Contemporary Themes

Methodology of Research in Psychosomatic Medicine*

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Summary

This paper reviews some problems in the methodology of clinical psychosomatic research. Its emphasis is on elucidation of symptoms rather than on aetiology of disease and on diagnosis and treatment of known psychopathology, particularly mood disturbance, rather than on underlying speculative mechanisms. Reliability, sensitivity, and validity of measurements are considered to be the keys to advance of knowledge in this field. Samples of patients studied must be representative of a disease, and not of other factors which contribute bias to the observations. Account must be taken of the wide variability found in most measures required in psychosomatic patients, and hence of their lack of specificity to an individual patient.

Introduction

Psychosomatic medicine is not a specialty. It invokes psychological factors, both aetiological and therapeutic, to help those with a variety of somatic symptoms. Morbidity rather than mortality characterizes the interest in psychosomatic medicine. The advances from research should improve the quality of existence to some degree for all with physical suffering, because to a greater or lesser extent such suffering is affected by psychological matters. Research in psychosomatic medicine can be directed from several viewpoints and may be conducted by several disciplines using measurement techniques that differ widely. Problems especially relevant to clinical research will be considered.

In recent years the horizon has widened from a list of specific diseases to embrace somatic symptomatology which can be produced by both psychological and physiological mechanisms. Methods are required nowadays to study, for example, both stubbornness and endocrinological features in the anorexic and obese; fool-hardiness and pharmacological reactions in the smoker and the promiscuous; and the tribulations and biochemistry of the patient kept alive by machines. Where there is continual variation in both physiological and psychological processes it seems sensible to study both these factors simultaneously. The history of psychosomatic medicine abounds with theories, but few hypotheses have been put rigorously to the test.

Methodological problems that may seem insurmountable to the researcher testing one kind of hypothesis need hardly be noticed in the testing of another hypothesis. Nowadays the

physician has available to him a multitude of tests whose reliability, sensitivity, and validity he need seldom question. For instance, the forced expiratory volume and peak expiratory flow rate in an asthmatic patient are consistently reproducible, reflecting accurately and sensitively the degree of bronchospasm.

Not so this luxury for the psychiatrist endeavouring to study the variables which he believes relevant to the aetiology of bronchospasm or contributory to the distress from bronchospasm. Constantly he must question and take account of deficiency in reliability, sensitivity, and validity of his observations. Yet scores of articles have been published in which the authors have failed to do so.

Measurement of Psychological Variables

How *reliable* are the findings from a Rorschach test? How *sensitive* is the neuroticism score in the Eysenck personality inventory? What does hostility as measured by the Foulds scale mean to the clinician, and hence what is its *validity* to clinical observation of aggression? There is evidence that even these well-accepted psychometric tests are deficient in essential methodological attributes. I have never been satisfied that the findings from a Rorschach test do not arise principally in the mind of the tester. Eysenck himself reported that the mean score of neuroticism obtained from psychiatric patients lay only at the 87th percentile of those obtained from the general population.¹ In recent observations of ours the correlation between reasonably reliable clinical ratings of hostility and questionnaire scores purporting to reflect this trait failed to reach anywhere near clinical significance.

All methods designed to measure psychological states can study only indirect indicators of these activities. Research psychiatrists are a long way from having available an accurate measure of even common psychological disorders such as depression or anxiety. A physiological variable like forearm blood flow is not a measure of anxiety, nor is the patient's answer to a question about proneness to panic, whether asked of him in a questionnaire or at interview.

The logic of adding the scores obtained on various items in a rating scale to produce an overall index can be challenged. Firstly, the units of measurement for each item almost certainly differ and hence are not really additive. Secondly, the category sizes and theoretical "distances" between them are unknown and are unlikely to be linear. Yet there are many such rating scales which have yielded interesting and useful results despite being founded on this sort of dubious logic and having crude sensitivity.

Recently interview schedules specifically designed for general practice surveys have been prepared, quite admirable for recording neurotic symptomatology.² Good reliability has been reported, but nevertheless I would advocate that two raters should always be used so that reliability can be kept under constant scrutiny.

Observer bias produces a well-acknowledged artefact in clinical research and it is foolish to pretend or to hope that such bias does not distort reality. If two raters generally observe the

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same phenomenon it would be a cynical critic who challenges the existence of something interesting. Quite often an observer reports a finding of which it is difficult to prove its existence or even to understand. For example, "asthma is a form of introjected anxiety."³ It would be a compliant and naïve reviewer who accepts that something of value has been discovered by the uttering of such an assertion. Yet how commonly this kind of statement can be read in the psychoanalytic literature.

Validity of observations which report findings in certain types of patient cannot be adequately assessed without similar observations on control subjects. If the findings are to be identified only with the diagnosis they should be shown to be largely absent when that diagnosis is not applicable. The method of assessment for both groups must be identical. Variables known to influence the findings, such as age, sex, and social class, must be closely matched.

Errors have been perpetrated by neglect of this rule. Specific symptoms have been attributed to mild anaemia and have been regarded as such in generations of textbooks; but these symptoms are now known to relate more to mood disturbance than to haemoglobin level.⁴ Similarly, for many of the symptoms attributed to hypertension level of blood pressure is less relevant than mode of presentation in the sick role.⁵ In a recent study it was salutary to observe both healthy and neurotic controls in a comprehensive study of bronchial asthma.⁸ The patients were selected at random from registers of diagnosed cases. Exactly where they lay on a severity continuum of neuroticism was discerned; on this continuum they lay close to that of healthy controls and were distinctly different from neurotic controls.

Thus a cardinal principle of research is to ensure that the instrument of measurement is as reliable, sensitive, and valid as possible. As these criteria are never certain for psychological variables this principle must be watched with tenacity. It is wise to use more than one method in the assessment procedure. For measurement of anxiety a self-rating questionnaire,⁷ a structured clinical interview with two raters,⁸ and a recording of physiological variables would comprise a comprehensive assessment. More than one physiological variable should be measured because of personal specificity of system response. The choice should be determined by the likely results for the purpose of the experiment and the laboratory facilities available.

Sampling Population for Study

In order to ascertain the prevalence or incidence of any disease it is essential to have clear definitions of the criteria designating the disorder. This is far from easy when the abnormality is only a quantitative distinction or is only intermittently present; or when the same abnormality can be due to different causes.

How and where the complaint is manifested will in part determine whether it is detected for inclusion in the sample. The customs and habits not only of the patient but of the doctor—indeed of the society and culture—influence whether the patient selects the "sick" role for a given complaint.

Patients with asthma referred to a psychiatrist are not representative of all asthmatics; Aitken *et al.*⁹ found that for them both the pulmonary and the psychological disorders were more severe than for any group representative of the disease and not so referred. They inferred that any conclusion drawn from patients referred to psychiatrists cannot be generalized as though it applied to all patients with the disorder. Indeed even patients attending hospital do not do so only because of physical symptoms or signs but also because of other matters such as anxiety, depression, or dependency.¹⁰ These can influence the severity of the symptomatology—for example, with breathlessness—or the threshold of tolerance—for example, with pain. On the other hand, frequency of attendance and hence chance of being detected in any sampling among attenders can be reduced by hostile attitudes in either patient or doctors. To repeat—patients do not come to doctors solely on account of the severity of their disorder.

If it is intended to measure features referable to a particular physical disorder it is essential that the sample studied is *representative*—in other words, that it has been selected at random and without bias. A psychoanalyst should not report a psychological finding in a patient with a physical disease, considering that finding to be causally related to the diagnosis, without also considering that it could have been a function of the referral of the patient to him in the first place.

Fallacies in Deduction of Causality

Because two variables can be shown to be associated by correlation analysis it does not need to follow that one caused the other; the association could be due to a common intervening variable. For example, bus drivers have a higher incidence of myocardial infarction than bus conductors.¹¹ This need not be due to anything related to the stress of driving but rather to the sedentary nature of bus drivers' work or to the tendency for them to be overweight. Here is an example where a psychosomatic relationship suggesting a possible aetiological stress mechanism can be overstated. What should be of equal interest is why the calorie intake of bus drivers is higher than their needs.

When a life-threatening event like a myocardial infarction or an attack of status asthmaticus is precipitated by an unknown cause it is natural for both patient and doctor to seek an explanation among the preceding environmental events. It is usually easy to identify retrospectively something which could be relevant, but the association could be false and due to chance; the event might just as well have happened without being followed by such dire consequence, and such occasions can be readily forgotten. This problem plagues our understanding of several disorders of unknown aetiology where psychosomatic factors are thought to be relevant.

Methodological Problems

The usual list of diseases to which psychological factors are considered important in their understanding are, in fact, of unknown aetiology. They tend to be common diseases, mainly of low mortality. Most are characterized by a natural history of a relapsing and remitting nature, so making comparison of therapies fraught with difficulties. A good deal of the symptoms and pathophysiology are common also to functional disorders of physiology—for example, breathlessness and hyperventilation in asthma, gastric hyperacidity in peptic ulcer, diarrhoea in ulcerative colitis, headache in migraine, palpitations in coronary artery disease, and pruritus in dermatitis. All these symptoms can be caused by hyperarousal, as in states of anxiety, which frequently also produces insomnia and anorexia.

Many such symptoms must in themselves alter mood—for example, distress from recurrent dyspepsia or diarrhoea, or fear from an attack of breathlessness which could escalate alarmingly, or of palpitations which could proceed to grave cardiac arrhythmia, though this rarely occurs. These expected mood alterations should be taken into account in the examination of these patients. The patient with myocardial infarction who is not anxious is the abnormal one. The idiosyncratic meaning of a symptom believed by a particular patient can itself produce abnormal psychological signs.

Proneness to anxiety is common, neurotic disorders being as prevalent as all the diseases in the usual list of so-called psychosomatic ones put together. Hence it should be no surprise when a "psychosomatic" disease and neurosis occur by chance in the same person. Nor should it be a surprise when another person with the same disease is found to be emotionally stable. High prevalence rates can account for physical disorders to be associated with psychological disorders. This reason must always be excluded when considering the role of psychological factors in the aetiology of disease. But this emphasis becomes different

when considering the aetiology of distress; both mechanisms should then be considered separately because if in addition to physical disease there is a psychological abnormality, such as depressive or phobic illness or personality disorder, then clearly the patient deserves as much treatment for that as for his physical symptoms. "It is much more important to know what sort of patient has a disease than what sort of disease a patient has," wrote Parry at the end of the eighteenth century. Attention of all doctors to the needs of the person would do much to advance our understanding of distress and hopefully its relief.

Case Identification

The reader who has reached here may be feeling disheartened—daunted by the pitfalls that await the unwary and by the gloom engendered by complexities. Herein lies one of the paradoxes of this topic—how to encourage research and yet to ensure that the results will be meaningful. In psychosomatic medicine this kind of paradox extends to clinical practice, where much of the work is to facilitate more sensitive attitudes. How should appropriate case identification for recruitment into psychiatric treatment be encouraged and yet avoid causing disillusionment because of the lack of effective treatment to cure the physical disease? Fortunately nowadays there is much to offer which benefits symptoms, particularly for mood disturbance, both by psychopharmacology and by the psychotherapies. There is reason to believe that what our clinical research should be seeking is identification of mood disturbance in those afflicted with disease. Elucidation of what contributes to distress and the alleviation of symptoms should be of paramount concern rather than the psychosomatic aetiology of disease.

More is likely to be gained by using methods for assessing psychological disorders which have been shown to be reliable, sensitive, and valid and applying them in a wide group of patients. Still more needs to be known about the precise role of mechanisms which are understood partly already. This will advance psychosomatic medicine more than will speculation about mechanisms that are almost beyond understanding. Certain observations have already been made which should profoundly affect clinical practice and, hopefully, the alleviation of suffering. For example, it has now been established (a) that life expectancy for those on haemodialysis is as much related to hostility as to the renal disease;¹² (b) that the success of surgery for peptic ulcer is as much related to anxiety as to either choice of operation or gastric acidity;¹³ (c) that the interval until rehabilitation is complete for those who have had a myocardial infarction is as much related to mood as to extent of coronary artery disease;¹⁴ and (d) that the frequency with which a patient with asthma attends the outpatient clinic is as much related to disorders of his psyche as to the pulmonary disease.¹⁰

Study of the dying and of the bereaved has shown how distressed they are by psychiatric symptomatology. Over two-thirds of the dying who are breathless experience severe anxiety, which is twice as many as those who experience other discomforts such as pain or nausea.¹⁵ Young widows consult doctors appreciably more often after bereavement than before, at least for emotional symptoms. The rate is also greater for non-psychiatric symptoms, which is reflected in a distinctly higher mortality.¹⁶ It challenges psychosomatic research to find out how to reduce this excessive mortality and morbidity.

Multidisciplinary Methods

Esoteric methodology for research in psychosomatic medicine is hardly required when an enormous advance could be made if simple rules were followed. A high proportion of patients attending general hospitals have neurotic symptoms, principally related to mood disturbance. This is particularly common for

men attending physical medicine clinics (40%) and for women attending gynaecological (52%), physical medicine (43%), surgical (41%), and medical (36%) clinics.¹⁷ These prevalences were determined from scores obtained by using the Cornell Medical Index, which records symptoms for which psychiatric treatment is generally available.

Complex factor analyses of data have seldom been rewarding. Eysenck's revelation of introversion/extraversion has made little if any impact on our appreciation of the role of personality in psychiatric disorder and none on treatment. Few if any psychiatrists believe that the understanding of a patient is achieved by considering his personality along two dimensions. Personality has protean facets, the taxonomy of which must be in multi-dimensional space. The profile of personality obtained by Cattell's 16 Personality Factors questionnaire looks more meaningful.¹⁸ The room for error—by that I mean variability, not mistake—still leaves the description far from satisfactory for an individual patient.

More needs to be known about how people feel, and in order to acquire this knowledge we require better techniques. The use of a visual analogue scale may have a place here.¹⁹ Just how alarmed is the asthmatic when breathing against resistance, and what effect has this on his cardiopulmonary function and behaviour?⁸ It also looks as if the use of repertory grids is rewarding for this kind of problem, such as discovering what people feel about each other when being treated in groups.²⁰

Research designs incorporating multidisciplinary methods are appealing. Research is dangerous if it is blinkered to the possible influence of changes in another physiological or psychological system. A multidisciplinary approach is required so that the psychologist can ensure that the psychiatrist has adequate measuring instruments and that the results are interpreted with due regard to the information obtained by the physician, assisted by biochemist and physiologist. This makes for high expense and for slow advance, but advance will be sure. Joint application of methods already available to patients with any symptom or disease—not limited by a list considered psychosomatic—should identify those with psychiatric morbidity; this morbidity can then be attended to with the likelihood of relief for those with mood disturbance. Alcoholism should be the classic example, where a correct psychosomatic approach could be rewarding.

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