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Enhancing Self-Efficacy for Optimized Patient Outcomes through the Theory of Symptom Self-Management

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Abstract

Background—In today's world, greater patient empowerment is imperative since 90 million Americans live with one or more chronic conditions such as cancer. Evidence reveals that healthy behaviors such as effective symptom self-management can prevent or reduce much of the suffering from cancer. Oncology nurses play a pivotal role in developing a symptom self-management plan that is critical to optimizing a patient's symptom self-management behaviors.

Objective—This article uses exemplars to describe how oncology nurses can apply a tested middle-range theory, the Theory of Symptom Self-Management, to clinical practice by incorporating interventions to increase a patient's perceived self-efficacy to optimize patient outcomes.

Methods—The Theory of Symptom Self-Management provides a means to understand the dynamic aspects of symptom self-management and provides a tested framework for the development of efficacy enhancing interventions for use by oncology nurses in clinical practice.

Results—Exemplars based on the Theory of Symptom Self-Management that depict how oncology nursing can use perceived self-efficacy enhancing symptom self-management interventions to improve the functional status and quality of life of their patients.

Conclusion—Guided by a theoretical approach, oncology nurses can have a significant positive impact on the lives of their patients by reducing the symptom burden associated with cancer and its treatment.

Implications for Practice—Oncology nurses can partner with their patients to design tailored approaches to symptom self-management. These tailored approaches provide the ability to implement patient specific behaviors that recognize, prevent, relieve, or decrease the timing, intensity, distress, concurrence, and unpleasant quality of symptoms.

We are living in a time where greater numbers of people are living with serious acute and chronic life-limiting illness.[1] People who may have had a rapidly deteriorating life-threatening illness years ago such as cancer are now living longer.[2, 3] Likewise, we are also living in a time where symptom management is increasingly becoming the responsibility of many patients with complex chronic illness such as cancer, cardiovascular disease, diabetes, and chronic lung disease which are among the most prevalent worldwide.[4, 5] As such, the World Health Organization advocates for symptom management interventions starting at the time of diagnosis and continuing throughout the chronic illness trajectory to enhance quality of life.[6, 7] Also, the World Health Organization endorses respect for a patient's autonomy in

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making choices and taking an active role in developing his or her plan for symptom management.[6, 7]

Recently, at the National Cancer Policy Summit sponsored by the Institute of Medicine, leaders in the cancer community emphasized symptom management research as a critical need for improved patient-centered cancer care on outcomes of primary concern to patients.[8] Likewise, an accumulating body of knowledge reveals that chronic illness self-management programs worldwide (e.g. United States, China, Taiwan, Australia) are improving health outcomes.[9–17] As such, oncology nursing plays a pivotal role in meeting the symptom self-management needs of this growing patient population.[18, 19] However, while patients with chronic illness such as cancer are expected to self-manage their symptoms, few are equipped with the ability to do so.[20–22] Moreover, persons with cancer report that the most distressing symptoms were those that they were least prepared to handle.[23–25] For patients, information is crucial[26] to promote a sense of control, decrease emotional distress, support effective self-management, and eliminate disruptions of daily activities.[27, 28] Patients want as much information as possible about their symptoms and strategies in order to manage their symptoms.[29–32] However, even with adequate information, not everyone has the same ability to manage their symptoms. For instance, two patients with similar demographics and the same cancer and symptom profile may have distinctly different abilities to manage their symptoms. Bandura[33] would posit that a contributing factor to the difference in symptom self-management is a person's perceived self-efficacy (PSE).

Perceived self-efficacy forms the basis of any decision to act and is defined as the perception of one's own ability to implement behavior(s) to attain designated types of outcomes such as symptom management.[33] Perceived self-efficacy is not a personality trait or even a positive outlook. Rather, PSE refers to a person's ability to implement situation specific behaviors in order to attain established goals, expectations, or designated types of outcomes.[34] Perceived self-efficacy beliefs are considered to be central and persuasive factors in determining the course of action selected, the degree of effort exerted, and the perseverance to continue in the face of difficulties and setbacks.[34]

The objective of this paper is to provide oncology nursing exemplars of how a tested theoretical framework, the Theory of Symptom Self-Management (TSSM), can be used to impact clinical practice by optimizing symptom self-management to maximize patient outcomes.[35] This theoretical framework[35] was formulated via the synthesis of two middle-range theories, the Theory of Unpleasant Symptoms (TOUS)[36, 37] and Bandura's Self-Efficacy Theory,[34] with the concept synthesis of symptom self-management.[38, 39] Hoffman et al[35] conducted path modeling to test the hypothesized relationships of the TSSM and found that PSE for symptom self-management plays an important role in the symptom experience. While the TSSM may be useful beyond individuals who can act on their own behalf, the TSSM is aimed at optimizing the self-management of symptoms using self-directed action for those who can act on their own behalf.

Importance of Symptom Self-Management

In an Institute of Medicine report titled "Priority Concerns for National Action: Transforming Health Care Quality", self-management was identified as one of the twenty most urgent areas of concern for the provision of quality health care within the United State's health care system.[40] The report denotes that self-management is a critical success factor for chronic illness management and that the aim is to ensure that the patient is recognized as the source of control. Moreover, out of the twenty priority areas, self-management has been earmarked by the Institute of Medicine as one of the most important areas of opportunity where improvements would benefit a broad array of patients.[40]

Similarly, a report issued by the World Health Organization[22] strongly supports the implementation of self-management interventions and programs to empower persons with chronic illness to manage their health and health care. The World Health Organization report also identified chronic illness management as one of three evidenced-based strategies that are essential in promoting the active role of patients in chronic illness management.[22] Congruent with the Institute of Medicine and the World Health Organization, a report from the Robert Wood Johnson Foundation[41] titled "Essential Elements of Self-Management Interventions", Lorig and Holman[42] identified five core self-management skills that can be tailored to the individual: problem-solving, decision-making, resource utilization, formation of a patient-provider partnership, and adoption of actions to manage the health condition. Consequently, the idea of self-management conveys a message of control, empowerment, and confidence for persons with chronic illness.[43]

Bandura has made a significant contribution to the field of self-management for persons with chronic and life-threatening illnesses such as cancer. In particular, Bandura[34] constructed the Self-Efficacy Theory and articulated insightful processes and strategies that influence the belief in a person's ability to engage in health promoting behavior. Following the theoretical underpinnings of Bandura, Lorig and Holman provide a conceptualization of self-management where for those with chronic disease, "only the patient can be responsible for his or her day-today care over the length of the illness," highlighting that "for most of these people, self-management is a lifetime task."[42](p1) Moreover, to be successful, self-management necessitates an approach that is over and above the incorporation of teaching of essential knowledge and skills alone, but also includes cognitive processes to change behavior in persons with chronic disease.[44]

Fu, LeMone, and McDaniel[38] defined symptom management as a "dynamic and multidimensional process in which patients intentionally and purposefully act on and interact with the perception (or previous perception) of the symptom(s) to initiate activities or direct others to perform activities to relieve or decrease distress from and prevent the occurrence of a symptom." Changes in behavior are achieved through enhancement of PSE, a cognitive process[45] that in the context of symptom self-management is defined as a dynamic, self-directed process of implementing behaviors that recognize, prevent, relieve or decrease the timing, intensity, distress, concurrence, and unpleasant quality of symptoms to achieve optimal performance outcomes. Thus, positive changes in symptom self-management behavior leads to the achievement of optimal performance outcomes such as functional status. Marks, Allegrante, and Lorig[46] note that purely having a high sense of PSE to perform symptom controlling behavior may be health enhancing in and of itself for persons with chronic illness. Self-management and symptom management are emphasized as key areas of science, falling within the strategic objectives of the National Institute of Nursing Research (NINR). The NINR[47] notes that self-management incorporates facets of both symptom management and the adoption of health promoting behaviors. It seeks to define the behaviors and design interventions to improve management of symptoms over the disease trajectory for persons with cancer. The effects of these symptoms and their inadequate management are a major determinant affecting a person's functional status and quality of life. [48–50]

Leveraging the Theory of Symptom Self-Management for Clinical Practice

The TSSM as depicted in Figure 1 was built utilizing the components of PSE enhancing interventions, patient characteristics, symptoms, PSE for symptom self-management, symptom self-management behaviors, and performance outcomes (e.g., functional status). The Table provides definitions for each concept of the TSSM. The TSSM also describes the various interrelationships and feedback loops between these concepts that demonstrate the

cause and effect relationships that are critical to the symptom management process. The relationships depicted in the TSSM form the foundation for the formulation of effective PSE enhancing interventions. The following provides further detail and clinical examples from the cancer population relative to the TSSM and the role PSE for symptom self-management plays in the optimization of symptom self-management. The examples and descriptions provided outline the potential impact PSE enhancing interventions could have on clinical practice to maximize patient outcomes. They are presented from left to right in Figure 1.

PSE Enhancing Interventions

Perceived self-efficacy is a critical component of Social-Cognitive Theory that views human functioning as a product of a dynamic interplay between a person's environment, behavior, and patient characteristics in the form of cognition, affect, and biological events.[33] Perceived self-efficacy determines how a person thinks, feels, motivates, and performs.[34] Perceived self-efficacy beliefs are developed and influenced through four main sources of information. These sources of information are forerunners to PSE for symptom self-management and form the foundation of PSE enhancing interventions and are defined as: direct mastery experiences (performing an activity); vicarious experiences (observing others similar to oneself successfully perform an activity); social/verbal persuasion (being influenced to believe in the capabilities to achieve a goal); and interpreting inferences from physiological and psychological states indicative of personal strengths and vulnerabilities to reach goals.[34] Examples of how these PSE enhancing interventions might be used in clinical practice are integrated into the description of other components of the theory.

Patient Characteristics

The TSSM identifies multiple patient characteristics that influence symptoms including physiological, psychological, and contextual characteristics. Derived from the Theory of Unpleasant Symptoms,[36, 37] examples of physiological, psychological, and contextual influencing factors, patient characteristics, are presented in the Table. Assessing these patient characteristics is necessary in helping develop an individualized plan of care that utilizes PSE enhancing interventions. For instance, a 48 year-old man recovering from a resection for colon cancer presented to an oncology clinic for his post-operative visit reporting significant fatigue and weakness. The patient described how he tried to manage his fatigue and weakness by walking two miles a day on his treadmill which was a mile less than his pre-diagnosis routine. He was extremely frustrated and stopped all activity after his attempt to exercise worsened his fatigue and weakness. Thus, his attempt to manage his symptoms had a negative impact on his symptoms and his functional status. This in turn negatively impacted his physiological, psychological, and contextual patient characteristics. After assessing the patient's specific physiological, psychological, and contextual characteristics, the nurse posed that he may have tried to do too much given his recent surgery. The nurse, using the intervention of sharing vicarious experiences, told of another patient with a similar cancer and demographic profile who found that his fatigue and weakness improved when he started his exercise routine at a more conservative pace. The nurse collaborated with the patient, using the PSE intervention of mastery experience, to define an exercise plan that the patient felt confident in achieving over the next two weeks. The nurse then asked the patient to measure his confidence in accomplishing his plan on a scale of 0 to 10 with 10 indicating greatest confidence to assure the plan was achievable. The patient rated his level of confidence at a 5, and the nurse counseled him that he needed to make the exercise plan more achievable. The patient proposed an alternative plan and gave a confidence level of 9 to achieve this plan. This process is consistent with Bandura's Self-Efficacy Theory[34] that states that achieving goals requires the action plan be specifically related to a doable, valued activity that can be achieved in a short time frame.

The nurse encouraged the patient to set his own goals that provided internal motivation to succeed rather than goals externally imposed by the nurse.

The nurse, promoting the patient's ability to self-model, then advised the patient to implement this plan and monitor his symptoms utilizing a daily log recording his level of exercise tolerance, symptoms, and functional status.[34] He was also advised to record a severity rating for his symptoms. The patient was able to observe his own success in reducing his fatigue and weakness and increasing his physical functional status.

When the patient returned two weeks later, he was excited to report to the nurse that not only was he able to achieve his original exercise plan but he did so well the first week that he exceeded the plan the second week. The nurse, using the PSE intervention of social persuasion, praised the patient for the progress he made that showed he was able to successfully implement his action plan with good effort. Bandura[34] states that evaluative feedback can be conveyed in ways that increase a sense of PSE or undermine it. In this instance, the nurse provided evaluative feedback about the patient's ability to achieve the goals the patient had set and recognized the personal effort the patient exerted to achieve these goals.

To assist the patient in interpreting his own physiological and psychological state, the nurse worked with the patient and they planned the patient's next step. This next step was to learn how to make decisions to tailor his exercise plan as a result of his physiological state while he was receiving chemotherapy. The nurse spent the remainder of the appointment working with the patient on an action plan for the next two weeks.

Throughout the cancer trajectory, patients experience many physiological and psychological states, and having the patient rely only on the expert advice of health care professionals counteracts the development of the patient's PSE to manage symptoms. In this example, the nurse educated the patient so he had the skills to monitor and interpret changes in his symptoms and level of functional status. This gave the patient the symptom management PSE to make decisions regarding possible solutions for symptom self-management.

The importance of a viable symptom management plan cannot be underestimated. Bandura [45] emphasizes that achieving performance outcomes is a prominent source of efficacy information. Performance successes are more likely to enhance PSE if performances are perceived as resulting from a skill, or in this case, a designed plan. Conversely, failures would be expected to produce reductions in PSE.

Symptom(s)

Symptoms are the perceived warnings of threats to health and the subjective experience of the person.[51] They can be physical (e.g. nausea) as well as psychological (e.g. anxiety) revealing clinical information to the patient and nurse. It is a challenge for patients with cancer to exercise control over both physical and psychological symptoms. People react to health threats in different ways and use different strategies to manage threats. According to Bandura,[34] people with high levels of PSE are able to exert control over threats such as physical and psychological symptoms. Implementing PSE enhancing interventions is important for symptom control to optimize functional status and prevent chronicity of the symptoms. The TSSM accounts for the significance of multiple symptoms, their interactions, and their exacerbating effects on the total symptom burden. Figure 2 provides a further expansion of symptom concurrence by depicting the potentially exacerbating effects of the addition of one symptom (S_1) to one or more symptoms ($S_2 \ldots S_N$) whose interaction results in a new, overall symptom burden state ($S'_1 \ldots S'_N$).[37] For example, when fatigue occurs with the symptom of pain, the result can be an exacerbation of the overall symptom

burden. This relates to the experience of persons with a serious chronic illness, such as cancer, who report concurrent symptoms that are likely to interact and exacerbate the overall level of symptom severity.[52]

Knowing that symptoms interact and exacerbate the overall level of symptom severity is crucial when considering how to maximize a person's PSE to manage symptoms. For instance, with her 16 year-old daughter at her side, a mother with recently diagnosed stage III breast cancer visited an outpatient clinic to undergo chemotherapy treatment. When the nurse asked how she was feeling, the mother tearfully said she was very worried, unable to sleep, and afraid of what was going to happen to her. The mother said she had pain and was fatigued. She further voiced concern that no one understood how she felt. Her daughter echoed her mother's sentiments telling the nurse, "I'm worried about my Mom." Through further assessment, the nurse learned that the mother's psychological symptoms were exacerbating the effects of all her symptoms, leaving her with very little PSE to manage any of her symptoms. First, the nurse worked with the woman on interventions to relieve her physical symptoms. Next, the nurse told the mother and daughter that it was just as important to treat the fear and worry as it was the pain, fatigue, and insomnia. The nurse referred them to a local breast cancer support group explaining that talking about these fears with others in similar situations has helped patients manage their fears since members of the group share common physical and emotional experiences.

This is a situation where a patient and family member were suffering from psychological symptoms that were exacerbating the patient's other symptoms. The mother and daughter had decreased PSE for managing their psychological symptoms. The nurse filled this need by implementing the PSE enhancing intervention of vicarious experience to help the mother and daughter manage their psychological symptoms. Breast cancer support groups play an important role by allowing patients with breast cancer and their loved ones to share ideas with others in a similar position to help them understand the course of their cancer and treatment trajectory.[53] Bandura[34] states that enhancement of PSE for managing situations such as physical and psychological symptoms occurs within a network of social influences. Increasing the mother's PSE to manage her psychological symptoms could help reduce or eliminate the exacerbating effects of multiple symptoms.

Perceived Self-Efficacy for Symptom Self-Management

How people perceive symptoms, their cognitive appraisal, formulates their behavioral response. Judging a person's ability to manage symptoms becomes instructive only through cognitive appraisal.[33] Primary appraisal is a person's judgment about whether a situation may cause harm and in what way. Secondary appraisal is a person's judgment about what can be done to control the situation. For persons suffering from a serious chronic illness such as cancer, this entails an evaluative process of the meaning of the illness, its symptoms; the symptoms' impact on a person's well-being; and a person's appraisal of his or her ability to manage symptoms. Understanding and anticipating the concerns of a person with cancer and identifying the likely deficits in his or her PSE to manage symptoms will help target interventions to improve PSE to manage symptoms. Moreover, overcoming these deficits will help the person alleviate worries while going through the cognitive appraisal process. For instance, if the health care provider knows that a newly diagnosed patient's greatest concerns are regarding the prognosis, its treatments, and its associated symptoms, the health care provider can enhance PSE by helping the patient interpret physical and psychological states relative to the disease trajectory. In this way, the patient can answer questions such as: "Is this symptom something I expected or something I need to get help with?" This efficacy enhancing information would provide patients with anticipatory guidance to use (e.g. mental checklist) when making decisions on what symptoms need action and what symptoms do not.

Gaps between a person's PSE to manage symptoms and his or her actual ability to manage symptoms (through incorporation of symptom self-management behaviors) may exist prior to a person attempting to manage the symptoms. The initial level of PSE may be over- or underestimated due to insufficient or faulty knowledge; not having the necessary feedback information to regulate efforts to self-manage; performing under different benchmarks from health care providers; or being hampered by a lack of resources.[34] For instance, one person may have a high level of PSE prior to attempting to manage his or her symptoms and find that ultimately he or she is unsuccessful. In this case, the level of PSE immediately drops with his or her level of performance of symptom self-management behaviors. Likewise, another person may have a low level of PSE prior to attempting to manage his or her symptoms and find that he or she is able to manage the symptoms better than anticipated. This person's level of PSE immediately rises with his or her level of performance of symptom self-management behaviors. These examples illustrate that initial levels of PSE can be faulty but the performance outcome of the symptom self-management behavior calibrates these levels. Figure 1 depicts the feedback relationship that is continuous such that as a person's level of performance of symptom self-management behaviors increases resulting in increased performance outcomes, his or her level of PSE increases. The person becomes optimistic and achieves symptom control and optimal functional status. Likewise, if a person does not develop the ability to manage the symptoms, PSE may continue to decrease, causing frustration and pessimism, and continuing failure to manage the symptoms.

Symptom Self-Management

Symptom self-management occurs through self-directed action, with PSE being a key factor. In some populations, a positive relationship between a person's PSE and his or her ability to manage symptoms has been shown.[54–56] In patients with cancer, most symptom management is carried out via self-management behaviors. Each day patients make decisions about their care, decisions on what and how much they are going to eat and drink, how long to rest, whether to exercise, and the extent to which they will take their medication or carry out other prescribed interventions. For those that are able, patients are autonomous and in charge of these important self-management decisions. The challenge for nursing should not be about whether or not patients will manage their symptoms, but how they will manage them. Bandura[34] asserts that self-management programs based on self-efficacy theory is key to effectiveness and efficiencies in the care of persons with chronic illness.

There are two aspects of symptom self-management, one that a person has control over and one that a person has little or no control over. Patients may interpret symptoms as signs of vulnerability or a worsening of their condition. This interpretation commonly leads to a loss of PSE for managing symptoms and fear avoidance behavior in which the patient limits any activity that might lead to increasing symptoms. Patients should be taught to judge and monitor their symptoms realistically from a positive perspective on their ability to reach goals.[34] For instance, when a person is administered a dose of epoetin alfa to treat his or her chemotherapy-induced anemia, the person has little control over the physiological effects that the epoetin alfa has on the body. However, the person does have control over behavior, such as the amount of rest received, the amount and type of food they have eaten, and the level of activity to maximize symptom management. The concept of enhancing a person's PSE for symptom management provides a means to modify how a person thinks, feels, motivates, and performs in order to strengthen a person's symptom control and functional status.

Performance Outcomes

Symptom self-management is a major element of maximizing performance outcomes of the symptom experience. Hence, performance outcomes are defined as the outcome or the effect of a person's symptom self-management experience. Performance includes functional and cognitive activities. Functional performance includes physical activity, activities of daily living, social activities and interaction, role performance including work and other role related activities.[37] Cognitive performance includes activities such as concentrating, thinking, and problem-solving.[37] Studies have found symptoms adversely impact the person's functional status.[48, 49, 57, 58] For example, a father of two with lung cancer with metastasis to his spine causing uncontrollable back pain and greatly reduced functional status was taking his pain medication as prescribed but the pain continued and his functional status was declining. He tried his own symptom self-management strategy of sitting on a heating pad for days without gaining any pain relief. Since the pain medication and self-management strategy were ineffective, his PSE to manage his symptoms was very low and decreasing as his symptoms and functional status worsened. It also negatively affected his patient characteristics (e.g., lost weight, depressed mood, and being homebound) causing an increased number of symptoms including anxiety and fatigue, exacerbating the effects of all symptoms, and continuing the deterioration in his functional status. In this scenario, being equipped with a PSE enhancing strategy of being able to interpret when his pain is considered unmanaged and what to do when this occurs would have provided him a strategy of calling his oncology nurse at the onset of the problem to partner to prevent unnecessary suffering from pain, other symptoms, and preventable complications.

There are numerous barriers reported by patients for not addressing unmanaged pain and other symptoms such as fear of delay or discontinuation of cancer treatment; belief that symptoms are normal indicators of cancer or progressing disease; belief that nothing can be done to address a symptom; and fear of being labeled an addict or a complainer by health care providers.[59] Most barriers to symptom management are amendable yet research documents that few patients receive assessment, consultation, or intervention to manage their symptoms including some of the most commonly reported symptoms such as pain and fatigue.[60, 61] Consequently, in this example, an oncology Advanced Practice Registered Nurse (APRN) could prescribe medication to target the symptom itself and partner with their patients[62] and equip them with a PSE enhancing intervention of understanding the notional trajectory of what can be expected along all phases of the cancer care continuum. This would provide patients with a high level of PSE to know when to contact the APRN when an unexpected symptom develops or a change in their symptom experience occurs. An intervention plan for symptom control to increase PSE to self-manage symptoms and maximize functional status is key to symptom self-management.

Summary of the Structure and Relationships of the TSSM

The TSSM incorporates the patient characteristics that affect symptoms and the multidimensionality and exacerbating effects of the symptoms. Moreover, the TSSM accounts for the many facets of symptoms and includes Self-Efficacy Theory to address the facets that can be affected by PSE enhancing interventions. Foster, Brown, Killen, and Brearly[63] note that self-management research is a key area for the innovative management of complex symptoms experienced by persons with cancer and that self-management for persons with cancer is poorly defined and lacks a theoretical framework. Empirical evidence that supports the model components and relationships described in the TSSM includes a study by Wells-Federman, Arnstein, and Caudill.[64] In this study, Wells-Federman et al[64] implemented a self-efficacy enhancing pain management program for persons with chronic pain to reduce pain intensity, disability, and depression. Wells-Federman et al[64] stated that improvements in self-efficacy have been associated with reductions in disability, emotional

distress, and improvements in pain management. The purpose of Wells-Federman et al's study was to investigate a pain management cognitive behavioral therapy program's (i.e., patients develop skills and make changes in their life that decrease symptoms, reduce health care visits and increase self-efficacy) effect on self-efficacy, pain intensity, pain-related disability and depressive symptoms among patients with chronic pain. Wells-Federman et al[64] found that at the end of the 10-week treatment program, participants reported improvements in lowering pain intensity by 22%, disability by 18%, and depression scores by 29%, whereas self-efficacy scores for chronic pain management rose 36%. Wells-Federman et al[64] concluded that by teaching patients specific knowledge and skills/ behaviors and positively reinforcing wellness behaviors, chronic pain patients improved their PSE to manage their pain, improved their functioning, and increased their ability to cope. Also, PSE was associated with changes in pain, related disability, and depression. As depicted in Figure 1, the TSSM would posit that increases in self-efficacy for management of symptoms (pain) due to a chronic illness (chronic pain) would have a positive influence on symptom self-management behaviors. Symptom self-management behaviors would positively influence symptoms (pain). Reduced symptoms would have a positive impact on patient characteristics (depression) and performance outcomes (disability as defined as interference with daily functioning due to pain). Improved patient characteristics (depression), reduced symptoms (pain), and improved performance outcomes (disability) would result in an increase in the level of PSE for SSM. Likewise, Hoffman et al[35] provided empirical evidence to support the TSSM.

In this study, Hoffman et al[35] established via path modeling, using components of the TSSM, that PSE for symptom self-management is a critical factor in a patient's symptom experience. Hoffman et al[35] analyzed baseline data from two randomized control trials (N= 298) for patients with cancer who were undergoing a course of chemotherapy. Path modeling examined the relationships between the components of the TSSM that included patient characteristics, symptoms, PSE for symptom self-management, and performance outcomes. Hoffman et al[35] validated that physiological patient characteristics affected symptoms. A person's age, chronic health conditions, sex, and stage of cancer influenced cancer-related fatigue severity. Next, Hoffman et al[35] found that having surgery anytime prior to having chemotherapy (physiological patient characteristic) affected the average severity of fifteen other symptoms. Also, Hoffman et al[35] found that symptoms interacted with each other with cancer-related fatigue severity negatively impacting the average severity of fifteen other symptoms. Additionally, chronic health conditions, cancer-related fatigue severity, and the average severity of the fifteen other symptoms influenced physical functional status (performance outcome).[35] These findings validated the critical hypothesis of the study that the severity from cancer-related fatigue directly and indirectly influenced physical functional status in patients with cancer. The indirect path was a novel finding, showing that PSE for fatigue self-management mediates the relationship between cancer-related fatigue severity and physical functional status in patients with cancer. This study validated that greater symptom severity predicted lower PSE for symptom self-management, and greater PSE for symptom self-management predicted greater performance outcomes. Thus, the studies conducted by Wells-Federman et al[64] and Hoffman et al[35] provide empiric support for the model components and relationships described in the TSSM.

The experience of living with a serious chronic illness such as cancer is characterized by variable prognoses with episodes of unexpected complications and death.[65, 66] What is certain is that persons who live with serious chronic illness still want to live as well and as long as possible with a key goal being symptom prevention and relief.[66, 67] This requires continuous flexibility in adjusting a symptom self-management plan over time. Because the needs of persons with serious chronic illness are dynamic and undergo continual change, the TSSM reflects the reciprocal relationships between patient characteristics, symptoms,

symptom self-management, performance outcomes and the important role that PSE plays in this process. The TSSM incorporates feedback loops that come into play during the symptom self-management process, such as the continuously changing relationships between PSE to manage symptoms, symptom self-management, and performance outcomes. The feedback loop also provides for the initial calibration that takes place when a patient has faulty levels of PSE to manage symptoms and finds that significant re-calibration needs to occur once the symptom self-management process begins. The TSSM also depicts the feedback loops coming from performance outcomes that drive the effects of both positive and negative performance outcomes back into the framework, altering a patient's symptoms, PSE to manage symptoms, and patient characteristics in either a positive or negative way. This feedback describes the continuous symptom self-management process and the importance of increasing a person's PSE to manage symptoms with the outcome being optimal performance outcomes.

Implications for Practice and Research

Empowering patients to regulate their cognition and behaviors optimizes self-management of symptoms to attain symptom control and optimal performance outcomes. Perceived self-efficacy can be learned. According to Bandura,[34] people formulate their self-efficacy beliefs by appraising information from direct mastery and vicarious experiences, social/verbal persuasion, and interpreting inferences from physiological and psychological states. Utilizing the TSSM, nurses partnering with their patients can tailor interventions to help patients self-manage symptoms. Nurses can identify areas where increasing PSE can have the greatest impact on a person's ability to manage their symptoms and maximize performance outcomes. The initial assessment of the person's PSE to manage symptoms provides critical information to design tailored patient interventions. The ongoing assessment of PSE to manage symptoms helps clinicians and patients understand the impact the interventions have on achieving symptom control and improved performance outcomes.

For practicing nurses, the TSSM provides insight into what influences the total symptom experience. Understanding what influences the symptom experience is useful to the nurse to better empower patients to manage their symptoms. A nurse should consider the numerous factors that contribute to the patient's ability to manage symptoms. These factors include physiological, psychological, and contextual patient characteristics when selecting an efficacy enhancing intervention that best influences the patient's PSE for symptom self-management. For example, a nurse needs to understand whether or not a patient has the transportation resources (contextual characteristics) required to attend a cancer survivor's health promotion class held at a local gym before selecting this efficacy enhancing (via social persuasion) intervention. Likewise, for a patient who is shy, motivated, and enjoys using the computer (psychological characteristic), the nurse may want to suggest participation in a web-based exercise program with other "like" patients as an efficacy enhancing intervention using vicarious experiences.

Nurses need to monitor for potential symptoms from concomitant co-morbid conditions while a person is undergoing cancer treatment such as chemotherapy. For example, a patient can have severe and distressing pain from extensive co-morbid conditions such as fibromyalgia and rheumatoid arthritis (physiological characteristic) that could decrease the patient's PSE to manage cancer symptoms. The nurse needs to consider these conditions when selecting interventions to assist the patient in interpreting physiological and psychological states (e.g., symptom diary). For instance, it would be important to teach the patient to distinguish between the sources of the different types of pain he or she is experiencing so that corresponding pain medications can be changed or titrated appropriately. Likewise, when incorporating an exercise intervention, the nurse needs to

teach the patient to “listen to their body” to what would be considered healthy training versus overtraining by giving the patient information regarding physiological and psychological states of the training continuum. These states are changeable signs and symptoms. An example of these states may include for healthy training versus overtraining: Physiological (normal versus increased resting heart rate; normal versus lack of appetite; no headaches versus headaches) and Psychological (stable mood versus a sudden onset of sadness or depressed mood; ability to pay attention to detail versus easily distracted; able to stay the course versus easily giving up).[68] Consequently, patients will develop awareness through direct mastery of changing states that can minimize injuries or setbacks to an exercise-training program. Likewise, practice nurses need to consider the level of or strength of a patient’s PSE to manage symptoms under changing situations.[34]

Nurses can assess a patient’s PSE to manage cancer symptoms such as fatigue through the use of psychometrically tested instruments to know where a patient is starting out in his or her perceived ability to manage symptoms.[69] Nurses can reassess a patient’s PSE to manage symptoms during both routine appointments and more importantly when there are changes in treatment plans. For instance, a patient recovering from breast cancer surgery will have a level of PSE for managing symptoms that will change as she transitions to radiation therapy, and later undertakes adjuvant drug therapy such as tamoxifen. Besides the instrument to measure PSE to manage fatigue, there are other psychometrically tested instruments that are available for use by nurses for measuring the PSE of cancer patient’s ability to perform other behavioral related activities including coping, symptom management, and self-care strategies.[70, 71]

The TSSM provides insight for the nurse to consider the patient’s anxiety, fear, and worry (psychological symptoms), in conjunction with PSE to manage cancer symptoms to assist the patient in implementing the most effective symptom self-management behaviors. For instance, for a patient who values attending church and reading the Bible (contextual characteristic) as sources of comfort and hope, a nurse may recommend that the patient seek support from the church and reading the Bible (symptom self-management behavior) as strategies to utilize the patient’s known sources of hope and comfort to help manage fear, anxiety, and worry (psychological symptoms). Note that contextual patient characteristics are unique and hold meaning for the person with cancer and can be used to design an efficacy enhancing intervention tailored to capitalize on these characteristics. Personally tailored interventions build on a person’s existing characteristics used to enhance PSE so the patient can successfully implement symptom self-management behaviors on a regular, ongoing basis.

Combinations of efficacy enhancing interventions or multiple strategies within one efficacy enhancing intervention can be implemented when a patient needs more support to target a symptom or needs variety to prevent symptom self-management from becoming onerous and boring. For example, many patients show signs of distress when they are anticipating and experiencing alopecia.[72] The nurse can implement the efficacy enhancing intervention of vicarious experience and social persuasion by referring the patient to cancer survivor support groups and relaying experiences with patients who have undergone distress from alopecia. For instance, a nurse could refer a patient who is experiencing alopecia to a cancer survivor hair and make-up appointment to demonstrate what the patient can do to offset the change in his or her appearance. In addition, if a patient normally enjoys physical activities such as golf, gardening, or attending baseball games (symptom self-management behaviors), the nurse can encourage the patient to continue with these activities to decrease the symptoms of distress via direct mastery of things he or she normally enjoyed. Ultimately, when the practicing nurse is aware of the components and relationships within the TSSM, the nurse can provide an effective, tailored efficacy enhancing intervention for the patient.

Thus, the practice nurse can use the TSSM as an important means to link symptoms and symptom self-management behaviors, particularly through the mediating influence of PSE for symptom self-management.

The effectiveness of interventions to enhance PSE to manage symptoms and increase functioning is contingent upon a sound theoretical framework that explains relationships between the major concepts of symptom self-management. The theoretical framework presented in this paper provides an analytical approach to understand the importance of what a person thinks of his or her ability to manage symptoms. Providing a structure to symptom self-management, using this theoretical framework, presents the concepts and their relationships in an organized manner from what was previously theoretically disconnected. The TSSM extends the science by integrating the complexity of the symptom experience with the cognitive process of symptom self-management to show how increasing a patient's PSE to manage symptoms can be an effective means for a patient to better manage symptoms and achieve optimal performance outcomes. The TSSM lays the foundation for future nursing interventions to help patients increase their PSE so they can better manage their symptoms for optimal performance outcomes.

Conclusion

Persons living with serious acute and chronic potentially life-limiting illness such as cancer are being asked to take a larger role in managing their healthcare as the cost of healthcare continues to climb.[22] However, many are not equipped to meet these challenges.[6, 7] The TSSM provides an encompassing perspective of symptom self-management that incorporates the critical cognitive aspects to support PSE enhancing interventions that give patients the tools they need to self-manage their symptoms. Using PSE enhancing interventions, health care providers can work in partnership with their patients to design tailored, achievable, goal-oriented plans that empower patients to be able to manage and deal with the symptoms they live with on a daily basis.

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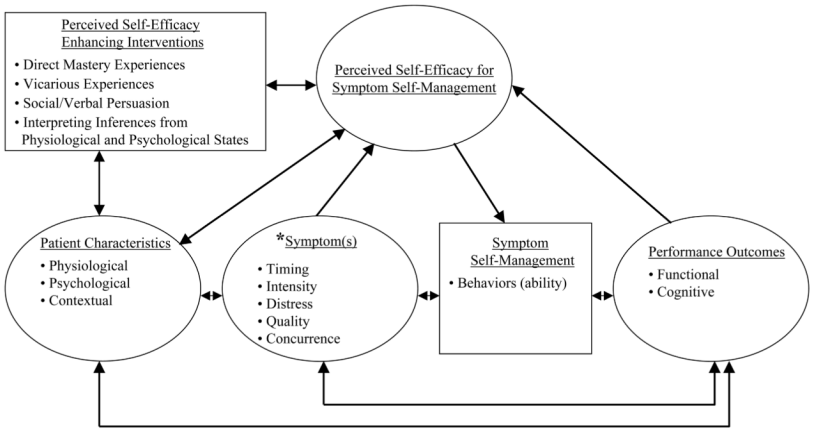

Figure 1.

The Theory of Symptom Self-Management

❖Square indicates an action.

❖Oval indicates a state or trait.

❖* See Figure 2 for further detail.

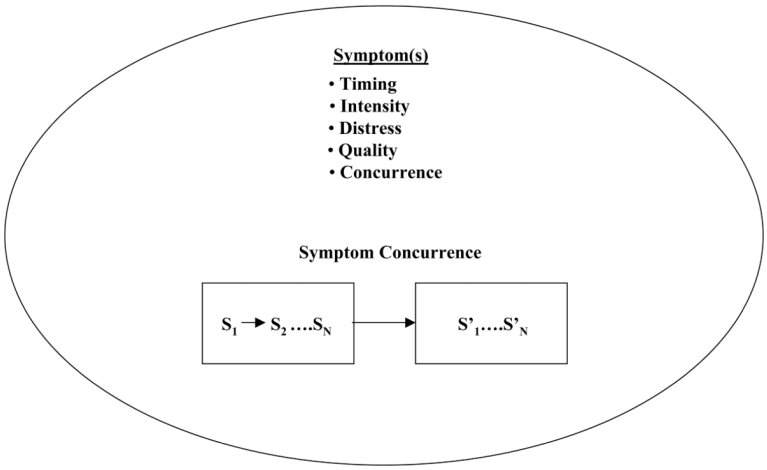

Figure 2.
Symptom Concurrence Effects

Table

Definitions of Major Concepts in the Theory of Symptom Self-Management (TSSM)

Major Concepts	Definition
Patient Characteristics	Physiological, psychological, and contextual influencing factors. Examples of patient characteristics may include but are not limited to: *Physiological*: Severity of illness; presence of co-morbid conditions; abnormal lab tests, and age. *Psychological*: Mental state or mood; personal beliefs and value systems; affective reaction to illness; and degree of uncertainty. *Contextual*: Social and physical environment; culture; developmental stage; family and social relationships; employment status; available resources; and lifestyle behaviors such as diet and exercise.
Symptoms	Symptoms are the perceived warnings of threats to health and the subjective experience of the person.
Perceived Self-Efficacy for Symptom Self-Management	A person's ability to implement situation specific behaviors in order to attain established goals, expectations, or designated types of outcomes.
Symptom Self-Management	A dynamic, self-directed process of implementing behaviors that recognize, prevent, relieve or decrease the timing (frequency, duration, occurrence), intensity, distress, concurrence, and unpleasant quality from symptoms to achieve optimal performance outcomes.
Performance Outcomes	The outcome or the effect of a person's symptom self- management experience.