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A Metasynthesis of Factors Affecting Self-Management of Chronic Illness

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Abstract

Aim—To identify factors that may serve as facilitators and barriers to self-management described by adults living with chronic illness by conducting a qualitative metasynthesis.

Background—Self-management is an individuals' active management of a chronic illness in collaboration with their family members and clinicians.

Design—Qualitative metasynthesis.

Data Sources—We analyzed studies (N=53) published between January 2000–May 2013 that described factors affecting self-management in chronic illness as reported by adults aged over 18 years with chronic illness.

Review Methods—Sandelowski and Barroso approach to qualitative metasynthesis: literature search; quality appraisal; analysis; and synthesis of findings.

Results—Collectively, article authors reported on sixteen chronic illnesses, most commonly diabetes (N=28) and cardiovascular disease (N=20). Participants included men and women (mean age=57, range 18–94) from twenty countries representing diverse races and ethnicities. We identified five categories of factors affecting self-management: Personal/Lifestyle Characteristics; Health Status; Resources; Environmental Characteristics; and Health Care System. Factors may interact to affect self-management and may exist on a continuum of positive (facilitator) to negative (barrier).

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Author Contributions:

All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE*):

1. substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
2. drafting the article or revising it critically for important intellectual content. * <http://www.icmje.org/recommendations/>

Conclusion—Understanding factors that influence self-management may improve assessment of self-management among adults with chronic illness and may inform interventions tailored to meet individuals' needs and improve health outcomes.

Keywords

self-management; chronic illness; metasynthesis; review; qualitative; nursing

INTRODUCTION

Self-management includes the daily activities in which individuals engage, along with their family, community and health care professionals, to manage a chronic illness (Lorig & Holman 2003, Richard & Shea 2011). Self-management encompasses multiple domains, including management of symptoms, treatments and lifestyle changes, as well as psychosocial, cultural and spiritual consequences of health conditions (Richard & Shea 2011). Individuals' self-management may greatly affect their quality of life and health outcomes. Self-management is a key component of the Chronic Care Model, which has been used internationally to guide clinical quality improvement initiatives (Coleman *et al.* 2009, McCorkle *et al.* 2011). The premise of this model is that self-management support that is provided in a health system by a prepared proactive team contributes to informed and activated individuals and improved outcomes (Bodenheimer *et al.* 2002). Thus, self-management support is a well-recognized aspect of chronic illness care.

Background

The Self- and Family Management Framework (Grey *et al.* 2006) was developed to illustrate relationships among risk and protective factors, self- and family management processes and health outcomes (Figure 1). In earlier work (Schulman-Green *et al.* 2012), we sought to deconstruct processes of self-management as broadly depicted in the Framework. Using qualitative metasynthesis techniques, we identified three main processes of self-management among adults with chronic illness: Focusing on Illness Needs; Activating Resources; and Living with a Chronic Illness. In several of these studies, factors that influenced individuals' self-management were identified, such as depression and co-morbidities. Therefore, we sought to comprehensively identify factors influencing self-management in adults with chronic illness and to further define risk and protective factors in the Self- and Family Management Framework. While several reviews have synthesized the processes and outcomes of self-management (Barlow *et al.* 2002, Newman *et al.* 2004, Warsi *et al.* 2004), less is understood about factors influencing self-management from the perspective of individuals living with chronic illness. Identification of factors that affect self-management can improve assessment of self-management, can inform the development of interventions by specifying potential mediators and/or moderators of self-management behaviors or processes and may also assist individuals with chronic illness to engage in productive and sustainable self-management.

THE REVIEW

Aim

To identify factors that may serve as facilitators and barriers to self-management described by adults living with chronic illness by conducting a qualitative metasynthesis.

Design

Qualitative metasynthesis is an integration of findings from qualitative studies with the aim of producing theories, grand narratives, generalizations, or interpretive translations (Polit & Beck 2008). To complete this metasynthesis, we followed methodological procedures outlined by Sandelowski and Barroso (2007): 1) literature search; 2) quality appraisal; 3) analysis of findings; and 4) synthesis of findings (Table 1).

Search methods

We began with a comprehensive literature search to identify all articles that used qualitative methods to describe factors affecting self-management from the perspective of adults living with a chronic illness (Procedure 1). With the assistance of a medical librarian, we searched for articles in the Academic Search Premier, CINAHL, MEDLINE, PsycINFO and PubMed databases as the most likely databases to contain literature on chronic illness self-management. We used combinations of the terms: 'self-management'; 'chronic illness'; 'chronic disease'; 'qualitative'; 'factors'; 'barriers'; 'obstacles'; and 'facilitators'. We did not include 'self-care' as a search term because it often refers to general healthy lifestyle behaviors and we wanted to locate articles on factors in the specific context of self-management as a set of tasks and skills used to manage chronic illness.

We included peer-reviewed articles concerning factors (i.e., facilitators and barriers) affecting self-management in adults aged over 18 years with chronic illness that were written in English and published between January 2000 – May 2013. When qualitative and quantitative data were distinct, we included qualitative results of mixed methods studies. We included studies with data from children, family caregivers and/or health care providers, but only when data from adults with a chronic illness was reported separately from the other group(s). We excluded articles that focused on mental illness or substance abuse given that self-management experiences may differ among these populations. We likewise excluded metasyntheses, literature reviews, theory-based works, dissertations, secondary analyses and evaluations of self-management interventions.

Search outcome

Figure 2 shows the flow of our literature search. Our initial search yielded 471 articles. Two reviewers read the titles and abstracts of these articles and judged, first independently and then jointly, if articles met inclusion criteria. Following this process, 68 articles met our eligibility criteria. Next, the two reviewers independently read the full text of these 68 articles and then collaboratively made a determination on eligibility. We searched the reference lists of these articles to identify any new articles and found five additional articles, which we then reviewed using the above process. After reading the full text of all articles (N=73), we excluded 20 due to a focus on self-management processes rather than factors

affecting self-management (N=9), focusing on the experience of chronic illness (N=5), or not meeting other inclusion criteria (N=6). Therefore, the sample for this metasynthesis was 53 articles. We created a data display matrix (Table 2) to categorize and compare articles (Miles & Huberman 1994) (Detailed data available in Table S1).

Among included articles, various qualitative designs and methods of data collection were used, including qualitative/interpretive description (N=27), focus group (N=6), mixed method (N=6), grounded theory (N=4), dialogical interviewing (N=3), phenomenology (N=1) and case study (N=1, 3 cases). The study type or method of data collection was not specified in five articles. Across all articles, 16 chronic illnesses were represented, most commonly type 1 and 2 diabetes (N=28) and cardiovascular disease (N=20). Samples, which ranged in size from 3–387 (median=24), represented 20 countries and included men and women of diverse races and ethnicities aged 18 to 94 (mean=57 years).

Quality appraisal

Next, we evaluated each article for quality (Procedure 2). To expedite the review process, we (all authors) assessed article quality (high, medium, low) using a slightly modified version of the Critical Appraisal Skills Programme (2014). Our quality checklist ('Yes/No') included seven key items assessing study design, sampling method, data collection and analysis procedure, saturation and the meaningfulness of the results. We also included space for reviewers' open-ended comments to discuss with the team. We believe that the method we used accurately assessed the quality of articles by capturing the main tenets of quality and rigor of qualitative research. We did not find any low quality articles and had no exclusions. We report article scores in Table S2.

Data abstraction and synthesis

To classify and summarize studies (Procedure 3), we recorded information from each article on study design, sample characteristics and factors affecting self-management. Of note, the risk and protective factors specified in the Self- and Family Management Framework informed our work but did not guide data abstraction or synthesis. We divided eligible articles among all authors, who were each responsible for independently extracting the aforementioned data from their assigned articles line-by-line. To ensure standardization of abstraction procedures, our team agreed to include any theme, subtheme, participant quote, or phrase in an article that described a factor affecting self-management. We were mindful about distinguishing between processes of self-management and factors affecting self-management; however, in some cases, a self-management process (e.g., communication with health care professionals) was also a factor affecting self-management (e.g., good/poor communication with health care professionals). Following independent data abstraction, the team came together to review all data abstraction forms and to resolve any differences of opinion through consensus.

Concurrent with data abstraction, we developed data coding categories. After independent review of the first ten articles, the team determined an initial coding scheme for factors affecting self-management. We used the constant comparative approach (Miles & Huberman 1994) to examine similarities and differences among factors affecting self-management as

they emerged. We initially identified eleven categories of factors: Demographic (4 subcodes); Clinical (4 subcodes); Health System (9 subcodes); Psychological (10 subcodes); Spiritual (3 subcodes); Support (4 subcodes); Financial/Insurance (5 subcodes); Communication (15 subcodes); Environment (16 subcodes); Assistive Devices/Technology (15 subcodes); and Self-Management (9 subcodes).

To synthesize findings (Procedure 4), we collapsed and expanded themes to determine an overall conceptualization of the analysis. We carefully considered the fit of sub-codes in each category, collapsing and expanding categories as indicated by group consensus. Our team discussed concepts underlying these eleven categories and we ultimately clustered them inductively into five higher level categories: Personal/Lifestyle Characteristics, Health Status, Resources, Environmental Characteristics and Health Care System.

We again worked in teams of two to re-code the data per these higher level categories, first coding independently and then jointly to resolve any coding conflicts. Table 3 shows the final categories and their subcodes. To maximize validity, we referred to our data abstraction forms and/or full-text manuscripts to ensure that our coding categories reflected self-management factors as described by adults with chronic illness. In addition, we took notes during team meetings to maintain an audit trail of our decision-making. To complete our synthesis, we discussed themes across categories and produced a graphic of factors affecting self-management.

FINDINGS

As noted, the five main categories of factors affecting self-management were Personal/Lifestyle Characteristics, Health Status, Resources, Environmental Characteristics and Health Care System. Each category is described below.

Personal/Lifestyle Characteristics

Personal/Lifestyle Characteristics that influenced self-management included knowledge, beliefs (cultural, spiritual and health), psychological distress, motivation and life patterns.

Knowledge—Individuals reported that knowledge about disease processes, the role of medications and their treatment plan was critical to their ability to successfully self-manage. Most importantly, individuals needed to know how to apply self-management knowledge to their lives. They reported that if they did not know why and how to manage their chronic illness, self-management efforts were impeded (Savoca & Miller 2001, Riegel & Carlson 2002, Horowitz *et al.* 2004, Roberto *et al.* 2005, Schnell *et al.* 2005, Hwu & Yu 2006, Nagelkerk *et al.* 2006, Utz *et al.* 2006, Gordon *et al.* 2007, Riegel *et al.* 2007, Costantini *et al.* 2008, Mead *et al.* 2010, Modeste & Majeke 2010, Newcomb *et al.* 2010, Lundberg & Thrakul 2011, Rasmussen *et al.* 2011, Henriques *et al.* 2012, Ploughman *et al.* 2012, Wortz *et al.* 2012, Griva *et al.* 2013).

Beliefs—Cultural beliefs and traditions primarily affected individuals in terms of a lack of congruence between people's cultural beliefs and self-management practices. For example, in Asian populations, if self-management tasks recommended by Western providers were

incongruent with an individual's belief in Eastern medicine, these tasks would not be completed as recommended (Zhang & Verhoef 2002, Lin *et al.* 2008, Newcomb *et al.* 2010, De Brito-Ashurst *et al.* 2011, Lundberg & Thrakul 2012). Individuals also reported struggling with self-management of their diet when recommendations were counter to their cultural practices or values (De Brito-Ashurst *et al.* 2011, Lundberg & Thrakul 2012, Orzech *et al.* 2013). For example, Vietnamese individuals with diabetes ate 'forbidden foods,' or foods that were not on their recommended diet, when they were offered them so as not to offend their hosts (Orzech *et al.* 2013).

Individuals reported that spiritual beliefs affected their coming to terms with a chronic illness and accepting the resultant change in life (Plach *et al.* 2005, Foster & Gatkins 2009, Handley *et al.* 2010). In addition, prayer and spiritual beliefs contributed to individuals' sense of control and confidence in their ability to self-manage. Spiritual beliefs about the cause of illness or cures could influence individuals' choices regarding health care providers (Utz *et al.* 2006) or treatments (Zhang & Verhoef 2002). Religious practices were mentioned as a potential barrier to self-management, e.g., fasting for Ramadan hindered the ability to follow a prescribed diet (Lundberg & Thrakul 2012).

Personal health beliefs were cited as both facilitators and barriers to self-management. Specifically, perceived control over illness and symptoms was identified as an important facilitator of self-management, such that increased perceptions of control facilitated better self-management (Horowitz *et al.* 2004, Hwu & Yu 2006, Cooper *et al.* 2010). Perceptions of the positive and negative consequences of self-management tasks were also reported to influence self-management efforts (Schnell *et al.* 2005, Hwu & Yu 2006, Lin *et al.* 2008, Henriques *et al.* 2012, Lundberg & Thrakul 2012). When individuals perceived the positive consequences of their self-management task, or the negative consequences of not completing self-management tasks, they expended more effort on self-management. Negative beliefs towards self-management, such as believing that self-management or treatment was time-consuming, inconvenient, complex, hard work, or did little to control their chronic illness, hindered individuals' self-management behaviors (Savoca & Miller 2001, Roberto *et al.* 2005, Hwu & Yu 2006, Nagelkerk *et al.* 2006, Utz *et al.* 2006, Jo *et al.* 2008, Handley *et al.* 2010, Song *et al.* 2010, Lundberg & Thrakul 2011, Lundberg & Thrakul 2012, Henriques *et al.* 2012, Wortz *et al.* 2012, Griva *et al.* 2013).

Psychological Distress—Individuals reported that psychological distress influenced their self-management. Stress, including the pressure of multiple roles (Modeste & Majeke 2010) was mentioned as a barrier to self-management (Balfe 2009, Mead *et al.* 2010). Similarly, fear, anxiety and impaired mood (Chasens & Olshansky 2008, Jo *et al.* 2008, Wortz *et al.* 2012) had a negative impact on self-management (Wu *et al.* 2011, Ploughman *et al.* 2012); however, anxiety also served as a facilitator when it caused individuals to be more vigilant of symptom monitoring and other self-management tasks (Riegel *et al.* 2010).

Motivation—Motivation and self-discipline (or lack thereof, Song *et al.* 2010) affected perseverance with self-management efforts (Ofstedal *et al.* 2010b). Sense of self-efficacy, or personal control, also contributed to motivation to self-manage (Horowitz *et al.* 2004, Schnell *et al.* 2005, Hwu & Yu 2006, Cooper *et al.* 2010, Handley *et al.* 2010, Lundberg &

Thrakul 2012). Stigma was noted as a motivating factor; individuals talked about taking care of themselves to avoid the stigma of needing additional devices or accommodations and wanting to ‘achieve a normal life’ (Audluv *et al.* 2009, Ploughman *et al.* 2012).

Life patterns—Prior self-management experience, the ability to create a self-management routine and life transitions were other personal characteristics that influenced self-management. Prior self-management experiences where self-management practices improved health had a positive effect on current health beliefs and behaviors (Savoca & Miller 2001, Riegel *et al.* 2007, Lin *et al.* 2008, Henriques *et al.* 2012). In contrast, those who experienced adverse effects of self-management or threats of further harm were less willing to continue with self-management (Hwu & Yu 2006, Griva *et al.* 2013). For example, some individuals with diabetes hesitated to take insulin due to a fear of hypoglycemia (Griva *et al.* 2013).

Developing a daily self-management routine was reported to facilitate self-management (Hwu & Yu 2006, Song *et al.* 2010, Pascucci *et al.* 2012, Griva *et al.* 2013), such as doing exercises at the same time every day. These strategies helped individuals remember to engage in self-management behaviors. Having a busy schedule complicated the ability to develop and maintain routines (Savoca & Miller 2001, Riegel & Carlson 2002, Hwu & Yu 2006, Handley *et al.* 2010, Song *et al.* 2010). Disruptions of daily routines caused by special occasions, travelling, vacation, holidays and weather challenged individuals’ self-management routines (Savoca & Miller 2001, Roberto *et al.* 2005, Newcomb *et al.* 2010, Pascucci *et al.* 2010, Song *et al.* 2010). Individuals needed flexibility and creativity to maintain routines when circumstances changed.

Life transitions also affected self-management. For example, the relatively unstructured life of college students inhibited young adults’ ability to establish and maintain health care routines (Balfe 2009). Other life transitions, such as becoming a mother or beginning employment also required reprioritizing and adjustment of self-management regimens (Rasmussen *et al.* 2011). Getting older was reported to affect self-management due to increased potential for cognitive issues that could inhibit self-management, such as forgetting to take medications (Song *et al.* 2010).

Health Status

Individuals’ health status, including co-morbidities, illness severity, symptoms, side effects from treatment and cognitive functioning were cited as factors that influenced self-management tasks. Physical co-morbidities added complexity to health care regimens and contributed to symptoms that interfered with self-management efforts (Riegel & Carlson 2002, Roberto *et al.* 2005, Hwu & Yu 2006, Utz *et al.* 2006, Brand *et al.* 2010, McCarthy *et al.* 2010, Newcomb *et al.* 2010, Riegel *et al.* 2010, Ploughman *et al.* 2012, Wortz *et al.* 2012, Griva *et al.* 2013). For example, shortness of breath from chronic obstructive pulmonary disorder could contribute to inability to exercise as part of diabetes or cardiac self-management (Schnell *et al.* 2005). Symptoms and side effects, particularly pain and fatigue, were identified as barriers to self-management (Savoca & Miller 2001, Roberto *et al.* 2005, Schnell *et al.* 2005, Hwu & Yu 2006, Gordon *et al.* 2007, Riegel *et al.* 2007, Chasens &

Olshansky 2008, Audluv *et al.* 2009, Jowsey *et al.* 2009, McCarthy *et al.* 2010, Pascucci *et al.* 2010, Wu *et al.* 2011, Henriques *et al.* 2012, Wortz *et al.* 2012). Notably, the absence of symptoms was identified as a factor that diminished self-management efforts, either due to lack of perceived seriousness or lack of perceived benefit (Constantini *et al.* 2008, Handley *et al.* 2010). Cognitive impairment was reported as a barrier to recognizing signs and symptoms, remembering to carry out self-management tasks, or problem-solving (Riegel *et al.* 2007, Jo Wu *et al.* 2008, McCarthy *et al.* 2012).

Resources

Resources that influenced self-management included financial resources, equipment and psychosocial support. The extent and quality of personal resources could influence self-management.

Financial—Limited financial resources, lack of insurance and financial instability were reported as major barriers to self-management. For example, low-income individuals paid more attention to their economic survival than to controlling their disease (Nagelkerk *et al.* 2006, Modeste & Majeke 2010, Lundberg & Thrakul 2011). The high price of medication, healthy food, supplies and alternative therapies served as barriers to self-management by restricting individuals' choices. Factors related to employment, such as loss of work or maintaining working ability, were also reported to affect self-management efforts. Lack of or limited insurance coverage greatly impeded self-management by decreasing individuals' access to health care and creating difficulties in obtaining medication (Gee *et al.* 2007, Mead *et al.* 2010, Newcomb *et al.* 2010, Vest *et al.* 2013). In contrast, financial support from family and friends facilitated self-management efforts, such as enabling purchase of high-cost foods as part of a prescribed diet (Orzech *et al.* 2013).

Equipment—Assistive devices that helped or hindered self-management included the Internet, as well as electronic and non-electronic equipment. The Internet could facilitate self-management by providing helpful information about health conditions and connecting individuals to peer support and other resources (Dickerson *et al.* 2006, Utz *et al.* 2006, Winters *et al.* 2006, Wellard *et al.* 2008, Brand *et al.* 2010, McCarthy *et al.* 2010). The Internet could also hinder self-management by offering an overwhelming amount of information, some of which could be perceived as frightening or unreliable (Dickerson *et al.* 2006, Balfe 2009).

Electronic equipment (e.g., glucose monitors) and non-electronic equipment (e.g., pill boxes) were also described as both facilitators and barriers to self-management. These types of equipment facilitated self-management by helping individuals to learn about their health condition, to make self-management decisions and to adapt to their environment. For example, individuals with memory problems recorded their daily schedule in a logbook to help them maintain self-management routines (Ploughman *et al.* 2012). Equipment could also serve as barrier to self-management due to perceived inconvenience or stigma. In one study, perception of adaptive devices was reported as a 'clear marker of disability', thus inhibiting their use (Ploughman *et al.* 2012).

Psychosocial—Psychosocial support was cited as a factor that affected self-management efforts in both positive and negative ways. Individuals reported that positive support from partners or peers was very influential (Hwu & Yu 2006, Gee *et al.* 2007, Brand *et al.* 2010, Henriques *et al.* 2012) and increased empowerment (Brand *et al.* 2010). Family and friends, especially those nearby (Hwu & Yu 2006, Emlet *et al.* 2010), helped with various aspects of self-management, including preparing healthy food, providing reminders about medication and accompanying individuals to medical appointments (Winters *et al.* 2006, Lundberg & Thrakul 2011, Lunberg & Thrakul 2012). However, individuals also reported a lack of or negative support from partners or peers (Roberto *et al.* 2005, Balfe *et al.* 2009, Newcomb *et al.* 2010, Orzech *et al.* 2013) as a self-management barrier. For example, a lack of spousal support for a new diet was identified as a barrier to following treatment recommendations (Savoca & Miller 2001).

Many adults highlighted the role of support groups and peer support as an important facilitator to self-management. Specifically, support groups and peers with the same condition offered an opportunity to share information (Utz *et al.* 2006, Ploughman *et al.* 2012, Giva *et al.* 2013) and feel connected to a community (Rasmussen *et al.* 2011, Lowe & McBride-Henry 2012). Finally, isolation, i.e., not having social support, was discussed as a barrier to self-management (Riegel *et al.* 2007, DeBrito-Ashurst *et al.* 2011).

Environmental Characteristics

Home, work and community were discussed as environmental factors that affected self-management.

Home—In the home environment, living among family members with different dietary preferences was a barrier to following a recommended diet (Schnell *et al.* 2005, Hwu & Yu 2006, Audluv *et al.* 2009, Wu *et al.* 2011, Orzech *et al.* 2013). Individuals could experience conflict with family members over food served in the home and reported receiving food from family members that was not congruent with their prescribed diets (Schnell *et al.* 2005, Hwu & Yu 2006, Orzech *et al.* 2013). Health problems of other family members were another reported barrier to self-management, as others' health problems created competing demands and less ability to concentrate on personal self-management needs (Wu *et al.* 2011, Ploughman *et al.* 2012).

Work—In the work environment, time and schedule constraints imposed by work were identified as a barrier that hindered the ability to carry out self-management related to diet, exercise and medications (Dickson *et al.* 2008, Audluv *et al.* 2009, Oftedal *et al.* 2010b, Lundberg & Thrakul 2012). In contrast, the support provided by employers and co-workers, in addition to a sense of belonging found at work, facilitated self-management (Dickson *et al.* 2008, Oftedal *et al.* 2010b).

Community—In the community, barriers to self-management included lack of transportation to get to the gym or to medical appointments (Lundberg & Thrakul 2001, Utz *et al.* 2006, Winters *et al.* 2006, Modeste & Majeske 2010, Pascucci *et al.* 2012), exposure to unhealthy food at restaurants (Savoca & Miller 2001, Utz *et al.* 2006, Chasens & Olshansky

2008, Pascucci *et al.* 2010, Lundberg & Thrakul 2012) and in various social environments (Hwu & Yu 2006, Chasens & Olshansky 2008, Handley *et al.* 2010, Orzech *et al.* 2013) and lack of knowledge among the general public about chronic illness (Wellard *et al.* 2008, Foster & Gaskins 2009, Cooper *et al.* 2010, Oftedal *et al.* 2010b). Individuals reported that eating out was challenging because foods in restaurants and convenience stores were often highly processed, had little nutritious value and came in large portion sizes (Savoca & Miller 2001, Utz *et al.* 2006, Pascucci *et al.* 2010, Lundberg & Thrakul 2012). Individuals reported that seeing others eat or seeing foods being offered by family or friends tempted them and inhibited their diet regulation (Hwu & Yu 2006, Chasens & Olshansky 2008, Handley *et al.* 2010, Orzech *et al.* 2013). The lack of public knowledge about chronic illness and self-management behaviors also affected individuals' self-management (Wellard *et al.* 2008, Foster & Gaskins 2009), at times creating social stigma associated with chronic illness (Foster & Gaskins 2009, Oftedal *et al.* 2010b).

Health System

Health system factors that influenced individuals' ability to carry out self-management tasks included access to health care, the ability to navigate the health care system and ensure continuity of care and relationships with providers.

Access—Individuals reported that access (or lack of access) to specialists, nursing care, self-management programs and alternative therapy was an important factor that influenced their self-management (Curtin & Maples 2001, Schnell *et al.* 2005, Utz *et al.* 2006, Winters *et al.* 2006, Lin *et al.* 2008, Brand *et al.* 2010, Mead *et al.* 2010, Henriques *et al.* 2012, Ploughman *et al.* 2012, Vest *et al.* 2013). In addition, access to educational resources from outside the health care system, such as obtaining information from radio, books, or brochures, was identified as a facilitator (Schnell *et al.* 2005, Brand *et al.* 2010, Lundberg & Thrakul 2011, Lundberg & Thrakul 2012).

Navigating System/Continuity of Care—Navigating the health care system and continuity of care were challenges for some adults with chronic illness. Individuals reported that long wait times for appointments, unreturned phone messages, or confusing communication with clinic staff negatively affected self-management (Schnell *et al.* 2005, Gordon *et al.* 2007, Brand *et al.* 2010, Newcomb *et al.* 2010). Some adults who had multiple health care providers expressed that they did not know who to call or when to call (Brand *et al.* 2010). Further, when individuals saw different providers at every appointment, they expressed challenges in communication and difficulty obtaining prescriptions (Plach *et al.* 2005, Gordon *et al.* 2007, Newcomb *et al.* 2010). Inconsistent advice by providers was also noted when there was a lack of continuity of care (Riegel & Carlson 2002).

Relationships with Providers—self-management was facilitated by positive patient-provider relationships where patients had time to share concerns, related to their provider and felt support, trust and empathy (Patterson 2001, Schnell *et al.* 2005, Nagelkerk *et al.* 2006, Jo *et al.* 2008, Jowsey *et al.* 2009, Brand *et al.* 2010, McCarthy *et al.* 2010, Mead *et al.* 2010, Newcomb *et al.* 2010, Oftedal *et al.* 2010a, Oftedal *et al.* 2010b, Wu *et al.* 2011, Henriques *et al.* 2012, Ploughman *et al.* 2012, Griva *et al.* 2013, Vest *et al.* 2013). In

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addition, self-management was supported by a collaborative approach where patients and providers were partners in self-management and problem-solved together with shared goals (Curtin & Maples 2001, Paterson 2001, Schnell *et al.* 2005, Nagelkerk *et al.* 2006, Utz *et al.* 2006, Cooper *et al.* 2010, Handley *et al.* 2010, Oftedal *et al.* 2010b, Lundberg & Thrakul 2012, Ploughman *et al.* 2012). Individuals expressed that adequate time was essential to understand changes in self-management, to ask questions, or to get feedback on self-management (Newcomb *et al.* 2010, Vest *et al.* 2013). Feeling confident in their health care providers' competence was reported as necessary to follow recommended self-management tasks (Zhang & Verhoef 2002, Winters *et al.* 2006, Wu *et al.* 2011).

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Good communication was essential to positive patient-health care provider relationships. When providers used medical jargon or technical language (Patterson 2001, Riegel & Carlson 2002, Zhang & Verhoef 2002, Gordon *et al.* 2007, Jowsey *et al.* 2009), patients were confused and left wondering what they should be doing. The same was the case when providers rushed communication or provided an inadequate amount of information (Gordon *et al.* 2007, Costantini *et al.* 2008, Brand *et al.* 2010, Newcomb *et al.* 2010, Oftedal *et al.* 2010a, Ploughman *et al.* 2012). Provider-related factors that facilitated self-management were actively listening to patients' input on their health condition, valuing patients' subjective illness experience, investing time to get to know patients as individuals (Paterson 2001, Wu *et al.* 2011, Henriques *et al.* 2012, Ploughman *et al.* 2012, Zhang & Verhoef 2002), having regular visits (Paterson 2001, McCarthy *et al.* 2010), offering practical advice and anticipatory guidance (Schnell *et al.* 2005, Mead *et al.* 2010, Oftedal *et al.* 2010a) and recommending culturally-sensitive self-management strategies, which increased the likelihood of strategies being followed (DeBrito-Ashurst *et al.* 2011, Orzech *et al.* 2013).

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Individuals likewise identified their own communication as affecting self-management. Problems included limiting communication or not being honest with their providers to avoid conflict (Curtin & Maples 2001, Newcomb *et al.* 2010, Lundberg & Thrakul 2012). Language barriers, specifically, not reading or speaking English (Zhang & Verhoef 2002, DeBrito-Ashurst *et al.* 2011, Griva *et al.* 2013), were also reported as impeding self-management. Proactively seeking information, making suggestions and sharing their opinion about their self-management regimen with providers were patient-related factors that facilitated self-management (Curtin & Maples 2001, Utz *et al.* 2006).

Factors affecting self-management may interact

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We found that factors affecting self-management did not occur or act in isolation. Rather, various factors could interact to affect an individual's ability and/or motivation to self-manage, as well as the quality of self-management. Figure 3 is a graphic representation of factors affecting self-management and their relationship to each other, showing that both within and across factor categories, factors may interact to affect self-management. For example, in the Resources category, having limited financial resources (Financial) could affect an individual's ability to afford an assistive device, e.g., a glucose monitor (Equipment). Across categories, not having a glucose monitor could affect the Health Status factors of Illness Severity (if blood sugar levels are not well controlled) and Symptoms (if an individual develops severe hypoglycemia).

Factors affecting self-management are on a continuum

We also found that many factors affecting self-management could be conceptualized as being on a continuum where factors are not present or absent, but rather reflect degrees of positive (facilitators) or negative (barriers). That is, a particular factor can be a facilitator or a barrier to self-management depending on where an individual falls along the continuum. For example, social support is not typically present or absent, but is perceived as a degree of support. Involvement of family and friends may be a positive factor (facilitator), as when family is supportive (e.g., accompaniment to an appointment), or a negative factor (barrier), as when family is unsupportive (e.g., offering 'forbidden' foods), or somewhere in between, as when gestures that are indeed helpful may also be perceived as nagging or intrusive. Figure 4 shows exemplars of factors on the continuum.

DISCUSSION

This metasynthesis provides a rigorous review of factors affecting self-management from the perspective of adults living with chronic illness. We have specified self-management factors across a range of categories and have identified themes related to the nature and interaction of these factors. Identified factors and themes are consistent with other self-management frameworks (Dunbar *et al.* 2008, Ryan & Sawin 2009) and further specify the risk and protective factors of the Self- and Family Management Framework (Grey *et al.* 2015). By identifying facilitators and barriers related to the broad categories of risk and protective factors, we have detailed specific positive and negative influences on self-management to guide research and practice.

Our results are also consistent with other self-management reviews (Barlow *et al.* 2002, Newman *et al.* 2004, Warsi *et al.* 2004) in identifying individual and interpersonal aspects of self-management, particularly in our Personal/Lifestyle Characteristics category (e.g., symptoms, psychological and lifestyle components). Results of our metasynthesis extend previous work by identifying the individual, family, environment and health care system as contexts that influence self-management.

To provide a foundation for research on factors affecting self-management, we took a broad perspective and included studies on a variety of chronic illnesses among an international group of adults of diverse races and ethnicities. However, this metasynthesis does not provide a complete profile of what may help or hinder self-management in chronic illness. For example, in the articles that met our inclusion criteria, we found few demographic factors that might influence self-management. Yet, we know from quantitative work that demographic characteristics such as socio-economic status, gender and race influence self-management (Nwasuruba *et al.* 2007, Heo *et al.* 2008). Analysis of quantitative studies and studies not written in English would add to our data. In addition, our sample largely included adults with diabetes and cardiovascular disease. Studies are needed to identify factors both common among and specific to self-management of various chronic illnesses that may differ across the illness trajectory. Finally, although our sample included a diverse group of study participants from multiple countries, additional research is needed to better understand the influence of factors affecting self-management among individuals of different backgrounds,

in different countries with varying health care systems and among those with multiple chronic illnesses.

While considerable effort has been expended worldwide to improve the management of chronic illnesses, chronic illness care remains a major challenge to health care systems globally. Improving access to self-management support programs has become a priority in numerous health care systems; however, for many individuals, care remains fragmented and self-management support programs, if provided, are not often integrated into primary care. Furthermore, many self-management programs focus on a single chronic illness, limiting the efficiency and effectiveness of such programs in populations where adults have high rates of co-morbidity (Geyman 2007).

Innovative programs and initiatives that address these barriers warrant attention. In Sweden, nurse-led clinics providing advanced care for adults with a chronic and complex condition (e.g., diabetes) have become common, with many integrated into primary care health centers in addition to hospital clinics. In the U.S., a chronic illness self-management program for adults, the Chronic Disease Self-Management Program, has demonstrated robust evidence of efficacy across a wide range of chronic illnesses (Ory *et al.* 2013); however, linkages with existing health care systems have not been evaluated. Workplace initiatives are increasingly being offered to support healthy behaviors in the workplace, such as fitness classes, access to healthy food and reducing sitting time (Center for Disease Control <http://www.cdc.gov/features/workingwellness/>). However, more could be done to facilitate the needs of people with chronic illness, such as offering flexible hours and psychosocial support. Ongoing effort to provide self-management support for adults with multiple chronic conditions that is integrated into work environments and the health care system is indicated.

Technology, such as decision-support (e.g. alerts, reminders, decision tools), interactive health communication between patients and health care providers and electronic health records that connect health care providers, holds great promise for linking providers and services, using resources effectively and providing integrated and coordinated health care for adults with chronic illness. Several countries, such as Denmark, the United Kingdom and Canada (Glasgow *et al.* 2008), have begun to implement technology-based platforms to improve health care for people with chronic illness.

Health policy that improves access to health care and prevents discrimination in the workplace for disability/illness is needed worldwide. For example, the UK Equality Act 2010 is aimed at preventing discrimination, including in the workplace (Equality Act 2010, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/85028/vcs-service-providers.pdf). Health care reform that focuses on prevention and wellness, such as the Affordable Care Act in the U.S., is also encouraging as a means for improving the health of populations with and without chronic illness (Anderko *et al.* 2012).

CONCLUSION

In this metasynthesis, we identified numerous factors that influence self-management, increasing the specificity of the Self- and Family Management Framework. Further

development and application of this conceptualization of factors affecting self-management is warranted. Understanding factors that influence self-management may improve assessment of self-management among adults with chronic illness and may inform interventions tailored to meet individuals' needs and improve health outcomes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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SUMMARY STATEMENT

Why is this review needed?

- There is no synthesis of factors that may affect individuals' self-management.
- Identification of factors can help define risk and protective factors in the Self- and Family Management Framework, informing interventions by specifying potential mediators and moderators of self-management behaviors or processes.
- Specification of facilitators and barriers to self-management can assist individuals with chronic illness and their clinicians to identify and address modifiable factors.

What are the key findings?

- We identified five categories of factors affecting self-management which detail specific positive and negative influences on self-management to guide research and practice.
- Interaction of factors affects individuals' ability and motivation to self-manage, as well as the quality of self-management, thereby forming a 'factor profile' that can help determine needed self-management support.
- Factors may be conceptualized as being on a continuum ranging from negative (barriers) to positive (facilitators), hence self-management interventions may assist individuals in moving toward the positive side.

How should the findings be used to influence policy/practice/research/education?

- Improving access to self-management support programs by integrating them into primary care may help to address fragmentation of care in health care systems.
- Given high rates of comorbidity in adult populations, self-management programs should have the capacity to support management of multiple chronic illnesses rather than focusing on a single chronic illness.
- Health policy that improves access to health care, prevents discrimination for disability/illness and focuses on prevention/wellness is needed to improve the health of populations with and without chronic illness.

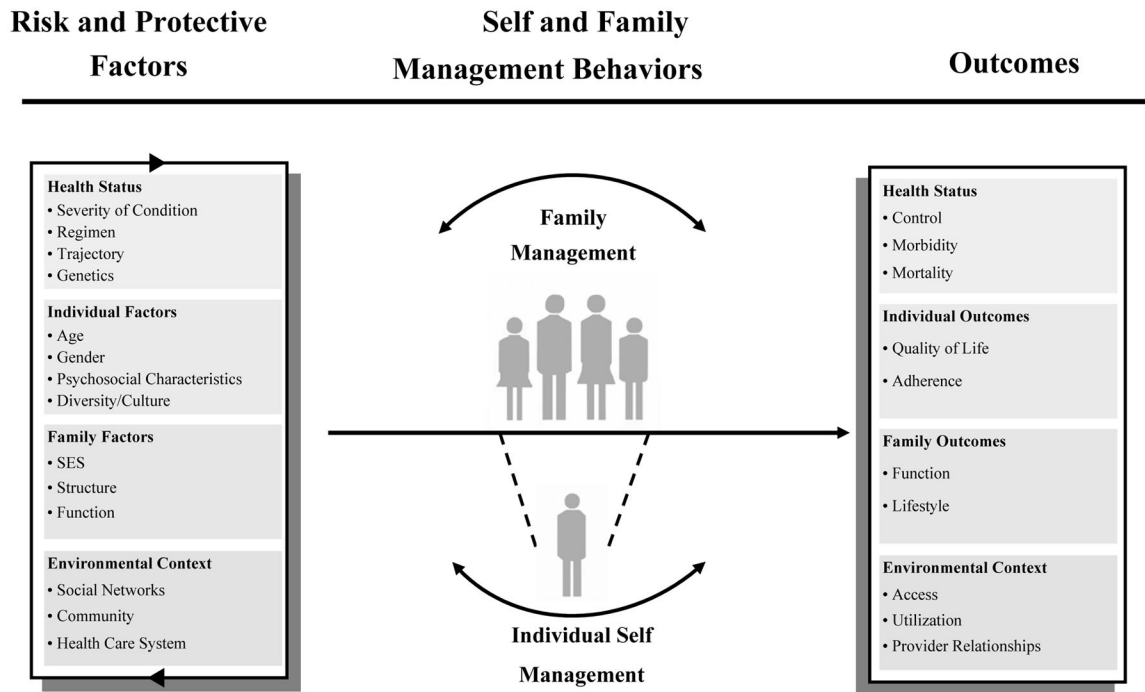


Figure 1.
Self and Family Management Framework

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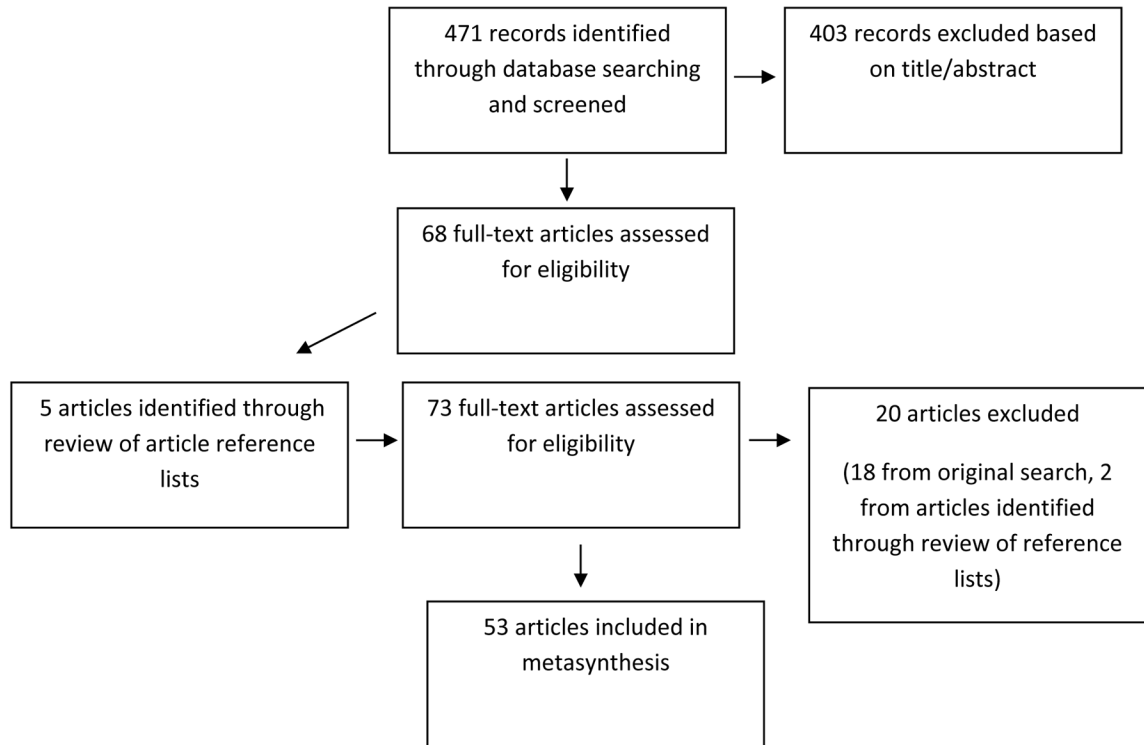


Figure 2.
Article Search Flow Diagram

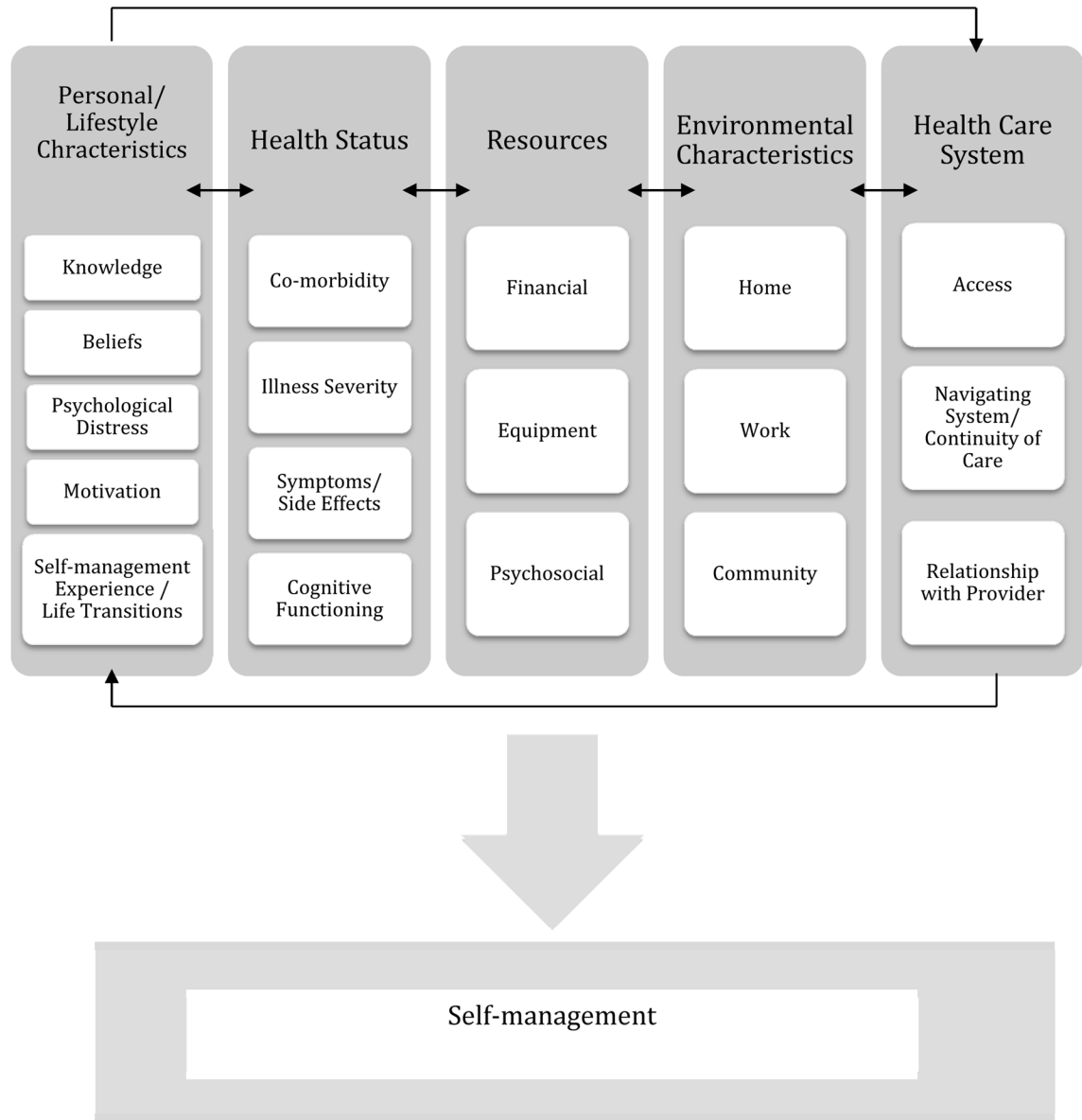


Figure 3.
Factors Influencing Self-Management

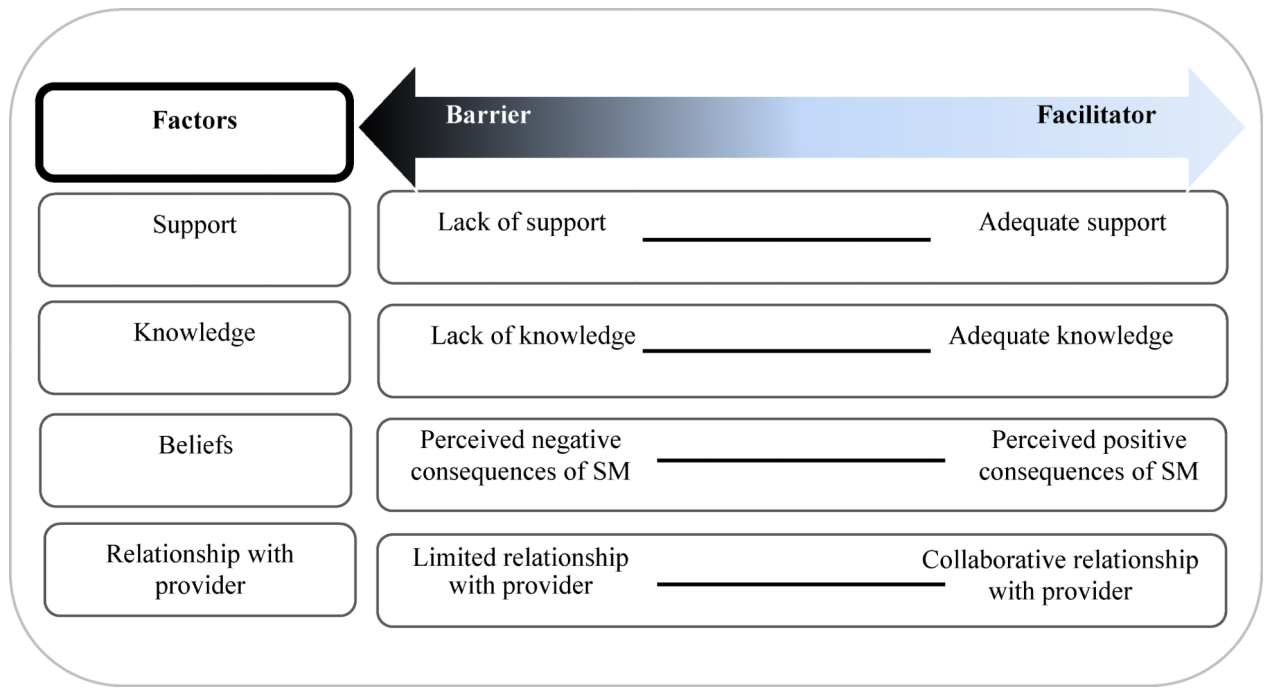


Figure 4.
Continuum of Selected Factors Affecting Self-Management

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Table 1

Methodological Procedures for Qualitative Metasynthesis (adapted from Sandelowski and Barroso, 2007)

Procedure	Activities
1. Literature search	Comprehensive, systematic search of the literature, including manual searching and selection of key articles
2. Quality appraisal	Comparative appraisal and evaluation of included articles to evaluate methodological strengths and limitations
3. Analysis	Classify and meta-summarize findings by extracting, editing, and grouping
4. Synthesis	Integrate findings and offer novel interpretation

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Table 2 METASYNTHESIS OF FACTORS AFFECTING SELF-MANAGEMENT: INCLUDED ARTICLES (N=53)

Reference	Methods	Sample	Factors Affecting Self-Management
Audulv <i>et al.</i> (2009)	Grounded Theory	N = 26; 69% Female; Swedish; Mean age = 58.5; multiple chronic illnesses Swedish	Demographics; Clinical; Psychological Support; Financial/Insurance/Employment Issues; Health Maintenance; Health System
Balfé (2009)	Qualitative/Interpretive Description	N = 17; 65% Female, n=6; English; Age range = 18–25; type 1 diabetes	Demographics; Psychological; Support
Brand <i>et al.</i> (2010)	Qualitative/Interpretive Description	N = 45; Male; 80% Female; Australian; Mean age = 52.9; Rheumatoid Arthritis	Clinical; Health System; Support; Communication; Health Maintenance; Assistive Devices/Technology
Chasens and Olshansky (2008)	Qualitative/Interpretive description	N = 17; 65% Female; African American, Caucasian and Native American; Mean age = 55.5; Diabetes	Clinical; Health Maintenance
Chudyk <i>et al.</i> (2011)	Not specified (focus group interview)	N = 28; 50% Female; Caucasian & Asian Indian; Mean age = 71; Type 2 Diabetes Mellitus	Assistive Devices/Technology
Cooper <i>et al.</i> (2010)	Other: the initial qualitative phase of a sequential qualitative-quantitative mixed methods study	N = 24; 46% Female; United Kingdom; Age range 30–40; Inflammatory Bowel Disease	Health System; Psychological; Communication; Other
Costantini <i>et al.</i> (2008)	Qualitative/Interpretive Description	N = 14; 57% Female; Canada; Mean age = 41; Chronic Kidney Disease	Clinical; Psychological; Communication
Curtin and Mapes (2001)	Qualitative/Interpretive Description & Other: Exploratory-Descriptive	N = 18, 44% Female; African American, Hispanic, Caucasian; Mean age = 48.77; End Stage Renal Disease	Health System; Communication; Health Maintenance
De Brito-Ashurst <i>et al.</i> (2011)	Qualitative/Interpretive description	N = 20; 100% Female; Bangladeshi (UK) Mean age = 60 ; Chronic Kidney Disease	Demographics; Support; Communication
Dickerson <i>et al.</i> (2006)	Phenomenology (interpretive, Heidegger's approach)	N = 20; 100% Female; Ethnicity not reported (US) Mean age = 52.3; Cancer	Assistive Devices/Technology
Dickson <i>et al.</i> (2008)	Other: Dialogical Interviewing	N = 41; 37% Female; African American & White Hispanic; Mean age = 49; Heart Failure	Financial/Insurance/Employment
Emlet <i>et al.</i> 2011	Not specified	N = 25; 32% Female; White, African American & Hispanic (US); Mean age = 56.1; HIV/AIDS	Support
Foster and Gaskins (2009)	Other: Mixed Method	N = 24; 29% Female; African Americans (US) Mean age = 57; HIV/AIDS	Spiritual
Gee <i>et al.</i> (2007)	Qualitative/Interpretive Description	N = 23; 65% Female; African American, Latino, Non-Hispanic White; Mean age = 22.1; Diabetes	Demographics; Support; Financial/Insurance/Health; Health System
Gordon <i>et al.</i> (2007)	Other: Inductive	N = 98; 58% Female; White, Black (UK); Mean age = 67; Cardiovascular	Clinical; Health System; Communication Health Maintenance
Griva <i>et al.</i> (2013)	Qualitative/Interpretive Description	N = 37; 41% Female; Chinese, Malay, Indian Ethnic groups/Singapore; Mean age = 51.3; End-Stage Renal Disease	Clinical; Health System; Psychological; Support; Financial/Insurance/Employment Issues; Communication; Health Maintenance

Reference	Methods	Sample	Factors Affecting Self-Management
Handley <i>et al.</i> (2010)	Phenomenology & Grounded Theory	N = 9; 56% ; New Zealand Europeans, Maori, Samoan; Age range = 43–79; Type 2 Diabetes	Clinical; Health System; Spiritual; Health Maintenance
Henriques <i>et al.</i> (2012)	Qualitative/Interpretive Description	N = 18; 61% Female; Portugal Age > 65 years; "four or more chronic illnesses"	Demographics; Clinical; Health System; Psychological; Support; Financial/Insurance/Employment Issues; Communication; Health Maintenance; Assistive Devices/Technology
Horowitz <i>et al.</i> (2004)	Grounded Theory	N = 19; 47% Female; African American, Latino, Caucasian (US); Age range = 52–89; Congestive Heart Failure	Clinical; Health System; Psychological
Hwu and Yu, 2006	Qualitative/Interpretive Description	N = 36; 44% Female; Taiwanese (Taiwan); Mean age = 60; Cancer, stroke, heart disease, diabetes mellitus, liver disease, chronic lung disease, renal disease, hypertension & rheumatic disease	Clinical; Psychological; Support; Financial/Insurance/Employment Issues; Health Maintenance; Assistive Devices/Technology
Jowsky <i>et al.</i> (2009)	Qualitative/Interpretive Description	N = 52; 46% Female; Australia; Most patients over 65 years; Diabetes, COPD, CHF	Clinical; Health Systems
Jo Wu <i>et al.</i> (2008)	Qualitative/Interpretive Description	N = 9; 67% Female; Australian; Mean age = 68.5; Type 2 diabetes, comorbidities, ischemic heart disease, hypertension & hyperlipidemia	Clinical; Health System
Lin <i>et al.</i> (2008)	Not specified	N = 41; 46% Female; Taiwanese (Taiwan); Mean age = 61.37; Type 2 Diabetes	Demographics; Psychological; Support Health Maintenance; Assistive Devices/Technology
Lowe and McBride-Henry (2012)	Qualitative/Interpretive Description	N = 3; 100% Female; New Zealand; Mean age = 84; MI, arthritis, Meniere's disease, high blood pressure, diabetes, asthma	Support; Health Maintenance
Lundberg and Thrakul (2011)	Qualitative/Interpretive Description	N = 29; 100% Female; n=29; Thai Muslim (Bangkok); Age range = 40–80; Type 2 Diabetes	Demographics; Clinical; Psychological; Spiritual; Support; Communication; Health Maintenance; Other
Lundberg and Thrakul (2012)	Qualitative/Interpretive Description	N = 30; 63% Female; Thai Buddhist (Bangkok); Mean age = 52.3; Type 2 Diabetes	Demographics; Clinical; Health System Spiritual; Support; Financial/Insurance/Employment; Communication; Health Maintenance
McCarthy <i>et al.</i> (2010)	Other: case study	N = 5; 40% Female; Australia; Age range = 48–85; Renal Failure	Clinical; Support; Communication Assistive Devices/Technology
Mead <i>et al.</i> (2009)	Other: Focus Groups/Content Analysis	N=282 (or 387?); 70% Female (n=198, male=84); African American & Hispanic (USA); Age range = 18–64; Serious Heart Condition/Cardiovascular Disease;	Clinical; Health System; Psychological; Financial/Insurance/Employment; Communication
Modeste and Majeke (2010)	Other: Descriptive Exploratory w/ Qualitative Approach	N=11, 100% Female; South Africa; Age range = 25–57; HIV/AIDS	Clinical; Health System; Psychological; Support; Financial/Insurance/Employment Issues; Health Maintenance
Nagelkerk <i>et al.</i> (2006)	Other: focus groups/content analysis	N=24; 50% Female; Caucasian; Mean age = 59;	Clinical; Health System; Psychological; Financial/Insurance/Employment; Communication; Health Maintenance
Newcomb <i>et al.</i> (2010)	Qualitative/Interpretive Description	N=104; 67% Female; Multieθνic groups (USA); Mean age = 50; Asthma	Clinical; Health System; Psychological; Support; Financial/Insurance/Employment; Issues; Communication; Health Maintenance; Assistive Devices/Technology

Reference	Methods	Sample	Factors Affecting Self-Management
Oftedal <i>et al.</i> (2010)	Qualitative/Interpretive Description or Other: focus group interview	N=21; 43% Female; Norway; Median age for each focus group: 57, 52, 42 ; Type 2 diabetes	Clinical; Support; Communication
Oftedal <i>et al.</i> (2010)	Qualitative/Interpretive Description	N=19; 36% Female; Norway; Mean age = 51; Type 2 diabetes	Psychological; Financial/Insurance/ Employment Issues; Communication
Orzech <i>et al.</i> (2013)	Other: focus group, individual interviews & content analysis	N=71; Gender not reported; Multiethnic groups (USA); Mean age for White = 54.2, Black = 50.5; Vietnamese = 61.9, Latino = 53.9; Diabetes and hypertension (participants had either or both)	Demographics; Support; Financial/Insurance Employment Issues; Communication; Health Maintenance
Pascucci <i>et al.</i> (2010)	Qualitative/Interpretive Description	N= 30; 17% Female; Multiethnic groups (USA); Age range = 30–83; Diabetes, Heart Disease	Clinical; Financial/Insurance/Employment; Health Maintenance; Other
Paterson (2001)	Grounded Theory	N= 22, 64% Female; White (Canada); Mean age = 43 ; Type 1 diabetes	Financial/Insurance/Employment Issues; Communication; Health System
Plach <i>et al.</i> (2005)	Other: Longitudinal (10 interviews over 2 years)	N=9; 100% Female; Multiethnic groups (USA); Mean age = 52; HIV/AIDS	Spiritual; Financial/Insurance/Employment; Health System
Ploughman <i>et al.</i> (2012)	Qualitative/Interpretive Description	N= 18; 78% Female; Euro-Canadian; Mean, range not reported but participants aged 55+; Multiple Sclerosis	Clinical; Health System; Psychological; Support; Communication; Health Maintenance; Assistive Devices/Technology; Other
Rasmussen <i>et al.</i> (2011)	Qualitative/Interpretive Description	N= 20; 75% Female; Ethnicity not reported (Australia); Age range = 18–38; Type 1 Diabetes	Demographics; Clinical; Support
Riegel and Carlson (2002)	Not specified	N=26; 35% Female; Ethnicity not reported (USA); Mean age = 74.4 ; Heart Failure	Clinical; Health System; Support; Communication; Health Maintenance; Assistive Devices/Technology
Riegel <i>et al.</i> (2010)	Other: Mixed Method	N=27; 30% Female; White (Australia); Mean age = 68.7; Chronic Heart Failure	Clinical; Psychological; Support
Riegel <i>et al.</i> (2007)	Not specified	N=29; Gender not reported; White (USA); Age range not reported; Heart Failure	Clinical; Support; Health Maintenance
Roberto <i>et al.</i> (2005)	Qualitative/Interpretive Description	N=17; 100% Female; Ethnicity not reported (USA); Mean age = 76.1 ; Heart failure, diabetes, osteoporosis	Clinical; Support; Financial/Insurance/ Employment Issues; Health Maintenance
Savoca and Miller (2001)	Qualitative/Interpretive Description	N=45; 58% Female; Multiracial (Country not reported); Mean age = 52.6; Type 2 Diabetes	Clinical; Psychological; Health Maintenance
Schnell <i>et al.</i> (2006)	Other: Semi-structured interviews	N=11; 36% Female; Caucasian and Aboriginal (Canada); Mean age = 64; Chronic Heart Failure	Health System; Support; Communication; Health Maintenance; Assistive Device
Song <i>et al.</i> (2010)	Other: focus group interviews	N=24; 42% Female; Korea; Mean age = 69.9; Type 2 Diabetes	Clinical; Demographics; Support; Health Maintenance
Utz <i>et al.</i> (2006)	Qualitative/Interpretive Description	N=73; 58% Female; African American (USA); Mean age = 60; Type 2 diabetes	Clinical; Health System; Psychological; Spiritual; Support; Financial/Insurance/ Employment; Communication; Health Maintenance; Assistive Devices/Technology
Vest <i>et al.</i> (2013)	Qualitative/Interpretive Description (focus group)	N=34; 76% Female; Multi-ethnic groups (USA); Mean age = 58; Diabetes	Health System; Support; Financial/Insurance/ Employment; Communication
Wellard <i>et al.</i> (2008)	Qualitative/Interpretive Description	N=4; 75% Female; Australia; Age range = 55–65; Type 2 Diabetes	Health System; Support; Assistive Devices/Technology; Other

Reference	Methods	Sample	Factors Affecting Self-Management
Winters <i>et al.</i> (2006)	Other: Multimethod integrated design	N=142; 100% Female; Race not reported; Mean age = 50.39; Rheumatoid conditions, MS, diabetes, cancer, heart disease	Demographic; Clinical; Support; Financial/Insurance/ Employment Issues; Health Maintenance; Assistive Devices/Technology; Other
Wortz <i>et al.</i> (2012)	Qualitative/Interpretive Description	N=47; 47% Female; Multi-ethnic groups (No country reported); Mean age = 68.4; Chronic Obstructive Pulmonary disease	Clinical; Psychological; Support; Health Maintenance; Assistive Devices
Wu <i>et al.</i> (2011)	Qualitative/Interpretive Description	N=17; 53% Female; Taiwan; Mean age = 46.4; Diabetes (focuses on hypoglycemia)	Clinical; Psychological; Support; Communication; Health Maintenance
Zhang and Verhoef (2002)	Grounded Theory	N=19; 84% Female; Chinese immigrants (Canada); Age range = 30–70; Osteoarthritis/ rheumatoid arthritis	Demographics; Health System; Spiritual; Support; Financial/Insurance/ Employment Issues; Communication

Table 3

Categories of Factors Affecting Self-Management and Associated Codes

Category	Sub-Category	Codes
Personal/Lifestyle Characteristics	Knowledge	<ul style="list-style-type: none"> level of knowledge/understanding about health condition, symptom management, medication, alternative therapy
	Beliefs	<p>Health Beliefs</p> <ul style="list-style-type: none"> perceptions of positive and negative consequences of (non)adherence/compliance perception of health lifelong commitment to health adverse effect of SM/threat of further harm SM/treatment is time-consuming, inconvenient, complex, hard work, can change <p>Cultural/Spiritual Beliefs</p> <ul style="list-style-type: none"> level of spiritual belief/beliefs in general spiritual beliefs about cause of illness/health care providers religious practices (e.g., influence medication time) cultural beliefs/values/practices (e.g., food, Western meds)
	Psychological Distress	<ul style="list-style-type: none"> uncertainty of effectiveness of SM uncertainty around permanence of disease inner conflicts from opposing needs sense of personal control over health condition stress-from illness or other cause (external) anxiety/fear/impaired mood (internal)
	Motivation	<ul style="list-style-type: none"> level of self-efficacy to self-manage motivation/self-discipline (including stigma that motivates and work place factors that motivate)
	Self-Management Experience/Life Patterns	<ul style="list-style-type: none"> age/lifecycle transitions (motherhood, college, begin working) presence of daily SM routine busy life past illness and SM experience changes in environment (weather, travel, holidays, special occasions, vacation)

Category	Sub-Category	Codes
Health Status	Co-morbidities	<ul style="list-style-type: none"> • co-morbidities
	Illness Severity	<ul style="list-style-type: none"> • disease severity/change in health status
	Symptoms/Side Effects	<ul style="list-style-type: none"> • symptoms/side effects
	Cognitive Functioning	<ul style="list-style-type: none"> • cognitive ability/ability to problem-solve/forgetfulness
	Financial	<ul style="list-style-type: none"> • lack of insurance/change of insurance/coverage limitations • high price/access to medication, healthy food, supplies, alternative treatment • maintaining working ability/loss of employment • level of financial resources/financial instability • financial support from family/friends
Resources	Equipment	<p>Devices-electronic or non-electronic</p> <ul style="list-style-type: none"> • lack of awareness of availability/don't have equipment • lack of information or support on how to use/potential problems • perceived inconvenience • cost-prohibitive • help educate/decision-making • modify environment to help adapt to limitations • as an alternative treatment • positively regarded/helpful <p>Internet</p> <ul style="list-style-type: none"> • helpful (hope, supportive, helps coping) • hurtful (overwhelming, too much information) • source of information/advice/resources, keep up-to-date • reliability • on-line peer support • access to educational resources (radio, books, brochures)
	Psychosocial	<ul style="list-style-type: none"> • perceived support/lack of support (parental, peer) • family nearby/accessible • access/participation in support groups/peer support

Category	Sub-Category	Codes
		<ul style="list-style-type: none"> isolation
Environmental Characteristics	Home	<ul style="list-style-type: none"> living with family members with different dietary preferences health concerns of other family members
	Work	<ul style="list-style-type: none"> time constraints of work affect time to SM support of employers and co-workers/sense of belonging food environment (short lunch break, limited access to healthy food)
	Community	<ul style="list-style-type: none"> exercise environment transportation (to gym, MD appointments, etc.) eating out is a challenge/convenience of fast food social settings important but may promote unhealthy food lack of knowledge among general public about health condition
	Access	<ul style="list-style-type: none"> language barriers (English as a second language) not enough time to talk/topics inadequately discussed provider accessibility (get appointment when needed) access to specialist care/mental health/nurse/diabetes education/alternative therapy staff shortage/staff quality access/participation in support groups/peer support
Health Care System	Navigating System/Continuity of Care	<ul style="list-style-type: none"> system navigation (who to call when) problems filling/refilling rx continuity of care/oversight of care as a whole/HCPs familiarity with case/conflicting advice transition from youth to adult care
	Relationship With Provider	<p>Health Care Provider (HCP)</p> <ul style="list-style-type: none"> medical jargon/HCP communication is unclear not enough information provided/perceived withholding of information by HCP insensitive/dismiss patient concerns regular visits/communication with HCP practical advice and information from HCPs/leads to course of action, productive cultural sensitivity

Category	Sub-Category	Codes
		<ul style="list-style-type: none"> • HCP follow up • Patient • patient limits communication not to bother HCP/ concealment of problems/being a good patient vs. being honest • patient proactive in communicating preferences/finding providers • difficult to discuss health condition with others • PT-HCP relationship/support/quality communication • collaborative approach/shared control of health condition/partnership • perceived quality of care/confidence in HCPs