

International Encyclopedia of Rehabilitation

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Self-efficacy in the context of rehabilitation

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Overview

This chapter will commence with a definition of self-efficacy, a concept that was first introduced by Bandura (1977). The historical origins of self-efficacy will be described followed by consideration of the four main ways that self-efficacy can be influenced (i.e. mastery experience, vicarious experience, persuasion, and physiological and affective states. These influential factors are important for rehabilitation. The relationship between self-efficacy and health status is considered along with the role played by self-efficacy (e.g. mediation) in changing outcomes of relevance to rehabilitation. Finally, measurement of self-efficacy is discussed. The chapter uses results from empirical studies conducted in rehabilitation to illustrate key points.

Definition

Self-efficacy refers to:

‘beliefs in one’s capabilities to organise and execute the course of action required to produce given attainments’ (Bandura, 1977, p3).

Once formed, self-efficacy beliefs influence not only the courses of action pursued, but also the effort expended, perseverance in the face of difficulties, the nature of thought patterns (i.e. encouraging or self-deprecating) and the amount of stress experienced in demanding situations (Bandura, 1977). Thus, it is clear that self-efficacy may be an important factor to consider in relation to rehabilitation for people with disabilities. Level of self-efficacy may influence how much effort patients invest in their rehabilitation, their perseverance despite difficulties encountered, whether they are able to maintain a positive attitude towards their rehabilitation goals, and the amount of stress experienced on the rehabilitation journey.

Historical origins

The concept of self-efficacy, as first introduced by Bandura (1977), brought together several historical trends to explain the effects of self-referent thought on psychosocial functioning. Firstly, the notion of reciprocal causation had gained increasing acceptance. The idea that people are not merely passive recipients of environmental forces was recognised by Lewin (1936), who argued that people not only react to the world but also seek to control it. Secondly, there was a growth of interest in personal

competence and self-regulation. White's seminal paper of 1959, referred to competence as the capability to effectively interact with the environment. Competence, or mastery, was conceived as a need or drive, which when satisfied enabled effective coping. Failure to satisfy this need led to poor functioning. The motivation to be competent was termed effectance motivation.

The advent of cognitive theories in the 1960s shifted the emphasis from drives to beliefs, perceptions, attributions and expectations (Peterson & Stunkard, 1989). Whereas motives reside within a person, beliefs may span both the person and environment. Hence, researchers became more concerned with specific aspects of personality and the interaction between person and environment (Mischel, 1968). Within the framework of Social Learning Theory, Rotter (1954) suggested that behaviour potential varies as a joint function of outcome and value expectancies. Outcome expectancies refer to the belief that behaviour will lead to a given outcome. Value expectancies refer to the perceived value of that outcome in a given situation. The concept of locus of control was proposed by Rotter (1966) and refers to generalised outcome expectancies concerning the extent to which a person believes events are determined by internal factors or external factors such as chance. Whilst outcome expectancies are concerned with the consequences of one's action's, perceived behavioural capabilities, or personal agency beliefs, are referred to as self-efficacy expectations.

Influencing self-efficacy

Self-efficacy is a particularly useful theory in the context of rehabilitation since it provides a blueprint for how self-efficacy beliefs can be enhanced. There are four main sources of information that influence perception of self-efficacy. These are mastery experience, vicarious experience, verbal persuasion or similar sources of social influences and physiological and affective states (Bandura 1991). These strategies can be incorporated either singly or in combination, into a rehabilitation programme.

Mastery experience

Mastery experience relates to actual performance of a behaviour or task and is believed to be the most powerful source of information influencing self-efficacy (Bandura, Adams and Beyer, 1977). Successful performance leads to increased self-efficacy whereas repeated failures may result in lower self-efficacy. The caveat to this situation is that successful performance must be attributed to the one's own efforts and abilities. In a rehabilitation context, asking people to set their own goals in a specific domain of interest, making sure such goals are realistic and attainable with appropriate effort and providing people with feedback on their performance can all help to increase self-efficacy. For example, a patient with coronary obstructive pulmonary disease (COPD) may be referred for Pulmonary Rehabilitation (PR), which usually includes an exercise component such as increasing the time spent walking. The latter can be measured easily by giving each patient a stop watch. Patients can be encouraged to set realistic goals for slowly increasing the time they are able to walk comfortably. Therapists and family members can provide positive feedback when patients achieve their goals. The ultimate goal may be to walk to the local shops to buy a newspaper, which not only provides exercise experience but also is likely to involve social interaction and may reduce the sense of isolation that people

with COPD can develop. At the time the goal is achieved, self-efficacy is likely to be high.

Vicarious experience

Observing similar others, or vicarious experience, can raise or lower self-efficacy expectations depending on the success or failure of the models observed (Bandura et al. 1980). To effectively raise self-efficacy, it is important for the models to be as similar to the observer as possible on variables such as age, sex, or condition. The caveat here is that models need to be seen as overcoming any difficulties through their own determined efforts rather than with ease (Strecher 1986). Other factors that may be important in enhancing self-efficacy are the number and variety of models observed and the perceived power of the models (Maddux and Stanley 1986). Vicarious experience may be particularly effective in raising self-efficacy in situations where the individual has no prior experience on which to base judgements of capability. Vicarious experience often occurs where rehabilitation is delivered in a group format, which provides numerous opportunities for patients to observe similar others performing common tasks and behaviours. Observing other patients with COPD pedalling on exercise bicycles or walking on treadmills during PR may serve to increase a newly referred patient's self-efficacy.

Verbal persuasion

Verbal persuasion is often used to influence perceived capabilities, especially in the context of rehabilitation. Persuasive information may have the greatest impact on those who believe that their actions can produce the required effects (i.e. those with an internal orientation). The effectiveness of verbal persuasion can vary with factors such as the perceived expertness, trustworthiness or attractiveness of the source of information (Maddux and Stanley, 1986). In the example of COPD patients attending PR, a physiotherapist leading a rehabilitation class could be perceived as having expert knowledge of PR and being trustworthy. Thus, the information and verbal encouragement provided by a physiotherapist during PR is likely to be viewed positively by patients and may help to increase their self-efficacy for achieving rehabilitation goals.

Physiological and affective states

Physiological state may influence judgements of capability, where fatigue and shortness of breathe for example, could indicate physical inefficacy. In addition, anxiety about the experience of shortness of breath whilst exercising may lower perceptions of self-efficacy. Autonomic arousal in fear or stress situations may diminish perceptions of self-efficacy where such aversive arousal is associated with vulnerability to dysfunction or poor behavioural performance. If a person becomes aware of unpleasant emotional arousal they may doubt their competence at performing behavioural tasks and develop low self-efficacy beliefs. A COPD patient experiencing shortness of breath whilst on an exercise bicycle may start to feel anxious about her ability to continue exercising and start to pedal more slowly or stop the exercise altogether. Thus, physiological and affective states may adversely influence the patient's perceived ability to complete rehabilitation exercises.

Direction of causality

Direction of causality requires a mention. Perceived self-efficacy may influence performance accomplishments which in turn may exert a reciprocal influence on self-efficacy judgements. Thus, behaviour, cognitions, physiological and affective states, and environmental influences all operate as interacting determinants of each other, a process referred to reciprocal determinism. Hence, self-efficacy can be viewed as a dynamic concept which is likely to vary with changes in experiences. Proximal experiences are likely to have greater influence on self-efficacy than distal experiences. Thus, COPD patients will be more influenced by recent experiences of exercising within PR than distal experiences of exercise during childhood.

Relationship of self-efficacy and health status

Self-efficacy has been positively associated with better health status outcomes in a range of conditions relevant to rehabilitation. Among people with multiple sclerosis (MS), Motl and Snook (2008) showed that greater self-efficacy beliefs in function and control were associated with being more physically active, and were positively associated with greater physiological and psychological components of quality of life. In a related report, lower levels of depression were found to be associated with higher levels of self-efficacy for controlling MS and higher levels of social support (Motl et al. 2009). Among people with MS referred for steroid treatment for relapse or admission to an in-patient rehabilitation unit, both pre-treatment self-efficacy scores and increase in self-efficacy scores from baseline to follow-up were significantly associated with improvement in perceived walking ability, physical impact of MS and psychological impact of MS. The authors conclude that self-efficacy is an important domain to assess and include in rehabilitation and patient education.

Among people with rheumatoid arthritis (RA), a longitudinal study conducted in Norway investigated the relationship between self-efficacy at baseline and changes in health status over a 2-year period (Brekke et al. 2001). Self-efficacy was correlated favourably with health status measures such as pain and fatigue (i.e. higher levels of pain and fatigue were correlated with lower self-efficacy). Interestingly, a related study by Brekke et al. (1999) showed that level of arthritis self-efficacy varied by socio-economic district with those residing in less affluent areas of Oslo reporting lower self-efficacy and poorer health status. There were no differences in terms of joint counts, disease severity or number of joint replacements. This suggests that environmental resources may have influenced self-efficacy perceptions. Wright et al. (1996) found that low self-efficacy for managing pain and distress contributed to predictions of depression in RA patients. Similarly, Beckham et al. (1994) report associations between low self-efficacy, and psychological distress and worse physical functioning. Furthermore, self-efficacy and pain predicted physical functioning among younger women with RA (mean age of 43 years) (Dwyer, 1997). Finally, a laboratory-based investigation found that osteoarthritis patients with very high arthritis self-efficacy for pain had higher pain thresholds and pain tolerance compared with participants with very low arthritis self-efficacy for pain (Keefe et al. 1997). Thus, people who felt certain that they were capable of managing their pain were able to tolerate more pain and had higher pain thresholds.

A prospective study of patients with coronary heart disease found that self-efficacy to maintain function and to control symptoms contributed to predictions of physical and

role functions, after controlling for coronary disease severity, anxiety, and depression Sullivan et al. 1998). Among a convenience sample of community-dwelling, ambulatory patients with heart failure, self-efficacy influenced self-maintenance behaviours such as taking medication, and following sodium dietary restrictions. Moreover, patients with higher self-efficacy beliefs had fewer hospital admissions.

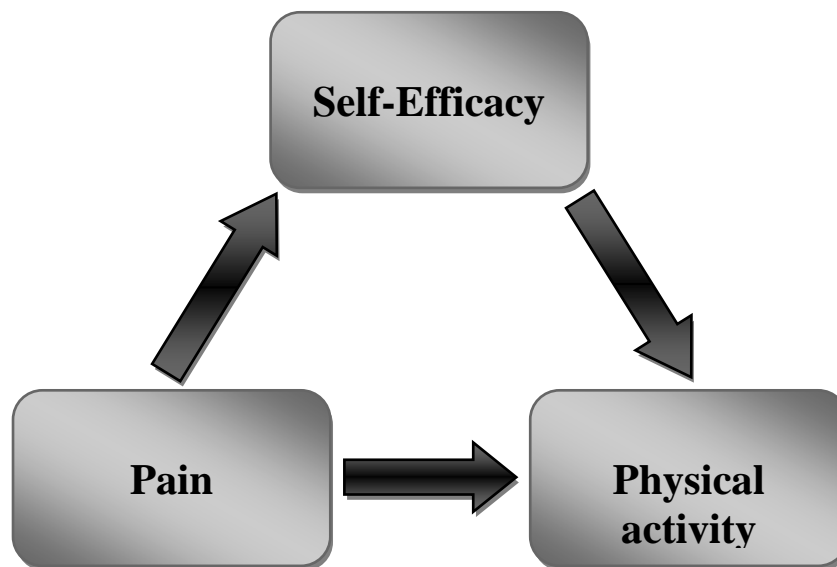
Self-efficacy was assessed in an investigation of self-management among patients with chronic heart failure, chronic respiratory disease, Parkinson's disease and chronic schizophrenia of moderate severity who had experienced an illness exacerbation in the past month (Gallagher et al. 2008). Low self-efficacy was found to be a risk factor for poor self-management, along with a poor sense of coherence, older age and a primary diagnosis of chronic schizophrenia. The authors maintain that since self-efficacy is the only one of these predictors 'known to be amenable to intervention', there is a need to include self-efficacy in support for these patient groups.

In a rehabilitation context, self-efficacy is important for understanding psychological, cognitive and physical functioning. Greater levels of self-efficacy are typically associated with less psychological distress (e.g. less anxiety and depression), greater tolerance of pain and other symptoms, increased ability to cope, greater use of self-care activities and better physical functioning. This suggests that improving self-efficacy may be one way of positively influencing psychological, cognitive and physical functioning among people attending rehabilitation.

Self-efficacy as a mediator or moderator

Self-efficacy may act as a mediator or a moderator in the context of rehabilitation. Although the terms moderator and mediator tend to be used interchangeably (Baron and Kenny, 1986), moderating and mediating effects can be distinguished conceptually in terms of the function of third variables. In a mediational model, the third variable (the mediator) functions as the mechanism through which the independent variable is able to influence the dependent variable. In a moderating model the third variable (the moderator) partitions an independent variable into areas of varying effectiveness in relation to a given dependent variable. Mediation and moderation have been examined often following the steps advocated by Baron and Kenny (1986). In rehabilitation, many variables act as partial rather than total mediators. For example, pain could influence depression both directly and indirectly through self-efficacy (See Diagram 1).

Diagram 1: Self-efficacy as a partial mediator of pain on depression



Empirical tests have provided support for the mediational role played by self-efficacy in rehabilitation. For example, arthritis self-efficacy has been shown to mediate between disease severity and adaptation protecting individuals with Ankylosing Spondylitis from the adverse effects of disease severity (Barlow, Macey and Struthers, 1993). Rejeski et al. (1998) found that self-efficacy mediated change in exercise behaviour among people with knee osteoarthritis. Among people with RA, Shifren et al. (1999) found that cognitive functioning had both direct and indirect effects on mental health: indirect effects were mediated through self-efficacy and pain, with higher self-efficacy and less pain being associated with better cognitive functioning. Among people with MS, symptoms have been found to have both direct effects on physical activity and also indirect effects via self-efficacy (i.e. mediation) (Snook and Motl, 2008). In a prospective study of coronary heart disease patients, self-efficacy was found to mediate the predictive role of socioeconomic status in changes in physical functioning (Barbarecshi et al. 2008).

There is less evidence of moderation by self-efficacy in rehabilitation. One longitudinal study of people with RA attending education programmes used in routine clinical care at eleven rheumatology centres, found that self-efficacy moderated the relationship between coping and emotions (Lowe, Cockshott, Greenwood et al., 2008). Specifically, anxiety was decreased in patients with reduced use of avoidance coping when self-efficacy for other symptoms increased and reduced depression was associated with increased acceptance-resignation coping among those whose self-efficacy for pain had increased. The authors suggest that as pain can be difficult to control, there are situations when resting and being inactive can be adaptive. Thus, reduced depression may result even when use of acceptance-resignation coping is increased when this is accompanied by increased self-efficacy for pain.

Measurement of self-efficacy

Self-efficacy can be a useful variable to assess when testing the effectiveness of various rehabilitation programmes. Self-efficacy can be measured as a domain

specific concept and this has led to development of a range of self-efficacy measures that can be used in a variety of rehabilitation contexts, settings and target groups. A domain can comprise a target group such as people with arthritis, MS or COPD for example. Hence, the Liverpool Self-Efficacy Scale (Airlie et al. 2001) and the MS Self-efficacy Scale (Rigby et al. 2003) have been devised specifically for use among people with MS. There is a COPD Self-Efficacy Scale (Wigal et al. 1991). Similarly, The Resource Centre for Minority Aging Research (RCMAR) has developed a Self-efficacy for Rehabilitation Outcome Scale (Waldrop et al. 2001) for use among patients recovering from orthopaedic reconstructive or replacement hip or knee surgery (see <http://www.musc.edu/dfm/RCMAR>). The scale is typical of self-efficacy measures assessing patients' beliefs about whether they can perform behaviours typical in physical rehabilitation for hip and knee surgery with items rated from 0 (I cannot do) to 10 (I'm certain I can do).

One example of how a specific self-efficacy scale came to be developed relates to an intervention that is being delivered in a number of countries around the world, the lay-led, community-based Arthritis Self-management Program (ASMP) (Lorig and Holman, 1993). Self-efficacy became the theoretical foundation of this program when investigation revealed that change in health outcomes was not necessarily correlated to change in use of self-management behaviours (Lorig, Seleznick et al. 1989). Structured and open-ended interviews with ASMP participants found that those who did well believed that they could make a difference to the impact that arthritis was having on their lives, whereas those who did less well held the opposite beliefs (Lenker et al. 1984). These findings suggested that expectations of self-efficacy for managing arthritis were mediating the outcomes of the ASMP and led to the development of an arthritis self-efficacy scale to measure change (Lorig, Chastain et al. 1989) and subsequent modification of the ASMP to incorporate efficacy-enhancing techniques (see chapter on Self Care for further details of the ASMP). Arthritis Self-Efficacy is defined as perceived ability to control, or manage various aspects of arthritis such as pain, fatigue or depressed mood. The Arthritis Self-Efficacy Scale has three subscales relating to physical function, managing pain, and managing other symptoms such as fatigue.

There are specific measures that have been designed for specific aspects of rehabilitation. For example, a job-seeking self-efficacy was developed for people with arthritis (Barlow, Wright & Wright, 2003). With some minor adjustments to wording, the scale is relevant for people with disabilities in general. For example, it has been successfully used to assess self-efficacy among a convenience sample of people with disabilities attending public vocational rehabilitation orientation training in the US (Hergenrather et al. 2008).

Self-efficacy and goal importance

It has been argued that in some circumstance, goal importance as well as self-efficacy can be an important predictor of disability (Orbell et al. 2001). A prospective study assessed people before hip or knee replacement surgery and again at three months and nine months post surgery. Self-efficacy and goal importance were assessed using scales specifically developed for the study, covering a range of 32 activities (e.g. mobility, body care, recreation). Goal importance was defined as the extent to which patients 'attached personal importance to the ability to perform activities of everyday

living'. (Orbell et al. 2001). Results showed that disability decreased at both 3 and 9 months post-surgery whilst self-efficacy increased. Pre-surgery goal importance and self-efficacy at 3 months were independent predictors of disability at 9 months, controlling for pre-surgery and 3 month disability. Patients, who valued functional activities highly and had high self-efficacy for performance of those activities, were less disabled at 9 months. There was evidence that pre-surgery goal importance moderated the impact of self-efficacy on disability at 9 months. Specifically, patients with low self-efficacy but high goal importance were less disabled at 9 months compared with patients who had low self-efficacy and low goal importance.

Conclusion

Self-efficacy can be a valuable theoretical concept in the context of rehabilitation. Self-efficacy is positively correlated with a range of health status outcomes including physical functioning and psychological well-being. Moreover, self-efficacy theory provides a useful blueprint describing how self-efficacy beliefs can be enhanced. Thus, efficacy-enhancing strategies can be included in rehabilitation programmes. The growth of interest in self-efficacy has led to development of a range of self-efficacy measures that can be used to evaluate rehabilitation effectiveness.

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