviour is

genuinely suicidal in intent as opposed to merely demonstrative as in the case of parasuicide is difficult to establish. Martin *et al* (1977) noted that since 1927 fewer than 30 cases of suicide by insulin overdoses had been reported in the world literature. They had encountered three cases in four years and suggest that many others may be unrecognized.

The prevalence of depression in diabetes is unknown, although it would be reasonable to guess that it would be higher than in a healthy control group. In the young diabetic, self esteem tends to be low (Swift *et al*, 1967; Koski, 1969; Sullivan, 1978). In older patients, Murawski *et al* (1970) and Sanders *et al* (1975) have reported a high frequency of depression although their studies were uncontrolled.

Many of the cases already cited involve marked emotional disorder with a correspondingly dramatic effect on diabetic control. How frequently relatively minor psychiatric or environmental problems form the basis for poor diabetic control is unknown. Diabetes is the disease par excellence in which the patient is expected to be ‘his own physician’ and one would expect that his ability to concentrate on this job would be impaired by personal or environmental stress.

Grant *et al* (1974) and Bradley (1979) have shown that stressful life events are associated with disturbances of diabetic control. The relationship is not very strong but these studies are complicated by methodological problems, not least of which is the difficulty of assessing diabetic control objectively. More specific questions such as which stresses have most effect on control or which personalities are most affected remain unanswered (Hauser and Pollets, 1979). Underprivileged families in the lower socio-economic strata are often less able to cope with the stresses of life and it might be expected that they would have most difficulty with diabetes. At first sight the literature is conflicting; some authors find no correlation between control and social class (Williams *et al*, 1967; Koski, 1969; Ludvigsson, 1977) while others find poor control in poor social circumstances (Stone, 1961; Swift *et al*, 1967). The apparent difference stems from the ways of measuring socio-economic class. Those who have measured it purely in terms of income have found no correlation with control but when social status is defined in terms of harmony in the family or frequency of major problems, there is agreement that disharmony in the home usually leads to poor control. As in other contexts the prejudicial factor is not an economically poor home but an unhappy one.

Brittle diabetes is not always the fault of the patient. Some may be brittle because they are on unsatisfactory insulin regimens (Gale and Tattersall, 1979b). Others may be on excessively high doses of insulin and having frequent attacks of asymptomatic hypo-

glycaemia. Not only is unsuspected hypoglycaemia, especially at night, common in the insulin-treated diabetic, but it may lead to symptoms such as weight gain, headaches, irritability and mood changes which can be mistaken for depression or anxiety (Rosenbloom and Giordano, 1977; Gale and Tattersall, 1979). Yet other diabetic patients may have labile control because they are trying to adhere too strictly to their regimen. Their dilemma was well summarized by Fabrykant and Pacella (1948) who wrote 'the patients are anxious to keep sugar-free but dread the incapacitating reactions. If they remain sugar-free through the excessive use of insulin, they develop a state of constant hypoglycaemic anxiety which is often mistaken for psychoneurosis, hysteria etc. If, on the other hand, glycosuria cannot be avoided, they live in fear of diabetic complications and are apt to develop a feeling of guilt. Suspected by their physicians of breaking the diet and lack of honesty or stigmatized as neurotics or hypochondriacs, they feel humiliated and lose faith in the medical profession'.

Treatment

Many of the studies so far quoted are uncontrolled and this is even more true of treatment and prevention, where anecdote predominates over randomized controlled trials.

Emotional problems often begin early in the course of insulin-dependent diabetes and much more might be done in the diabetic clinic to spot these at an early stage and help the patient to understand them. The initial admission for education and stabilisation may be very disturbing for a patient who feels relatively well because, not only is he exposed to conflicting sources of information but the fact of being in hospital creates an image of illness and dependency. Furthermore, much of the effort by the medical staff during this initial stage is directed to factual education and little to helping the patient come to terms with his illness. Many units have partially resolved these problems by using specialist nurses to start patients on insulin and educate them in the less threatening environment of their own homes. This system is greatly appreciated by the consumers and leads to fewer readmissions, better control and greater emotional security (Laron *et al*, 1979; Hearnshaw, personal communication, 1981).

For the patient, the long-term treatment of diabetes is onerous, often boring, and may generate much anxiety. Diabetic clinics are often over-concerned with blood sugars and other metabolic problems and do not provide a forum where patients can discuss their emotional problems. Local branches of the British Diabetic Association provide the opportunity for more general discussion although, by popular

request of the members, most sessions are devoted to recent advances in research. Some diabetic associations have deliberately undertaken programmes for families to discuss the social-emotional aspects of diabetes and learn ways of rebuilding self esteem in the patient (Hill and Hynes, 1980). In Holland, Pelsler and Groen (1980) have experimented with support groups for diabetic patients; they found that many participants had ambivalent relationships with key figures in their lives (including physicians) and were unable to discuss emotional problems. The group setting enabled them to talk freely, act out their feelings and at the same time deal with technical problems. Personal experience suggests that such groups only function well if run by a physician and a co-therapist who is experienced in group therapy. If only the former participates, there is a danger that the discussion will become entirely technical whereas if only the latter participates, patients become quickly dissatisfied because there is no one to answer technical questions.

When an emotional problem has been identified, the question arises who should deal with it, physician or psychiatrist? Some paediatric diabetic clinics have a child psychiatrist as part of the team (Gath *et al*, 1980) whereas others see this as unnecessary and potentially harmful (Craig, 1981). My own view is that the role of the psychiatrist should be a subsidiary one. In most cases it should be the physician who diagnoses and treats emotional disorders in his diabetic patients; splitting physical and emotional care tends to create confusion and may permit the patient to play off his doctors against one another. The physician must always make the initial diagnostic formulation since the psychiatrist cannot be expected to decide whether the patient's anxiety is due to chronic hypoglycaemia or his uncontrolled diabetes to an inadequate insulin regimen. The development of glycosylated haemoglobin, a test which measures diabetic control over the previous month, has helped to identify certain sorts of psychological problems (Citrin *et al*, 1980). What this test does is to identify patients in whom there is a marked discrepancy between control as determined objectively in the clinic and control as reflected in their reports of their own home monitoring (faked urine tests).

With time the metabolic and psychological aspects of diabetes tend to become inextricably intertwined and it may be difficult for the physician to see exactly where the problem lies. Here, a psychiatric opinion is helpful since the recognition that a patient's 'brittle diabetes' mirrors brittle emotions is a major step forward, in that it prevents frequent admissions for stabilization and fruitless minor changes of insulin dose in the clinic. Many problems can be resolved by the diabetic physician if he has the advice and support

of a liaison psychiatrist who has special knowledge of and interest in diabetes. Difficulties arise when those in the diabetic clinic do not have a psychiatric 'link man' to turn to or when they are forced to refer their patients indiscriminately because of local rules about psychiatric referral.

There have been relatively few reports of purpose-designed psychiatric treatment for diabetic problems. Many studies are based on a deficit model which concentrates on negative parental attitudes and the problematic behaviour of their diabetic children. A more rational approach might be to identify family strengths and successful coping strategies by behaviourally orientated research (Anderson and Auslander, 1980).

Minuchin and co-workers (1975 and 1978) have studied the difficult problem of children with repeated admissions for diabetic ketoacidosis who are usually easily controlled in hospital when removed from the family environment. These workers used a systems model of family therapy to study reciprocal influences between the physiological responses of the diabetic child and specific family interactions. They found that the families of brittle diabetics were characterized by psychological enmeshment between family members, over protective concern, rigid family interaction patterns and an inability or unwillingness to resolve family conflicts. Their studies did not include a control group but interventions which modified the life context of the diabetic child seemed to achieve a faster and more sustained remission than interventions which focused exclusively on the individual. In family therapy, family members learned more flexible ways of resolving conflict and the brittle diabetic child was freed both from enmeshment and episodes of ketoacidosis.

The emotional problems of the insulin-dependent diabetic have been recognized since the 1920's and will not go away. This has tended to be neglected as an area of psychiatric research and any attempt to link psychiatry more closely to general medicine could well start with diabetes, which apart from providing many practical psychiatric problems is also a useful paradigm of the interactions of the emotions with a physical illness.

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