

increased and that the number of smear positive infectious cases was now increasing because of infection of the young.

DISCUSSION

Tuberculosis is increasing rapidly in the developing world where HIV infection is prevalent. With the projected and actual introduction of short course chemotherapy to these countries,¹ it is possible that the most powerful drugs currently available to treat tuberculosis may be utilised irresponsibly; this might be due to inadequate provision of health services in some countries. The potential for the emergence of tubercle bacilli which are multiply drug resistant, as happened in recent years in New York City, where up to 25% of tubercle isolates became multiply drug resistant,² is real. That this need not happen is demonstrated by the IUATLD supervised Tanzanian National Tuberculosis Programme. Although cure rates approach 80%, notification rates for all forms of tuberculosis are still rising steeply and up to half of these patients are HIV positive. In spite of these pressures, the introduction of directly supervised short course chemotherapy in the initial treatment of infectious cases in this well-organised programme has maintained the cure rate without (to date) the emergence of drug resistant organisms.

The programme is funded by overseas donors with £1.5 × 10⁶/annum and supervised by the IUATLD as in similar programmes in many but not all qualifying countries. If the emergence of multiply drug resistant tubercle bacilli is to be avoided, the international community needs to respond to WHO's appeal for financial support to provide sound tuberculosis services in the developing world.¹

The United Kingdom at present makes no contribution either directly to governments or through WHO or IUATLD to the development or maintenance of such tuberculosis services.¹ Humanitarian reasons dictate that it should. The fact that in England and Wales tuberculosis notifications in the first half of 1994 have increased from 106 to 304 in the last five years³ in ethnic groups, other than White and Asian, the largest of which is black African, supports this view. It would be our fault if, as a result of the lack of appropriate overseas development aid, both the developing and the developed world were to experience a proliferation of tuberculous disease due to multiply drug resistant tubercle organisms and so, in effect, a return to the pre-chemotherapy era.

ACKNOWLEDGEMENT

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PSYCHOLOGICAL FACTORS IN RECOVERY FROM ILLNESS AND FROM SURGERY

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It is widely accepted by lay people that psychological factors may influence the onset, progress and recovery from disease. Indeed, high blood pressure has been regarded by non-professionals as evidence of psychosocial stress (rather than of the cardiovascular system).¹ Medical scientists have in the past dismissed such lay beliefs as anecdote-based or speculative and lacking support evidence. However a body of evidence is accumulating which goes beyond the merely speculative and anecdotal, and there is now a challenge for modern medicine to incorporate the implications into clinical practice.

Research on recovery from surgery has demonstrated the importance of psychological factors in the pre-operative period and this knowledge has been successfully applied to improve patient outcomes, although without adding to the understanding of how the effect is achieved. Research on recovery from illness has a less coherent literature and provides fewer answers to clinical problems but does show the range of psychological mechanisms which may influence recovery. This paper is presented in three sections: the first on the assessment of recovery, the second on studies of psychological preparation for surgery, and the third on the psychological processes of potential importance to recovery from illness and surgery.

ASSESSMENT

What is recovery?

In clinical practice and in research, recovery is assessed in several measures which include:

- (1) the reduction of symptoms, e.g. pain, breathlessness, anxiety
- (2) the reduction of disability/increased activity
- (3) the reduction of use of medication and analgesics
- (4) clinical and laboratory measures of the physiological functions of the various systems e.g. heart rate and increased T-cell count
- (5) length of hospital stay
- (6) participation in normal activities, e.g. return to work and to social and leisure activities
- (7) improved quality of life.

Multivariate analysis of measurements of recovery from surgery indicate that it is multidimensional²—a measurement on one dimension is not necessarily reflected in another. The mechanisms that influence outcomes may differ. Thus a patient may become more active but simultaneously increase the use of analgesics. Some measures of utilisation may not reflect a patient's condition; for example the length of hospital stay may not reflect speed of recovery, but the hospital bed state manipulation.

Behavioural indices of recovery

Few physiological measures are relevant especially beyond the early stages of recovery. Clinicians deciding whether or not to discharge patients from hospital

frequently asks how they feel (symptoms and mood) and how active they have become. It has been argued that the essential outcome of medical care reflects behaviour and that physiological and biochemical indices are only important insofar as they indicate what the individual will be able to do.³

There are three implications of behavioural and psychological indices of recovery. First it is essential that measures of recovery meet adequate psychometric standards, are reliable, valid, sensitive to change and acceptable to those assessed.⁴⁻⁶ Too often measures of behaviour are intuitive, *ad hoc* assessments or even opinions that do not allow for replication or comparison with other studies and allow sceptics to ignore the findings. Apparently good studies have sometimes been marred by lack of repeatability, such as the report that coping styles predicted survival rates in women with breast cancer where there was no clear measure of what constituted a 'stoical' or 'fighting spirit' style.⁷ Second, one should expect such measures of behaviour to be influenced by factors which similarly influence behaviour in other contexts. For example, in general, individuals lacking information develop high levels of anxiety; patients recovering from a myocardial infarction may also feel anxious in a clinical unit which provides little information. Third, insofar as the outcomes are psychological or behavioural, they will be subject to psychological interventions, and recovery should be enhanced by them; for example, post-operative patients may experience pain due to muscle tension and relaxation therapy can reduce this.⁸

Psychological factors affecting physiological indices of recovery

Psychological influences on physiological outcomes are complex and require interdisciplinary analyses. They can affect outcomes in three main ways (Fig 1).

Direct behavioural. Patients behaviours, such as adherence to treatment, may have a direct impact; thus a patient believing that essential hypertension is a short-term condition may give up taking medication. Emotion may increase smoking further impairing lung function in chronic obstructive pulmonary disease.

Indirect behavioural. Patients behaviour may influence the prescription of health care. For example, patients who are extremely distressed may be regarded by doctors and nurses as unlikely to tolerate an exacting chemotherapy and as a result may be prescribed a less aggressive, and possibly less effective, regimen. Also a patient may be influenced to believe in and successfully demand, further investigations which may ultimately lead to effective treatment.

Psychophysiological. Emotional states are accompanied by physiological changes in the neuroendocrine, immune and cardiovascular systems, which may exacerbate the clinical state or interact with treatment. For example, patients very anxious prior to surgery may require more anaesthetic and so have poorer outcomes⁹ and because of increased neuroendocrine activity are more susceptible to complications such as deep vein thrombosis or infection. Individuals who are HIV positive and highly stressed may be more likely to develop AIDS because of the immunosuppressing effects of the stress.

PREPARATION AND RECOVERY FROM SURGERY

Psychological preparation for surgery aims to reduce high levels of anxiety¹⁰ and to achieve a better outcome. Although it has been suggested that a certain degree

A young man develops symptoms of a chest infection, two weeks after having unprotected sex. He attributes the symptoms to HIV infection. As a result of this wrong belief, three things happen:

1. He tries not to think about it, goes off to the pub with his mates and smokes much more than he would normally. This exacerbates his lung symptoms.
2. He decides not to go to his GP, both because he does not want to think about it and because he knows there is no cure for AIDS. As a result, he does not get the antibiotic prescription which would tackle his infection.
3. He begins to feel depressed and hopeless. As a result his immune system becomes depressed and less effective in fighting the infection.

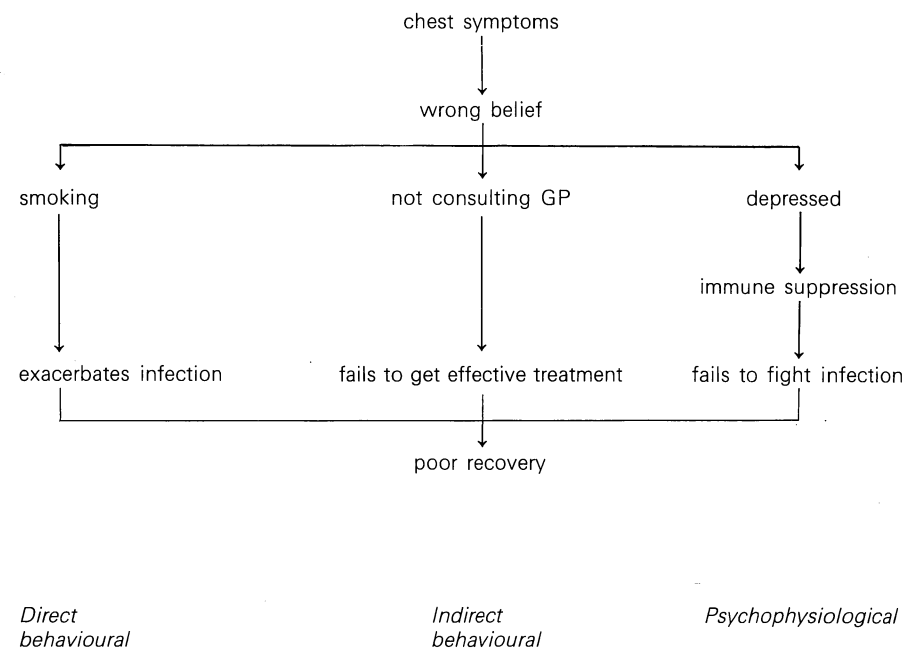


FIGURE 1

An illustration of how psychological factors might affect outcome of an illness via three pathways.

of anxiety is beneficial,⁹ studies show that patients with least anxiety fare best.

In the first controlled study of psychological preparation¹¹ general surgical patients were randomly allocated to normal care or special care which provided additional information about pain control and post-operative procedures. Those in the special care group required less analgesia and were discharged from hospital earlier than the controls. Over 40 randomised controlled trials have now confirmed that recovery is enhanced by psychological preparation.

The effect of providing information about the procedures to be undergone by the patient, and the sensations (e.g. pain, drowsiness) that may be experienced at each stage have been investigated. Cognitive training enables the patient to identify and cope with thoughts that provoke anxiety about the forthcoming operation and to think in a positive and adaptive way. Behavioural instruction, such as how to cough and relax, may be given pre-operatively. These methods have been shown to be helpful with sensation information and cognitive methods

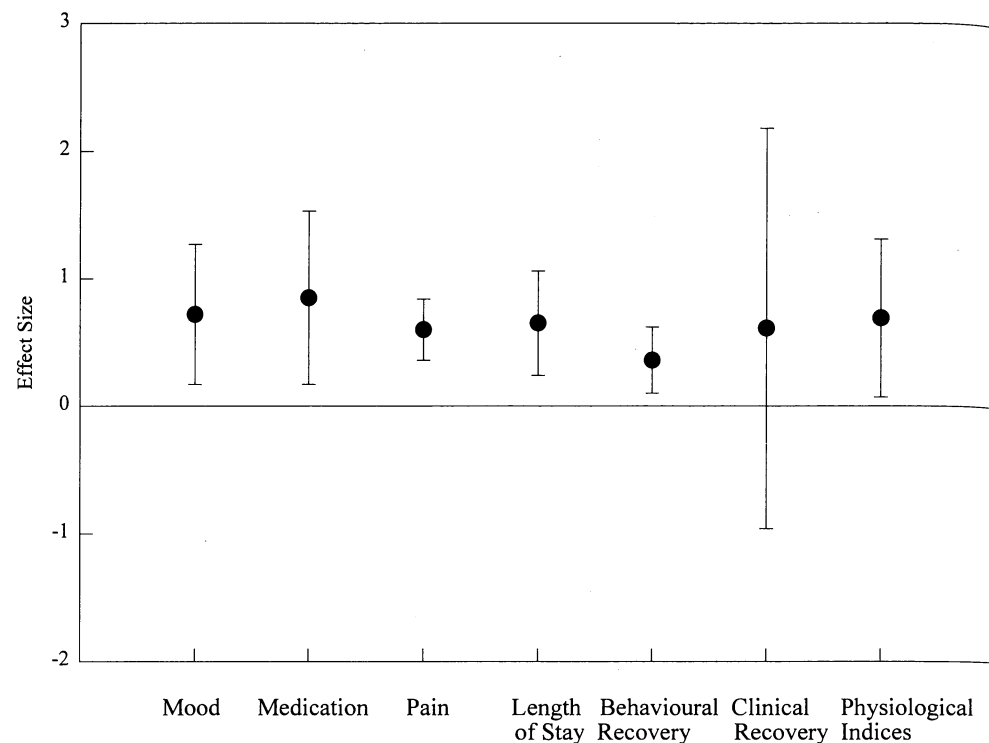


FIGURE 2

Preparation for surgery: results of meta-analysis for 7 outcomes. (Data are effect size with confidence intervals for each outcome⁸).

most effective. They have led to reductions in pain and use of analgesics, early ambulation, and decreased length of hospital stay. Psychological interventions might be expected to be most effective in achieving psychological and behavioural benefits such as reduced anxiety and faster return to normal activities. However they have improved other outcomes, for example, patients prepared before a coronary artery bypass and graft (CABG) had a lower incidence of acute postoperative hypertension.¹¹ Meta-analysis of the results of published trials demonstrate significant benefits on all outcomes⁸ (Fig 2). Given the wide range of benefits and the lack of apparent adverse effects, there is a strong argument for clinical implementation of psychological preparation.

There is little information on how psychological preparation works. However, in order to achieve greater scientific understanding of the process and to enhance its effectiveness it is important to understand how it influences outcomes such as length of stay or medication requirements. The three pathways (Fig 1) may each be a route whereby psychological preparation benefits surgical recovery.

PSYCHOLOGICAL PROCESSES IN RECOVERY

Four major areas of current research have produced significant findings which build on earlier work on how people think and feel and influence others.

Cognitions

Patients' cognitions, i.e. their thinking or beliefs, can affect recovery. The infor-

mation which they receive determines what they think and do, and this includes how they adhere to medical advice. Adherence is influenced by their satisfaction with communications with doctors and other health professionals; patients are less likely to adhere to treatment if they think the doctor has not listened to or fully understood their concerns about their condition.¹³

In addition to right or wrong information, people develop mental representations of their condition which influence how they feel and act. In preparation for surgery, providing information (both procedural and sensation) changes patients' mental understanding of their experience of the procedure and leads them to interpret sensations more appropriately, e.g. prepared women experiencing severe abdominal pain following hysterectomy may be more inclined to interpret the pain as due to wind than to the incision. Leventhal and colleagues¹⁴ have identified five components of patients' models of clinical conditions short-term or chronic, which are likely to influence how they respond. (1) Identity of the condition: what do they think it is? (2) Time line: do they perceive it to be acute, chronic or cyclical/remitting? (3) Cause: what caused it? Was it due to their own behaviour or character? (4) Consequences: what do they believe they have experienced as a result of the condition and what do they expect the outcome to be? (5) Control/cure: can the condition be controlled by their own or health professionals' actions?

The importance of identity is illustrated by patients on chemotherapy who were found to be more distressed by non-specific symptoms such as tiredness than they were by hair loss or nausea.¹⁵ This was held to be due to the more specific symptoms being clearly identified with treatment whereas the non-specific symptoms were identified with the disease and attributed to its progression. Time-line was illustrated in patients with essential hypertension.¹⁶ Those believing that it was an acute condition with a short time-line ceased to take the antihypertensive medication after a few weeks or when presenting symptoms disappeared, on the assumption that the condition had cleared up, whereas those believing it had a chronic time-line continued to take medication with greater benefits and lower blood pressure recorded at follow up.

Beliefs about control of both past events, (the cause of the condition), and over future events, (possible cure), are also important. In preparation for surgery effects can be achieved by enhancing patients' beliefs in personal control. In CABG patients,¹² the benefits were more closely associated with patients believing they had control than in simply feeling better informed.

Three main ways in which control cognitions are tackled relate to locus of control, attribution theory which addresses the explanations we give for past events and self-efficacy, i.e. confidence that one can 'perform' critical behaviours. Locus of control distinguishes where control is internal, i.e. by the individual, or external, i.e. outside the control of the individual and, when external, whether other people have control, 'powerful others control', or whether events are due to chance. The evidence suggests that those with internal control beliefs have better outcomes; for example, allowing for initial levels of disability after a stroke, or a wrist fracture patients with high internal beliefs make better recoveries.¹⁷

Any major event leads to a search for explanations and attributions. Blaming others may lead to poorer emotional adjustment, whereas blaming oneself has sometimes proved adaptive and sometimes maladaptive.¹⁸ The evidence suggests

that it may be more adaptive when one is blaming isolated elements of behaviour, than when one is blaming one's enduring disposition.¹⁹ It may be easier to adapt when one can blame oneself and there is the prospect of behaving more successfully at a future date. For example, parents of a baby with birth defects adjusted more easily if they could attribute the defects to some changeable element of their own behaviour, probably because they could anticipate giving birth to a normal child in future.²⁰

Self-efficacy has also predicted outcomes largely because those with high self-efficacy beliefs are more likely to perform critical behaviours, thereby securing outcomes or enhancing behavioural skills essential to recovery. For example, patients with rheumatoid arthritis (RA) with high self-efficacy beliefs were better adjusted emotionally and were less disabled at follow up.²¹

In summary, patients' beliefs about their condition and about its treatment are highly predictive of emotional adjustment, extent of their disability and adherence to medical regimes. By affecting emotional state, cognitions may trigger psychophysiological processes which affect recovery. For example, programmes for RA patients which focus on enhancing self-efficacy beliefs²¹ have resulted in better emotional and disability outcomes. These programmes are currently being implemented in Scotland and throughout the UK by the charity, 'Arthritis Care'.

Emotional state

Patients' emotional state during recovery is determined partly by their disposition and partly by the threats associated with their condition and treatment. People with a high anxiety trait typically display more transient anxious moods and become highly anxious more readily in threatening situations than do those with a low trait. Thus someone who has been very anxious before examinations is likely to be very anxious before surgery or when diagnosed to have a serious disease, both of which arouse anxiety in virtually everyone.

When patients are anxious before surgery, they continue to be anxious after surgery. In women having major gynaecological procedures, anxiety levels continued to be high for over a week after surgery (Fig 3).¹⁰ Even when the surgical procedures are complete, the speed and level of recovery are still uncertain, and therefore continuing high levels of anxiety are understandable. However such anxiety may interfere with recovery either by psychophysiological disruption or because anxious individuals may be less inclined to engage in early ambulation.

Negative moods are more common in people with physical complaints and various explanations have been considered.²² First, patients may be anxious or depressed as a result of their condition and possible associated treatment. Second, people with negative affect may be more likely to become ill; a review of psychological characteristics concluded that depression was the clearest risk factor for a variety of diseases including coronary heart disease (CHD) and cancer.²³ Third, people vary in the attention they give to symptoms; those more attentive have more physical and more psychological complaints than those who give little attention to symptoms.

Levels of distress in patients with chronic conditions do not relate to the type or severity of the condition. Using standard measures of anxiety and depression patients with motor neurone disease showed little more distress than a 'healthy' population,²⁴ and high scores may be found in individuals with less threatening conditions. The emotional reaction is explained as a response to the person's

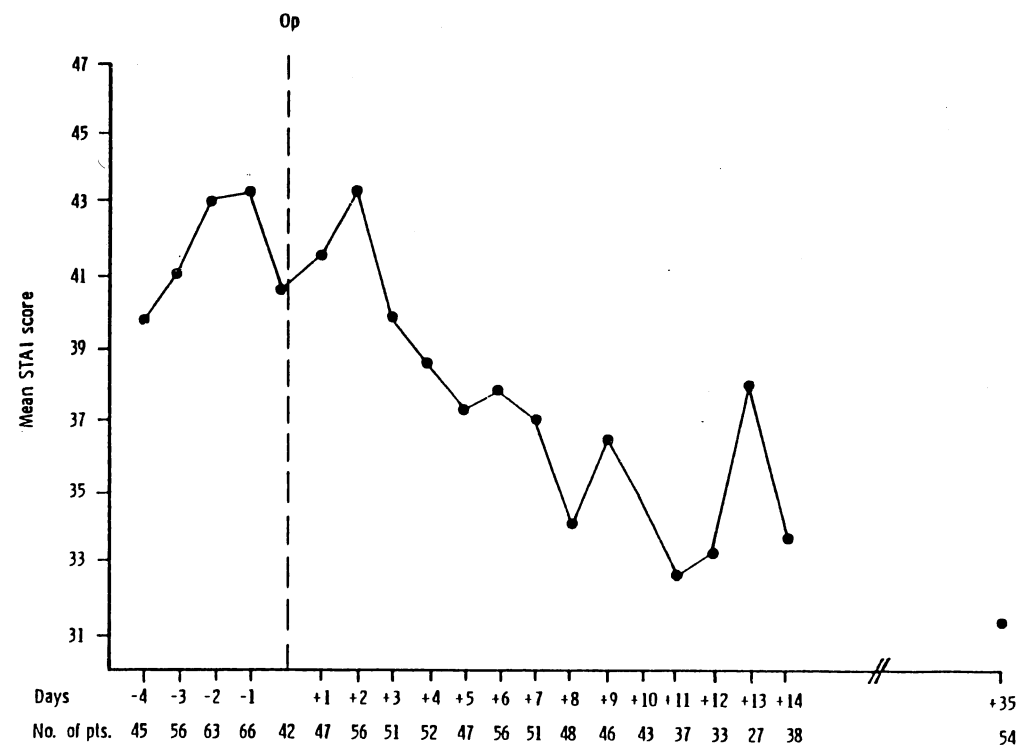


FIGURE 3

Mean anxiety (State-Trait-Anxiety-Inventory, STAI). Scores for total sample of 72 patients showing prolonged elevation of anxiety levels during the week after surgery. [reproduced by permission of the British Medical Association]

mental representations of the condition.

These emotional responses can become a problem in themselves and patients have to deal with them as well as with the objective challenge of a disease and its treatment.¹⁴ Psychological interventions in patients with RA,²¹ with advanced cancer,²⁵ and following myocardial infarction (MI)²⁶⁻²⁷ have improved emotional functioning.

Emotional states may also predict poor outcomes. Following a myocardial infarction, patients with high depression scores were less likely to survive 6 months than those with a low score.²⁸

Coping

In the psychological literature, coping is defined as any effort to manage external or internal demands, i.e. what people do in response to stress. Unlike in lay usage there is no assumption that coping is effective management. Folkman and Lazarus²⁹ suggest that events, whether internal (including symptoms) or external (including what people say) undergo a process of primary appraisal as either positive or negative (a loss or threat of loss). If appraised as negative, there is a secondary appraisal of available resources (psychological, physical, financial, social, etc.) to meet the challenge. Having made these appraisals the individual then engages in coping.

Coping can be classified. First, coping responses can be part of a person's

habitual style in a wide range of situations, and may be contrasted with a coping strategy, used for a particular problem, but which need not apply in other situations. Second, coping responses can be problem-focused or emotion-focused, i.e. directed at solving the problem or at minimising the emotional reaction. Thus following surgery for breast cancer, a woman may seek the best surgical after-care (problem-focused) and/or minimise the seriousness of breast cancer (emotion-focused) by bringing to mind ways in which it is not so bad as other conditions. Third, coping can direct attention away from or towards the threat, and is then referred to as avoidant-vigilant, or as repressing-sensitising or as degree of denial. It is possible to have combinations; for example, when a person disabled by stroke avoids situations where it is necessary to climb stairs, this would be problem focussed avoidant coping; when however he avoids conversations about disability this is emotion-focused avoidant coping.

For short-term stresses avoidant coping results in better outcomes than vigilant coping whereas vigilant coping is more effective for long-term stresses.³⁰ For surgery, where the stress is of short duration it has been found adaptive to avoid thinking about the threats involved and possible bad outcomes. By contrast, patients with chronic conditions, who attend to a threat rather than avoiding thinking about it have better outcomes; this may be because they direct their coping efforts at solving some of the problems that result from the condition and they are less likely to be caught out emotionally by intrusive reminders of their condition.

Coping strategies may be important in recovery, especially where active participation is required; for example, a patient using an emotion-focused, avoidant strategy may be more difficult to engage in retraining in a cardiac rehabilitation programme than one using a problem-focused attentional strategy.

Concern has been expressed about the possibility of disrupting patients coping prior to surgery by psychological preparation. If a patient is successfully using avoidant coping, then attempts to provide additional preparatory information or instructions could be disruptive and harmful as avoidant coping immediately prior to surgery is associated with good post-operative outcomes. While there is little specific research, the evidence suggests that brief preparation may be more harmful than fuller preparation; patients with an avoidant style who watched a preparatory video once did worse than avoidant patients who did not see the video. However avoidant patients seeing the video three times benefited in the same way as patients with vigilant strategies.³¹ The previously cited research on preparation for surgery suggests that psychological preparation enhances the effectiveness of patients' coping.

Social support

When faced with a threat, individuals appraise their coping resources and these may be further enhanced by many facets of social support. The social network includes household composition and family or friends living nearby. The support can be practical, i.e. tangible help and assistance with information, or emotional that makes the individual feel esteemed and valued. All of these have been related to health outcomes. The Direct Effect hypothesis about social support proposes that it is always beneficial, whereas the Buffering hypothesis proposes that it is beneficial only at times of stress by protecting against the detrimental effects of stress on health. Both hypotheses have empirical support.

Patients after CABG surgery who had good social support from a spouse, and were visited frequently took less medication and were discharged sooner than less supported or unmarried patients; quality of relationship appeared to have little effect.³² The authors suggest that spouses' visits acted by enhancing self-efficacy beliefs and coping efforts. After allowing for all appropriate clinical predictors, elderly patients who prior to the operation participated in some social or community group were less likely to die within 6 months of cardiac surgery than those who did not participate.³³

A measure of emotional support was found to predict immune function changes in HIV-infected men with haemophilia. Those with low social support showed a more rapid deterioration in CD4 count in the years following infection than men with high emotional support.³⁴ This study was not able to control for possible confounding factors such as changes in social support following infection.

Spiegel²⁵ studied patients with advanced breast cancer who were randomly allocated to either a programme of group therapy or to normal care. The group therapy involved a large element of social support among group members and also other features facilitating emotional expression. Interim results showed better emotional functioning and reduced pain in those on group therapy and increased survival time was an unexpected bonus.

What are the likely mechanisms? Does increased social support act by changing cognitions (including self-efficacy beliefs), by improving mood and/or by altering coping strategies? Are the effects on survival in advanced breast cancer due to direct behavioural factors such as the women altering their diets, or by indirect behavioural means as they learn to negotiate about their health care and possibly achieve more effective interventions, or are the effects psychophysiological and achieved by changes in immune functioning as a result of improved mood?

CONCLUSIONS

The belief that psychological factors influence recovery from surgery and illness now has a much stronger foundation than merely anecdote and speculation. It is relatively easy to demonstrate that psychological factors affect common indices of recovery such as emotional states, pain and activity levels but they also impinge on physiological outcomes such as immune function or even death. The most convincing evidence comes from clinical trials where individuals having a psychological preparation for surgery or social support in advanced breast cancer recover faster or survive longer than those lacking such preparation. The major scientific challenge is to understand the underlying mechanisms, which psychological processes are critical, how they interact and how they affect each other. One can readily propose relationships between cognitions, emotional states, coping and social support, e.g. that cognitions affect mood or that social support influences coping. Psychological factors may influence physiological outcomes via direct behavioural, indirect behavioural and psychophysiological pathways and there is clear evidence in support of each. Further research is necessary but findings are now at a stage where they could be implemented clinically and improve outcomes for patients.

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FUNDAMENTALS OF MEDICAL ETHICS: AN ISLAMIC VIEW

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Ethics is a vast and many faceted subject, and can be defined as the treatment of moral questions. Morality is concerned with the goodness or badness of character and disposition, and with the distinction between right and wrong; it is the regulator of one's conduct. Morality lends itself to a value system, using principles or standards to judge what is valuable and important in life. The genesis and nurture of morals require innate faculties of self-evaluation, self-reproach, reprehensibility and accountability. There is an eternal need for a religion to enable these faculties to be cast in the mould of one's conduct.

Man owes his existence solely to God, and is ordained by Him to serve a divine purpose in life. This purpose is to worship God and to seek His pleasure with total submission to His Will. The discharge of one's obligations towards fellow human beings is the ultimate in winning the pleasure of God. The eradication and alleviation of suffering of God's creatures is a foremost obligation and this devolves mostly onto a physician.

Man, having been created in God's own image, has to reflect God's Attributes in himself. The fundamental Attributes of God from which all other Attributes emanate are enunciated in The Qur'an.

ATTRIBUTES OF GOD

The opening chapter of The Qur'an, *Surah-ul-Fatihah*, enunciates the cardinal Attributes of God from which all other Attributes emanate and it provides us with a key to unlock and unravel all vistas of ethics. The Surah's reading uplifts and enriches mind and soul, opening prospects of communion with one's Maker on one side and fellow creatures on the other.

The four quintessential Attributes, rich and limitless in content, are as follows:

Rub ul Alameen: the first Attribute; Lord and Master of all Worlds

God is Controller and Caretaker of all there is in Space and Time. There are diverse ways in which a physician can reflect this attribute. He has to steer consciously or unwittingly the course of a patient's life. Limited by his own talent, dedication, level of concern and compassion, he is to act as lord and master of his patient's life. Unless the physician understands the moral implications of his position and relationship with his patient, he cannot be ethical. The scope and range of a physician's interaction with a human being extends over the latter's entire life, and ethical issues arise not only in relation to the individual patient, but also in relation to his family, dependents, and to society in general. At the grassroots of life, a physician is involved with eugenics and he becomes a caretaker and controller of life for so many. A physician counsels on the prospects of marriage and planning of family, and he may have to investigate and treat infertility. The mother and offspring have to be looked after during the course of pregnancy and at confinement. The birth of a new human being, unfolds a new dimension of the physician—patient contact and interaction. Thus a physician, has to mould himself in the role of lord and master in diverse ways. Not only the