MCIS 2018 Proceedings

Mediterranean Conference on Information Systems (MCIS)

2018

The Effect of Self-management Systems on Coping with Stress and Anxiety in Chronic Patients

Azadeh Savoli
IESEG School of Management, a.savoli@ieseg.fr

Henri Barki
HEC Montreal, henri.barki@hec.ca

Recommended Citation

Savoli, Azadeh and Barki, Henri, "The Effect of Self-management Systems on Coping with Stress and Anxiety in Chronic Patients" (2018). *MCIS 2018 Proceedings*. 8.
https://aisel.aisnet.org/mcis2018/8

THE EFFECT OF SELF-MANAGEMENT SYSTEMS ON COPING WITH STRESS AND ANXIETY IN CHRONIC PATIENTS

Research full-length paper

Health Information Systems and Bioinformatics Track

Savoli, Azadeh, IESEG School of Management, France, a.savoli@ieseg.fr
Barki, Henri, HEC Montreal, Canada, henri.barki@hec.ca

Abstract

Self-management programs have been introduced in order to help chronic patients better manage their symptoms, treatments, and the physical, as well as the psychosocial consequences and lifestyle changes inherent in living with a chronic condition. As many chronic patients tend to also suffer from mental health issues, such as depression and anxiety, coping resources and constructive coping strategies can also help them improve their psychological health, which in turn can help them improve their quality of life. Information technologies can provide useful opportunities for improving the self-management support that are provided to chronic illnesses such as asthma, especially when they can be integrated with patients' ongoing medical care and by enabling the patients to also better cope with mental health issues. The present paper describes an exploratory study that studied 17 asthma patients who used a self-management system and examined if and how the system also helped them cope with the negative emotions evoked by their disease. Adopting a coping theory perspective, the paper identified several coping responses that the studied self-management system seemed to support, and developing future self-management systems so that they can also support these coping responses can be useful for improving the health of chronically ill patients.

Keywords: self-management, emotions, stress, coping

1 Introduction

Past research suggests that many chronic patients tend to suffer from various mental health conditions, such as depression and anxiety. For example, it has been observed that half of the patients who suffer from chronic obstructive pulmonary disease (COPD) also deal with generalized anxiety, panic anxiety and depression, which in turn can negatively impact their quality of life (Cully et al., 2006; Dahlen et al., 2002). It has also been suggested that, in order to improve chronic patients' quality of life, psychological factors need to be carefully addressed (Di Marco et al., 2006). Researchers have investigated various factors that can help patients cope with the negative psychological effects of their disease, finding that social support and personal coping resources can help improve chronic patients' psychological health, and that patients who receive social support tend to have higher levels of self-efficacy and self-esteem, and a decreased risk of having anxiety and depression (Penninx et al., 1998).

It is important to note that "self-management support" reflects the education and skills training that are provided to patients in order to help them better understand the central role they play in managing their illness, as well as to help them make informed decisions about their healthcare and engage in healthy behaviors, while controlling their illness (Kotses and Creer, 2010). Relatively recently, self-management support is being provided to chronic patients by integrating information technologies (IT) with ongoing medical care and it is possible that such systems can also be useful in helping patients better manage the anxieties that often accompany living with a chronic disease. While many studies have reported the effectiveness of such IT systems on managing patients' stress and anxiety, some studies have observed that they can also evoke negative emotions in patients. For example, Hess et al. (2007) found that patients stopped using such systems due to frustration, and Huniche et al. (2013) observed that, depending on the presence and supervision of health professionals, patients can perceive them to be either as reassuring or as increasing their anxiety. Moreover, according to Lupton (2011), the disciplinary requirements of self-managing one's chronic illness can also evoke stress and anxiety in patients, which in turn can make patients resist and/or evade such technologies.

Based on the above considerations, this paper reports an exploratory study that examined how IT could also be viewed as a coping resource for asthma patients by investigating "*How self-management systems can help chronic patients cope with their anxiety and stress?"* To do so, the study adopted a coping perspective (Lazarus and Folkman, 1984) for examining how asthma patients used a self-management system for coping with the psychological consequences of their disease. Coping refers to an individual's cognitive and behavioral efforts that attempt to minimize the effect of negative emotions, such as anxiety and stress, which are typically viewed as being taxing or demanding (Lazarus and Folkman, 1984). According to Lazarus and Folkman (1984), psychosocial coping resources can be particularly useful for patients who face stressful experiences due to their disease.

The rest of the paper is structured as follows: first the key theoretical foundations that guided the paper's empirical investigation are discussed, followed by an explanation of the methodological approach that was used to examine how the patients who were examined tended to employ their self-management system in order to cope with anxiety and stress. This is followed by a presentation and discussion of the study's findings and contributions, as well as some suggestions for future research.

2 Literature review

2.1 Emotional reactions of chronic patients to their disease

According to Bagozzi et al. (1999) emotions are "*mental states of readiness that arise from the appraisal of events and one's own thoughts*" (p. 184), and they can be evoked as reactions to "*situational events and objects in one's environment that are relevant to the needs, goals, or concerns of an individual*" (Zhang 2013, p. 251), which suggest that people tend to evaluate a stimulus and respond to it, which in turn tends to evoke certain emotions in them. Cognitive appraisal theories (e.g., Lazarus, 1991; Scherer et al., 2001; Smith and Ellsworth, 1985) view emotions as consequences of individuals' personal interpretations of events and their situational environment, and suggest that emotions tend to be produced not just by a given event itself, but also by one's personal characteristics since different people can have different emotional reactions to an event (Bagozzi et al., 1999).

It is also important to note that emotions can be positive or negative. Stress and anxiety are negative emotions that are often accompanied by biochemical, physiological, cognitive, and behavioral reactions (Baum, 1999), with stress often emerging when an event is appraised as being taxing or exceeding a person's resources (Lazarus and Folkman, 1984), and past research has observed a strong relationship between anxiety and depression (Cole et al., 1997). As patients who suffer from chronic diseases often need to adjust their life styles and employment conditions, their adjustments can also lead to stress, anxiety, and depression, which suggests that patients would therefore also need to cope with the emotional aspects of their situation (Turner and Kelly, 2000).

2.2 Coping theory

According to Folkman and Lazarus (1990), coping can be viewed as reflecting the cognitive and behavioural efforts one makes for managing stressful situations, and when facing a stressful situation, one tends to go through an appraisal process and evaluate the situation in order to see if anything can be done to prevent harm (Folkman et al., 1986). Hence, one's cognitive reappraisal processes regarding a stressful situation are viewed as important antecedents of one's coping strategies, which include the actions an individual undertakes in order to respond to a stressful situation, regardless of whether such efforts are successful or not (Folkman et al., 1986). For example, when faced with a stressful situation, one might adopt different problem solving strategies, or try to avoid the situation, or seek help. Moreover, according to coping theory, coping has a context-dependent nature, that is, one's coping strategy is influenced both by one's appraisal of a stressful situation and by the coping resources one has for managing the situation, such as individual differences in optimism, self-esteem, and social support (Folkman et al., 1986), with coping resources influencing one's coping strategies, that is, how one assesses one's coping resources tends to influence whether one chooses to confront a stressful situation, avoid it, or deny it.

According to Folkman and Lazarus (1980), coping strategies can be categorized as being problem- vs. emotion-focused, reflecting one's rational versus emotional reactions to stressful events. These authors also suggest that, problem-solving or task-oriented coping is used for managing a problem that causes distress, whereas emotion-focused coping is used for managing the emotions evoked by a distressful situation (Lazarus and Folkman, 1984). For example, wishful thinking and expressing emotions are potential emotion-focused strategies, with problem-focused actions tending to be used when constructive actions to manage a stressful situation are possible. On the other hand, emotion-focused coping strategies tend to be used when one thinks that a situation cannot be changed and that it needs to be endured. The effectiveness of different strategies depends on the particularities of each situation, and past research has observed that, in most cases, both types of coping are necessary. However, coping strategies are considered to be effective to the extent that they are responsive to an individual's personal and situational contingencies (Lazarus and Folkman, 1984), with some types of coping responses not being very constructive, such as when a person who responds to a stressor cannot positively remove the stressor or solve the stressful situation.

According to Roth and Cohen (1986), coping strategies can be categorized as “approach” and “avoidance”, depending on the nature of one’s orientation toward a threatening stimuli. The “approach” strategy brings one to a closer contact with the stressful situation, which in turn can encourage an instrumental action. In contrast, the “avoidance” strategy allows one to withdraw his/her attention from a threat, which in turn may relieve one’s distressing experience. According to past research, a relationship exists between approach-oriented coping strategies and positive psychological and physical health in stressful circumstances (Billings et al., 2000). Although avoidance can be considered to be a non-constructive strategy, past research has observed that coping via avoidance can be useful when a stressful situation exists for a short term and is uncontrollable (Suls and Fletcher, 1985). For example, cardiac patients who denied their disease were observed to spend less time in care units (Levine et al., 1987).

As noted above, since they affect the behaviors that patients use for managing stress, coping resources can play a key role in influencing the coping strategy and response that a patient adopts. According to past research, optimism, psychological control or mastery, self-esteem, and social support are some of the coping resources (Taylor and Santon, 2006) that can improve a patient’s capacity to manage stressful events and have better health outcomes. Moreover, past research has also observed that coping resources cannot only be antecedents of coping responses, but that they can also have a direct effect on one’s wellbeing. As such, modifying coping resources and patients’ stressful environments is likely to provide a significant potential to patients for managing their stress and improving their quality of life (Taylor and Stanton, 2006). Hence, to the extent that they are designed as an intervention mechanism that can help increase chronic patients’ coping resources so that they can better manage the stress caused by their illness, self-management programs and self-management tools can be viewed to also incorporate intervention.

2.3 Self-management systems

Self-management programs have been introduced to chronic patients in order to help them better manage the symptoms, treatments, and the physical, as well as the psychosocial consequences and lifestyle changes inherent in living with their illness (Coleman and Newton, 2005). It is important to note that information technologies (IT) can provide significant opportunities to improve self-management support for chronic illnesses such as asthma, especially when they are integrated with patients’ ongoing medical care. Such IT-based self-management tools are usually developed in order to help increase patients’ participation in the management and prevention of their disease (Polomano et al., 2007), and hence help improve patients’ self-management as they provide them with essential information when they need it, at home or at work, and at their convenience.

Past research has observed that self-management tools can also be helpful in the management of the intense anxiety that often accompanies living with a chronic disease as they can allow patients to communicate with care providers, which in turn can reassure them that they will receive support and help when they need it. For example, Gustafson et al. (1999) found that an IT that provided HIV-positive patients the possibility to connect with experts and other patients, as well as providing them with information and decision making support, helped patients by decreasing their negative emotions and by enabling them to better deal with their emotional responses to their problem. Moreover, Winkelman et al. (2005) found that online electronic medical records (EMR) evoked positive emotions in patients who suffered from a chronic disease by creating a perception of support, which in turn tended to improve patients’ adjustment to their chronic illness. In addition, Lambert and Loiselle (2007) observed that health information seeking behavior helped reduce negative reactions, such as anxiety, and provided reassurance which could contribute to positive health outcomes (Fourie, 2009). However, past research has also observed that some patients have reported negative emotions when using these systems (Garcia-Lizana and Sarria-Santamera, 2007). The present paper examines how asthma patients used a self-management system for coping with the negative emotions related to their disease.

3 Method

3.1 Study context and data collection

The IT examined in the present study is a web-based asthma self-management portal (labelled the Portal) developed by the Clinical and Health Informatics research group in a North American university. The Portal had two interfaces: Patient Interface and Nurse Interface. The Patient Interface required from each patient to enter his/her health status, adherence to taking his/her medications, and weekly physical activity. Using a patients' data, a graphical feedback mechanism and a graph of the patient's medication, exercises and symptoms, the Portal informed the patient about the status of his/her asthma control. The Portal's weekly questions and its graphical feedback mechanism were devised in order to enable patients to self-monitor their symptoms, their adherence to taking their medication, and their physical activity. The Portal also informed a patient about what to do when his/her asthma was not under control. On the other hand, the Nurse Interface contained a list of patient names that were color-coded and ordered according to each patient's weekly health-status. Patients whose asthma was out of control were marked in red and had a higher priority in the list. The Portal also had an e-mail section which enabled patients to exchange messages with the nurse. When the nurse noticed any problems, such as ambiguous data entered by the patient, or an out-of-control asthma status, she e-mailed the patient who could also e-mail the nurse and ask her questions.

Before the beginning of the Portal's trial period, 22 patients who had been diagnosed with asthma were recruited from two North American hospitals and were asked to use the Portal for 14 weeks. A nurse was also recruited from one of the hospitals for monitoring the patients' health status by using the Portal, and a research coordinator provided a two-hour training on how to use the Portal. At the end of the trial period, each patient who had agreed to participate to the present study was interviewed for approximately one hour. As three patients dropped out before the end of the trial period, 19 patients used the Portal for 14 weeks, and 17 (89%) of them accepted to be interviewed for the present study (Table 1). The interview protocol contained open-ended questions and asked patients to describe how they used the Portal, the emotional consequences of their disease, how they coped with it, as well as their asthma self-management behaviors.

Characteristics	Values	n (%)
Gender	Male	6 (35%)
	Female	11 (65%)
Age group (years)	18-39	3 (18%)
	40-49	3 (18%)
	50-59	7 (41 %)
	>60	4 (23 %)

Table 1. Participant Profiles

3.2 Analysis

The present study adopted an exploratory approach to examine patients' negative emotions regarding their asthma by focusing on each patient's stress, anxiety, depression, and coping strategies, and by considering the Portal as a coping resource. After transcribing each interview, the transcripts, as well as each patient's e-mail exchanges with the nurse were coded using N'vivo software (version 11), based on the initial study concepts, including patients' emotions as a result of their disease, their perceptions and usage of the Portal, their self-management behaviors and coping strategies. Then, in an effort to identify new concepts and their relationships, a content analysis (Hsieh and Shannon, 2005) that was based on these concepts was undertaken. Finally, all interviews were compared and contrasted based on the initial codes in order to identify relationships that appeared to exist between the study concepts.

4 Results

The interview data contained different negative emotions that patients expressed regarding their disease. Some of them expressed hatred, *"I hate it [my asthma] with every single fibre of my being"* (P17), while others mentioned feelings of embarrassment regarding their disease, *"I felt a lot of embarrassment. I would go out to dinner or somewhere and I would just start coughing and coughing and coughing and coughing. To me, that was an embarrassing problem….The coughing was really, it bothered, emotionally bothered me that I would have to cough in front of people."* (P12). Some patients were frustrated about their asthma, *"Sometimes you get a bit discouraged because you're just like, tired of it, you know? Very draining, very"* (P3), or as P16 stated, *"There's frustration. Frustration of not being able to do what you used to do, frustration that this is never going to go away and you got to, you have to live with and you have to adjust your lifestyle a bit. It's not that you're dead and it's not that you can't do things, but you have to rethink how you're doing things"*. Further, many patients reported that they felt anxiety and stress as a consequence of their asthma, such as *"I think for anyone with asthma, you're always worried about being in a place that's going to set off an asthma attack"* (P13), or *"When it gets bad it can be very scary. And it can be when you're stuck breathing, not breathing for a long time"* (P8). Also, some of them noted that asthma made them feel depressed, "*You have asthma, it's depressing anyway*" (P4), "*There are times when the drugs just don't work, and then what do you do? It's a desperate thing, asthma"* (P8), *"I can get depressed sometimes when my asthma's bad and I didn't really cope that well. I didn't take anything for it. I'd just sometimes be depressed a little bit because I had it"* (P10).

The analysis of the interview data indicated that the anxiety, stress and depression that patients experienced as a consequence of their asthma was mainly due to the unpredictable nature of their disease and their lack of control over it. They were afraid to experience an asthma attack in situations where they would have no access to resources, such as at night. Moreover, they also noted that asthma was preventing them from living the life they wanted to, which they felt was a source of stress and depression as well. Further, given the fact that asthma is an incurable chronic disease, some patients felt depressed and less hopeful about the future.

In order to cope with the negative emotions that their asthma evoked, some patients viewed the Portal as a coping resource and adopted an emotion-focused approach in order to cope with their stress and anxiety. They felt reassured by the fact that a nurse was accessible through the Portal, and felt that in case of a problem, the nurse would notice and would react to save their lives. For example, *"It's [asthma] just something I've accepted. I can't do anything about it. However, I got a comfortable feeling with the nurse on the Portal. I didn't know her; I didn't have any idea who she was, but I had a comfortable feeling with the nurse*" (P3); *"Oh, there's somebody backing up with this in case I have these kinds of symptoms, oh, it will improve me. So you may feel secure or safe with this kind of study, especially if you have some insecurities that okay, what will I do, shall I, you know, how do I do this without somebody backing up on me? It's like you know what to do because you have your own doctor, but you have a back-up plan with this kind of study… you're feeling sometimes stressed, not really* *depressed, but it would make you more confident doing everything in your life because oh, there's somebody backing up"* (P1); "*It's the confidence, it's the security. Confidence and security knowing that the asthma portal site is there"* (P12).

Some patients adopted a more task-oriented and problem-focused approach regarding the negative emotions that their disease had evoked, and they perceived the Portal as a resource that could help them solve their problems. Such patients usually had a very active role in the management of their disease. For example, P13 stated that *"You don't let it rule your life or anything. It doesn't stop me from doing something. I'm always conscious of it. I always know to, if I feel the tightness in my lungs or whatever, to stop what I'm doing or make sure my pump's on hand or something like that, but I think that's the same. I think that's pretty much anyone with asthma"*. These patients used the Portal mostly for receiving feedback about their health status and analyzing their symptoms in order to make better decisions regarding their self-management. For example, P13 explained *"I was having allergies, so my asthma started picking up and I was able to track how long that went on for [by using the Portal]. It wasn't something that I would automatically do just because I was crazy at that point, everything was going on. The Portal let me know how long that lasted for. The Portal said okay, this is when you're having a hard time; this is when you're not having a hard time. I was able to track and know how long it lasts for.*" For such patients, the Portal was a useful resource for managing their stress in a constructive way: *"Before using the Portal, I was much more nervous when I had a small symptom because I did not know what to do. When I am stressed I don't breathe well. Now, with the Portal, I know what to do. So I am less nervous and less stressed because of the disease"* (P2). Moreover, they perceived the Portal as a source of motivation, which encouraged them to exercise more and take their medications regularly and on-time, which could eventually help them deal with the depressive symptoms of their disease. For example, P10 stated that *"I don't exercise a whole lot but I have a physical job so, before using the Portal I didn't exercise a lot and I was a little depressed with my asthma actually because it was affecting me. But using the Portal, I walked and hiked a lot more just to try to do certain amount of minutes per day."*

The analysis of the interview data indicated that not all patients viewed the Portal as a coping resource, with some of them using an avoidance strategy to deal with the negative emotions evoked by their asthma. As such, they withdrew their attention from their disease by paying attention to something else. For example, P4 mentioned that "*I handled it the best way I could because I just, I would ignore it. Like I have asthma, get over it. That's it, that's all. My husband has cancer, so he's more important right now, you know. I went already, what year are we today? Fourteen years ago, when I was in coma because of the asthma and because of pneumonia that was the point where I woke up and said, you know what, asthma ain't good, but I just live day by day."* Moreover, some patients mostly relied on other coping resources and did not perceive the Portal as a legitimate coping resource. For example, P14 relied on her doctors in the hospital to cope with her negative emotions: *"Sometimes I talk with my doctor about my emotional problems and sometimes with my nurse".*

The analysis of the interview data indicated that patients who had an emotion-focused coping strategy tended to use the Portal mainly to regulate and express their emotions, or to seek support. On the other hand, patients who had a problem-focused coping strategy tended to use the Portal mostly to plan their actions, make decisions, execute their actions, and seek information. The remaining patients either denied their negative emotions or avoided it, or relied on resources other than the Portal in order to cope with their negative emotions. Each coping activity is summarized in Table 2.

Coping strategy	Coping activities
The Portal was used as an emotional management resource (emotion-focused)	• Emotion regulation and expression Patients could express their negative emotions by contacting the nurse via the Portal. • Support seeking Patients looked for comfort, security, and support from the Portal. Knowing that there was a tool that monitored them constantly provided them a sense of safety.
The Portal was used as a problem-solving resource (task-oriented or problem-focused)	• Planning actions and decision making Patients used the feedback mechanism to analyse their symptoms, medication adherence, and exercises. Based on their analysis, they made appropriate decisions to manage their asthma (e.g., followed their action plan, contacted a healthcare provider). • Executing actions The Portal encouraged patients to do more exercises and take their medication regularly. Also, the e-mail feature of the Portal provided them with an opportunity to contact the nurse and ask for advice when needed. • Information seeking The information page of the Portal provided useful information about their disease. Patients also could contact the nurse if they had a question or a concern regarding their asthma.
No other resources or resources independent of the Portal were used	• Avoidance Patients pretended that their asthma was not important, avoiding to think about their asthma or do anything about the situation. • Relying on other sources Patients preferred to contact their doctors and hospital nurses in order to cope with their negative emotions.

Table 2. Coping activities

5 Discussion

The present study investigated how chronically ill patients tended to use a self-management system in order to cope with the negative emotions they had about their disease, and observed that a chronic disease like asthma could evoke negative emotions in patients, such as frustration, stress, anxiety, and depression. According to coping theory (Lazarus and Folkman, 1984), stress and anxiety result when one appraises an event as exceeding one's resources. In the case of chronic patients, they need to keep their disease under control in order to be able to improve their quality of life. However, the severity of their disease, their lack of knowledge, or their self-reliance can be limiting and prevent them from achieving desired results and control their illness, which in turn tends to make them feel stressed and anxious, potentially resulting in depressive symptoms.

According to Lazarus and Folkman's (1984) coping theory, self-reliance and positive beliefs are characterized as person-related coping resources that can influence one's success in behaviorally and emotionally coping with distressing problems and emotions that are caused by their disease. The present study suggests that self-management tools can provide to such patients an additional resource that can help them better cope with the emotional consequences of their disease. As noted earlier, such tools have been designed to help patients adopt a more constructive and problem-focused strategy for coping with their negative emotions. However, self-management systems can also be considered to provide patients with a coping resource that can facilitate both their problem-focused and emotion-focused coping responses, as well as by helping them regulate their negative emotions or seek support from healthcare providers.

Extant research has highlighted the role of personal control and mastery as a coping resource which can help individuals in addressing their distressful situation (Taylor and Stanton, 2006). Personal control or mastery refers to whether a person feels capable to control or influence outcomes (Thompson, 1981). Past research has observed a significant relationship between a sense of control and better psychological and physical health outcomes. The present study observed that self-management systems are likely to play a positive role in creating personal control and mastery in chronic patients. The interviews with asthma patients indicated that the Portal's feedback mechanism provided them with information about their health status. Some patients stated that this mechanism helped them have better control over their disease and track it better. In essence, the feedback mechanism helped them better face their disease and have a closer contact with the source of their stress, which helped increase their awareness about their health status, eventually encouraging instrumental actions (Roth and Cohen 1986). Hence, tools such as the Portal can help patients who have an avoidance strategy to adopt an approach that enables them to cope with their negative emotions and control their stressful situations.

Self-efficacy beliefs and self-esteem are other coping resources that have been observed to have similar beneficial effects on managing stressful events (Bandura, 2006). A high level of self-esteem can be viewed as a positive sense of self, and can help reduce potential adverse effects of stress, leading to positive physical and mental health outcomes and general well being (DuBois and Flay, 2004). As such, any intervention that enhances the self can be beneficial and the present study observed that self-management tools can positively influence patients' self-efficacy. These tools can encourage patients to adhere to their medications and also help them to be physically more active, which can positively influence patients' self-efficacy beliefs, which in turn can help reduce their stress and anxiety.

The present study's data suggests that self-management tools can provide social support by connecting patients to their healthcare providers. Social support can be viewed as one's perception or experience that one is loved, valued and cared-for by others (Wills, 1991), and as such it can provide another significant coping resource. Past research has found that social support can reduce stress, anxiety, and depression and that it can facilitate psychological adjustments to stressful situations. Patients who participated in the present study often noted that, thanks to the Portal, they felt secure and protected, and that they no longer felt alone. As discussed in past research, social isolation and loneliness is related to high stress, as well as to inadequate and inefficient physiological repair (Hawkley and Cacioppo, 2003).

It is important to note that patients can perceive a self-management system, such as the Portal, as a coping resource in different ways, and chronically ill patients can use a variety of coping strategies to deal with various disease-related and common stressors. In the present study, while some patients tended to adopt a problem-focused approach, others tended to adopt an emotion-focused approach. Moreover, some patients were not interested in using the Portal tool as a coping mechanism and had negative attitudes toward it. As such, the results of the present study suggest that differences in patients' adopted strategies are likely to depend upon their personal characteristics, and it can be useful in future studies to investigate the factors that are likely to influence patients' coping responses.

6 Conclusion

Based on an exploratory study of 17 asthma patients who used an IT-based asthma self-management tool labeled the Portal, the present study found that the patients were able to use the Portal not only as an aid to manage their asthma, but also as a coping resource that helped them deal with their anxiety and stress. The study identified that patients were able to use the Portal as a tool that could help them with their emotion-focused and problem-focused coping responses. Following emotion-focused strategies, patients engaged in actions that involved support seeking, emotion expression and regulation. On the other hand, following problem solving strategies, patients engaged in actions that involved planning, decision making, executing, as well as information seeking in order to cope with the emotional consequences of their chronic disease. In addition, the present study observed that patients could also use self-management tools as a coping resource that helped them increase their personal control, self-efficacy, and social support, suggesting that coping resources such as the Portal can foster more positive appraisals of stressful situations evoked by chronic diseases, and lead patients to a more approach-related coping. The present study also observed that not all patients were able to benefit from such tools, and that some of them did not view it as a coping resource. As such, future research can investigate different factors that influence why some patients do not view self-management tools as a coping resource. Moreover, as chronic diseases have different characteristics regarding prognosis, and responsiveness to treatment, the effects of psychosocial coping resources may also differ for patients with different diseases, which can also provide an interesting avenue for future research.

References

Bagozzi, R. P., Gopinath, M., & Nyer, P. U. (1999). The role of emotions in marketing. Journal of the academy of marketing science, 27(2), 184-206.

Bandura A. (2006). Toward a psychology of human agency. Perspect. Psychol. Sci. 1:164–80

Baum A. (1999). Stress, intrusive imagery, and chronic distress. Health Psychol. 9:653–75

Cole, D. A., Truglio, R., & Peeke, L. (1997). Relation between symptoms of anxiety and depression in children: A multitrait-multimethod-multigroup assessment. Journal of Consulting and Clinical Psychology, 65(1), 110.

Coleman, M. T., & Newton, K. S. (2005). Supporting self-management in patients with chronic illness. Am Fam Physician, 72(8), 1503-1510.

Cully, J. A., Graham, D. P., Stanley, M. A., Ferguson, C. J., Sharafkhaneh, A., Souchek, J., & Kunik, M. E. (2006). Quality of life in patients with chronic obstructive pulmonary disease and comorbid anxiety or depression. Psychosomatics, 47(4), 312-319.

Dahlén, I., & Janson, C. (2002). Anxiety and depression are related to the outcome of emergency treatment in patients with obstructive pulmonary disease. Chest, 122(5), 1633-1637.

Di Marco, F., Verga, M., Reggente, M., Casanova, F. M., Santus, P., Blasi, F., . . . Centanni, S. (2006). Anxiety and depression in COPD patients: the roles of gender and disease severity. Respiratory medicine, 100(10), 1767-1774.

DuBois DL, Flay BR. (2004). The healthy pursuit of self-esteem: comment on and alternative to the Crocker and Park 2004 formulation. Psychol. Bull. 130:415–20

Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. Journal of health and social behavior, 219-239.

Folkman, S., & Lazarus, R. S. (1990). Coping and emotion. Psychological and biological approaches to emotion, 313-332.

Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. Journal of personality and social psychology, 50(5), 992.

Fourie, I. (2009). Learning from research on the information behaviour of healthcare professionals: a review of the literature 2004–2008 with a focus on emotion. Health Information & Libraries Journal, 26(3), 171-186.

García-Lizana, F., & Sarría-Santamera, A. (2007). New technologies for chronic disease management and control: a systematic review. Journal of telemedicine and telecare, 13(2), 62-68.

Gustafson, D. H., Hawkins, R., Boberg, E., Pingree, S., Serlin, R. E., Graziano, F., & Chan, C. L. (1999). Impact of a patient-centered, computer-based health information/support system. American journal of preventive medicine, 16(1), 1-9.

Hawkley L, Cacioppo J. (2003). Loneliness and pathways to disease. Brain Behav. Immun. 17:S98105

Hess, R., Bryce, C. L., Paone, S., Fischer, G., McTigue, K. M., Olshansky, E., Siminerio, L. (2007). Exploring challenges and potentials of personal health records in diabetes self-management: implementation and initial assessment. Telemedicine and e-Health, 13(5), 509-518.

Huniche, L., Dinesen, B., Nielsen, C., Grann, O., & Toft, E. (2013). Patients' use of self-monitored readings for managing everyday life with COPD: a qualitative study. Telemedicine and e-Health, 19(5), 396-402.

Kotses, H., & Creer, T. L. (2010). Asthma self-management Asthma, Health and Society (pp. 117-139): Springer.

Levine J, Warrenburg S, Kerns R, Schwartz G, Delaney R, et al. 1987. The role of denial in recovery from coronary heart disease. Psychosom. Med. 49:109–17

Lambert, S. D., & Loiselle, C. G. (2007). Health information seeking behavior. Qualitative health research, 17(8), 1006-1019.

Lazarus, R. S. (1991). Emotion and adaptation: Oxford University Press.

Lazarus, R. S., & Folkman, S. (1984). Coping and adaptation. The handbook of behavioral medicine, 282-325.

Penninx, B. W., van Tilburg, T., Boeke, A. J. P., Deeg, D. J., Kriegsman, D. M., & van Eijk, J. T. M. (1998). Effects of social support and personal coping resources on depressive symptoms: different for various chronic diseases? Health Psychology, 17(6), 551.

Polomano, R. C., Droog, N., Purinton, M. C. P., & Cohen, A. S. (2007). Social Support Web-Based Resources for Patients with Chronic Pain. Journal of Pain and Palliative Care Pharmacotherapy, 21(3), 49-55

Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. American psychologist, 41(7), 813.

Scherer, K. R., Schorr, A. E., & Johnstone, T. E. (2001). Appraisal processes in emotion: Theory, methods, research: Oxford University Press.

Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. Journal of personality and social psychology, 48(4), 813.

Suls J, Fletcher B. 1985. The relative efficacy of avoidant and nonavoidant coping strategies: a meta-analysis. Health Psychol. 4:249–88

Taylor, S. E., & Stanton, A. L. (2007). Coping resources, coping processes, and mental health. Annu. Rev. Clin. Psychol., 3, 377-401.

Turner, J., & Kelly, B. (2000). Emotional dimensions of chronic disease. Western Journal of Medicine, 172(2), 124.

Wills TA. (1991). Social support and interpersonal relationships. In Prosocial Behavior, ed. MS Clark, pp. 265–89. Newbury Park, CA: Sage

Zhang, P. (2013). The Affective Response Model: A Theoretical Framework of Affective Concepts and Their Relationships in the ICT Context. MIS Quarterly, 37(1), 247-274.