

## Incidence of Somatic Disease in Psychiatric Patients

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MANY of the research efforts to define psychological and physiological interrelationships have been directed toward defining *specific* relationships between the two. There have been innumerable attempts to relate specific personality organizations, traits, attitudes or conflicts to specific "psychosomatic syndromes," such as peptic ulcer or headache. These investigations have met with varying degrees of success. One of the frequent problems in such studies has been that the particular psychological disorder has proved to be nonspecific to the syndrome. For example, the dependence-independence conflict, although it seems to characterize many peptic ulcer patients, is a conflict common to many illnesses, "psychosomatic" or otherwise.

There has been an equally great number of attempts to discover characteristic physiological differences between the various psychiatric disorders. Here, too, although

many differences between psychiatric patients and healthy controls have been defined, few if any of these have proven to be peculiar to any particular diagnostic grouping. Moreover, the physiological differences within a particular diagnostic grouping have consistently been of considerable magnitude. Thus, for example, while many schizophrenic patients were demonstrated to have altered adrenocortical function, these changes were not unique to schizophrenia, did not characterize all schizophrenic patients, and showed a wide variation from hypofunction to hyperfunction.

A possible explanation for these discrepancies may lie in the premise that, although the psychological aspects of adaptational failure may parallel the physiological ones, the relationship may be more general than specific. From such a frame of reference, the response to stress might be measured either physiologically or psychologically and would be viewed within the conceptual framework of fundamental adaptational deficiency rather than in terms of psychosomatic symbolizations of classes of persons, stresses, or diseases. From this point of view, a relatively pervasive reduction in psychological adaptive capacity, such as that which occurs in psychiatric illness, might be paralleled by a similarly pervasive modification of physiological adaptability. A corollary of this premise would be that the reduction in adaptive capacity attendant to somatic disease would be reflected in

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a broad, nonspecific, psychological restriction.

One group of studies has utilized such a frame of reference implicitly in correlating the character and degree of psychological disability with severity and duration of "somatic" disease. For example, Berle and Day have reviewed many of the reports relating psychological factors to tuberculosis. A similar relationship between longevity and cancer has been reported by Blumberg, West and Ellis and by Klopfer. In an earlier study the present authors demonstrated that university students whose ego strength was relatively good recovered more rapidly from infectious mononucleosis (as measured by hematological criteria) than did comparable individuals whose ego strength was relatively less good.<sup>6</sup> Brodman *et al.* have shown that the duration of convalescence from acute respiratory infections is related to a general measure of psychological health.

Another group of studies has compared the incidence of various diseases in the psychologically disabled to the incidence in persons psychologically healthy. One of the earliest of such studies was that of Lewis, who found that the frequency of cancer was greater in paranoid patients of a mental hospital population than in the general population. This finding was later confirmed by Schefflen. However, the fact that both Lewis and Schefflen found that catatonics and hebephrenics had a lower incidence of cancer than the general population would, of course, cast doubt upon a hypothesized relationship between psychological health and resistance to physical disease.

Perhaps the best known and most extensive research of this nature is the work of Lovett Doust. This investigator found that there was a higher incidence of physical illness and complaints in the medical histories of psychiatric patients than there was in a sample of the general population. Additionally, psychotics reported more physical illness than neurotics, suggesting that the greater the degree of psychological

disability the less the capacity to resist stresses ordinarily thought of as purely physiological. To our knowledge this work has never been reproduced. Since it was based largely upon the results of questionnaires, it is possible that psychiatric patients merely *report* more illness and that the actual incidence of disease is not greater among them. Lovett Doust carefully considers this possibility himself and cites other research evidence in support of his contention that the questionnaire method was valid in this instance. However, an experimental design avoiding the pitfalls of the questionnaire method would obviously be desirable. It is also true that the sample of psychiatric patients utilized by Lovett Doust was comparatively a very sick one, heavily loaded with hospitalized psychotics on the one hand and with neurotics and character disorders sufficiently sick to be discharged from military service on the other. Thus, assuming the validity of his findings, the relationship between psychological and physiological factors may be only a very gross one, and persons who were less disabled psychologically might not show such a parallel somatic vulnerability.

The purpose of the present research was to test the findings of Lovett Doust with certain modifications in the design of the experiment as suggested by the fore-going considerations. We tested the same hypothesis, namely, that psychiatric patients would demonstrate a greater incidence of somatic disease than would a control population.

#### Method

The subjects selected for study were 500 university students seen in the psychiatric out-patient clinic of the University of Wisconsin Medical Center between 1947 and 1950. All of the subjects were functioning sufficiently well to continue in their usual life patterns. The psychiatric diagnoses in this group ranged from situational maladjustments to schizophrenic reactions. The more serious disorders represented a small fraction of the total group, as might be expected. The medical records of this group

were obtained from the Student Health Clinic, and the number of visits, if any, to the clinic, the diagnosis and complaint for each visit and the age and sex of the patient were recorded. This objective data constituted the criteria of disease.

The control group consisted of 500 university students whose medical records were the next in the medical clinic files of a patient of like sex.\* The same information was recorded for this group.

The complaints and physicians' diagnoses were initially classified into 16 categories in order to obtain groups sufficiently large for statistical analysis. Three of these categories (cardiovascular disease, blood dyscrasias, and congenital anomalies) were discarded as too small for this purpose. The number of *persons* from the control and experimental groups who had complaints in each category was totaled and the significance of differences between groups were subjected to statistical analysis. Differences in the number of *occurrences* of illness in each category for both groups were also subjected to statistical test. In this tabulation judgment was made as to whether a number of visits to the clinic for the same complaint constituted a single occurrence of the illness or whether they represented recurrences of the same illness. The total number of visits for each category of disease for both groups was calculated and the significance of the difference between groups was evaluated. In addition, the number of visits for all disease categories was totaled for the experimental and control group and the significance evaluated. In this instance individuals who made no visits to the clinic were included in the calculation.

### Results

There was insufficient information in the medical records of some subjects and they were therefore dropped from the study. Four hundred and eighty control subjects and 471 psychiatric patients remained and

\*All registered students have medical records on file.

constitute the sample on which the following results are based. Of these, 219 were female controls, 261 male controls, 222 female psychiatric patients, and 249 male psychiatric patients. This difference in the total number of each sex in the control group as compared with the psychiatric group is not significant. The average age of the control group was 21.40 years, for the experimental group was 21.70 years, a nonsignificant difference. It is therefore concluded that the differences to be discussed cannot be attributed to age or sex.

The thirteen categories of illness and the diagnoses and complaints included within each group are listed below.

#### *Anxiety*

Anxiety tension state	Worry about family problems
Hysteria	Insomnia
Hysterical syndromes	Chronic fatigue
Palpitation	Unable to concentrate or study
Worry about having cancer	Nervous vomiting

#### *Headache*

#### *Gastrointestinal Disorders*

Gastroenteritis	Constipation
Ulcerative colitis	Obstructions
Spastic colon	Adhesions
Duodenal ulcer	Appendicitis
Gastritis	Mesenteric lymphadenitis
Anal fissures	
Hernia	

#### *Gynecological Disorders*

Dysmenorrhea	Amenorrhea
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#### *Neurological Disorders*

Tertiary syphilis	Neuritis
Polio	Herpes zoster
Encephalitis	Causalgia
Epilepsy (grand, petit, psychomotor)	

#### *Allergy*

Rhinitis	Conjunctivitis
Allergies (anything other than skin)	

#### *Inflammations*

Cystitis	Cervical erosion
Pyelitis	Purulent vaginal discharge
Pyelonephritis	Conjunctivitis (non-allergic)
Urethritis	Otitis media
Cervicitis	
Vaginitis	

Blepharitis	Paronychia
Infected callus	Ingrown hairs
Prostatitis	Salivary gland infections
Furunculosis	Mumps
Carbuncles	Measles
Eustachitis	Chickenpox
Pruritus ani	Pink eye
Vincent's angina	
Stomatitis	

*Upper Respiratory Infections*

Tonsillitis	Coryza
Nasopharyngitis	Influenza
Laryngitis	Sinusitis
Pneumonia	Upper respiratory infection
Pharyngitis	Rhinitis
Bronchitis	
Tracheitis	

*Obesity**Exogenous**Tumors*

Ovarian cysts	Dermoid cyst of the ovary
Fibroadenomas of the breast	Salivary gland tumors
Ganglia	Pilonidal cysts
Naevi	Aberrant breast tissue
Condylomas of the rectum	Chondroma
	Osteoma
	Hodgkin's disease

*Trauma*

Bites	Contusions
Animal scratches	Concussions
Chemical burns	Lacerations
Burns	Abrasions
Frost bite	Puncture wounds
Sprained ankles	Incised wounds
Fractures	Traumatic arthritis
Falls	Herniated nucleus pulposus

*Endocrine Disorders*

Hyperthyroidism	Menorrhagia
Hypothyroidism	Diabetes mellitus

*Hirsutism**Skin Disorders*

Poison ivy	Warts
Poison oak	Moles
Hyperkeratosis	Sebaceous cysts
Alopecia areata	Sunburn
Scabies	Herpes simplex
Fungus infections	Herpes stomatitis
Plantar warts	Vitamin deficiencies
Allergies with skin manifestations, especially drug allergies	Tenia cruris

The decision as to which category a particular diagnosis should be assigned was, in some instances, arbitrary. Mesenteric lymphadenitis, for example, might have been assigned to the inflammatory group rather than the gastrointestinal one.

It will also be noted that the thirteen categories are not based on any uniform systemization; in part they are comprised of diseases relating to particular organ systems, in part on the character of the pathology and in part (as in the case of *Anxiety*) on symptoms presumed to be directly related to psychiatric disorder. In the latter instance, the intention was to separate visits to the clinic which might be expected a priori to be higher in a psychiatric group from those illnesses constituting a more critical test of the experimental hypothesis.

Just as the psychiatric disabilities in our experimental group are relatively benign, so too are their somatic disabilities. This is in some contrast to the results obtained by Lovett Doust. The difference is probably attributable in part to differences in methodology; Lovett Doust used the questionnaire method, the age range of his subjects was greater, the total time covered in his study was greater and thus the opportunity for more serious disability increased. The question is germane, however, whether our subjects, being comparatively healthier psychologically were not also comparatively more healthy somatically.

One test of our hypothesis is whether psychiatric patients are represented significantly more frequently in each of the disease categories than are the controls. Table 1 shows that this is the case (with the difference significant at the usually acceptable levels of confidence) in every category but two—skin disorders and endocrine disorders, and for even these the differences approach significance. By this criterion, then, our hypothesis is largely confirmed.

However, it is possible that even though there are a greater number of psychiatric patients in each category, patients might have fewer occurrences of illnesses within the category than the controls. We have,

TABLE 1. COMPARISON OF THE NUMBER OF PSYCHIATRIC PATIENTS AND CONTROLS IN THIRTEEN DISEASE CATEGORIES

<i>Disease category</i>	<i>Psychiatric patients (No.)</i>	<i>Controls (No.)</i>	$\chi^2$	<i>P*</i>
Anxiety	93	17	59.41	.001
Headache	46	13	19.21	.001
Gastrointestinal disorders	89	51	12.31	.001
Gynecological disorders	42	17	10.89	.001
Neurological disorders	20	6	9.40	.01
Allergy	37	15	9.99	.01
Inflammations	152	116	7.32	.01
Upper respiratory infections	216	178	7.19	.01
Obesity	15	3	7.11	.01
Tumors	28	15	3.76	.05
Trauma	194	168	3.59	.05
Endocrine disorders	25	14	2.97	.10
Skin disorders	129	112	1.86	.10

\*One tail.

therefore, tabulated the results of the significance tests for the difference in the number of occurrences of illness (Table 2).

It will be seen that again the psychiatric patients have a significantly greater number of occurrences of illness within every category but two. The exceptions are skin disorders and tumors but again these differences approach significance. This second criterion also supports the hypothesis.

A more concise comparison of the relative incidence of disease between the psychiatric and control groups may be gained

from Table 3. By dividing the illness-occurrence per category by the number of persons per category a disease-frequency ratio is obtained that permits precise comparison between the two groups. The non-parametric sign test reveals that these differences are significant at beyond the .01 level of confidence.

The important possibility remains that psychiatric patients come to the clinic more frequently for a given occurrence of illness than do the controls. This possibility was checked, as noted in the discussion of meth-

TABLE 2. COMPARISON OF THE OCCURRENCES OF THE THIRTEEN "DISEASES" IN PSYCHIATRIC PATIENTS AND CONTROLS

<i>Disease category</i>	<i>Occurrence in psychiatric patients</i>	<i>Occurrence in controls</i>	$\chi^2$	<i>P*</i>
Anxiety	128	19	78.34	.001
Headache	65	14	31.64	.001
Gastro-intestinal disorders	117	57	20.00	.001
Gynecological disorders	56	18	18.50	.001
Neurological disorders	24	6	12.12	.01
Allergy	50	18	14.14	.001
Inflammations	210	151	9.32	.01
Upper respiratory infections	399	278	21.28	.001
Obesity	16	3	7.58	.01
Tumors	28	17	2.22	.10
Trauma	309	256	4.78	.05
Endocrine disorders	29	15	3.84	.05
Skin disorders	182	154	2.16	.10

\*One tail.

TABLE 3. DISEASE-FREQUENCY RATIOS\* FOR PSYCHIATRIC PATIENTS AND CONTROLS

Disease category	Disease-frequency ratio	
	Psychiatric patients	Controls
Anxiety	1.38	1.12
Headache	1.41	1.08
Gastrointestinal disorders	1.30	1.12
Gynecological disorders	1.33	1.06
Neurological disorders	1.20	1.00
Allergy	1.35	1.20
Inflamations	1.38	1.30
Upper respiratory infections	1.85	1.56
Obesity	1.07	1.00
Tumors	1.00	1.13
Trauma	1.59	1.52
Endocrine disorders	1.16	1.07
Skin disorders	1.41	1.38

\*Illness-occurrence per category divided by the number of persons per category.

od, by computing the total number of visits per occurrence in each category for both groups and testing for the significance of the differences. None of these differences was significant or approached significance. In the same category of disease, psychiatric patients *do not* visit the medical clinic, for a given occurrence, more frequently than do the control subjects.

### Discussion

Obviously the most conservative explanation of these findings would be that psychiatric patients have a greater degree of body consciousness. Such increased body consciousness might induce them to over-respond to somatic symptoms which would not motivate the normal individual to consult a physician. Several factors would appear to negate this as the explanation for our results and, thus, support the fundamental thesis that psychological ill-health and actual somatic vulnerability are related.

Assuming that the crucial variable determining these results were differing degrees of anxiety which somatic symptoms produced in the psychiatric and control groups, it would be expected that the anxiety would continue to operate during

the course of the illness and, thus, be reflected in a greater number of visits for a given disease category. As noted previously, this was not the case; although psychiatric patients do utilize the facilities of the medical clinic more frequently than non-psychiatric patients, individuals within a given disease category do not differ in their clinic attendance as a function of whether they are or are not psychiatric patients. Further weight may be added to the argument by citing previous research of the present investigators,<sup>5</sup> which demonstrated that, contrary to popular belief, individuals who complain about their health do not necessarily consult a physician more frequently than do individuals who do not complain about their health.

Finally, we should consider the possibility of a systematic referral bias. Might not the clinic physicians emphasize referrals of certain types of conditions which they assume to be "psychosomatic" and thus spuriously inflate the medical problems of the psychiatric groups? The facts of the clinic situation as well as the nature of our results would argue against this likelihood. Only 30 per cent of the psychiatric patients are referred by the medical clinic and a chronically long waiting list has served to discourage the referral of patients who do not manifest patent emotional symptomatology.

A more important argument is reflected in the data. Surely we might expect anxiety referents to be better represented in the psychiatric group. Similarly, headache, allergy, gastrointestinal disorders and perhaps some other categories might be expected a priori to be heavily loaded in the psychiatric group but this would not be likely for inflammatory disease, upper respiratory infections or the other more traditional "somatic" entities. In fact, if one examines the data in Table 3 it can be seen that the magnitude of the differences between psychiatric and control groups is no greater for those diseases generally thought of as "psychosomatic" than for those diseases ordinarily classified as "somatic."

We feel justified in the conclusion, therefore, that psychiatric patients do visit medical clinics more frequently than controls but they do so because they suffer a greater frequency of "real" illness.

This study would appear to confirm Lovett Doust's finding that psychiatric patients suffer a greater amount of somatic disability than do controls drawn from the general population. The present investigation employed a psychiatric population less sick than that previously studied and this fact may well argue for a very intimate and pervasive relationship between the psychological and the physiological throughout the broadest spectrum of adaptational ability.

The problem of causality, the "chicken or the egg," becomes somewhat of a pseudo-problem if viewed within the context of our present thinking. In attempting to define psychosomatic interrelationships we are dealing with somewhat arbitrarily demarcated sub-systems of the organism in the process of adaptation. Much work has yet to be done toward gaining a fuller understanding of both the qualitative and quantitative aspects of this relationship. We are, for example, presently embarked upon the study of psychological adaptive processes in patients with severe somatic disease. However, it is central to our thesis that "chicken" and "egg" are more apparent than real, more a function of experimental bias and perspective than a reflection of actual dichotomous events. The question of which is the dependent and which the independent variable in psychosomatic research remains, at root, in the nature of the experimental design rather than in the adaptive process.

### Summary

This study tested the hypothesis that persons with impaired psychological adaptive capacity, operationally defined by status as

psychiatric patients, would demonstrate a greater incidence of somatic disease than would a control group. Four hundred and seventy one university students seen in a psychiatric out-patient clinic were compared with 480 control subjects for the incidence of thirteen categories of disease based on their medical records. Results confirm the hypothesis at appropriate statistical levels of confidence. The data support the thesis that there is a higher incidence of somatic disease in those with impaired psychological adaptive capacity rather than simply a differential body consciousness.

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