Understanding Health: A Biopsychosocial Model

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ABSTRACT

The present study on biopsychosocial model indicates that health can only be understood in the contexts of biological, psychological and social aspects. This model suggests that the diagnostic process should always include the interacting role of biological, psychological and social factors in assessing an individual’s health.

INTRODUCTION

The idea that the mind and body together determine health and illness logically implies a biopsychosocial model. As its name implies, its functional assumption is that health and illness are consequences of the interplay of biological, psychological and social factors (Schwartz, 1982).

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Journal of Indian Health Psychology
Biopsychosocial model is a conceptual cornerstone in health psychology and behavioural medicine. In the traditional biomedical model, which underlies much of modern research and practice, disease is seen as stemming from a disordered biological system. Aberrations in biochemistry or physiology cause disease, alter its course, and are intervention targets. Psychological or social factors are seen as largely irrelevant. In a landmark paper, Engel (1977) articulated the biopsychosocial model as an alternative. Here biological, psychological and social processes are seen as an inter-related influence on health and illness. The onset, course and treatment of illness are best understood as involving each of these interacting, reciprocally determined levels of analysis.

Current research in health psychology consists of three general topics. The first—health behaviour and prevention—focuses on behavioural determinants that influence disease (e.g., diet, exercise, smoking), and the effectiveness of interventions to reduce these risks. The second—stress and illness—focuses on direct connection between psychological process and the development of illness. Rather than the intervention effect of habits and lifestyle factors, this research examines the impact of environmental stress and related personality and social processes on the psychobiological mechanism and the pathophysiology of disease. The third research area—the psychological impact and management of illness—focuses on the emotional and social consequences of illness and psychological interventions intended to improve adjustment and supplement traditional medical care.

Epidemiological researches have demonstrated the impact of daily habits on health. A variety of conceptual models have been developed to describe the determinants of these behaviours, and thereby provide the targets for interventions intended to reduce health risks (Armitage & Conner, 1999). For example, the health belief model suggests that several cognitive factors influence health behaviour. These include the value or importance an individual places on health; belief about vulnerability conferred by a specific behaviour; belief about the severity of the related illness; the individual belief about the effectiveness of a behaviour change in reducing risk; and a view of the relative costs and benefits of that change. From this perspective, interventions can be designed to increase the perceived importance of good health, strengthen the belief that a specific behaviour impacts health, make clear the severity of the disease or condition to be prevented, emphasise the risk reducing impact of behaviour change, and make salient the relative benefits of this change in promoting more healthy lifestyles. Based on this and closely related models of health behaviour, interventions ranging from individual counselling to national advertising campaign have been developed.
For many health behaviour changes, biological level of analysis is a critical consideration. Nowhere is this more evident than in the case of smoking cessation. It has become quite clear that nicotine is an addictive component of tobacco, and that habitual smoking can be seen, in part as the self regulation of this addictive agent. Hence, nicotine replacement therapy (e.g. nicotine gum or trans-dermal patches) is a valuable addition to psychological or behavioural approaches.

Body weight of 25% or more above normal is associated with increasing risk of diabetes, high blood pressure, coronary heart disease, and stroke. Further in industrialised countries, the prevalence of obesity is increasing. Vulnerability to obesity is influenced by genetic factors. The energy balance model suggests two additional influences on obesity—the amount of energy (i.e. calories) consumed and the amount expended. In simple terms, an individual gains weight when the amount of energy consumed exceeds the energy expended. Hence, caloric restriction (i.e. dieting) and increased energy expenditure through physical activity are critical determinants of obesity and essential components of treatment. However, larger socio-cultural and economic factors also affect obesity. In industrialised nations, the availability of high-fat, energy-rich foods has increased dramatically in recent decades, and level of leisure time and work related physical activity have decreased. Especially for the genetically vulnerable, this socio-cultural and economic context for the individual’s energy balance can be toxic environment promoting obesity (Hill & Peters, 1998). Hence our understanding of the influences on health behaviour influences on obesity is facilitated by a comprehensive perspective of the biopsychosocial model.

Smoking and obesity are very difficult to treat in adulthood, even with multi-component, multilevel interventions. Research and practice on health behaviour and prevention have begun to address the prevention of unhealthy behaviour. That is, rather than focusing on improved method of smoking cessation and weight loss in adults, more attention is being paid recently to method of preventing smoking and obesity in childhood and adolescence, and on the modification of these and other risk factors in youth. This trend has necessitated a developmental view of health habits and behavioural risk factors, as well as age appropriate interventions at the individual, family, school, and community levels. Even though the modification of health behaviour in adulthood remains a priority area in health psychology, early prevention is likely to become more widespread in the future.

The emergence of health psychology and its focus on health behaviour change preceded the identification of Acquired Immune Deficiency Syndrome.
(AIDS) and HIV infectious agents, only by a few years. Quickly, epidemiological and clinical research identified intravenous drug use and unprotected sexual activity as primary risk factors. As a result, health psychologists have been closely involved in efforts to prevent HIV infection. As in other health behaviour efforts, multiple levels of interventions have been employed. Individual level programmes, include educational interventions based on the health behaviour model and related approaches, such as enhancing the individuals’ skill in negotiating condom use during intercourse are being advocated. Community level approaches have focused on changing norms regarding sexual behaviour and advocacy of ‘safer sex’ by visible members of high risk communities. Institutional approaches have involved increased access to clean needles for drug users.

A second major focus of research and practice in health psychology involves the impact of stress, negative emotions and other psychological factors on the development of physical illness. In contrast to the effects of health behaviour described above, this area addresses more direct connection between mind and body. The general view guiding this research area, is the role of the stresses and strain of everyday life on the individual’s physiology. Accumulated over many days, months or even years, such physiological changes can initiate, hasten, or exacerbate the development of illness. Further, some characteristics of individuals’ personality or social environment can make them more or less susceptible to these psychobiological influences on disease.

A growing array of environmental and personality characteristics have been identified in epidemiological research as risk factors for physical illness and premature death. For example, individuals who are socially isolated or report low level of social support are at increased risk of cardiovascular disease, cancer, and premature death (House, Landis & Umberson, 1988). High levels of job stress also place people at greater risk of illness (Schnall, Landsbergis & Baker, 1994), as does the chronic stress of caring for seriously ill family members (Schulz & Beach, 1999). Individuals who are prone to anger and hostility are at increased risk of developing cardiovascular disease and premature death, as are people who report symptoms of anxiety, depression, pessimism and hopelessness (Smith & Gallo, 2001).

People who are socially isolated, experiencing high level of job stress, or are prone to negative emotions may be likely to smoke more, overeat, consume too much alcohol, or avoid regular exercise. These health behaviours could account for some of the effects of the social environment and personality on
health. However, the association of these psycho-social risk factors with subsequent morbidity and mortality remains significant even when the effects of health behaviour are controlled (Adler & Mathews, 1994). The prevailing view in this research area is that the psychological effect of stressful environment and negative emotions are the link between psychological risk factors and subsequent disease. These mechanisms are best understood in two general pathways—the effect of stress on cardiovascular system and its effect on immune system (Rozanski, Blumenthal & Kaplan, 1999).

Environmental threats and demands evoke transient increase in heart rate, blood pressure, and concentration on various hormones (e.g. epinephrine, nor-epinephrine, cortisol, etc.). In human and animal research, over a period of time, these stress induced physiological changes appear to promote more enduring levels of high blood pressure, and initiate and hasten the development of atherosclerosis in the coronary and carotid arteries. Atherosclerosis in these sites increases the risk of coronary heart disease and stroke respectively. Environmental stresses and the brief psychogenic changes they evoke can also precipitate acute manifestation of cardiovascular disease (e.g., temporary reduction of oxygen supply to heart muscle) among individuals with pre-existing atherosclerosis (Rozanski, et. al. 1999). Further, psychosocial factors identified in epidemiological studies as risk factor for cardiovascular disease tend to be related to this psycho-physiological mechanism. For example, social support generally reduced the magnitude of stress induced physiological reactivity (Uchino, et. al. 1996), and personality characteristics associated with increased risk of cardiovascular disease such as hostility. These are associated with more pronounced cardiovascular and neuro-endocrine reactivity (Smith & Gallo, 2004)

A variety of illnesses from common cold to some forms of cancer are influenced by the immune system as is the rate at which wounds heal. The immune system is a complex set of structures and processes, the overall function of which is to identify and destroy foreign bodies (e.g. viruses) and aberrant cells (e.g., malignancies), and to facilitate repair of damaged tissues. Reduction in immune system functioning, render the individual more susceptible to infection. A growing body of evidence suggests that environmental stress and factors influence the individual’s susceptibility to stress impact immune system functioning. Factors as diverse as the stress of final examinations, to marital discord have been found to reduce immune functioning. This interdisciplinary field Psycho Neuro Immunology (PNI) is the second area in which the study of mind-body connections is quite advanced. Psycho Neuro Immunology helps us establish a bridge between the material (biological and

Understanding Health: A Biopsychosocial Model

Journal of Indian Health Psychology
physiological) factors and “non-material” (societal, economical, political) factors that affect health and disease. The Nervous System, the brain in particular, is at the center of those interactions. It is the principal link between the mind (the mental state) and the body’s immune system. There are several existing models that try to map these complex interactions. Nearly all of the psychological variables identified in epidemiological research as risk factors for disease, have been found to be related to immune functioning (Glaser & Glaser, 1995).

Health behaviour might be responsible for some effects of stress on immune functioning. Smoking, inactivity, poor diet, and even sleep deprivation can produce deficits in immune functioning, and these are plausible links between stress and immune functioning. As described above environmental stress and negative emotions are associated with heightened circulating level of several neuro-endocrine factors such as cortisol and catecholamines. These neuro-endocrine responses can disrupt immune functioning. Stress-reduction interventions can have positive effects on immune functioning even among high risk disease such as HIV.

The third major aspect in health psychology involves the impact of psychosocial aspects and interventions on acute and chronic medical illness such as pain, disability, emotional distress, and the usefulness of psychological interventions. Psychological interventions facilitate to cope with chronic disease (e.g., arthritis, headache and chronic back pain) and stress, and aim to improve health. Stress management, training in pain coping techniques and reinforcement for increasing level of physical activities are some techniques used in psychological interventions. Chronic illnesses such as coronary heart disease, cancer, and HIV create many burdens for patients. These conditions pose the threat of further limitations and early death. They are associated with discomfort and disrupt social and vocational functioning, and involve unpleasant medical interventions and demand patient’s behaviour change. These threats to quality of life are important targets for health psychology interventions.

**Implication of the Biopsychosocial Model**

The biopsychosocial model indicates that the process of diagnosis should always consider the interacting role of biological, psychological and social factors in assessing an individual’s health or illness. Therefore, an interdisciplinary team approach may be the best way to make diagnosis. The model makes explicit the significance of the relationship between patient and practitioner. An effective patient-practitioner relationship can improve a patient’s use of services available for treatment as well as the efficacy of treatment.
Biopsychosocial model clearly implies that the practitioner must understand the social and psychological factors that contribute to an illness in order to treat it appropriately. In the case of health of an individual, the biopsychosocial model suggests that one can understand health in the contexts of biological, psychological and social aspects.

REFERENCES


