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ASTRACT

The challenges associated with cancer diagnosis and treatment require a coping response. The nature of the response can be defined according to a number of theoretical models of adjustment. Presented is a review of 3 theoretical models of adjustment applied to the cancer experience (1) The problem solving model of stress and coping (Nezu, Nezu, Houts Friedman & Faddis, 1998); (2) An integrative framework and life events model (Billings and Moos, 1982); and (3) the cognitive model (Moorey and Greer, 2002). While the problem solving model highlights the importance of problem solving processes in mediating the impact of cancer on quality of life, the integrative framework and the life events model defines the relationship between cancer and adjustment as being mediated not only by coping responses but also by the individual’s personal and environmental resources as well as their cognitive appraisal of cancer-related stresses. The appraisal of cancer-related stresses is the central factor in the cognitive model, which proposes that it is patients’ perception of stress which determines the level of adjustment and quality of life. The theoretical frameworks reviewed here suggest that psychosocial interventions that aim to improve the adjustment of cancer patients should enhance problem-solving skills, increase personal and environmental coping resources, and facilitate the development of adaptive appraisals of cancer-related stresses.
Review of theories of the effects of cancer on psychological adjustment

Introduction

Notwithstanding increasingly favourable prognoses, cancer impacts significantly on the life of the patient. Approximately 25% of cancer patients experience severe psychological distress (Derogatis et al., 1983). Difficulties associated with a diagnosis of cancer range from complex decision-making regarding treatment options to everyday problems including shifts in familial and vocational roles. Additional challenges include difficulties communicating effectively with health care professionals and the important people in the life of the patient. Those who undergo surgery may face disfigurement; radiation is associated with fatigue and pain and long-term cosmetic changes; and chemotherapy brings with it a series of debilitating side effects. These difficulties in addition to concurrent life problems require a coping response. The precise nature of the adjustment response can be defined according to a number of theoretical approaches, outlined here.

Theoretical Models of Adjustment

A number of theoretical models of adjustment have been proposed to explain the associations between these factors. What follows is a description of three such frameworks of adjustment.

2. An integrative framework and life events model (Billings & Moos, 1982)
3. The cognitive model of adjustment to cancer (Moorey & Greer, 2002).

The models listed above will be presented as they are of particular relevance to psychosocial interventions which aim to improve the adjustment of cancer patients to their illness.
Review of theories of the effects of cancer on psychological adjustment

Problem-Solving Model of Stress and Coping
The basic tenet of the problem-solving model of stress is that problem-solving ability has a moderating effect on distress (Nezu, Nezu, Houts, Friedman, & Faddis, 1998). Nezu and colleagues hypothesised that there is a significant relationship between problem-solving ability, as it applies to everyday difficulties, and psychological distress engendered by stressful life-events. Within this model the experience of cancer may be conceptualised as a major event which impacts significantly on day-to-day living.

Problem solving is defined as a process which facilitates the understanding and resolution of everyday difficulties. Effective problem solving comprises clear definition of problems and active engagement in realistic solutions. The latter aspect of problem solving refers to the individual’s attempts at altering the nature of or reaction to the problem, or both. Common obstacles to effective problem solving include uncertainty, conflicting demands or lack of resources. These obstacles are likely to feature throughout patients’ experience of cancer.

The problem-solving framework takes account of individual differences in problem-solving ability. Individuals may be characterised as having a positive or negative problem orientation depending on their ability to identify problems as they occur, to minimise the emotional and cognitive impact, to accept the reality of the problems and to engage in systematic coping. The expectation of success also contributes to this characterisation.

Individuals characterised as effective and ineffective problem-solvers exhibit a number of key differences. Compared with the latter, effective problem-solvers demonstrate a deeper understanding of everyday problems, higher motivation to engage in problem solving and a greater expectation of success. Effective problem-solvers are less inclined to exhibit avoidant behaviour (Heppner, Hibel, Neal, Weinstein, & Rabinowitz, 1982), while ineffective problem solvers report
greater anxiety (Neal & Heppner, 1982), and higher levels of depression (Heppner, Kampa, & Brunning, 1987). More specifically, evidence from studies with adult cancer patients supports the application of the problem-solving model to the cancer experience (Nezu, Nezu, Faddis, DelliCarpini, & Houts, 1995; Nezu et al., 1999). When controlling for levels of distress patients rated as ineffective problem solvers report higher levels of depression compared with patients characterised as effective problem solvers (Nezu et al., 1995).

The application of the problem-solving model to adjustment to cancer is presented in figure 1. Four major stress-related variables are interrelated and contribute to overall distress or quality of life. The four factors include major negative life events, daily problems, negative emotional states, and problem-solving coping. In this framework poor prognosis and multiple psychological and medical stresses can lead to severe psychological distress and poor quality of life. Effective problem solving is seen as the key factor in improving individual coping, reducing, emotional distress and improving quality of life.

The bi-directionality of the arrows between Cancer and Medical Psychosocial Problems illustrates how medical problems or medical treatment side effects can have an adverse affect on the overall health outcome. The question mark by the arrow linking Quality of Life and Cancer is intended to emphasise the controversial nature of the relationship between psychosocial adjustment and health outcome. Also represented in the diagram is the causative link between psychological distress and impaired functioning, variables which put together, fall under the banner of Quality of Life.

The problem-solving model of adjustment describes the mechanisms by which effective problem solving minimises immediate distress and decreases the probability of long-term negative outcomes. Ineffective or impaired problem-
solving skills reduce motivation to engage in problem solving and/or inhibit problem-solving performance. Poor problem-solving skills increase the likelihood of long-term negative affective conditions and poor quality of life. Ineffective problem solving can exacerbate existing day-to-day problems and/or create additional problems.

This framework departs from Lazarus and Folkman’s (1984) model of problem solving. Lazarus and Folkman described two aspects to problem solving: problem-focused and emotion-focused coping. The former refers to the process of attempting to alter the nature of the problem so that it is no longer problematic. The latter describes attempts at managing the emotional distress associated with the problem. Within this paradigm problem solving comprises problem-focused goals and emotion-focused goals. Problem-focused goals are formulated where there is perceived potential for altering the nature of the problem. Emotion-focused goals are set as a means of managing distress.

**Integrative Framework and Life Events Model**

While the problem-solving model (Nezu et al, 1998) highlights the importance of problem solving processes in moderating the impact of cancer on patients’ psychological adjustment and quality of life, no reference is made to other potentially important variables such as personal and environmental resources and personal appraisals of illness and other stresses. Billings and Moos’s (1982) integrative framework and life events model deserves a mention because it is with these precise variables that it is centrally concerned. Examining the interrelationships between the psychosocial factors underpinning adjustment to illness is key to understanding the variability in patients’ responses to a diagnosis of cancer (Billings and Moos, 1982).

The integrative framework and life events model of adjustment posits that the relationship between stressful life events and depression is mediated by a
Review of theories of the effects of cancer on psychological adjustment

number of factors (see Figure 2). These include personal and environmental resources, cognitive appraisal and coping responses, and the interplay of each of these factors. The model treats genetic, biological, developmental, and socio-cultural factors as determinants only in so far as they impact on these domains.

Personal resources refer to social skills and problem-solving skills, as well as dispositional characteristics like self-concept and attributional style. Environmental resources are seen as encompassing the emotional, material and informational support provided by those with whom the individual has contact. It is within this context that the stressors are perceived and appraised. The coping response represents the individual’s attempt at minimising the impact of the stressors. The resulting disruption to the individual’s level of functioning, and its propensity to incur depressive symptomology, is determined by the combined outcomes of these interrelated factors.

For example, environmental stressors such as cancer, or cancer-related stresses, trigger appraisal and coping responses. The outcome of this determines personal functioning, depressive symptomology and overall quality of life. Personal resources, such as high self-esteem, can mitigate depressive outcomes in a number of ways. Personal resources can reduce the occurrence of stressors by facilitating stress-reducing coping or by fostering healthy functioning even in the absence of stress. Environmental resources can affect functioning in a like manner. Moreover, personal resources can impact on depression indirectly by facilitating the development of environmental resources. For example, certain personal characteristics are better placed for fostering environmental supports from family and others. This impacts positively on affect. Finally, impaired functioning and depressed mood can influence each of the preceding sets of factors.
Cognitive model of adjustment to cancer

An important aspect of Billings and Moos' (1982) integrative framework and life events model of adjustment is the central role given to the appraisal of cancer and cancer-related challenges in determining adjustment and quality of life. Different people perceive the threat that cancer poses to survival and personal identity in different ways. The appraisal process is of primary concern to the cognitive model of adjustment (see Figure 3). Cognitive models of adjustment consider interpretation as the key factor in determining response to stresses (Moorey and Greer, 2002).

Cancer may be interpreted as a challenge, a grave threat, impending harm, or as loss or defeat. The existence of illness may be denied outright. The result of the appraisal process is crucial in determining patient adjustment. The initial appraisal of the diagnosis comprises questions relating to the nature of the threat posed by the cancer, what can be done about it, and the outlook.

The news can profoundly impinge on a patient’s sense of control. Core beliefs are challenged, and the associated feelings and cognitions disrupted. The cycle of feelings, thoughts and behaviour relating to the patient’s experience of cancer gives rise to their coping style. Coping styles can be divided into the 5 categories, described below (Greer and Watson, 1987).

- Fighting spirit
- Avoidance or denial
- Fatalism
- Helplessness and hopelessness
- Anxious preoccupation

*Fighting Spirit*
Review of theories of the effects of cancer on psychological adjustment

A patient characterised as having fighting spirit perceives cancer as a challenge. A positive attitude is taken and recovery is viewed as a process in which the patient is willing to take an active part. In order to foster a sense of control normal day-to-day activities are typically resumed in a relatively short space of time. Fighting spirit is reflected in the sentiment, “I take each day as it comes.”

Avoidance or denial
Patients engaging in avoidance or denial play down the threat in an effort to maintain a sense of control. The effect of the illness is denied and prognosis is looked on favourably. Avoidance or denial is expressed in the statement “The doctors weren’t concerned - they offered me treatment just to be safe.”

Fatalism
Patients with a fatalistic adjustment style interpret their illness as a relatively minor threat over which they can exert no control. The attitude here is one of passive acceptance. Typical fatalistic statements include, “It’s not up to me how this will work out.”

Helplessness and hopelessness
Helplessness and hopelessness coping styles are defined by the patient’s sense of being overwhelmed by the diagnosis. The illness is interpreted as a major threat, loss or defeat. As with fatalistic adjustment styles the situation is viewed as one over which little of no control can be exerted. A helplessness or hopelessness style of adjustment is reflected in the sentiment “It’s all over for me now.”

Anxious preoccupation
Anxious preoccupation is characterized on an affective level by anxiety and on a behavioural level as compulsive searching for reassurance. The illness is perceived as a major threat. The patient harbors uncertainty over their ability to
Review of theories of the effects of cancer on psychological adjustment

exert control over the situation. A typical expression made by patients who are anxiously preoccupied is “My day is filled with reminders of my illness and the chance of it returning.”

The work of Taylor and Armor (1996) elucidates the relationship between coping style and psychological adjustment. The authors purport that fighting spirit is associated with favorable self-perception and appraisal of the future, and a strong sense of control. Conversely, patients with maladaptive coping styles exhibit a predilection towards negative cognitive bias. Examples of common cognitive distortions include all-or-nothing thinking and overgeneralisation. All-or-nothing thinking describes a style of cognition in which the world is seen in black or white terms. This kind of thinking is expressed in the line “If I will not regain 100% fitness after treatment there’s no point in trying in the first place.” Overgeneralisation refers to the tendency to construe isolated events as being part of an inexorable pattern of decline and is reflected in the sentiment “The tiredness and aches I feel from time to time mean the cancer is coming back.” Information is processed negatively in order to maintain negative core beliefs about self, the world and others. Examples of negative core beliefs include, “I am a burden on my family”; “The world is an unjust place”, “Nobody cares about my illness.”

Central to the cognitive model of adjustment is the concept of negative automatic thoughts. Negative automatic thoughts refer to negatively biased automatic self-talk. The cognitive model holds that negative thoughts inform feelings and behaviour negatively. Negative cycles of thoughts, feelings and behaviour entrench the patient’s concept of and attitude towards their illness. These patterns define the patient’s emotional and behavioural response. To illustrate, depressed mood is commonly underpinned by a sense of hopelessness about the potential to derive pleasure from activity. The behavioural withdrawal, and associated negative thoughts which follow, compound the sense of
hopelessness, thereby perpetuating the negative affect. Depression is further associated with aches and fatigue, symptoms which are interpreted by some patients as signs of declining health. This too reinforces the negative affect and cognitions.

There is compelling evidence indicating that the manner in which patients cope with their illness is a principal determinant of overall adjustment. Fighting spirit is correlated with lower levels of depression and anxiety (Watson et al., 1988; Watson, Greer, Pruyn and Born, 1990). Patients with a helplessness-hopelessness or anxiously preoccupied coping style show a higher prevalence of anxiety and depression (Osborne, Elsworth, Kissane, Burke & Hopper, 1999). Breast cancer patients with a greater sense of control over their illness exhibit better adjustment (Taylor, Lichtman & Wood, 1984).

According to the cognitive model of adjustment emotional response is informed by the perception of the threat posed by cancer. Anxiety, anger, guilt and depression are four common emotional reactions to cancer (Silberfarb and Greer, 1982). Anxiety is elicited in patients for whom the illness represents a threat to physical or social status, and where there is a perception that they and others are ill equipped to deal with it. Anger is invoked when the threat is viewed as an unjustified attack either directly on physical safety or self-esteem, or indirectly on values or rules the person holds dear. Of note, an angry reaction can be adaptive if the individual responds by harnessing their energy to fight the disease or if it is inclined to distract the individual from attending too closely to symptoms. Apportioning blame is also typical of an emotional reaction which is predominated by feelings of guilt. Self-blame is born out of the idea that the patient somehow brought on the cancer themselves. The patient's search for meaning may even lead to the conclusion that the diagnosis is punishment for some wrongdoing on their behalf. Finally, cancer patients with depressed affect experience a sense of loss, either of abilities, roles or appearance.
Review of theories of the effects of cancer on psychological adjustment

Interactions with family, friends and health care professionals play an important role in colouring patients’ perception of their illness. Evidence indicates that quality of support takes precedence over quantity in facilitating adjustment (Bloom, 1986). It may be that there is a reciprocal relationship between social support and adjustment (Moorey & Greer, 2002).

In summary, the cognitive model of adjustment emphasises the primary role of patient interpretation in determining psychological adjustment. Emotional response is defined by the perception of the threat cancer represents for the patient. Core beliefs about self, the world and others are challenged and core negative beliefs are activated. Overall adjustment is determined by an interaction between patient interpretation, available coping strategies, and the nature of the emotional support available.

Conclusion

In this paper 3 models of adjustment were presented (1) The problem solving model of stress and coping (Nezu, Nezu, Houts Friedman & Faddis, 1998); (2) An integrative framework and life events model (Billings and Moos, 1982); and (3) the cognitive model (Moorey and Greer, 2002). While the problem solving model highlights the importance of problem solving processes in mediating the impact of cancer on quality of life, the integrative framework and the life events model contends that the relationship between cancer and adjustment is mediated not only by coping responses, but also by the individual’s personal and environmental resources, and their cognitive appraisal of cancer-related stresses. The appraisal of cancer-related stresses is the central factor in the cognitive model, which proposes that it is patients’ interpretation, or perception of stress in their lives which determines their level of adjustment and quality of life. These three models are of particular relevance to psychosocial interventions which aim
Review of theories of the effects of cancer on psychological adjustment
to improve the adjustment of cancer patients to their illness. They suggest that
such programmes should enhance problem-solving skills, increase personal and
environmental coping resources, and facilitate the development of adaptive
appraisals of cancer-related stresses.
Review of theories of the effects of cancer on psychological adjustment

References


Review of theories of the effects of cancer on psychological adjustment


Review of theories of the effects of cancer on psychological adjustment

Figure 1: Problem-solving model of adjustment: Reciprocal relationships among major negative life events, daily problems, negative emotional states, and problem-solving coping (based on Nezu, Nezu, Houts, Friedman & Faddis, 1998).

Figure 2: An integrative framework for the analysis of adaptive processes and depression (based on Billings and Moos, 1982).
Figure 3: Cognitive Model of adjustment to cancer (Moorey and Greer, 2002).