Self-Management Education: History, Definition, Outcomes, and Mechanisms

Kate R. Lorig, Dr.P.H. and Halsted R. Holman, M.D.
Stanford University School of Medicine

ABSTRACT

Self-management has become a popular term for behavioral interventions as well as for healthful behaviors. This is especially true for the management of chronic conditions. This article offers a short history of self-management. It presents three self-management tasks—medical management, role management, and emotional management—and six self-management skills—problem solving, decision making, resource utilization, the formation of a patient–provider partnership, action planning, and self-tailoring. In addition, the article presents evidence of the effectiveness of self-management interventions and posits a possible mechanism, self-efficacy, through which these interventions work. In conclusion the article discusses problems and solutions for integrating self-management education into the mainstream health care systems.

(Ann Behav Med 2003, *26*(1):1–7)

INTRODUCTION

Self-management is now a common term in health education and is the name attached to many health promotion and patient education programs. The purpose of this article is to (a) define or operationalize self-management as well as discuss some of the research that underlies this definition; (b) discuss the evidence that self-management programs can change behaviors, health status, and health care utilization; (c) examine self-efficacy, one of the possible mechanisms by which self-management achieves the previously mentioned outcomes; and (d) discuss how self-management can be integrated into health care systems.

One of the first uses of the term *self-management* appeared in a book on the rehabilitation of chronically ill children written by Thomas Creer (1). Since the mid-1960s he and his colleagues at The Children's Asthma Research Institute and Hospital have been using the term in conjunction with their pediatric Asthma program. They acknowledge basing their work on the early writings of Albert Bandura (2). Creer and colleagues felt that the term *self-management* indicated that the patient was an active participant in treatment. Since that time the term has been used widely, mainly in referring to chronic disease patient education programs, but it has not been well conceptualized or defined. In the following section we offer one such conceptualization.

This study was supported by National Institute of Nursing Research Grant 5 RO1 NR04438.

Reprint Address: K. R. Lorig, Dr.PH., Stanford Patient Education Research Center, 1000 Welch Road, Suite 204, Palo Alto, CA 94304. E-mail: lorig@stanford.edu

THE MEANING OF SELF-MANAGEMENT

Whether one is engaging in a health promoting activity such as exercise or is living with a chronic disease such as asthma, he or she is responsible for day-to-day management. Gregory Bateson (3) once said, "one cannot not communicate." The same is true for health behavior and disease management. One cannot not manage. If one decides not to engage in a healthful behavior or not to be active in managing a disease, this decision reflects a management style. Unless one is totally ignorant of healthful behaviors it is impossible not to manage one's health. The only question is how one manages. The issue of self-management is especially important for those with chronic disease, where only the patient can be responsible for his or her day-to-day care over the length of the illness. For most of these people, self-management is a lifetime task.

SELF-MANAGEMENT TASKS

Traditionally, researchers have thought of chronic illness as having a disease course that waxes and wanes due largely to physiologic changes. Recently Patterson pointed out that patients have shifting perspectives on their illness (4). She suggested that persons with chronic illness sometimes have illness in their psychological foreground and sometimes wellness. These shifting perspectives are in part due to the waxing and waning of the disease but are also due to psychological factors. Within this paradigm, self-management aims at helping patients to maintain a wellness in their foreground perspective. This is done by concentrated on three set of tasks as delineated by Corbin and Strauss in an elegant qualitative study on the work of people with chronic conditions (5). The first set of tasks involves the medical management of the condition such as taking medication, adhering to a special diet, or using an inhaler. The second set of tasks involves maintaining, changing, and creating new meaningful behaviors or life roles. For example, people with back pain may need to change the way they garden or participate in favorite sports. For someone with heart or pulmonary disease it may mean doing less, such as cooking only one dish for a holiday dinner while other people prepare the other dishes. The final task requires one to deal with the emotional sequeli of having a chronic condition, which alters one's view of the future. Emotions such as anger, fear, frustration, and depression are commonly experienced by someone with a chronic disease; therefore, learning to manage these emotions becomes part of the work required to manage the condition.

If we use the Corbin and Strauss framework, then self-management programs must include content that addresses all three tasks: medical or behavioral management, role management, and emotional management. Although most health promotion and patient education programs deal with the medical and be-

havioral management, most do not systematically deal with all three tasks.

SELF-MANAGEMENT IS PROBLEM BASED

The research of Corbin and Strauss is based on the perceptions of patients about their conditions. Thus, self-management programs must be based on patient perceived problems. For example, traditional arthritis education programs focus on preventing disability and disability management. However, the major concern of arthritis patients is pain (6). Therefore, arthritis self-management programs focus on pain management. This does not mean that information about managing disability is not taught. Rather, it is taught in the context of pain management. For example, one factor that contributes to people's pain is tense or weakened muscles. Exercise will strengthen and relax these muscles and thus lessen pain.

Because self-management education is focused on patient concerns and problems, a detailed needs assessment must be done for each new topic and group of patients. Although many concerns are shared across different diseases, behaviors, and populations, there are always differences between groups and even individuals. For example, when working with a Spanish-speaking population we learned that many people felt that they were being neglected by the doctor or offered inferior care when they had a short visit and were then referred to see a nurse practitioner, physical therapist, or psychologist. This was different from their experiences in their countries of origin, where most had seen only a physician who could spend more time for each visit. In addition, in their country of origin many people working in the health field tended to have more limited education and health-related training. Having discovered this information, we included a section on the training, roles, and functions of different health care professionals in the United States in our self-management programs for the Spanish-speaking community. We also pointed out that the total time spent with health care professionals might be similar to that in their home country.

CORE SELF-MANAGEMENT SKILLS

Based on our 25 years of experience, review of the literature, and a recent report from a Robert Wood Johnson meeting on self-management, there are five core self-management skills: problem solving, decision making, resource utilization, forming of a patient/health care provider partnership, and taking action (7). Let us examine each of these in more detail.

By definition self-management education is problem based. Thus, it is logical that problem solving is a core self-management skill. This does not mean that people are taught solutions to their problems. Rather, they are taught basic problem-solving skills. These include problem definition, generation of possible solutions including the solicitation of suggestions from friends and health care professionals, solution implementation, and evaluation of results. These skills have been defined in detail by D'Zurilla (8). For example, a patient says that he cannot visit his daughter and grandchild. This problem needs more definition. On examination we find that the daughter lives far away, and the man is afraid that with his need to use oxygen he cannot travel. Many possible solutions are generated, including having the daughter come for a visit, driving with a friend and carrying a supply of oxygen in the car, and calling the railway and airlines to see how they accommodate passengers who are oxygen dependent. Someone suggests that maybe the Lung Association may have more information. In the end, the man finds out that the airlines can accommodate his needs and decides to fly to see his daughter.

A second self-management skill is decision making. When this decision making is part of problem solving, it is part of the D'Zurilla model. In addition, persons with chronic illness must make day-to-day decisions in response to changes in disease condition. To do this they must have the knowledge necessary to meet common changes. For example, how do I know when I have exercised enough or too much? How do I know whether a symptom is medically serious? Should I continue taking my medications when I have a fever? What do I do to get back on my diet if I eat some chocolate cake? Decision making is based on having enough and appropriate information. For example, back pain patients can be taught to identify the serious symptoms or "red flags" that require medical attention, such as loss of bladder control. They can also be told that if they do not have any of these serious symptoms, they probably do not need to see the doctor, and with self-management and a few days of rest, they can gradually return to their activities. When starting an exercise program, all people can be taught that they should not feel worse after exercising than before starting. If this occurs then they should have guidelines to follow. First, cut back on the exercise, find a comfortable exercise level, stick to this for 1 or 2 weeks, and add to it by 10 to 20% every 7 to 14 days. The formation of these key messages to foster appropriate decision making is central to self-management education.

A third core self-management skill is how to find and utilize resources. Many programs tell participants about resources but do not teach participants how to use the phone book, 800 numbers, the Internet, the library, and community resource guides. In addition to teaching people how to use resources, self-management includes helping people seek these out from many sources. When looking for a resource, most people will call only one at a time and wait for information. If that does not work, they try another. However, for best results, it is important to contact several potential resources at the same time as if casting a net for information. This skill is basic but often overlooked in traditional health promotion and patient education programs.

The fourth self-management skill is helping people to form partnerships with their health care providers. A little historical perspective is necessary to truly understand this skill. For the first half of the 20th century the primary reason for seeking health care was to treat acute illness. Thus, our health care system was formed to provide care for acute illness. In this system the role of the health care provider was to diagnose and treat.

In the second half of the 20th century, this picture changed. Chronic disease now prevails. When dealing with a long-term illness, the role of the health care provider becomes that of teacher and partner as well as professional supervisor. The pa-

tient must be able to report accurately the trends and tempo of the disease, make informed choices about treatment, and discuss these with the health care provider. Self-management training prepares people with chronic illness to undertake these tasks.

The final skill is taking action. This can be acquainted with solution implementation in the D'Zurilla model and with skill mastery in the self-efficacy model. Taking action may seem more like a decision than a skill but, in fact, there are skills involved in learning how to change a behavior. The most important of these is probably making a short-term action plan and carrying it out. Making an action plan is a little like making a New Year's resolution but of shorter duration and much more specific (9). An action plan involves a period of 1 or 2 weeks and is very behavior specific. For example, "This week I will walk around the block once before lunch on Monday, Tuesday, and Thursday." Next, it should be realistic or "doable." This means that the person should be able to accomplish the behavior this week. Finally, it should be something that the person is fairly confident he or she can accomplish. Confidence can be measured by asking yourself how confident you are that you will take a walk around the block before lunch on Monday, Tuesday, and Thursday. This confidence can be measured on a scale from 0 (*totally unconfident*) to 10 (*totally confident*). If the answer is 7 or higher, based on self-efficacy theory (more about this in the following section), there is a good chance that the action plan will be accomplished. If the answer is less than 7 then this would be a good time to do some problem solving to make the plan more realistic and to avoid failure.

One more characteristic distinguishes self-management from more traditional health promotion and patient education programs: self-tailoring, or using self-management skills and knowledge and applying these to oneself as appropriate. Again, some historical context may be helpful. From the seminal work of Haynes, Taylor, and Sachett (10), compliance or adherence has been an important component of educational programs. Compliance is most simply getting patients do what they are told. Unfortunately interventions to improve compliance are seldom successful. More recently we have seen a great deal of literature on tailored interventions (11). Health providers, using a series of tests based on one or more models, tailor what they tell the patient based on the patient's readiness to learn, stage of change, and health belief (12,13). Tailored interventions have met with some success but seldom have been linked to changes in health status or utilization. Unlike compliance and traditional tailoring, self-tailoring is done by the individual based on learning the principles for changing behaviors and self-management skills. An example of these principles is how to begin and enhance an exercise program, discussed earlier. In summary, patients who self-tailor must have the principles for making specific behavior changes as well as decision-making and problem-solving skills. All of these are part of self-management programs and lead to successful self-tailoring.

Having examined the different self-management tasks and skills, let us now turn to the evidence that self-management education makes a difference in terms of changes in behavior, health status, and health care utilization.

Self-Management Evidence

In examining self-management evidence we must distinguish between programs that meet the criteria outlined previously and those that are called self-management but do not meet the criteria. Unfortunately, for many studies interventions are not clearly described. The following are examples of self-management programs that meet at least some of the previously discussed criteria.

The Stanford Patient Education Research Center has developed and evaluated self-management programs for people with chronic conditions. Some of these such as the Arthritis Self-Management Program, the Spanish Arthritis Self-Management Program, the Positive Self-Management Program (for people with HIV/AIDS), and the Back Pain Self-Management Program (developed for Group Health Cooperative of Puget Sound) are condition specific, whereas the Chronic Disease Self-Management Program (CDSMP) includes people with different conditions in the same intervention at the same time (14–16). All of these programs have been evaluated in randomized trials lasting 4 to 12 months. The arthritis programs have also been evaluated for long-term follow-up in longitudinal studies of 1 to 4 years (17). Both the Arthritis Self-Management Program and the CDSMP have been replicated with diverse populations and outside the United States (18–23).

We have found that these programs have significantly improved behaviors. These include an increase in the number of minutes per week of exercise as well as in the practice of cognitive symptom management techniques such as relaxation. In addition, participants have reported improved communication with their physicians. We have also found changes in health status. In all studies of painful conditions (arthritis and back pain), pain has been significantly reduced, and in most of the studies disability has also been reduced. In addition, participants have reported less fatigue and less health distress or worry about their conditions and improved role function. Finally, in both the English Arthritis Self-Management Program and in the CDSMP, participants have demonstrated significant reductions in health care utilization.

There are many other psychoeducational programs for chronic diseases, some of which meet some or most of the criteria for self-management as suggested previously. For example, utilizing a Cochran review as well as other reviews, 23 adult asthma controlled studies that included clinical outcomes were identified. Of the 11 studies that demonstrated improvement, 7 (63%) included goal setting or action plans as part of the intervention. Of the 12 that did not demonstrate improvement, only 4 (33%) included goal setting (24–31).

Clark and colleagues developed the Take PRIDE program for older adults with heart disease (32). Using a randomized group intervention with many of the attributes of self-management, they demonstrated reduction in symptoms and distress for up to 1 year. Brody and colleagues reported on a randomized self-management intervention for elderly patients with macular degeneration (33). The intervention resulted in improved psychological health and increased use of vision aids. Hammond, Lincoln, and Sutcliffe demonstrated in a randomized trial that a

joint protection program for people with rheumatoid arthritis that included goal setting and modeling improved use of joint protection (34). LeFort, Gray-Donald, Rowat, and Jeans demonstrated the effectiveness of a self-management program for the management of chronic pain (35). In one of the few diabetes program to include self-management strategies, Mazzuca and colleagues demonstrated that 1 year after treatment, randomized treatment participants demonstrated significant differences in hemoglobin A1c (36).

How Are Self-Management Effects Achieved?

The answer to this question is not entirely clear. However, we do have some strong suggestions. Traditional health promotion and patient education programs have operated on the assumption that people should change behaviors to improve health status. This assumption has come from epidemiological studies, which link such behaviors as poor diet, lack of exercise, and smoking to future health problems. Although there is little question that changing these behaviors will probably impact future health, this same assumption may not hold for people already living with chronic conditions (37).

Our early arthritis studies were largely athoretical. We assumed that changes in behaviors would be associated with changes in health status. Much to our surprise, we found that the associations between improvements in healthful behaviors and improvements in health status were weak to nonexistent (38). In a qualitative study conducted to find an explanation for the improvements in health status, participants suggested that they felt that the impact of the program was due to their feeling more in control of their illness (39). To operationalize the concept of control we studied several theories before deciding to base future research on self-efficacy theory (40). This theory states that "perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of actions required to produce given attainments" (41, p. 3). Self-efficacy is usually measured by asking people "how confident they are" or "how sure they are" that they can under specific conditions achieve certain behaviors or physiological states. For example, "how certain are you that you can reduce your pain a small amount without taking extra medication?"

We then tested this hypothesis to see if changes in self-efficacy were associated with changes in health status. In early studies we found evidence to support this hypothesis (42). In more recent studies, we have shown that both base-line self-efficacy and changes in self-efficacy are associated with future health status (18). Thus, it appears that enhanced self-efficacy is at least one of the mechanisms responsible for the improvements in health status demonstrated by those attending self-management programs. In addition, there are many other studies that support the finding that self-efficacy and changes in self-efficacy are associated with changes in health behavior and health status (41). Such findings have important implications for the design of future programs. The enhancement of self-efficacy must be considered a key program component, and the teaching processes must be structured to include the four ingredients of efficacy enhancement: performance mastery, modeling, interpretation of symptoms, and social persuasion (41). The following are examples of how each of the efficacy-enhancing components are incorporated into the Stanford self-management courses.

Skills mastery or taking action involves getting people actively involved in behavior change. It is very difficult for someone to argue that they cannot do something when they are doing it. In our courses, action planning is the key element in skills mastery. Each week, each participant is asked to make a specific action plan for something he or she wants to do in the next week. It must be very specific—not that one will exercise but rather that one will walk two blocks on Monday and Thursday before lunch. After making the plan, we ask each individual about his or her certainty that he or she will complete the plan on a 10-point scale from 10 (*very sure*) to 1 (*not at all sure*). (Please note that this is a self-efficacy question.) If the answer is less than 7, we then using problem-solving techniques to adapt or change the plan. The following week, each individual reports on his or her success. If problems arose, then problem solving is used again.

Modeling can be accomplished several ways. First, materials (written and video) should reflect the population for which they are developed. Thus, drawings, photos, and actors should represent various body types, ages, and races as well as both sexes. In focus groups of people with chronic conditions, we have been told several times that patients do not like comic figures. They have said that having a long-term condition is not funny and they do not want to be treated as children.

Modeling can also be accomplished by having peers teach self-management programs. From several studies, we have found that peers, when well trained and given a detailed protocol, teach at least as well as health professionals and possibly better (43–45). Finally, people can act as models for each other. In group situations, when a patient has a problem, other members of the group can be asked to offer suggestions before any are offered by the group leader. In much this same way, people newly diagnosed with a disease, or contemplating a new treatment, can be paired with someone who has experience with the disease or treatment.

Reinterpreting physiologic symptoms is aimed at helping patients form alternative explanations for their symptoms. When they have alternative explanations as to cause, they also have reasons to try new self-management behaviors. For this reason, symptoms should be explained as having multiple causes. This leads to multiple ways of managing the symptom. For example, fatigue can be caused by disease, poor nutrition, poor level of physical fitness, fear, depression, and medications or medication interactions. When examined in this way, exercise, although usually thought to be counterindicated for people with fatigue, becomes a reasonable fatigue management technique.

Finally, social persuasion is a powerful means of increasing self-efficacy. If those around you are participating in a behavior or not participating in a behavior, you are more likely to follow. An example is that when smoking is not the norm among teens, then there is less likelihood that one will begin to smoke. In a self-management course, if many members of the group are tak-

ing part in some sort of exercise and experiencing positive effects, the other members of the group are more likely to follow. This is one of the reasons that group education and support is often effective for behavior change. Alcoholics Anonymous is an excellent example of how social persuasion can work in overcoming a difficult and destructive addiction problem.

CHALLENGE OF INTEGRATING SELF-MANAGEMENT INTO USUAL HEALTH CARE

If one accepts that self-management interventions can positively affect both the outcomes and cost of chronic illness, the question remains, how can these programs be integrated into our existing health care system? There are at least three facets to this integration: (a) preparation of the system, (b) preparation of patients, and (c) payment mechanisms.

Preparation of the Health Care System

With the exception of diabetes patient education, which is somewhat integrated into the health care system, most attempts at self-management education have been undertaken by the voluntary health care agencies such as the Mended Hearts program sponsored by the America Heart Association. Although many of these programs have reached thousands of people, they still reach only a small percentage of the people with the target conditions.

The public health system is another possible place for self-management dissemination. This is beginning to happen with the instigation of statewide chronic disease programs for arthritis, diabetes, and other conditions. These programs are largely based on support from the Centers for Disease Control and Prevention. These agencies are well placed to work with diverse populations, and we hope they will soon receive the funding necessary so that they become major contributors to the self-management movement.

Although not discounting either voluntary agencies or the public health system, self-management education is probably best placed in ambulatory clinics. The major advantage of using clinical settings is that in the ideal world self-management education would be linked to medical care fostering an ongoing patient–provider partnership. Although there is promise there are also barriers.

First, in many health care organizations, be they clinics, group practices, HMOs, or PPOs, there is little or no structure to support self-management. There are few personnel with specific specialized training in health education or patient education. Second, even when such personnel exist, they are seen as adjuncts to the main purpose of the system and are seldom seen as central to the system's mission. Third, unlike some other parts of the health care system, there is little or no accountability for the quality of services rendered. Even when quality standards do exist such as the American Diabetes Association standards for diabetes education, these standards are written in terms of the qualifications of the persons offering the education and the content of the education; they seldom, if ever, include the systematic documentation of the effects of the education on the patients' health status.

Finally, the system itself does not support self-management education. There is no requirement for documentation, few referrals from health care providers, and little expectation that patients will benefit or report back on their progress. One physician summed up this dilemma when she said, "This is not part of our dance."

There are several steps to overcoming these problems. First, the system should identify the populations that would benefit from self-management programs. Second, the system should decide which evidenced-based program or programs it wants to support. Third, dedicated trained self-management personnel must be part of the health care systems. For example, for a system to offer the CDSMP discussed earlier, a coordinator dedicated 25 to 100% of the time is required. Last, or better yet at the very beginning, self-management education needs to become a central mission of the organization and integrated with all other services such as medical care, pharmacy, and laboratory services.

There are several examples of how self-management has been integrated into health care systems. For example, the National Health Service of England has recently adopted the Expert Partner Program, which used the CDSMP as a key educational offering (46). The program will soon be offered by all primary health care trusts in the country. Closer to home, three major HMOs—Kaiser Permanente, Groups Health Cooperative of Puget Sound, and Health Insurance Plan of New York—have all adopted the CDSMP as a key offering for their chronic disease patients. There are an additional 150 health care organizations in the United States using the program (http://www.stanford.edu/group/perc/).

We are all struggling with how to fit this program into traditional settings, but progress is being made toward integrating the self-management into health care systems. In 2002, Kaiser Permanente awarded the system-wide CDSMP dissemination its highest honor for innovative health care: the Vohs Award. The outcome evaluation of this dissemination project is discussed elsewhere (45).

A closely aligned facet of self-management implementation is the preparation of patients and their acceptance. Until about 100 years ago individuals, families, and communities were the major source of health care. However, in the 20th century health care moved from the individual, family, and community to health care providers and health care institutions. With this move came a shift in public expectation. Patients now looked toward health care providers and institutions for disease prevention, cure, and alleviation of suffering. They were sometimes encouraged by this system to relinquish personal or family or community responsibility. If self-management is to achieve its potential, this trend should be changed. We have already discussed the need for providers to form partnerships with patients. At the same time patients' families and communities must be prepared for this role. We know from experience with smoking prevention and cessation, and mammogram campaigns, that such a change will probably require an ongoing social marketing campaign as well as direct referrals from health care provid-

ers. These referrals can take several forms. First providers need to say "I want you to learn about your disease and its management." Referral for self-management education should be the same. It may be that participation in self-management education should be a standard for judging quality of care.

To make programs acceptable to patients, choices are needed: small-group self-management programs, group visits with providers, Internet-mediated programs, telephone counseling, and automated telephone disease management have all demonstrated effectiveness (47–49). Effectiveness is determined by a fit among content (what is taught), process (how the content is taught), the format of teaching (small group, telephone, etc.), and patient characteristics such as culture, language, family support, and so forth.

Although we have effective self-management programs, effective means of delivery, and knowledge of what is needed to impact a large percentage of people with chronic disease, very little advancement will be made without adequate financing. At the present time there is little government financing for self-management programs by Centers for Medicare & Medicaid Services, the U.S. Department of Veteran Affairs, or state Medicaid programs. Where financing does exist, it is categorical (such as payment for approved diabetes programs through Medicare). These programs may or may not be effective. Although few HMOs seriously fund patient education, there are exceptions such as Kaiser Permanente, Group Health Cooperative of Puget Sound, and Health Insurance Plan of New York. Most PPOs and third-party insurers do not dedicate funds or reimburse for self-management programs.

One reason for this lack of financing is the difficulty both providers and payers have in identifying standardized effective programs. Without such a mechanism, funding could become a financial black hole. However, this is not an insurmountable barrier. Programs that appear effective in small trials should be piloted for generalized effectiveness before being approved on a large scale. New programs should only be approved after small-scale trials and pilot generalizability studies. When programs meet the standards of effectiveness as judged by improved health status or slowing decline, they should be funded by all traditional funding in much the same way as medications and other services.

CONCLUSION

In this article we have attempted to give meaning and substance to the term *self-management.* We have suggested ways to operationalize self-management and have presented some examples of effective programs. In addition we have examined one of the mechanisms, self-efficacy, that may make self-management effective. With this meaning and substance, perhaps existing self-management programs that are effective can be more widely disseminated, and more programs containing all the key self-management components can be developed. Finally, we have discussed means of integrating self-management into existing health care systems. The discussion present in this article is meant to be a start toward clearly defining self-management and its role in the delivers of health care to people with chronic disease.

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