THE RELATIONSHIP BETWEEN SOCIAL ADJUSTMENT AND HYPERVENTILATION IN DIABETES

by

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CHAPTER I

INTRODUCTION

Even though diabetes mellitus is a disease which has existed for many years, it was not until quite recently that its psychosomatic aspects were recognized. It then became evident that this illness might have an emotional component arising from social problems; that social and emotional difficulties might influence the course of the disease, and might even play a very definite part in etiology. Comparatively little has been written on this phase of diagnosis and treatment, as indicated by a review of the indexes to the medical periodicals.

With the growing recognition that the patient is a person, and must be treated as a whole, it has been acknowledged that the social worker has a definite contribution to make in a hospital setting. Health as we know it today is best defined by the United Nations as: "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." From this it can be seen that illness may create problems, but that problems may also develop into illness. The social worker has acquired, through study and training, skills in helping people with

their problems, and casework technics have been used in hospitals as they would in other social agencies.

The concept that the medical social worker is part of the team in the hospital grew out of the two-way relationship between doctor and worker. Not until the middle 1930's was this broadened to include the worker along with the other specialties. As one author expressed it:

> Individuals are taken care of today and illness is prevented by groups of specialists; this demands team work with one person serving as the leader for each case. Coordination is essential and a physician must remain the leader of the team...The Medical Social Worker can contribute knowledge in her field, as the engineer or chemist may contribute to medical problems; but joint or cooperative work becomes more obviously desirable in problems of the social component of medicine.[1]

At the same time that the teamwork concept in diagnosis and treatment in its broadened form was becoming more widely accepted, the social worker's function in research was beginning to be defined and emphasized. It is natural that this should originate and get its impetus from teamwork as such, for coordinated research is just a step further in sharing skills, in understanding the patient and the meaning of illness to him.

Unfortunately a way does not seem to exist to investigate how much coordinated research has actually been done.

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1. George R. Minot, "Investigation and Teaching in the Field of the Social Component of Medicine", Bulletin A.A.M.S.W., Vol. 10, April 1937, p. 10.

Much of it no doubt is in the form of unpublished Master's Theses, which have not been indexed at the libraries, except at the school where the research was done. In addition, many of these may deal with social aspects of illness, but may not be utilized as a part of medical research as such. Ruth D. Abrams is one medical social worker who has participated in several research projects with doctors, one of which was published in Cancer of November 1951.[2] The sharing of skills here was in accordance with the true teamwork approach.

The increased interest in the emotional and social components of illness in general and diabetes in particular, as well as a realization of the value of coordinated research between doctor and social worker, each having a definite contribution to make, stimulated this research project. For several years the Department of Psychosomatic Medicine at Wisconsin General Hospital, which is one unit of the University of Wisconsin Hospitals, had been interested in evaluating the social and emotional components of illness, particularly of diabetes. Drs. Marc J. Musser and Thomas H. Lorenz of that department have been investigating the relationship of hyperventilation and insulin reactions in adult diabetic patients. At the time that this project was

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2. Harley C. Shands, Jacob E. Finesinger, Stanley Cobb and Ruth D. Abrams, "Psychological Mechanisms in Patients with Cancer", Cancer, Vol. 4, November 1951, pp. 1159-1170.

being considered, their assumption was that those who showed hyperventilation had major emotional difficulties and probably manifold social problems. It was decided with them that it would be helpful to their total study to determine what, if any, relationship existed between social adjustment and hyperventilation in these diabetic patients. This would be, then, a testing of their hypothesis through a comparison of the social adjustment of the patients who showed hyperventilation with those who did not.

It was necessary of course, in order to obtain a solid basis for this project, to survey the literature to see what had been written on the subject. In the following chapter, some space will be devoted to a discussion of diabetes, and to the meaning of psychosomatic medicine. A resume of some of the literature dealing with the psychosomatic aspects of diabetes is given, and the concluding section covers an explanation of hyperventilation. Chapter III describes the methodology of this study, including the limitations. Case histories of the ten diabetic patients studied is presented in Chapter IV, and Chapter V shows case analysis, tables and conclusions.

CHAPTER II

MEDICAL BACKGROUND

Diabetes

Diabetes mellitus is a disease which has been recognized since ancient times. As early as 1500 B.C., Ebers noticed that abnormally frequent urination was a symptom. Aretaeus (A.D. 30-A.D. 90) constructed the word diabetes, which meant to pass through. Galen (131-201 A.D.) defined diabetes as a weakness of the kidneys which cannot hold back water; he considered the urine of diabetics as unchanged drink. The Hindus during the sixth century called it honey urine, because of its sweet taste, and considered it a disease of the rich, brought on by the overeating of rice, flour and sugar. Willis (1621-75) of Oxford University stated that diabetes was primarily a disease of the blood, and that the sugar which first appeared there later showed up in the urine. Cawley in 1788 diagnosed diabetes by demonstrating the presence of sugar in the urine. Rollo, an Englishman, in 1796 laid the foundation for systematic treatment by restricted dieting.[1] In 1889, Van Mehring and Minkowski removed the

1. Joseph H. Barach, Diabetes and Its Treatment, (New York 1949), Chapter I.

pancreas from a dog and saw the resultant diabetes. The theory developed "that the pancreas, and the islets of Langerhans in particular, must manufacture a hormone secreted into the blood stream which is essential for normal utilization of glucose in the animal organism."[2] Insulin was not isolated until 1922 when Banting and Best accomplished this at the University of Toronto. This discovery radically changed treatment of the disease; it meant that diets became much less restricted, and death from diabetes much less common.

In diabetes, we see that the "normal process of utilization of glucose by the cell is impaired because of a disturbance in the function of insulin."[3] The kidneys are normally supposed to dam the sugar in the blood and keep it from going into the urine. When glucose is not used by the cells at a normal rate, it is in the blood in greater quantities, and consequently shows up in the urine. The symptoms vary according to the severity of the disease, but in general they can be listed as follows:

1. weight loss) because sugar is lost in the urine
2. excessive hunger) and cannot then be used for fuel.

2. Arthur R. Colwell, Diabetes Mellitus in General Practice, (Chicago, 1947), p. 18.

3. William S. Collens, and Louis C. Boas, Helpful Hints to the Diabetic, (Springfield, Ill., 1949), p. 55.

3. frequent urination--sugar in the urine irritates the kidneys. An attempt is made to prevent this by diluting the sugar through more urine.
4. weakness--muscles need sugar to function.
5. excessive thirst
6. fatigue
7. constipation

In 1900, diabetes was listed as the 25th cause of death, and in 1940 as the 9th.[4] It is now considered first in the list of controllable chronic diseases, although many deaths still occur and are attributed to neglect. The American Diabetes Association has estimated that 1,000,000 people are unaware that they have diabetes,[5] whereas approximately 6,000,000 are known to exist. More people discover the disease between the ages of 35-60, and the greatest number between 45-55. The ratio of women to men is estimated at 3/5 to 2/5 respectively, and it is seen more in Jews, but less in Negroes.

The etiology of this disease has as yet not been definitely determined. Differences of opinion exist as to what can be considered most important. It is held that certain glands are influential, such as the pancreas, the pituitary, the adrenal, and the thyroid. Hereditary factors apparently play their part, and a Mendelian recessive is considered a

4. Lester C. Walker, "A Million Unknown Diabetics", Harper's Magazine, Vol. 198, January, 1949, p. 55.

5. Lester J. Palmer, "Diabetes Detection", Today's Health, Vol. 28, November 1950, p. 13.

possibility. More than 50% of people with diabetes seem to be obese -- should this be considered a causing factor? However, one author believes that, "like infection, trauma and emotional stress, excessive food intake and obesity must be considered precipitating rather than primary causes".[6] Emotional factors, as will be seen later, no doubt have their influence.

Treatment of diabetes depends on the severity of this disease, but diet, with or without insulin, is always important. Very mild diabetics may manage without insulin, whereas those with the moderate or severe form have to take some form of insulin dose daily by injection. Insulin lowers the blood sugar and causes urine sugar to disappear -- in other words, it creates a normal state of glucose metabolism. The types of insulin which may be used are: regular, crystaline, globin and histone, protamine-zinc -- some having to be administered more often than others.

The complications from diabetes are many. Acidosis and coma are due to a lack of insulin. Here the onset is usually gradual, with such symptoms as: feeling drowsy, dull headache, increasing thirst, frequent urination, flushed face, dry skin, tender abdomen, sweet breath, and air hunger. It is treated with enormous quantities of water and insulin given intravenously.

Insulin reaction, shock, or hypoglycemia may be due to

6. Colwell, Diabetes Mellitus, p. 24.

an overdosage of insulin or improper timing of meals and inadequate feedings. The symptoms are: nervousness, trembling, weakness, hunger, profuse sweating, pallor, rapid pulse, transient loss of memory; many cases have a forewarning with these symptoms, but some labile (very unmanageable and unstable) cases may go right into confusion, delusions, aphasia, ataxia, loss of consciousness or generalized convulsions, which is the last stage of shock.[7] Usually sugar is administered in some form to relieve this condition.

Insulin sensitivity may occur, which is a type of allergy, local swelling and redness appearing at the site of the injection. -- The diabetic is somewhat more vulnerable than the average person to arteriosclerosis in later life, so that the feet have to be cared for constantly to avoid ulcers and gangrene.--Furuncles and carbuncles are apt to develop on the skin, eye complications are not uncommon, and neuritis involving the upper and lower extremities also is frequently seen.--"Almost all infectious diseases occur more easily and more severely when diabetes is uncontrolled. They almost invariably increase the severity of diabetes and become more severe themselves when good control is not maintained."[8]

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7. Russell L. Cecil, and Robert F. Loeb (ed.), A Textbook of Medicine (8th ed., Philadelphia and London, 1951) p. 635.

8. Colwell, Diabetes Mellitus, p. 221.

Psychosomatic Medicine

Before discussing the psychosomatic aspects of diabetes, it is necessary to know what psychosomatic medicine as such connotes. Alexander and French consider every disease as having psychosomatic factors. To them it is a methodological concept, "a simultaneous study and treatment of psychological and somatic factors in their mutual interrelationship."[9]

Cannon expresses the mechanisms which are operating more fully:

> Profound emotional disturbances are expressed in effects on viscera which are innervated by the autonomic nervous system, and especially by the sympathetic division of that system....But if there is no war to be waged, if the emotion has its natural mobilizing effects on the viscera when there is nothing to be done, obviously the very system which functions to preserve constancy of conditions within us is then employed to upset that constancy. It is not surprising, therefore, that fear and worry and hate can lead to harmful and profoundly disturbing consequences.[10]

It should be added that this is especially true if fear, worry, and hate are not expressed, or if no solution to the particular problem is found. No doubt we have all experienced upset stomach before examination time; this is a normal experience. These normal reactions to stress form the background

9. Franz Alexander, and Thomas French, Studies in Psychosomatic Medicine: An Approach to the Cause and Treatment of Vegetative Disturbances, (New York 1948) p. V.

10. Walter B. Cannon, "The Role of Emotion in Disease", Annals of Internal Medicine, Vol. 9, May 1936, pp. 1457-58.

for illness caused by emotional upsets. It should also be noted that structural change within the body may or may not occur as a result of these upsets.

Weiss and English have devised a way of dividing illness for purposes of classification:

Group I - no organic base for illness.
Group II - organic factors are present, but symptoms are in part a result of emotional factors.
Group III- illness wholly within realm of organic, but emotional factors do have influence.

According to them:

> The day is near at hand for the final outmoding of the "either-or" concept (either functional or organic) in diagnosis, and to place in its stead the idea of how much of one and how much of the other, that is, how much of the problem is emotional and how much is physical and what is the relationship between them. This is truly the psychosomatic concept in medicine.[11]

Psychosomatic Aspects of Diabetes

Opinion has been definitely divided among the experts through the years as to the importance of emotional factors in diabetes. Some have advocated that diabetes can be caused by emotional upsets, while others have not conceded such absolute proof. Such outstanding workers as Cannon, Daniels, Dunbar and Menninger have taken a certain stand along the way. For the purpose of this study, a summarization of what has been discovered and concluded, primarily on the

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11. Edward Weiss, and O. Spurgeon English, Psychosomatic Medicine: The Clinical Application of Psychopathology to General Medical Problems, (Philadelphia and London, 1949), p. 10.

positive side of the question, has been included, the order being more or less a chronological one.

"The literature of Western medicine has contained many references to the importance of life experiences in the onset and course of diabetes mellitus since three hundred years ago when Thomas Willis remarked upon the sweet taste of the urine of his patients, and said the disease was caused by 'prolonged sorrow'".[12]

During World War I we see the direct antithesis to this, when Von Noorden and Joslin, in studying service men with diabetes, came to the conclusion that heredity and obesity were of the utmost importance in causation, and completely denied the influence of trauma and emotional conflict, for lack of evidence. These two men have influenced many since that time, and their followers have frequently quoted them as authorities.

To those who have disagreed with Von Noorden and Joslin, Cannon is the most oft-quoted authority. In passing, it is interesting to note that prior to Cannon's book, one author, Neilson, made an interesting statement which was certainly premature for his time. He said:

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12. Lawrence E. Hinkle; Frederick M. Evans, and Stewart Wolf, "Studies in Diabetes Mellitus III: Life History of Three Persons with Labile Diabetes, and Relation of Significant Experiences in Their Lives to the Onset and Course of the Disease", Psychosomatic Medicine, Vol. 13, May-June, 1951, p. 160.

> The frequency of a low sugar tolerance and glucosuria in mental disorders, the occurrence of so-called emotional glycosurias, the frequency with which emotional upsets and severe mental strain apparently initiate diabetes, and the frequency with which emotional and psychic upsets aggravate an already established diabetes, are well-known and emphasize the nervous factors in the disease.[13]

Cannon, in 1929, regarded the following statement with skepticism, and decided that this should be proven experimentally under controlled conditions: "Great grief and prolonged anxiety during a momentous crisis have been regarded as causes of individual instances of diabetes, and anger or fright has been followed by an increase in the sugar excreted by persons who already have the disease."[14] He thereupon performed certain experiments with cats. They were bound to comfortable holders and confined from 30 minutes to 5 hours, which left them quite frantic. Before the animal became excited, the urine was sugar free, but afterwards twelve cats developed a well-marked glycosuria. The three cats who did not become excited were then separated and barked at by a dog; sugar subsequently appeared in their urine. Cannon also noticed like results in humans

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13. Charles Hugh Neilson, "Emotional and Psychic Factors in Disease: Influence on Exophthalmic Goiter, Diabetes Mellitus, and Diseases of the Nose and Throat", Journal of the American Medical Association, Vol. 89 September 24, 1927, p. 1022.

14. Walter B. Cannon, Bodily Changes in Pain, Hunger, Fear and Rage: An Account of Recent Researches into the Function of Emotional Excitement, (New York and London, 1929, p. 67.

after examinations, and football games. He therefore concluded that "just as in the cat, dog, and rabbit, so also in man, emotional excitement produces temporary increase of blood sugar."[15]

Stone in 1931 expressed the belief that even though a strenuous nervous life may at times precede the onset of diabetes, this is not a very important cause. He did agree with the fact that emotional glycosuria occurs in normal individuals, as well as in already known diabetics.[16]

Menninger in 1935 noted that in the literature emotional glycosuria as such had become quite widely accepted, but that as yet very few persons considered that diabetes might at times be psychological in origin. He studied 22 cases, where the patients came for help with their mental difficulties, who also had diabetes. In 10 of these, the diabetes and the mental disorder apparently developed together; in 7 the diabetes existed before the onset of the mental disorder; and in 5 the diabetes developed in the course of the mental disorder. He focused on these latter 5, and noticed that the diabetic condition cleared with mental recovery. He concluded from this that diabetes may be the direct result

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15. Ibid., p. 75.

16. C. T. Stone, "Emotional and Psychic Factors in Exophthalmic Goiter and Diabetes", Texas State Journal of Medicine, Vol. 27, November, 1931, p. 522.

of disturbances of a psychological or emotional nature. --- We can see how strongly he must have felt about this whole matter from the following statement:

> The psychological influence has been consistently neglected by the basic science workers who may be thwarted by the less tangible nature of such investigations and the clinicians who are prevented from such investigations by lack of time or interest or technique. If we were to accept seriously the advice about 'consideration for the patient as a whole' and scientifically investigate all his various parts instead of only the physio-chemical side, we might expect to find a great influence from his daily emotional struggles, his will to live or die, and all the conscious and unconscious strivings in these directions.[17]

In another article, Menninger drew a clinical picture of the diabetic patient. He might show diminished alertness and awareness of the environment, memory disorders, inability to concentrate, sluggish mental activity, hypochondriasis. He might be depressed, fearful with occasional suicidal ideas, irritable, apathetic and indifferent, anxious, and occasionally seclusive. In addition he might show physical laziness, somnolence, increase in appetite, impotence and frigidity. --- Menninger continued to say:

> From a study of the cases at hand, I concluded that the psychological picture above described, so often associated with diabetes, is perhaps sufficiently characteristic to be regarded as a "diabetic personality" reaction. Such a concept should emphasize that the diabetes is an expression of the

17. William C. Menninger, "Psychological Factors in the Etiology of Diabetes", The Journal of Nervous and Mental Disease, Vol. 8, January 1935, pp. 11-12.

personality rather than that the personality is an expression of the diabetes."[18]

Daniels in 1936 stated that: "Diabetes which is associated with a neurosis would appear to be a state in which chronic anxiety, overt or concealed, expresses itself through continued distrubance of sugar metabolism."[19] He examined a group of alternate admissions to the Presbyterian Hospital diabetic ward for one year, coming to a total of 23 between 15-55 years old. His main interest was in the neurotic manifestations prior to the onset of the disease, the sources of emotional conflict at the onset, the fluctuations in sugar level related to emotional stress, the character of the insulin reactions, and the evidence of the neurosis when observed.[20]

Daniels again in 1939 commented on the receding interest in the general medical field in emotional factors in diabetes, and noted especially that very little on this subject appeared in the literature. He realized that the experience during World War I had had a tremendous influence, and he said that

18. William C. Menninger, "The Inter-Relationships of Mental Disorders and Diabetes Mellitus", The Journal of Science, Vol. 81, 1935, p. 338.

19. George E. Daniels, "Emotional and Instinctual Factors in Diabetes Mellitus", American Journal of Psychiatry, Vol. 93, November 1936, p. 723.

20. Ibid., P. 713.

it was important to know that shell-shock did not usually result in diabetes. However, he did not consider this complete proof that psychic trauma might not be important in diabetes, and pondered about other factors during the war which might have had their effect, such as a possible low carbohydrate diet in the Army. -- He proceded further by saying:

> It is not conscious emotional conflict which has greater opportunity to discharge through the voluntary nervous system that is most important, but repressed emotional tension. This explains much of the seeming contradiction in the effect of transitory emotional upsets in the sugar level which so confused Joslin and Von Noorden, and led them to rule out the whole phenomenon as of little importance.[21]

He thought psychoanalysis should be utilized with diabetic patients in order to gain a better understanding of the psychosomatic aspects. He also stressed that the discovery of the disease itself in people often resulted in quite an untoward emotional reaction.

Dunbar in 1943[22] did quite an extensive study of a group of diabetic patients, and came forth with a rather elaborate picture. The patients ranged between 15-50 years of age; 48% were male and 52% female; ½ were married, but above 25,

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21. George E. Daniels, "Present Trends in the Evaluation of Psychic Factors in Diabetes Mellitus: A Critical Review of Experimental, General Medical and Psychiatric Literature of the Last Five Years", Psychosomatic Medicine, Vol. 1, October 1939, p. 544.

22. H. Flanders Dunbar, Psychosomatic Diagnosis, (New York and London, 1943) Chapter VIII.

more than 2/3 were married. She found them the most difficult, of all the patients she saw, in obtaining an adequate history and personality picture. In all the cases a long history of wear and tear before the onset of the disease was evident, with often too little sleep, many aggravations, general depression and feeling of hopelessness. In about ½ the cases concrete experiences were responsible, such as financial difficulty or death in the family, with consequent more assumption of responsibility by the patient. The reaction was anxiety, and often overeating, especially sweets. --- She found that in general they were superficially agreeable, and looked and acted younger than their age. Anxiety and indecision seemed to stand out as important parts of their personality make-up. An inability to cope with external difficulties was seen in interpersonal relationships, and also a difficulty in taking initiative. This lack of initiative was particularly seen in sexual and domestic adjustments, and in general they were unhappily married, with a dislike of menstration, sex, and children evident. 3/4 of the males preferred and were dominated by their mothers, while only 1/3 of the females were. -- On the whole they were unable to follow a consistent course of action, and considered themselves victims of their environments. The diabetes proved an excellent alibi for their inadequacy, indecisiveness, and lack of success, and it was exploited

to the full by the majority of these patients."[23] -- Their interests were few and scattered, tending to be intellectual with an avoidance of competitive sports. Food proved to be interesting, however, with a tendency to overindulge. Not a very consistent interest in religion was seen. -- Depression was a common reaction to their illness, together with a tendency to project, but also a feeling of relief because of the consequent excuse for inadequacies. -- According to Dunbar, the major difficulty lay in the areas of adjustment around the assumption of responsibility, and their need to be dependent. -- Tension, aggression and resentment were not expressed adequately, and defense mechanisms were not operating successfully. -- She concluded that personality traits were important pre-disposing factors and that, if these could be corrected, diabetes might be prevented.

Daniels, in 1944, saw eight patients, 2 males and 6 females, during from 6 to 250 individual interviews. He remarked that they had many instances of true or pseudo-insulin shock, and said: "Both the true and pseudo shocks I regard as important indicators of emotional disturbance in many instances, and I believe the associated autonomic symptoms to have therapeutic value in the discharge of

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23. Ibid., p. 492.

emotional tension they promote."[24]

Bollmeier and Meyer in 1944 thought it important to differentiate between emotional glycosuria and diabetes, because of the different prognosis and clinical management.

> It is of great practical importance that reversible emotional glycosuria be differentiated from irreversible diabetes. An early diagnosis will help the physician to give the proper treatment, i.e. by psychotherapeutic means with special reference to the environment, diet, and insulin, if required. It is quite possible that the irreversible cases of diabetes are the end results of a functional fluctuating phase, which after a certain duration may lead to irreparable damage of pancreatic function.[25]

De la Fontaine, in 1946, expressed the view that even though it has not been proven that diabetes can be emotionally precipitated, in uncontrolled or labile diabetes a high emotional component could be seen. She also said: "Diabetics are rarely actively hostile. They complain. They 'get even' through annoying the people they resent by interfering with their lives through attacks, and they often express their real feeling only when in coma or shock."[26]

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24. George E. Daniels, "Brief Psychotherapy in Diabetes Mellitus", Psychiatry, Vol. 7, 1944, p. 123.

25. Ludolf N. Bollmeier, and Albrecht Meyer, "The Differential Diagnosis of Glycosuria from Diabetes Mellitus", The Journal of the Arkansas Medical Society, Vol. 41, November 1944, p. 123.

26. Elise de la Fontaine, "Some Implications of Psychosomatic Medicine for Case Work", The Family, Vol. 27, June 1946, p. 132.

In accordance with Von Noorden and Joslin's point of view, it is interesting to note that in 1946, Gendel and Benjamin reported a study of 44 patients admitted to an army general hospital. They stated that it was impossible in any of these to prove that the stress related to military service caused the development of diabetes.[27]

Meyer, Bollmeier and Alexander in 1948 described two cases of diabetes mellitus who were treated with psychoanalysis, and whose diet and insulin also were controlled.

> Both patients retained an infantile dependent and demanding attitude, and felt frustrated because their demands for attention and love were out of proportion to the reality situation of an adult and consequently were never adequately satisfied.... Diabetes developed in both cases when these infantile wishes conflicted with the demands that were frustrated, and the sugar output decreased when they temporarily renounced their demanding attitudes.[28]

Mirsky in 1948 referred again to the World War I experience with diabetes, and emphasized that it did not matter what the trauma was, but on what type of person it would have an effect. "It is only when the trauma reactivates some infantile neurosis and thereby releases more

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27. Major B. R. Gendel and Colonel Julien E. Benjamin, "Psychogenic Factors in the Etiology of Diabetes", The New England Journal of Medicine, Vol. 234, April 25, 1946, pp. 556-60.

28. Albrecht Meyer, Ludolf N. Bollmeier, and Franz Alexander, "Correlation Between Emotions and Carbohydrate Metabolism in Two Cases of Diabetes Mellitus", In Alexander and French, Studies in Psychosomatic Medicine, p. 397.

primitive patterns that we may expect the development of sufficient internal stress which will induce diabetes mellitus in the individual with physiologic systems of limited capacity."[29] He also stressed that just the discovery of the disease in patients might be a traumatic experience.

Daniels in 1948 wrote that not very often a sudden emotional shock, but rather a sustained emotional conflict seemed to be important in the etiology of diabetes. (thus agreeing fundamentally with Dunbar) "This most often revolves around sexual problems, may follow death of a close relative or love object, or in some instances...may develop after a prolonged period of grinding work and frustration, with little hope for relief."[30] He did point out that heredity or obesity should not be ruled out, as they are important clinically in determining etiology.

As late as 1949 one author indicated that all the above is quite one-sided, and that many would still disagree today, with most of the already-cited authors. He said:

> Not infrequently patients attribute the onset of diabetes to a period or an episode of severe nervous strain or shock. Clinical experience leads one to

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29. I. Arthur Mirsky, "Emotional Factors in the Patient with Diabetes Mellitus", Bulletin of the Menninger Clinic, Vol. 12, 1948, p. 189.

30. George E. Daniels, "The Role of Emotion in the Onset and Course of Diabetes", Psychosomatic Medicine, Vol. 10, September-October, 1948, p. 289.

> believe that diabetes making its appearance at such times is purely coincidental. There can be no question that psychic disturbances will temporarily exaggerate the diabetic picture in an existing diabetes, but there are too many daily examples of mental or psychic trauma that have no bearing on the etiology of diabetes.[31]

Weiss and English in 1949 deplored the lack of research on the emotional component of diabetes. -- Upham in 1949 expressed in rather general terms that which could be applied to the diabetic patient: "The individual's family and social relationships, deprivations, reality pressures, and social milieu may all give rise to emotional conflict which he may attempt to meet through illness." [32]

The latest study on this particular phase of diabetes, reported in the medical literature, was in 1951 by Hinkle, Evans and Wolf. They realized that not much experimental evidence was available, and hence proceded to add to the evidence. Of the group of labile diabetic patients which they saw at the Diabetic Clinic of New York Hospital, a complete medical, as well as a life, history was taken through a series of directed and undirected interviews. Relatives and friends were seen, Social Service investigations were held in certain cases, and psychometric tests given where indicated. Three cases were described in detail, with a chart for each one showing the age, situation, reaction

31. Barach, Diabetes, p. 43.

32. Frances Upham, A Dynamic Approach to Illness: A Social Work Guide, (New York, 1949), p. 91.

to it, attitude and feeling about it, and bodily changes. "It is striking that in each of them the onset of the disease occurred at a time of serious life stress, and that the exacerbations correlated similarly with life stresses."[33] In practically all the cases a need for the mother's love and attention was seen, as well as a close and continuing relationship with her, with strong dependence during adult life. All the patients had an early and intense desire for food, especially carbohydrates.---The onset of the disease could be correlated with a loss to the patient of love, attention and security--such as loss of the mother through death or separation, loss of friends, of money, of social position, of parental approval etc. -- It is interesting to observe that a remission of the diabetes occurred during periods of relative security. -- "In the discussion of these observations it has been suggested that diabetes mellitus is a disorder of adaptation, and that persons showing this disorder react to various life stresses with a physiologic response which is appropriate to starvation, but inappropriate to the deprivations which they have suffered."[34]

In a parallel study by these same authors of a group of fairly stable, mild diabetic patients, three cases were

33. Hinkle, Evans, and Wolf, "Studies in Diabetes Mellitus: III", Psychosomatic Medicine, Vol. 13, May-June 1951 p. 180.

34. Ibid., p. 182.

again described in detail with charts. The onset of the disease occurred in all the patients at a time of significant and sustained life stress. They all felt deprived of their mother's love during childhood, and their early experiences conditioned the relation between food and mother love. Thus they all responded to stress by desiring to overeat. In comparing the two groups, it was seen that:

> The adults had successfully surmounted the obstacles of life for many years before they broke down with obvious illness....The juveniles, on the other hand, had failed to make satisfactory adaptations from very early in their childhood, and succumbed to apparently trivial incidents which might be considered in our culture 'a normal part of growing up'".[35]

Studies such as the ones by the three authors just mentioned are quite convincing. However, it is true, as they themselves have admitted, that much more experimental evidence is needed before diabetes can be considered in the same class as peptic ulcer for instance. And no one can be sure at this time that emotions do not merely play a part, and no more, in the etiology of this disease.

Hyperventilation

Since the Psychosomatic Department has been studying the relationship between hyperventilation, insulin reactions

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35. Lawrence E. Hinkle, Frederic M. Evans, and Stewart Wolf, "Studies in Diabetes Mellitus IV: Life History of Three Persons with Relatively Mild, Stable Diabetes, and Relation of Significant Experiences in Their Lives to the Onset and Course of the Disease", Psychosomatic Medicine, Vol. 13, May-June, 1951, p. 201.

and emotional disturbance, and this study concerns itself with the relationship of hyperventilation and social problems, it seems necessary to define the term and to explain what its significance is.

Hyperventilation literally means an abnormal excess of fresh air circulation through the lungs, or over breathing. This term has come to mean, in medicine, a symptom complex resulting from either functional or organic disease. We are concerned with it here primarily in its relation to emotions. That a definite connection exists between respiratory function and emotions can be seen from everyday experiences, such as the panting in rage, fear and sexual excitement, the sighs of relief or of despondency, and the involvement of breathing in weeping and laughing.

> The hyperventilation syndrome is a distinct clinical entity which occasionally accompanies irreversible disease but most frequently occurs in the absence of gross physical findings. As an important mechanism of psychosomatic disease, it demonstrates one means whereby emotional disturbances can produce physiological and biochemical changes and physical symptoms.[36]

> It may occur as a more or less non-specific reaction to the experience of terror, extreme anger, severe pain, or other intense emotions in essentially healthy individuals, or it may be a symptom of neurosis. It occurs quite frequently during real anxiety, and in the anxiety attacks of anxiety neurosis where it represents a physiologic concomitant of the anxiety.

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36. Paul A. Gliebe, and Alfred Auerback, "Sighing and Other Forms of Hyperventilation Simulating Organic Disease", The Journal of Nervous and Mental Diseases, Vol. 99, 1944, p. 600.

> Physiologically it serves the purpose of preparation for fight or flight, permitting prolonged physical exertion and even breathholding.[37]

In the anxious or worried patient, three minutes or less of overbreathing generally produces distressing symptoms, whereas in the average person a longer time is required. Everyone will have some symptoms, but it is the degree of reaction which serves as the criterion. The basic cause of the symptoms is probably a depletion of carbon dioxide, leading to profound disturbances in physiology affecting the central nervous system, the vasomotor system, the skeletal muscles, and the circulation. The patient breathes deeply through the mouth, 15-25 respirations per minute, and when he stops he is asked to describe his symptoms. These may be: vague anxiety, sinking feelings in the stomach, palpitations, generalized flushings, trembling, buzzing in the head, numbness and tingling in the hands, face, feet, dryness of the mouth, stiffness of muscles, blurring of vision, tightness of chest, feelings of suffocation, cardiac pain, degrees of reduction in level of consciousness, giddiness or faintness. In general these are symptoms much like those commonly experienced during "insulin reactions".

With this background information in mind, it is now possible to explore the methods which were used in this study.

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37. George L. Engel, Eugene B. Ferris, and Myrtle Logan, "Hyperventilation: Analysis of Clinical Symptomatology", Annals of Internal Medicine, Vol. 27, November 1947, p. 683.

CHAPTER III

METHODOLOGY

The purpose of this study was to determine what, if any, relationship existed between hyperventilation and social adjustment in the diabetic patients. A small group had to be chosen as a sample, since the number of subjects would naturally be quite limited, and it was decided that ten patients would be a sufficient number for a project of this kind. The study included all diabetic patients admitted to certain floors of Wisconsin General Hospital after February 1st, who were between the ages of 20-50, and who had experienced repeated insulin reactions. These patients were also within the total group being studied by the Department of Psychosomatic Medicine, and a fourth year medical student, who is writing his M.D. thesis on part of their investigation.

After consultation with the nursing staff about the availability of diabetic patients, the latter were interviewed within the limited time available for research. This meant that not every diabetic admitted to the hospital was seen, but an effort at random selection was made. The Department of Psychosomatic Medicine was notified each time a patient was seen by the worker. Their study was done separ-

ately, and it was not until the interviews had been concluded, that it was known whether hyperventilation was present or not.

It soon became apparent that the minimum of ten patients could not be included without modifying the original plan. The age limited was then raised to sixty, and those without insulin reactions were included as well, in as much as it was agreed with the doctors that these patients might serve as controls.---Thus by April 21st, the minimum of ten patients previously agreed upon had been interviewed.

Each patient was approached in the following manner: "We are doing a study of diabetic patients. We are interested in knowing what the disease has meant to you, and how it has affected you in every phase of your life. We hope thus to be able to help patients, who have just discovered they have diabetes, to better adjust to the disease." Confidentiality was stressed. At no time did anyone question those topics which did not obviously relate to the disease. On the whole they were quite eager to talk and to have someone interested in the, and they especially liked the idea of being able to help others.

In interviewing the patients, it was realized that it would be important to review with them certain life experiences--in relation to their disease, their families, school, church, employment, recreation--in order to determine what problems they had had to face, and how they had adjusted to them. In thinking of the types of questions to be used,

the following picture of the normal personality, as stated by Edward Glover of London,[1] was kept in mind.

NORMAL PERSONALITY

Emotional Features	Behavior
A minimum of mental conflict.	Ability to reach a decision without too much stress or delay.
Satisfactory work capacity.	Enjoys work; no undue fatigue, no need for frequent change; maintains optimum efficiency.
Ability to love someone other than self.	Takes pleasure in social relationships, marital relationships, parental relationships; understands the emotional needs and points of view of others, and makes appropriate response.

Physical status -- Absence of symptoms (of neurotic origin.)

Before seeing the patient, his medical chart, including records of any previous hospitalizations here, was reviewed, in order to obtain background material as a basis for the interview. Each patient was interviewed twice; during the first one a relationship was established, and the patient was encouraged to talk rather freely, if with direction, while during the second one the areas were covered which had not been touched upon previously, including those which required more of a relationship before they could be discussed by the patient. -- A schedule (see appendix) was used for

1. In Edward Weiss, and O. Spurgeon English, Psychosomatic Medicine, p. 34.

classification of social material, but not in the patient's presence. The questions contained in it were kept in mind, and were interjected in the conversation whenever appropriate. No notes were taken during the interview, but the information was written up immediately afterwards. A comparison with the doctors' material was not made until all the foregoing had been accomplished.

As would be expected, a study such as this has many limitations, some of which have already been mentioned. Inexperience with coordinated social and medical research is one factor. The smallness of the sample is another. Moreover, the information obtained from the patients was of course quite subjective, and what they said was taken at face value without attempt at verification. Then, too, the skill of drawing out this information within stipulated interviews is a definite factor; in some cases, if more time had been allotted, and a better relationship had been established, more information might have been obtained.

The purpose of the hospital need also be taken into consideration. Patients come from all over the state of Wisconsin, either because of special problems which need to be evaluated by specialists not available in smaller communities, or because their conditions are of particular interest for teaching and research. To this extent, the diabetic patients who have been included in this study cannot be considered an entirely representative sample of the total diabetic population.

CHAPTER IV

CASE HISTORIES

Case #1

Age 30, married male, moderate diabetes.

Factors Pertaining to the Disease

This patient was admitted with the diagnosis of Diabetes Mellitus with Kimmelsteel-Wilson Syndrome, Diabetic cataract of the right eye and Retinopathy. His visual disturbances started two years ago. In general the patient did not adhere closely to his diet. He used to test his urine just once a month, adjusting his diet in accordance with the results. Since December, 1951, however, his urine has been tested one to two times daily, which resulted in improved control of his diabetes. Insulin reactions occurred about once a week. These were aborted symptomatically by ingestion of sweets. There was no history of diabetic coma.

It was when this patient was thirteen, and just ready to go to highschool, that his diabetes appeared. The only other person in his family who had diabetes was a maternal aunt. He did not find it difficult to manage his diabetic regime at home, though at first it bothered him to take the insulin. In his present home, he and his wife eat the same diet, and she administers his insulin for him.

On the whole his family has been accepting of his disease, but the patient did not tell his highschool friends why he could not have ice cream and sodas, etc. He resented being different in school, and especially that he was not able to join the Navy. He said that he wished the doctor had given him a booklet describing the complications of diabetes which might arise, so that he could have been more careful with his diet.

Family Relationships

The patient's parents are living, the mother being age 70 and the father 75. He is the youngest of eight siblings. He did not have much to say about his siblings, except that he was closer to those nearest his age. The patient has always thought a great deal of his mother, although he said his father was nice to the "kids" and did not beat them too often. He did not feel neglected in such a large family, as he knew his mother had her hands full.

He has been married for six years to a girl he met nine years ago. She was taking care of his sister's children, and on seeing his picture, decided he "was the one for her." His sister explained about his diabetes, but this did not matter to her. The patient never went out with girls much before this, as he felt he could not show girls a good time. He considered his illness a definite social handicap. With

his wife-to-be this was not the case, as they did not go out much, but stayed at home during much of their courtship. They delayed marriage until he was financially able, and his parents, especially his mother, approved of the marriage.-- No children have resulted from this marriage; the patient showed definite ambivalence in this area, both wanting children, and yet being afraid that they would have diabetes. --- According to him the marriage is a satisfactory one.

Education and Employment

The patient left highschool in his Senior year, because he was absent due to illness, which resulted in his being accused of "playing hooky." This annoyed him so much that he never finished and graduated. -- He had liked art and science, but disliked taking those subjects which he considered as having no use value. He had not planned to go on with higher education after highschool, as he hoped to join the Navy.

The patient had been working as a sheetmetal man, which he liked very much. Prior to this he did factory work of one type or another, and changed jobs because one was temporary, and one was at night which was inconvenient since his wife worked days. He did not think that his diabetes prevented him from obtaining the job he wanted. As his wife has been working too, they have managed to become fairly

secure financially. However, the patient's present eye condition will mean an adjustment in their way of living which causes him worry.

Religion and Outside Interests

The patient is a Lutheran, who was brought up quite strictly and according to church standards. He was the head of his confirmation class, and feels that religion still plays an important part in his life, and helps him with his problems.

For recreation, he likes to help others with construction work, he draws cartoons, enjoys hunting, fishing and traveling. Photography is his principal hobby, and he especially enjoys taking scenery photographs. He says that not much time is left for friends, nor for the church group to which he belongs.

Attitudes and Expression of Feelings

He does not express his anger, fear, anxiety or frustration easily. He does not appear very discouraged with his present situation, and seems to feel that things will work out for him in the future.

Evaluation from Psychosomatic Record

The patient never regarded himself as nervous until recently. He was always easily hurt and overly sympathetic with the misfortunes of others. He never expresses hostile or negative feelings. He resented his diet and cheated out of spite. When his local doctor died, he went off of his diet since he did not care anymore. According to him his eyes "went bad" this past December when his sister-in-law died suddenly.

He was considered as passive-dependent, somewhat emotionally immature, and as harboring deepseated feelings of resentment. He was somewhat tense as well as depressed.

Hyperventilation for two minutes reproduced a number of sensations which he considered as quite similar to some of his insulin reactions.

Case #2

Age 33, married male, severe diabetes.

Factors Pertaining to the Disease

This patient was admitted with the diagnosis of fairly well controlled Diabetes Mellitus, Anxiety Tension State, and Vitiligo. His chief complaints were that he was very nervous, irritable, jumpy, worrisome, tired at the end of the day, and hopelessly pessimistic during the day. He

tested his urine one to two times a week, was not on a very strict diet, and took insulin for only the last few years. He had no recent insulin reactions, but when he was working harder, he did have them about once a week. Diabetic coma had not occurred.

The disease started when the patient was twenty-one, and was discovered during a routine physical examination after a car accident in which the patient was "just scratched up a bit." The only other person in the family known to have diabetes was a paternal aunt. The patient was quite perturbed about being a diabetic just "at the prime of youth", and felt as if the "world were coming to an end -- it was that much of a shock". He knew it would be a matter of having to live with it, but it was not easy for him, especially since he had always been a heavy eater. He always obtained a great deal of security from food, and thus found it difficult to adhere closely to his diet. He enjoyed eating when with friends, and often would break dietary rules at those times. -- Though insulin was no pleasure at first, he now is used to it and administers it himself. -- His parents, siblings, and wife have accepted him as a diabetic.

Family Relationships

The patient's parents are living, the mother being 59

and the father 68. He thinks they sheltered him too much, and fostered dependence in him. Most of his family is nervous and highstrung. He feels, too, that his parents had high expectations of him. The patient did not feel too close to any of his two brothers and two sisters. His youngest brother finished school at the University of Wisconsin, and is now successful, which is not easy for the patient to face.

He did not go out with girls much before he met his wife-to-be, as he considered himself an "introvert". He went with her two to three years prior to marriage, and has been married nine years. He was afraid to tell her of his diabetes before proposing, but when he did, she was very accepting of it. They have had a good relationship; she is the strength of the family, an excellent seamstress, homemaker and organizer, and has given him a lot of moral support. -- They have two girls, age 5 years, and 19 months, of whom the patient is very fond, even though they are in trouble sometimes. He is very proud of their achievements, and hopes they will do better than he has done. He hopes to have more children in the future, if economically feasible.

Education and Employment

The patient finished highschool, and one semester of college. He was interested in Sociology in highschool, and liked school well enough to warrant going on. However, he

was not able to persevere, and left in order to find work. (It was at this time that he had a contact with a Jewish Family Welfare Agency.)

He worked in a factory, doing assembly line work, which he found too heavy, and therefore changed to doing office work, expediting materials. Because he is still in the learning stage, he does not know whether or not this suits him better. He seems to get along fine with his fellow workers and bosses. Financially he has been through a difficult period, but at present his wife is working evenings, so that they are managing better now.

Religion and Outside Interests

The patient is Jewish, not brought up religiously, and consequently has not been concerned much with it. He feels that one religion is too narrow and makes for discrimination of others.

He enjoys reading in his spare time, but says that he wants to read too quickly and then does not get anything out of it. He enjoys sports, looking at television, and going to shows but has no hobbies and is sorry about this. It has always been difficult for him to make friends, but once they are made, he keeps them as such. When once he tried to join a dramatics group, he dropped it as it proved too difficult. This was his only attempt at group activities.

Attitudes and Expression of Feelings

He usually expresses his anger, fear, anxiety or frustration, as he "likes to get it out of his system." He is not at all satisfied with the way things are going in the present. He is very pessimistic, has no self-confidence, feels he does not have any ability and cannot pursue anything for a long period of time. It seems to him that he has an inferiority complex, or a neurosis. It is hard for him to know what he likes. New situations are very threatening to his sense of security. He is extremely worried about himself and about the future, and were it not for his wife, would feel completely hopeless.

Evaluation from Psychosomatic Record

Insulin reactions usually start with a twitching in the toes, then a numbness and tingling of the legs and occasionally the hands, some ataxia, lightheadedness, shakiness, weakness, dizziness, and nervousness. He relates most of these to heavy work, but some to worry and "nerves". It is better in his present job, where the work has not been so hard.

He has quite a temper, especially with his children. He is tense, usually keeps his eyes diverted, frequently blocks, seems labile emotionally, and seems quite dependent and immature.

Hyperventilation was very poorly performed for two minutes. He seemed apprehensive, protective, and fearful of the procedure. In spite of this he developed some dizziness, weakness, and parathesias, which were a good deal like some of his lighter reactions.

Case #3

Age 33, divorced male, severe diabetes.

Factors Pertaining to the Disease

This patient was admitted from Waupun State Prison with the diagnosis of Diabetes Mellitus, juvenile type, Allergic Rhinitis, and Retinal Hemorrhage of the left eye. He had numerous insulin reactions, and was in diabetic coma eight times. He has had reduced libido and potency for the past three and a half years.

This patient's diabetes appeared when he was twelve; at this time, a cousin, who had been his playmate and for whom he cared very much, died of appendicitis, which came as a great shock to him. No history of the disease was evident in his family. It was difficult for him not to be able to eat the food he liked, and at home as a boy it meant that he had to eat alone. He was also left out of activities in grade school, had to miss some of highschool, could not join the service, and found employment fairly limited. He

resented being different, especially since very few of his friends had diabetes, but at present he has accepted it fairly well. He administers his insulin and does not mind doing so.

He has been at Waupun for three years, and finds that the food he gets there is such that he is unable to eat what he should. Prior to entering the prison, he was in jail for some time, where he had "plenty of bread, jam and candy," which he thought was terrible maltreatment.

Family Relationships

The patient's parents are living, the mother being 53 and the father 65. He considered them strict in their ways, and overprotecting at times. He never expressed love for them, nor they for him, and he was much more attached to an aunt, and the cousin who died. He is the second oldest of five, having three brothers ages 36, 30 and 24, and one sister, 22.

He was married in 1944 to his first wife, and divorced in 1946. She was very good-looking, according to him, but wanted too many material things, for which they did not have enough money; they also did not have enough in common. His parents disapproved of this marriage, but did not say anything because they believed in letting him do things for himself.

He remarried in 1947, and was divorced once more in

1950, primarily because of mother-in-law trouble. He thinks his second wife still wants him and that there is hope for reconciliation after his prison term is over, as their relationship was essentially good. He has one girl, age 7, by his first marriage, and one boy, age 3, by his second. He loves children, and thinks that his "getting into trouble" has been hard on them.

Education and Employment

The patient finished highschool, and would have liked to continue with his education, as he always liked school, and was a good student, but lack of money prevented this.

He was a truck driver before entering Waupun, and enjoyed this type of work. Very few jobs were available to diabetics, according to him, and his boss never knew he was one. He made several very good friends among his fellow workers, and got along fine with his boss.

Religion and Outside Interests

The patient is a Presbyterian and was brought up fairly strictly and according to church standards. At present it does not mean much to him and he says that he never goes to church, as he does not want to be a hypocrite.

He used to enjoy sports, getting together with friends, shows and dances sometimes, but liked to be outdoors best

of all. He never feels at ease with people when he first meets them, but does not have trouble making friends. He either likes or dislikes people, and does make enemies easily.

Attitudes and Expression of Feelings

When he is angry, he swears and expresses himself excessively. Fear "puts my stomach in knots", but he does not keep it to himself.

When he got into trouble, he had had too much to drink, and when this occurs, he will do anything anyone dares him to. He was dared to do a "stick-up", and was even given a gun. Even though he realizes that alcohol was not good for him, it was hard for him not to drink when in a group.

He is not very satisfied with the present, as he would like to work in the prison hospital. He feels that "they do not put you where you want to be". The possibility of parole comes up in August, and he is hopeful of getting it--otherwise he has to serve three more years. He is worried about getting a job after getting out, especially with his limited eyesight, and does not feel that the authorities will help him to find one.

Evaluation from Psychosomatic Record

The patient averages ten insulin reactions a week, which occur at any time. He has had more since he has been in

prison, and resentfully attributes this to environmental circumstances which preclude his taking care of himself the way he used to.

He has deprived himself of all male contacts, except his mother, in order to avoid knowing what he is missing. -- He was always high-strung, a trouble-maker and a fighter as a youngster, being easily angered and often anxious. His greatest treat as a child was to go to his aunt's home and get candy. Food meant a great deal to him.

His insulin reactions were manifested by dizziness, weakness, nervousness, shakiness, numbness of hands, sweating and shaking, and a hungry feeling in the stomach. Hyperventilation for two minutes reproduced these symptoms, except for hunger. He was rather emotionally upset and tremulous on hyperventilating.

Case #4

Age 33, divorced female, moderate diabetes.

Factors Pertaining to the Disease

This patient was admitted with the diagnosis of Anxiety Tension State with Spastic Bowel Syndrome, Mild Diabetes, and Mild Hypotension. No history of insulin reactions or coma was obtained.

The disease started when the patient was twenty-three.

She was then six months pregnant with her first child; overeating of sweets was considered as a possible cause for her diabetes by the patient. No one else in her family had the disease. She did not find it difficult to adhere to her diabetic diet, but she did not like to take insulin. She has felt very much incapacitated, and has thought that her diabetes and bowel trouble were connected. She had been told her diabetes would go away, and could never accept "nerves" as an explanation for her not feeling well. She felt hostility toward doctors in general, and toward herself for not feeling better.

In 1944 she had fainting spells which were attributed to marital problems. At the husband's request, a neuropsychiatrist saw the patient, who determined that her anxiety tension symptoms were mild and due to marital difficulties. The mother-in-law was the basis for these, and religious differences were also involved. In 1951, the patient was again seen, and Dr. Glover wrote: "This patient does have many worries about her children and her forlorn, single, insecure state. Her outlook is restricted and not too pleasant. Her background has been one of hostility and defensiveness and remains to influence her present status. Outpatient psychotherapy is recommended".

Family Relationships

The patient's mother died when she was one and a half years old, and her father did not care about his children. Consequently she was brought up by her grandparents. She never really knew her own parents, but showed definite hostility toward her father for deserting the family. Her grandparents never gave her the love and care which she craved, and she used to cry a lot about not having a mother like other children. She was sick much of her childhood, but felt that her grandparents never took care of this properly. She has one brother, 36, for whom she cares a great deal, and a half-sister, 41; both of these siblings are married. An aunt and uncle have at times been like parents to her, and have made her feel wanted.

The patient was married at twenty-one to a man who was considered "no good" by her friends; they advised against the marriage. She had only gone out with one other fellow steadily before she met her husband-to-be. Her grandmother told her nothing in the way of sex education, so that she was not very adequately prepared for marriage. Menstruation at the age of thirteen came so unexpectedly that she thought she was going to die.

She married primarily to have a home and security, but she and her husband never got along. They lived for some time across the hall from his parents, which presented

difficulties in that the mother-in-law was jealous of her and wanted things her own way. She divorced her husband in 1950, and received no alimony. -- They have two boys, age four and nine, who are at present being cared for by the husband. The first child was born after three years of marriage, and it was a very difficult pregnancy for the patient; she was very sick and in bed most of the time. The second pregnancy was not quite so bad. She had hoped to have three altogether, but if she had known it would be such a painful process, she would not have had any. The oldest boy has been quite a problem, because, according to her, her husband would never discipline him. She has always liked the youngest one best. --Marriage has brought no satisfactions to her at all, and she has not wished to remarry. Even her children have not been considered as something pleasant resulting from her marriage, as she feels they will have a difficult time because of the divorce.

Education and Employment

The patient finished highschool, and liked it better than grade school, as she enjoyed herself more. She still keeps in contact with some of her school friends.

She worked for the Telephone Company before her marriage and liked this quite well. Since the divorce she has worked some as a hotel maid, but this has been too hard for her when

not feeling well. She hopes to return to the Telephone Company when she is again well enough to do so. At present she is living with friends. She is not financially secure. Aid to Dependent Children did not satisfy her when she had the children, so that she gave that up. Her husband then had to take them, since financially and physically she could not manage them.

Religion and Outside Interests

The patient is a Lutheran, and, as a child, went to Sunday school every week. Religion has meant a lot to her, but she has not been well enough to attend church, or belong to church groups as she used to.

She has not been doing too much in the way of recreation, though she likes to read and listen to the radio. She embroiders, and likes to cook and bake. She has not made any friends recently, but has many of the past with whom she keeps in contact.

Attitudes and Expression of Feelings

The patient expressed quite freely her anger, hostility frustration etc. She is not satisfied with the way things are going, and would like to be "cured" and start working again.

Evaluation from Psychosomatic Record

Hyperventilation was negative, though the patient obviously is quite emotionally disturbed.

Case #5

Age 35, married male, severe diabetes.

Factors Pertaining to the Disease

This patient was admitted with the diagnosis of Diabetes Mellitus, and Diabetic Gangrene of the great toes bilaterally. He has had frequent insulin reactions, and complained of nervousness. He has had difficulty with erections, and has had impotency.

The disease started when the patient was twenty-five; three months after his first child was born. There was no history of diabetes in his family. He had to accept the fact that he had diabetes, but has felt quite incapacitated by it. It has not been easy for him to adhere to his diet, especially while working away from home. During 1948 he could not remain on his diet because of finalcial difficulties which prevented him from buying the proper foods. Insulin has caused him no trouble, though he has found it hard to regulate. His wife has accepted his disease, as have his children.

Family Relationships

The patient's mother died when he was twenty-one. She had been sick seven years before this. His father is 74 and still alive. The patient remembered that, due to his mother's illness, he had to do a lot of the housework. He felt closer to his mother, but not too close to either of his parents. He was the youngest, by four years, of five siblings, having three brothers and one sister. They all shared in the farm chores, and as a group "stuck pretty close together".

The patient was married at twenty-five to a girl he met in a summer resort near where he was working. He had gone out with quite a few girls before this, but never before wanted to get married. He knew his wife-to-be eight months before marriage. According to a report from the Welfare Department sent to the Hospital during one of the patient's admissions, the wife is pictured as being extremely domineering. She emphasized that he was being taken care of by her, and that his life was in her hands--treating him more like a son than a husband. -- There are four children from this marriage, two boys, age 11 and 10, and two girls, age 18 months and 6 months. The first child was born nine months after they were married. The patient said that he liked children, and denied feeling neglected because of them. He considered his marriage a happy one.

Education and Employment

The patient finished the eighth grade, and left school because he had to go to work. Now he wishes he had more education in order to be able to do something other than manual labor.

He has never worked steadily, taking whatever came along. Before his marriage, he used to live with men in boarding homes or barracks. He has been a logger, snow plower, road grader, farmer, truck driver, tractor operator in lumber camps, gasoline station attendant, bartender, and handyman. He was able to work until he was thirty, but since then has been too weak to continue. At the present he is interested in being helped by Vocational Rehabilitation, and hopes to become a machinist, as he has always liked machinery. -- Financially he has had a lot of difficulty. He received Aid to Dependent Children, but has recently been denied such assistance. His wife has worked some. He has been forced to borrow money from friends.

Religion and Outside Interests

The patient is a Lutheran who was brought up fairly strictly and according to church standards, going to Sunday school as often as possible. Since that time it has not been too important to him, although he likes to go to church and wants his children to.

He likes fishing and hunting, but finds it difficult to engage in such sports as a diabetic. He listens to the radio a little, reads a little, and likes to "tinker" with machinery as a hobby. He does not belong to any groups in the community, but does know a lot of people in the neighborhood.

Attitudes and Expression of Feelings

This man does not express his feelings easily. He is not satisfied with the present, and would like to move away and find work which would be less taxing on him.

Evaluation from Psychosomatic Record

Although the patient relates "insulin reactions" to heavy work, he has long recognized that such "spells" will come on more quickly and severely if he is upset or worried about things when he is working. Also if the patient sits down, rests or relaxes his symptoms of "insulin reaction" (weakness primarily) will disappear--it is not necessary for him to eat candy to get symptomatic relief.

Hyperventilation for two minutes produces rather marked weakness, fatigue, breathlessness, and palpitation--similar to his insulin reactions.

Case #6

Age 37, married male, severe diabetes.

Factors Pertaining to the Disease

This patient was admitted with the diagnosis of Diabetes Mellitus (not too well controlled), Mild Generalized Arteriosclerosis, and Psychoneurosis. His urine has been tested almost daily. He has had insulin reactions once a week, but sometimes has gone without them for two or three weeks. When he has them he feels tense and nervous; he perspires, and may stagger. He has never been in a diabetic coma.

His diabetes started when he was twenty-two, following a car accident in which he injured his head and neck. No one else in his family has had diabetes. When he married his first wife he had only been a diabetic a short time. According to him, she thought only of herself, and thus was not accepting of his disease. His second wife has been very accepting, however, and they have had no difficulty with food. He takes his own insulin, but has found it hard to regulate. He has been resentful because this regulation cannot seem to be accomplished even in a hospital. He considers his insulin reactions very inconvenient, and has been especially afraid that they will occur at night, when alone, and that death will result.

Family Relationships

The patient's mother died of tuberculosis when he was five. His father is still living. His mother's death was very upsetting to him. His sister, who was eleven at the time, had to take over the household duties, but they all helped her. He was the next to the youngest of five, having three brothers, and a sister. He and his father always got along well.

The patient knew his first wife for many years before they were married. He did not go out with girls much before this because of a lack of money. They did not get along well, as she was very unsettled, and went out with other men. In 1945 he was at Mendota State Hospital for a month for observation, after having been in a fight with his wife in which she got hurt with a knife. They were divorced after this which left him completely "down in the dumps". -- He still sees his two boys who are in his first wife's custody.

He was remarried in 1947 and has a good relationship with his second wife. He has had trouble with erections during the past seven years, but has intercourse about once a week. His wife has a son from a former marriage whom he has tried very hard to accept, and in addition they now have a girl, age three, and a boy, two years old. He has been testing the latter two's urine to make sure that no diabetes is present.

Education and Employment

The patient finished the eighth grade, and left school because he had to go to work. He was somewhat sorry about this, but not too much so. He did remember being extremely hungry at that time.

The patient has changed jobs very often because of his diabetes and insulin reactions. He has done all sorts of work--farming, factory work, work with lumber, truck driving, work in a stone quarry etc. Since 1945 he has worked irregularly as a common laborer. He likes factory work, especially work with wood. He has had much trouble with employment, however, because he needs a steady job so that he can regulate his insulin properly. He always got along with his fellow workers and bosses, and was considered a good worker, except for his insulin reactions. At present his wife is working, and he is not.--They have applied for financial assistance.

The patient feels that his experience at Mendota, thirty-one days without insulin and no restricted diet, was responsible for his present condition. He begged for a diet and insulin, but to no avail. He was very bitter and resentful about this. Finally his lawyer "rescued" him and sent him to Wisconsin General Hospital in 1945--after his legs were partially paralyzed--and thus practically saved his life. The doctor at the head of the diabetic clinic supposedly told him that if he ever had any trouble controlling his disease,

he should come here, and perhaps they could ask the State to take care of him. He has taken this to mean that it is his right to get public assistance, that the State of Wisconsin is responsible for his present condition, because his diabetes has not been controllable since the time he was in Mendota and he cannot hold a job as a result.

Religion and Outside Interests

The patient is a Methodist, but after his mother's death there was not time for church, so that "he got out of the habit". Religion has not been important to him, but he might consider going to church again for his children's sake.

He used to enjoy sports, but cannot participate in them any longer since such activity is too strenuous for him. He likes to read the paper, magazines such as True Stories, and listen to the radio. He had many friends in Iowa, but does not know anyone yet where he is living now.

Attitudes and Expression of Feelings

He "blows his top" sometimes when angry, but when he is worried, does not express himself, but will go for a walk or think of something else.

He is quite discouraged about the way things have been going for him, and would be much happier if his insulin reactions would stop. With them he feels very insecure, as

he believes he might hurt himself or others.

Evaluation from Psychosomatic Record

This patient has an excuse for everything because of his diabetes. He has many features of the constitutional psychopath. He is tense, very defensive, evasive, vague, dependent, emotionally labile, unreliable, very resentful and capable of sudden hostile and aggressive behavior. He seeks approval, but often does things which do not get it. --He says things because he knows they are the right response.

Hyperventilation was poorly performed--he was anxious. It made him feel like he has early in his reactions.

Case #7

Age 51, married male, moderate diabetes.

Factors Pertaining to the Disease

This patient was admitted with the diagnosis of Diabetes Mellitus with Peripheral Neuropathy, Tabes Diabetica, and Involutional Melancholia. He was never really sick before, so that this has come as "quite a blow" to him. He cried a great deal when first admitted, but this lessened as time went on.

This patient's diabetes was discovered in September 1951, after he developed a pain in the right knee, a number of

boils, and a pain in the right groin and testicle. One of his sisters had diabetes. The patient feels that he has to accept his diabetes as God's will, and his family has been accepting of it as well. He is mainly worried about not being able to work, and would like to know what the outlook is for him as far as this is concerned. He has always loved to eat well, but still thinks he will manage all right on the diet.

Family Relationships

The patient's father died at 66 of heart disease, and his mother at 64 of a stroke. He was one of five children, having two brothers and two sisters. One brother died at 56 of heart disease, and a sister at 33 of tuberculosis. They always had a good time at home, as he remembers it.

The patient was married at 26 to a girl whom he had known for two years, and with whom he got acquainted through a friend. He had gone out with girls quite a bit before this, especially in groups, and as he put it "we had no silly ideas about sex then as the youngsters do now".-- He has been impotent since receiving the prostratic massage for an infection of his prostrate gland, in which "all the poison was pushed out to the end of my penis". He had refrained from intercourse, for fear of infecting his wife.-- The marriage seems to have been a fairly happy one.

They have four children. The oldest, a girl of twenty-three, is married and has one child. He is very proud of her as she graduated from highschool with honors and immediately got a good job. She was so well liked by her boss, that she was begged to return to her job after her pregnancy. His son, who is 21, is in the Army Engineers in Korea; the patient talked him into joining the Army. A daughter, 16, is a sophomore in highschool, and a son, 6, is in grade school.

Education and Employment

The patient finished eighth grade, and attended Vocational School for some time. He liked it quite well, but had no urge to continue.

He was a cook in the Navy in WWI, and then worked as a railroad fireman. In 1937 he changed from railroad work, as it was not too steady, to rough grinding of casts, which paid a better wage. Financially his family has managed all right so far. He had recently applied for a V.A. pension.

Religion and Outside Interests

The patient is a Catholic, and religion has meant a great deal to him. He has some very moralistic views of life, and thinks the world is made of "jealousy, greed and hate." He thinks that more Priests should visit the hospital

patients.

He likes to read, especially about politics, and is interested in this as well as humanitarianism to such an extent that he would like to broadcast over the radio. He enjoys fishing and gardening also. He has always found it easy to make friends, and likes to meet people. He was President of the Blood Bank in his community, a leader in his Trade Union, and belongs to church groups and the Knights of Columbus.

Attitudes and Expression of Feelings

He seems to express himself easily. He is not satisfied with the present, not knowing what is ahead of him. He would be satisfied in the future if he could earn a living.

Evaluation from Psychosomatic Record

This is an emotionally labile, dramatic, opinionated, resentful and rather outspoken individual. He seems to be a "compensated neurotic" of years' standing--basically insecure, and aggressive-dependent--whose compensation was fractured by the diagnosis and complications incident to his diabetes. It is not possible to establish the relevance of emotions to diabetic control--he has some of the personality traits and attitudes which commonly are found in the diabetic, but that is all. Hyperventilation is negative.

Case #8

Age 54, widowed male, moderate diabetes.

Factors Pertaining to the Disease

This patient was admitted with the diagnosis of Diabetes Mellitus, General Arteriosclerosis, Partial Deafness in the right ear, and Mycotic Infection of the right foot. He was instructed concerning a diet in 1950, but did not adhere to it, nor did he regulate his insulin properly. He had frequent episodes of dizziness, ringing in the right ear, and tight feelings in the head when taking too much insulin.

His disease was discovered in December of 1950, when he was hospitalized for a swollen leg. He thought that it might have been with him previously, as he had had some of the usual diabetic symptoms. Prior to the onset of the disease, he was worried about a financial debt, which according to him might have had something to do with bringing on his diabetes. The only other person in the family having it was his mother.

The patient does not know much about diabetes, nor understand the necessity for staying on a diet and taking insulin. His only reaction to it has been the fear that his leg will have to be amputated, and that death will result, as happened with his mother.--At home no one cares for sweets, so that he has no trouble in this respect. Taking insulin

does not bother him, and he administers it himself. He has not told his children about his disease, as he thinks it would upset them too much.

Family Relationships

The patient's mother died at 68, and his father at 63. He has three sisters and three brothers who are living and well, but who are scattered over the states, so that he does not see them often.

He met his wife-to-be at a dance, chosing the prettiest girl there and expecting to be turned down. He apparently "made a hit" with her, for they went out together, even though she was engaged to someone else. They were married about one year after their first meeting--he was 31, then, and she 20 years old. They were very happy together, almost too happy according to him, for she died at the age of 32 in a Sanatorium of tuberculosis and anemia. He was terribly upset about this, and it took a long time before he realized that he must continue to live for his children. He managed to do a lot of the housework, and especially prepared the food very well, as he had had experience with cooking before.

He has a girl 20, and a boy, 14. He is extremely fond of the former, who only went through the 7th grade, and has stayed home with him since. His son will finish the 8th grade, and plans to be a car mechanic. Both of them have

given him a lot of enjoyment.--He has thought of remarrying, but thinks he will not be able to now because of his diabetes, which he is afraid will lead to his death.

Education and Employment

The patient finished the 4th grade at 13. He did not like school, and preferred to seek employment.

He worked until he was 17 in a factory, and after this worked as a common laborer--creamery worker, farmer etc. He spent nine years wandering all over the country (before his marriage) wrestling and boxing. He thinks now that this was foolish, but admits he enjoyed it.

At present he is in the car salvage business, which he enjoys. Financially he is managing despite a $750 debt; having built his own home and owning several cars.

Religion and Outside Interests

The patient was brought up as a strict Catholic, and his children have gone to Catholic school. He does not feel that his religion has helped him to pull through stresses. His belief is firm, but he is not intolerant of other religions.

He has been a professional wrestler, and has always enjoyed this and boxing as hobbies. He and his daughter raise flowers and tomatoes in their garden, which they try to sell.

Attitudes and Expression of Feelings

He gets upset and cries easily, is very emotional and can become quite angry. He worries quite a bit.--He is quite satisfied with the way things are going at present. The future looks all right to him, except that he is worried about his poor circulation, and death.

(Partial deafness and rather low intelligence made it difficult to interview this patient.)

Evaluation from Psychosomatic Record

The patient never noted ups and downs in diabetic control. He had vague spells attributed to insulin, but also related by the patient to getting upset and worried. Since he has been off insulin, he has had none.--He seemed rather dull, bullish, aggressive-dependent, and quite tense. Hyperventilation was negative.

Case #9

Age 57, unmarried female, severe diabetes.

Factors Pertaining to the Disease

This patient was admitted with the diagnosis of Nonunion of an Old Right Hip Fracture, and Diabetes Mellitus. She had never been in diabetic coma, and had her first

insulin reaction during this hospital admission. An operation was performed on the hip during the time the patient was being seen in the hospital, and the patient stated that she was not worried about it, trusting in God and in the doctors.

Her disease started when she was 30, the only symptom being that she was tired. Her diabetes was easily controlled by a diet and she gradually "got over it". Three years ago, at the time of her accident when her hip was broken, diabetic symptoms returned but in much more severe form, necessitating insulin.--The only person in her family having diabetes was her grandfather, who died with it at age 84.

When the patient found out she had the disease, she was scared because she thought death was near at hand. Her mother also thought this, and it was quite a shock to her. She had to eat differently from her mother and "practically starved" which was extremely unpleasant for her. As she felt better through the years, she did not adhere closely to her diet, which she now fears may have caused her present symptoms. At present she is allowed to eat more than she did at first, and manages her diet quite well.

Family Relationships

The patient's mother died seven years ago at 88, and her father died at 72 during WWI. She lived with her mother until

the latter's death, since she felt it was her duty to take care of her.

The patient was an only child, whose older brother died at two weeks of age from prematurity. She has wished at times that she had a brother to protect her, especially at present. She has few relatives, and is very lonely.

In her youth she went out with boys, but on looking the young men over, she decided that she would be better off at home. She had several chances to be married, and her mother urged her to do so, but she did not think she ought to leave home. She denies that she is sorry over this decision.

Education and Employment

The patient finished the 8th grade, but she did not like school at all, and thus was glad to quit it. She feels now that she might have enjoyed going on.

After leaving school, she stayed at home and helped out there, as her father considered her too young to work.-- She has done housework and has been taking care of others most of her life. She gardens and does yard work also, which she enjoys especially. She has been living with friends, when not in the hospital, and is getting public financial assistance, since she has no resources of her own.

Religion and Outside Interests

The patient is a Methodist, but was not brought up strictly, as her father was not very religious. Religion means a great deal to her now, and she says that she does not worry about things, but prays to God that everything will turn out all right.

She enjoys doing fancywork, such as embroidering and knitting. She makes friends easily, but does not like to be in groups, as she has never enjoyed being with more than a few people at a time.

Attitudes and Expression of Feelings

She does not express herself when angry, fearful or anxious, but keeps things to herself. She sometimes cries. Her outlook for the future can be summed up by saying that she trusts in God.

Evaluation from Psychosomatic Record

This patient had been working as a domestic for an old lady and was very hurried and tired when her first hip injury occurred three years ago. Three weeks prior to the present admission she fell on her right side on the ice because she was in a hurry.--She believes she had just started to go through the menopause before her fall and hip fracture.

She was always cutting herself at work; she ripped a ligament in her left knee during WWI, and a colt kicked her in the nose as a youngster. The foregoing suggests that the patient is accident prone.

She has often been unhappy since her mother's death. She does not consider herself nervous "on the outside", but does not know about the inside.

She is obviously tense, emotionally labile and depressed. It seems that she is contending (and has been for years) with difficult emotional problems. Although it is not possible to see that this has materially influenced her diabetes, it is of interest that her diabetes recurred during the stress of the fall three years ago.

Hyperventilation was negative.

Case #10

Age 59, married female, mild diabetes.

Factors Pertaining to the Disease

This patient was admitted with the diagnosis of Diabetes Mellitus, Cataract of the right eye, Conjunctivitis, Post Irridectomy, Exogenous Obesity, and Healed Leg Ulcers (Varicose Veins). She was operated on the left eye for cataract during a previous admission. There is no history of insulin reactions or diabetic coma.

Her disease was discovered in May of 1951. The patient does not know what it signifies, as it has not been explained to her adequately. Several doctors differed in their diagnosis, so that she did not know whether or not to believe that she had it.

She has not managed with her diet. Insulin has only been given to her in the hospital, and she does not know if she will have to take it after discharge. No history of diabetes is evident in the family.

Family Relationships

The patient's mother died when the former was born, and she, being the youngest, was then adopted by a couple who had no children. When her father subsequently remarried, he took her two brothers and one sister with him but the patient could not join them because she had been legally adopted. Her stepparents died when she was 18, which left her all alone. She has not seen her siblings for years. When she wrote to her father at this time, he did not answer. She then had a chance to get married, and she did so to have a home and someone with whom to stay. They had both been working in a chair factory, and knew each other for a year prior to marriage. She was happy with him, except for the fact that she had hoped to travel and visit her siblings, which was not possible after marriage.

They had five children--one daughter died at 4½ but three daughters, age 26, 30 and 38 are living and well, as is a son, aged 40. She always liked children. At present only her son lives near her; one daughter is in Norfolk, Va., with her husband who is in the Navy; one daughter is in Oregon; and the youngest daughter is in a Convent because she did not want to be married and "have children every year." The patient does not mind her daughter joining the Order.

Education and Employment

The patient finished 8th grade. She did not like school at all, since the work was too difficult for her.

She worked in the chair factory before marriage, and has not worked since. She has not minded being a housewife and even when she could not see, she managed the household, with some help. Financially they have gotten along all right, despite the fact that her husband does not earn too much.

Religion and Outside Interests

The patient was brought up as a strict Catholic, and religion has meant a lot to her.

In her spare time she enjoys making rag rugs. She seems to be outgoing. She belongs to a church group, but does not play cards, so that she is not very active in the group.

Attitudes and Expression of Feelings

She expresses her anger quite vehemently, but keeps worries to herself. She is quite satisfied with the present, and has no worries about the future.

Evaluation from Psychosomatic Record

The patient is markedly obese, vociferous and rather a simple individual--she seems tense and very excitable.

She has always had a big appetite, and has been overweight since childhood.--Her stepparents were good to her, as she had everything she wanted; she felt she was spoiled by them.

It would seem that emotional factors play an important role in the patient's obesity, and may indirectly be a factor in her diabetes. Otherwise nothing more can be established. The patient is borderline adequate emotionally and intellectually.

Hyperventilation was negative.

CHAPTER V

CASE ANALYSIS AND CONCLUSIONS

In the foregoing chapter, it was shown that in case numbers 1, 2, 3, 5 and 6, hyperventilation was positive, whereas in case numbers 4, 7, 8, 9 and 10, hyperventilation was negative. The purpose of this study was to consider the relationship of hyperventilation and social adjustment. Therefore, the cases have been analyzed with this in mind, creating, as it were a control group composed of the five patients who did not exhibit hyperventilation.

For the purpose of simplification, the group comprising the patients who hyperventilated will henceforth be termed Group 1, and other designated as Group 2.

Table I indicates that all of Group 1 fell in the age range of 30-39, whereas 4 out of 5 in Group 2 were between 50-59.

TABLE I

AGE

Age	Group 1	Group 2
20-29	0	0
30-39	5	1
40-49	0	0
50-59	0	4
Total	5	5

It is interesting to note that (Table II) all of Group 1 were males, whereas the three females in this series of ten patients fell within Group 2.

TABLE II

SEX

Sex	Group 1	Group 2
Male	5	2
Female	0	3
Total	5	5

All of the patients were of the white race. Thus color did not constitute a difference between the two groups.

In examining some of the factors pertaining to the diabetes itself, it is perhaps significant that (Table III) 4 out of 5 in Group 1 had a severe form of diabetes, severity being measured according to the amount of insulin required to maintain control. On the other hand, in Group 2 only one patient was classified as severe by this measurement.

TABLE III

SEVERITY OF DIABETES

	Group 1	Group 2
Mild - 0-10 units insulin	0	1
Moderate - 10-40 units insulin	1	3
Severe - over 40 units insulin	4	1
Total	5	5

In evaluating the importance of heredity, as seen in Table IV, no remarkable difference was found between these two groups.

TABLE IV

REPORTED HEREDITY FACTORS

	Group 1	Group 2
None	3	2
Siblings	0	1
Parents	0	1
Grandparents	0	1
Other	2	0
Total	5	5

Tabulation of possible precipitating events for the diabetes in these patients (Table V) reveals no significant difference between the two groups. It should be noted, however, that evaluation of such factors is quite subjective, and dependent upon the patient's memory, as well as the significance he attaches to certain incidents and experiences, etc.

TABLE V

POSSIBLE PRECIPITATING EVENTS

	Group 1	Group 2
Accidents	2	1
Childbirth	1	1
Death in the family	1	0
Financial worries	0	1
School	1	0
None discernible	0	2
Total	5	5

In considering the duration of the illness (Table VI), it is evident that on the whole the patients in Group 1 had diabetes for a longer period of time than did those in Group 2. Also the average age of onset was earlier in the first group.

TABLE VI

DURATION OF ILLNESS

	Group 1			Group 2		
	Age at Onset	Age Now	Duration in Years	Age at Onset	Age Now	Duration in Years
	13	30	17	23	33	10
	21	33	12	51	51	2/3
	12	33	21	53	54	11
	25	35	10	30	57	27
	22	37	25	58	59	1
Average	18.6		17	43		7.9

Viewing the complications of diabetes present in these patients, it is seen that all of the patients in Group 1 (Table VIII) had insulin reactions, and frequent ones, whereas the two patients in Group 2 who had insulin reactions did not have them often.

TABLE VII

COMPLICATIONS

	Group 1	Group 2
Insulin reactions	5	2
Diabetic coma	1	0
Eye complications	2	1
Arteriosclerosis	1	1
Gangrene and infections of extremities	1	1
Peripheral neuropathy	0	1
None	0	1

Turning now to a consideration of social factors, Table VIII has been devised to illustrate the comparative social adjustment of the two groups. The areas to be looked at have been chosen as a measurement of what might be an acceptable standard of social adjustment, depending on a standard of success set-up arbitrarily.

It seems quite significant that Group 1 had more difficulty than Group 2 in: (1) accepting their diabetes; (2) forming successful social relationships, and relationships with parents; (3) attaching more importance to religion; (4) maintaining employment; (5) enjoying groupy pastimes for recreation; (6) expressing their feelings; (7) obtaining satisfaction from the present; and (8) maintaining an optimistic outlook for the future. No difference was seen between the two groups in (1) ability to adhere to the diet; (2) marital adjustment; (3) and economic adjustment. Satisfactory school

adjustment was the only area in which Group 2 had somewhat more difficulty.

TABLE VIII

COMPARATIVE SOCIAL ADJUSTMENT

	Group 1		Group 2	
	Good	Poor	Good	Poor
Acceptance of disease	0	5	2	3
Ability to adhere to diet	2	3	2	3
Relationships with parents	3	2	4	1
Social relationships	0	5	3	2
Marital adjustment	3	2	3	2
Success in school	3	2	2	3
Acceptance of religion	1	4	5	0
Satisfactory employment	3	2	5	0
Economic adjustment	2	3	2	3
Recreational adjustment	1	4	3	2
Expression of feelings	3	2	4	1
Satisfaction with present	1	4	3	2
Outlook on future	1	4	3	2

From the foregoing it can be concluded that basic differences do exist between the two groups, in this series. These differences seem to be essentially a matter of degree. None of these ten diabetic patients were without some social problems. However, on the whole those who did not exhibit hyperventilation were able to adjust to their problems in a more satisfactory way than did those who exhibited hyperventilation. Thus it would seem that the assumption by Drs. Marc J. Musser and Thomas H. Lorenz of the Department of Psychosomatic Medicine at Wisconsin General Hospital is correct, namely that the patients who show hyperventilation

do have major emotional difficulties and manifold social problems, which they are unable to handle satisfactorily.

As is already noted, this is a pioneer study, and of necessity a limited one, being such a small series. It is to be hoped, therefore, that other studies of this kind will be undertaken in the future, in order to further evaluate the conclusions, and in this way contribute to reliability and validity of this investigation.

Perhaps, too, the findings derived from this study might be applied to the treatment of diabetic patients. It seems evident that certain of these patients need special consideration with their social difficulties. Hyperventilation might be utilized as a simple preliminary test with diabetic patients to determine the presence of possible emotional disturbance related to social problems. This, then, might be used in part as a screening device for further evaluation and possible referral for services by psychosomaticists, or caseworkers.

It is to be hoped, also, that this research project will demonstrate the validity of using social study as a part of medical research.

SCHEDULE

Name	Age	Race
Hospital number	Service	Classification
Marital Status	Birthdate	Religion
Address		
Date of admission		
Previous admissions		

1. Medical Picture

   a. Present diagnosis

   b. Onset--Any precipitating events

   c. Prognosis

   d. Treatment

   e. Severity
      mild - no insulin up to 10 units
      moderate - 10-40 units
      severe - over 40 units

   f. Pt.'s attitude toward present illness

   g. Management of diabetic regime at home

   h. Heredity

   i. Attitude toward disease by others of family, as well as friends

   j. Anything else pertaining to medical picture

2. Family relationships

a. Parents

Siblings

Children

Mate

b. Feelings towards parents

c. Attitudes towards siblings

d. If married:

(1) Relation to mate and attitudes about

(2) When married, attitudes toward, and parents' attitudes toward

(3) Children -- feelings about them and about having them

(4) Has marriage brought satisfactions?

e. If not married:
(1) Dating

(2) Views about possibility of marriage, or about not having married

3. Education

   a. Grades completed

   b. Attitude toward school, and the amount of schooling received

   c. Friendships while at school

4. Employment

   a. Types of jobs held

   b. How often changed and reasons why

   c. Attitude toward work, and particular jobs

   d. Ability to get along with fellow workers, and bosses

   e. Degree of economic security

   f. If a housewife:
      (1) Jobs held before marriage, if any

      (2) Attitude toward being a housewife now

5. Religion

   a. Background and training

   b. Importance of, and attitude toward

6. Recreation and Outside Interests

   a. Types of recreation and enthusiasm about these

   b. Hobbies

   c. Friends--ability to make and keep friends

   d. Participation in group activities and community activities

7. General

a. Reaction to stresses: expression of anger, fear, anxiety, frustration etc.

b. Degree of satisfaction with way things are going in the present.

c. Outlook on future.

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