

Factors influencing nurses' provision of self-management support for patients with chronic illnesses: A systematic mixed studies review

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ABSTRACT

Background: Self-management support is considered an important task for nurses working in chronic care provision. The complex nature of self-management support makes it necessary to clarify the factors affecting the behaviour of nurses in supporting patients living with chronic illnesses.

Objective: The aim of this review is to synthesize the factors influencing the provision of self-management support as perceived by nurses in the care for patients living with a chronic illness.

Design: A systematic mixed studies review.

Data source: Studies published in English from 1999 to April 2020 were extracted from five databases: CINAHL, PubMed, Cochrane library, EMBASE, and Web of Science.

Review method: The selection process was guided by PICo (Population, phenomenon of Interest, and Context). Studies that highlighted factors associated with the provision of self-management support among nurses, within the context of the top four non-communicable chronic diseases, were included. The risk of bias was carefully assessed. Using data-based convergent synthesis, the identified factors were synthesized and tabulated. The clusters of factors organized under each theme were approved by all researchers in discussion meetings.

Results: In total, sixteen studies met the inclusion criteria; out of these, seven were qualitative, seven quantitative, and two mixed methods studies. The review identified nurses' perspectives regarding factors influencing self-management support at the patient, nurse, care relationship, education and training, organization and healthcare system, and intra- and inter-professional levels. The review provided evidence that these factors are interdependent in nature.

Conclusion: This review proposed considering a framework of interdependent factors influencing self-management support. It highlighted the need to come up with a comprehensive definition of self-management support that takes into account the emotional aspect as well as patient-as-partner approach. The proposed framework can be useful in tailoring multi-faceted interventions to strengthen nurses' supportive role in self-management of chronic care. Future studies should focus on exploring contextually relevant factors impacting nurses' supportive role in self-management.

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What is already known

- Nurses are regarded as important providers of self-management support.
- Evidence indicates that nurses' self-management support behaviour is limited, and influenced by several factors.

- A synthesis of what factors influence nurses' provision of self-management support in the care for patients living with chronic illnesses is needed.

What this paper adds

- This review proposed a framework of interdependent factors that influence nurses' provision of self-management support in the care for patients living with chronic illnesses.
- There is an obvious need for a new definition of self-management support that incorporates varying essential elements such as emotional aspect and patient-as-partner approach.

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- The proposed framework of factors can assist in planning need-based and contextually-relevant interventions in the field of self-management support.

1. Introduction

The number of people with non-communicable chronic diseases (NCDs) is increasing and contributes to around 70% of mortality worldwide (WHO, 2018). The burden of chronic diseases has shifted the focus of healthcare towards a self-management approach (Barlow, Wright, Sheasby, Turner, and Hainsworth, 2002). Self-management (SM) is the “ability of the individual, in conjunction with family, community, and healthcare professionals, to manage symptoms, treatments, lifestyle changes, and psychosocial, cultural, and spiritual consequences of health conditions” (Richard and Shea, 2011, p. 261). This person-centred approach empowers patients to manage chronic conditions through learning and completing healthcare tasks; to activate and utilize healthcare, psychological, spiritual, social, and community resources; and to develop problem-solving skills, emotion regulation skills, and life skills management, to enhance their quality of life (Adams and Corrigan, 2003; Barlow, 2001; Barlow et al., 2002; Schulman-Green et al., 2012). Moreover, SM has the potential to reduce the related treatment and re-hospitalization costs (Been-Dahmen, Dwarswaard, Hazes, van Staa, and Ista, 2015; Bodenheimer, Lorig, Holman, and Grumbach, 2002). Thus, SM requires healthcare team members to perform collaborative roles for better health outcomes (Adams and Corrigan 2003). Nurses are considered highly trusted and accessible care providers who can support patients' SM. However, studies have indicated various factors that impede nurses' engagement in providing self-management support (SMS). Hence, a synthesis of what factors influence nurses' provision of SMS in the care for patients living with chronic diseases is needed.

2. Background

Self-management support is considered an important task for nurses providing care to patients with chronic diseases. Supportive interventions by nurses facilitate patient insight into the disease and acquaint patients with medical, emotional, and social SM (Corbin and Strauss, 1988; Lenzen, Daniëls, van Bokhoven, van der Weijden, and Beurskens, 2018; Schulman-Green et al., 2012). Nurses help patients modify their cognitive appraisal of the disease and its symptoms, adopt a positive illness management approach, and encourage health seeking behaviour (Denver, Barnard, Woolfson, and Earle, 2003; Richard and Shea, 2011; Schulman-Green et al., 2012; van Hooft, Dwarswaard, Jedeloo, Bal, and van Staa, 2015). This in turn encourages patients to take a central role in promoting their health through collaborative partnership (Duprez, Vansteenkiste, Beeckman, Verhaeghe, and Van Hecke, 2019). Today, no comprehensive definition of SMS encompasses these different aspects of support. Likewise, the activities around SMS have taken a more proximate focus on medical and behavioural skills for disease management (Elissen et al., 2013). This review has utilized the most common and relevant definition of SMS provided by the Institute of Medicine Adams and Corrigan (2003). The institute defined SMS as, “the systematic provision of education and supportive interventions by healthcare staff to increase patients' skills and confidence in managing their health problems, including regular assessment of progress and problems, goal setting, and problem-solving support” (p. 52).

The complex nature of SMS also makes it necessary to clarify the possible influencing factors. Several internal and external factors may affect nurses' behaviour in providing SMS, as stipulated by theories on human behaviour (Fishbein and Ajzen, 2010;

Ryan and Deci, 2000; Schwarzer and Luszczynska, 2005). These factors can be situated at the personal, contextual, and patient-related levels (Adams and Corrigan, 2003; Been-Dahmen et al., 2015; Bos-Touwen et al., 2015; Lenzen et al., 2018; Westland et al., 2018).

The nature of patients' need, their knowledge regarding the disease, and motivation to practice SM for chronic illness influence nurses' supportive behaviour (Been-Dahmen et al., 2015; Lenzen et al., 2018). While providing SMS, nurses' perception of role performance by patients (as an expert of their lives rather than a passive recipient of SM instructions) impacts the collaborative partnership in care (Been-Dahmen et al., 2015). Nurses often struggle to promote shared decision making with patients due to a lack of self-efficacy as SMS providers (Lenzen et al., 2018). Support and encouragement by supervisors and on-the-job training are likely linked with SMS provision (Bos-Touwen et al., 2015; Lenzen et al., 2018). However, nurses find the SMS process complex and challenging to implement in routine care (Lenzen et al., 2018; Westland et al., 2018).

Earlier reviews appraised positive patient health outcomes and a reduction in need for utilization of healthcare through the provision of SMS (Dorn, 2010; Panagiotti et al., 2014). A meta synthesis by Massimi et al. (2017) reported nurse-led SMS to be more effective as compared to usual care in chronic care community programs. Another systematic review conducted by Duprez, Vandecasteele, Verhaeghe, Beeckman and Van Hecke (2017) assessed the effectiveness of interventions that enhance nurses' competency to provide SMS. Beyond the intended aim, this review identified nurses' attitudes as possible predictors of their SMS delivery. Considering the fact that certain factors markedly influence SMS, it is crucial to recognize the breadth and association of these factors. Such synthesized evidence is helpful in gaining insight into the possible barriers or facilitators involved at different levels. Addressing those factors can assist in promoting SMS provision among nurses through the development of tailored interventions. Among the reviews addressing SMS conducted to date, none have assessed the factors influencing its provision by nurses. Hence, the aim of this mixed studies review is to synthesize the factors influencing the provision of SMS as perceived by nurses in the care for patients living with a chronic illness (first step of the review process).

3. Method

3.1. Design

This mixed studies review Grant and Booth (2009) was conducted in a systematic manner following the seven steps by Pluye and Hong (2014). These steps comprise of: (1) writing a review question; (2) defining the eligibility criteria; (3) applying an extensive search strategy in multiple information sources; (4) identifying potentially relevant studies; (5) selecting relevant studies; (6) appraising the quality of included studies; and (7) synthesizing included studies. Reporting of this review was aligned with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Moher et al., 2015).

3.2. Search methods

3.2.1. Eligibility Criteria (step 2)

The aim of this review was descriptive in nature (Stern, Jordan, and McArthur, 2014). Thus, the discussion meetings among the authors concluded using PICO (Population, phenomenon of interest, and the context) as a guide to formulate the review question and inclusion criteria (Lockwood, Munn, and Porritt, 2015; Stern, Jordan, and McArthur, 2014) as used in mixed studies reviews earlier (Uhm, Choi, and Lee, 2020; Uhm and Choi, 2020). Using PICO was

Table 1
Eligibility criteria.

	Inclusion Criteria	Exclusion Criteria
Participants	Registered nurses working in various roles and settings with patients (≥ 18 years) living with a chronic illness. Studies that include healthcare professionals as participants were included, making sure that one-third of those participants were nurses. Additionally, these papers provided separate results for each profession so that the information pertinent to the nurses could be extracted easily.	(Undergraduate) nursing students
Phenomenon of interest	Factors (in)directly contributing to SMS provision as perceived by nurses.	Factors not reported by nurses
Context:	Definition of self-management support (SMS) provided by Institute of Medicine (Adams & Corrigan, 2003) (provided in the background section of this paper) and related self-management (SM) elements by Barlow et al., (2002), in the context of the top four non-communicable chronic diseases (WHO, 2017, 2018), namely respiratory, cardiovascular, diabetes, and Oncology. Elements by Barlow include: disease related information, management of physical symptoms, medications and psychological consequences, lifestyle modification, social support and communication, and other supportive strategies that integrate disease into daily living.	Chronic non-cancer pain, chronic diseases in children; chronic mental illnesses
Design:	Qualitative, cross-sectional, correlational, mixed methods studies. Interventional studies (randomized or quasi experimental) with a focus on modifying factors associated with SMS.	Students' thesis, study protocols and systematic reviews
Language:	English	

facilitative since the review question does not require an intervention or a control group. Moreover, the intent was not to quantify the magnitude of the factors synthesized.

The review question has identified *nurses* as the population, *factors associated with SMS* as the phenomenon of interest, and *SMS behaviours in chronic illness* as the context. Supporting patients towards SM is an integral role of advanced practice nurses (APNs). Hence, studies that focus on APNs supportive roles in chronic conditions were retained. In line with the research question, different types of research studies were included to gain rich data and better understanding of nurses' perceived factors [Pluye and Hong \(2014\)](#). The eligibility criteria are listed in [Table 1](#).

3.2.2. Search strategy (step 3)

Studies published in English from 1999 till April 2020 were extracted from the following electronic databases: CINAHL, PubMed (including Medline), Cochrane library, EMBASE, and Web of Science.

The search process comprised of a list of title and abstract words, MeSH terms and their synonyms that are clustered as five 'keyword' groups, aligned with the eligibility criteria, including: 1) nurses' or advanced nurses' roles, 2) associated/contributing factors derived from the literature, their synonyms, and key behavioural constructs from theories on antecedents of human behaviour, 3) attributes of SMS behaviour, 4) top four non-communicable chronic diseases identified by World Health Organization ([WHO, 2017](#); [WHO, 2018](#)), and 5) type of study (design). The list of terms and words in each group were combined with Boolean operator 'OR', and subsequently these five groups of terms representing each keyword were connected with 'AND.' Supplementary file 1 represents the search strategy for PubMed. Subsequently, the search strategy was adapted for the other databases. All retrieved studies were imported to the systematic review management software Rayyan for screening and possible inclusion or exclusion. Additionally, the reference lists of included studies were also screened.

3.2.3. Identifying and selecting studies (step 4 and 5)

First, duplications were removed. Next, eligibility was determined for 20% of the studies by title and abstract. Pairs of reviewers (AT and VD, and AT and TA) were assigned to 10% of these studies to determine eligibility independently. The inter-rater reliability (Kappa) was 81% and 86% respectively. Inconsistencies were discussed to determine inclusion or exclusion. The remaining papers were reviewed independently by AT for title and abstracts, and clarity on inclusion or exclusion was obtained from VD where needed. Abstracts that provided uncertain information about inclusion were retained to be reviewed as full text. Full paper eli-

gibility assessment was implemented for 10% of the papers (5% in each pair), attaining 90% agreement. In case of discrepancies between two reviewers, additional review was conducted by a third reviewer (VD or TA).

3.3. Quality assessment (step 6)

The methodological quality of the included studies ($n = 16$) was assessed for risk of bias. Quality assessments of quantitative and qualitative studies were conducted using the Joanna Briggs Institute (JBI) critical appraisal tools [JBI \(2017\)](#). The mixed methods appraisal tool (MMAT) ([Hong et al., 2018](#)) was used for papers with corresponding study designs. The methodological quality of four papers (one from qualitative, one from mixed methods, and two from quantitative) was assessed independently by two reviewers (AT, VD). Non-agreement was discussed to reach consensus. The inter-rater reliability (Kappa) was 83%. Quality assessments of the remaining studies were performed by AT.

3.4. Data extraction and synthesis (step 7)

Based on the aim of this mixed studies review, a data extraction sheet was developed and agreed upon by the authors. The data sheet systematically stipulated the characteristics of studies and participants, study aims, definition or description of SMS, and details of the influencing factors. The definition of SMS and related elements, illustrated in the inclusion criteria, were used as a guide to extract the definition or description/characteristics of SMS referred to in the included papers (refer to supplementary file 2). Papers were further screened to extract the influencing factors, with reference to the extracted definition or characteristics of SMS from the paper. 'Data-based convergent synthesis' ([Hong, Pluye, Bujold, and Wassef, 2017](#)) was used, where factors narrated from the included studies were synthesized and presented together in a tabulated spreadsheet ([CRD 2009](#)). First, the influencing factors were extracted at the descriptive level. The extractions were kept unchanged from the original source to capture true meaning during synthesis. Data were independently extracted for six selected studies (three papers among each pair AT, VD and AT, TA). Next, the extraction sheet was collectively discussed by the reviewers to check accuracy of the extracted data and to achieve consensus. Multiple discussion meetings among the authors facilitated in forming clusters of factors.

Details of articles were presented in rows, whereas excerpts for similar themes from each article were presented in column. This technique facilitated the comparison of the factors extracted from each paper. The relationship (facilitating, barrier, or no association)

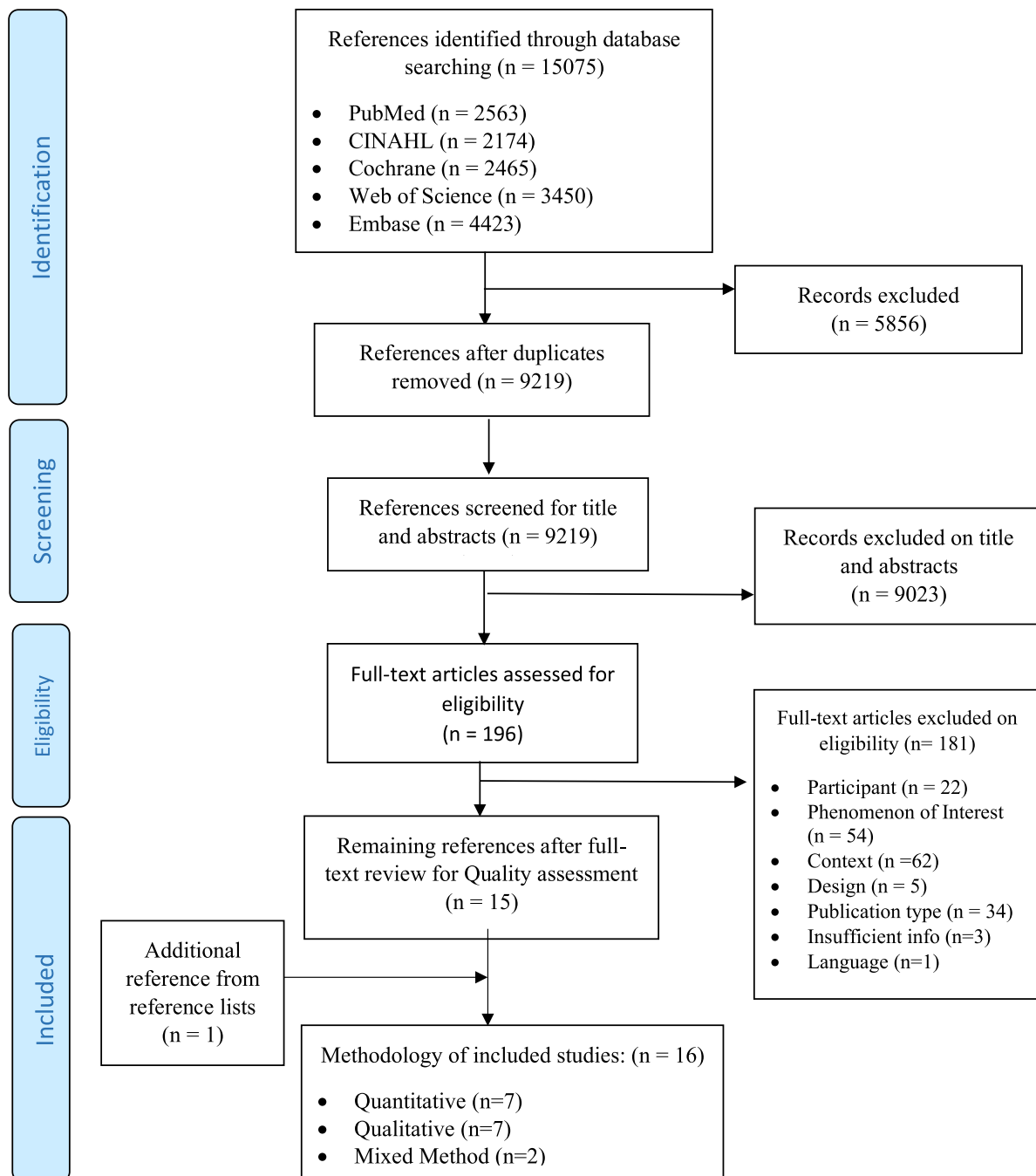


Fig. 1. Process of the study selection.

of each extracted factor with nurses' behaviour in SMS as reported in the papers was recorded. Quantitative data were transformed into 'qualitized data' to facilitate integration with the qualitative data (Hong, et al., 2017; Kang, Gillespie, Tobiano, and Chaboyer, 2018; Stern, et al., 2020; Uhm and Choi, 2020). P-values available in the quantitative papers were also mentioned in the synthesis. These p-values were helpful in reporting how significantly these factors were influencing the provision of SMS. Multiple readings of each article ensured inclusion of each and every factor. Data extraction of the remaining articles was completed by the first author (AT). Supplementary file 3 represents the clustering of factors to form descriptions and themes. The authors of this review included three doctoral (AV, VD and TA) and one Masters' (AT) prepared nurses. Most of the authors have expertise in data synthesis and literature review and two of them, additionally, around SMS.

The authors' expertise in these areas was helpful in guiding the data synthesis exercise.

4. Results

4.1. Selection of studies

The search resulted in 15,075 articles from all five databases. Duplicate articles (5,856) were removed and the remaining 9,219 were screened by title and abstract. Full text reviews were performed for 196 articles. Through this study selection process, 16 papers were retained for this review, comprising 15 papers from databases and one from the screening of reference lists. Fig. 1 shows the flow chart of the study selection process, outcome, and reasons for exclusion.

Table 2
Characteristics of the included studies.

Qualitative studies (n = 7)								
No	Author (country of study)	Aim of the study	Methodology				Context of the disease(s)	Themes of factors from the study
			Setting	Sampling	Population	Data collection method		
1.	James et al., 2020 (Australia)	To explore GPNs' perceptions of interactional factors supporting communication with patients about lifestyle risk.	General practices in SENSWPHN and ACTPHN	Convenience	Baccalaureate prepared GPNs (n=15)	Face-to-face and telephonic individual interviews	Chronic diseases	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Care relationship
2.	Wilkinson et al., 2016 (New Zealand)	To explore nurses' understanding of, and beliefs about, their role in relation to patient self-management of long-term conditions.	Primary and secondary care	Purposive	Post graduate nursing students (n=14)	One FGD and two individual interviews	Long term diseases	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Care relationship • Organization and the healthcare system • Intra- and interprofessional-related
3.	Young et al., 2015 (UK)	To explore nurses' and AHPs' understanding and implementation of supported COPD self-management within routine clinical practice.	Primary, secondary and community setting	Convenience followed by purposive sampling	Nurses (n=10) and AHP (n=4)	Face-to-face semi-structured interviews	COPD	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Care relationship • Education and training of nurses • Organization and the healthcare system
4.	Kennedy et al., 2014 (England)	To evaluate the implementation and embedding of self-management support (WISE training) in a UK primary care setting.	Primary Care trust	Pragmatic	PNs (n=11) and assistant practitioner (n=1)	Face-to-face semi-structured interviews	Diabetes, COPD and IBS	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Care relationship • Education and training of nurses • Organization and the healthcare system • Intra- and interprofessional-related
5.	Zakrisson & Hägglund, 2010 (Sweden)	To describe asthma/COPD nurses' experience of educating patients with COPD in PHC.	21 PHCs	Convenient	Nurses (n=12)	Face-to-face individual interviews	Asthma/ COPD	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Care relationship • Education and training of nurses • Organization and the healthcare system • Intra- and interprofessional-related
6.	Lundh et al., 2006 (Sweden)	To describe and analyse the way a group of nurses perceived the care of patients with COPD.	20 PHCCs	Purposive	District nurses and GPNs (n=20)	Face-to-face individual interviews	COPD	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Care relationship • Organization and the healthcare system
7.	Macintosh et al., 2003 (England)	To discover PNs and GPs perceptions of the benefits of the intervention and the extent, adequacy and scope of secondary prevention and cardiac rehabilitation.	Primary care trust area	Purposive	PNs (n=14) and GPs (n=4)	Semi-structured individual interviews	CHD	<ul style="list-style-type: none"> • Nurse-related • Education and training of nurses • Organization and the healthcare system • Intra- and interprofessional-related

(Continued on next page)

Table 2
(Continued).

Quantitative studies (n=7)		Aim of the study	Methodology				Context of the disease(s)	Themes of factors from the study
S. No	Author (country of study)		Setting	Sampling	Population	Data collection method		
8.	Woo et al., 2019 (Singapore)	To provide an overview of the practice patterns of APNs and to explore their perceptions of their role in Singapore	Registered APNs in active practice	Total sampling	Nurses (n=87)	Online survey	APNs role	<ul style="list-style-type: none"> • Nurse-related • Care relationship • Education and training of nurses • Organization and the healthcare system • Intra- and Inter-professional related
9.	Duprez et al., 2018 (Belgium)	To explore nurses' self-perceived behaviour of supporting patients' self-management, and its association with person-related and socio-structural factors.	Nine general hospitals and three community health care	Random sample from of general hospitals and convenience sample from community sites	Nurses (n=477)	Self-administered questionnaires (paper or digital format) at two-time point	Chronic diseases	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Education and training of nurses • Organization and the healthcare system • Intra- and interprofessional-related
10.	Guo et al., 2018 (Taiwan)	To explore nurses' PR-related knowledge, attitudes, and behavioural intentions toward PR promotion, and investigated the obstacles to providing PR promotion.	Three hospitals	Convenient	Nurses from internal medicine (n=191) and chest medicine (n=93)	Structured, self-administered questionnaires	COPD	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Education and training of nurses • Organization and the healthcare system
11.	Faithfull et al., 2016 (UK)	This study examines the self-reported perceptions of competence in nurses and professionals allied to medicine providing survivorship services caring for adults after cancer treatment in both secondary and primary care	UK cancer services, community forums, rehabilitation networks and the Queens Nursing Institute.	Total sampling of associated nurses and AHP	Oncology and community nurses (n=368); AHP (n= 250)	Online national survey questionnaire	Adult Cancer survivors	<ul style="list-style-type: none"> • Nurse-related • Care relationship • Education and training of nurses
12.	van Hooft et al., 2016 (the Netherlands)	To explore (i) the self-reported behaviour on self-management support of nurses in a university hospital; and (ii) the factors influencing their behaviour.	One university hospital	Total sampling	Nurses (n=347)	Online questionnaires	Chronic care	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Care relationship • Education and training of nurses • Organization and healthcare system • Intra- and interprofessional-related
13.	Buriak et al., 2015 (USA)	To identify what barriers were perceived by participants in our (Cancer Survivorship Primer for Primary Care) course and what demographic factors influenced intention to provide care.	Online registered person on Medscape Education platform	Total sampling of (online) course participants	NPs (n=213), RNs (n=1367); physicians (n=229)	Online survey on conclusion of e-course	Cancer survivorship care	<ul style="list-style-type: none"> • Nurse-related • Education and training of nurses • Organization and healthcare system • Intra- and Inter-professional related
14.	Kaufman et al., 2012 (Thailand)	To investigate the preparedness of the Thai nursing workforce for providing chronic care, and aimed to understand factors that affect nurse preparedness.	Eight randomly selected provinces	Convenient sample	Nurses (n= 468)	Survey questionnaire	Chronic non-communicable diseases	<ul style="list-style-type: none"> • Nurse-related • Education and training of nurses • Organization and healthcare system

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Table 2
(Continued).

S. No	Author (country of study)	Aim of the study	Methodology			Context of the disease(s)	Themes of factors from the study
			Setting	Sampling	Population		
15.	Walters et al., 2012 (Australia)	To investigate the adoption of a self-management support role for GPNs, using qualitative and quantitative methods during a controlled study of the effectiveness of health mentoring for patients with COPD in primary care.	All practices in the three divisions of general practice	Total sampling of GPNs undertook health mentoring training	GPNs (n=5) from three health practices	COPD	<ul style="list-style-type: none"> • Patient-related • Nurse-related • Education and training of nurses • Organization and healthcare system • Intra- and interprofessional-related
16.	Halcomb et al., 2008 (Australia)	To identify and explore the factors cited by practice nurses as impacting on the development of their role in cardiovascular disease management.	All PNs	Convenient sampling for survey and random selection of survey participants for interview	Nurses: for survey (n = 284) and interviews (n = 10)	Cardiovascular	<ul style="list-style-type: none"> • Nurse-related • Care relationship • Education and training of nurses • Organization and healthcare system • Intra- and interprofessional-related

Legend: (ACTPHN: Australian Capital Territory Primary Health Network); (APNs: Advanced Practice Nurses); (AHPs: Allied Health Professionals); (CHD: Coronary heart disease); (COPD: Chronic Obstructive Pulmonary Disease); (FGD: Focus Group discussion); (GPNs: General Practice nurses); (GPs: General Physicians); (IBS: Irritable Bowel Syndrome); (PHC: Primary Health Care); (PNs: Practice nurses); (PR: Pulmonary rehabilitation); (SENSWPHN: South Eastern New South Wales Primary Health Network); (WISE: Whole System Informing Self-Management Engagement); (PHCC=Primary Health Care Centres); (NPs= Nurse Practitioners); (RNs= Registered Nurses)

4.2. Description of study characteristics

Out of 16 included studies, most were conducted in Europe (UK [N = 4], Belgium [N = 1], the Netherlands [N = 1], Sweden [N = 2]). Other studies were from Asia (Singapore [N = 1], Thailand [N = 1], Taiwan [N = 1]), Australia (N = 3), New Zealand (N = 1) and the United States (N = 1). The descriptions of the study aim, methodology, and disease context are stipulated in Table 2.

4.3. Quality assessment

The overall quality of the included studies was moderate to high. Three qualitative studies lacked reflexivity of the researchers in the study (Kennedy et al., 2014; Macintosh, Lacey, and Ford, 2003; Wilkinson, Whitehead, and Crowe, 2016). Four quantitative papers either did not report or lacked clarity on confounding factors, and comprised of two descriptive (Faithfull, Samuel, Lemanska, Warnock, and Greenfield, 2016; Woo, Zhou, Lim, and Tam, 2019) and two analytical (Buriak, Potter, and Bleckley, 2015; Kaufman, Rajataramya, Tanomsingh, Ronis, and Potempa, 2012) studies. The mixed methods studies lacked clarity on the risk of non-response bias (Walters et al., 2012) and sufficient inclusion of qualitative findings (Halcomb, Davidson, Griffiths, and Daly, 2008). None of the studies were excluded based on quality assessment. Details of the quality assessment are provided in supplementary file 4.

4.4. Definition or description of SMS

Six studies have reasonably explained SMS (Duprez et al., 2018; Kennedy et al., 2014; van Hoof, Dwarswaard, Bal, Strating, and van Staa, 2016; Walters et al., 2012; Wilkinson et al., 2016; Young et al., 2015). One of these papers by Duprez et al. (2018) has provided the definition of SMS, that they relied on in their study. The remaining ten papers studied nurses' roles and behaviours that align with the characteristics of SMS, namely patient knowledge and education (Kaufman et al., 2012; Lundh, Rosenhall, and Törnkvist, 2006; Woo et al., 2019; Zakrisson and Hägglund, 2010), secondary prevention (Macintosh et al., 2003), survivorship care (Buriak et al., 2015; Faithfull et al., 2016), pulmonary rehabilitation (Guo et al., 2018), and lifestyle modification/risk factor communication (Halcomb et al., 2008; James, McInnes, Halcomb, and Desborough, 2020). Two of these studies have operationalized SMS by the 5A's model (Assess, Advise, Agree, Assist, and Arrange) and assessed the correlated factors with the actual behaviours of nurses in SMS (Duprez et al., 2018; van Hoof et al., 2016). (See supplementary file 2)

4.5. Related factors with SMS in chronic diseases

This review explored nurses' perspectives of various factors that impact their provision of SMS in chronic care. These factors were indicative of nurses' perspectives at the patient, nurse, care relationship, education and training, organization and healthcare system, and intra- and inter-professional levels. Table 3 includes the extracted factors from studies and significance levels drawn from quantitative papers. The script italicized in the description of results below are direct extractions from the included studies.

4.5.1. Patient-related factors

4.5.1.1. Patient's motivation. Nurses perceived that patients' motivation and willingness to take up SM information and responsibility impact their own SMS behaviour (James et al., 2020; Lundh et al., 2006; Wilkinson et al., 2016; Young et al., 2015). Nurses preferred to wait for discussion around behavioural change until patients were ready to take up SM responsibility (James et al.,

them from providing support for SM (van Hooft et al., 2016) or had no impact (Duprez et al., 2018). These two studies also reported no impact on nurses' supportive behaviour when they considered patients as incapable of making choices (Duprez et al., 2018; van Hooft et al., 2016).

4.5.1.3. Other patient-related factors. Studies have highlighted other patient-related factors that impede nurses' SMS behaviour, including *cultural* beliefs and practices, and *language differences* (Wilkinson et al., 2016; Young et al., 2015; Zakrisson and Häggglund, 2010). Nurses perceived that patients' lives were too *chaotic* (Kennedy et al., 2014) and had too many barriers preventing them from taking up SM responsibility (James et al., 2020). Older patients were considered cognitively impaired and nurses reported that these patients were less motivated and preferred to engage in social conversations during consultations with nurses (Young et al., 2015). Hence, these factors were considered obstacles, preventing nurses from providing SMS to elderly patients.

4.5.2. Nurse-related factors

4.5.2.1. Availability of time and managing workload. Two papers reported nurses' perceptions of having sufficient time available to support patients' SM (Guo et al., 2018; Zakrisson and Häggglund, 2010). Additionally, concerns related to lack of time and increased workload were reported in five (four qualitative and one quantitative) studies. Supporting SM was considered as increasing *workload* (Kennedy et al., 2014; Macintosh et al., 2003; Young et al., 2015) and referred to as *burdensome* by nurses Zakrisson and Häggglund (2010). Nurses stated that they do not have sufficient time to perform the role of providing SMS (Woo et al., 2019; Young et al., 2015). Nurses voiced their *discomfort*, reporting that they struggle to balance other *conflicting priorities* with SMS (Macintosh et al., 2003). In two of the correlational studies, however, no association of perceived availability of time with nurses' support in SM was reported (Duprez et al., 2018; van Hooft et al., 2016).

4.5.2.2. Nurses' experience with SMS. In nine of the studies, nurses' years of experience and relevant clinical practice were perceived to be positively influencing the provision of SMS. Relevant *clinical experience* had a positive impact on supportive behaviour (Buriak et al., 2015; Duprez et al., 2018; Faithfull et al., 2016; Guo et al., 2018; Kennedy et al., 2014; Lundh et al., 2006; Woo et al., 2019). Experience contributed to enhancing nurses' competence in providing SMS (Walters et al., 2012; Young et al., 2015). The number of years of experience was considered essential in one quantitative study (Buriak et al., 2015), whereas the correlational study by Guo et al. (2018) indicated that the years of experience had no impact on nurses' *knowledge and attitude* to support SM.

4.5.2.3. Self-efficacy and competence to provide SMS. Presence of disease knowledge, skills, and confidence to support SM was considered essential in eleven studies. Confident nurses were more supportive in SM (Duprez et al., 2018; Faithfull et al., 2016; Guo et al., 2018; Kaufman et al., 2012; van Hooft et al., 2016; Walters et al., 2012) and in addressing the psychosocial needs of patients to minimize their disease related fears and anxiety (Faithfull et al., 2016). Nurses perceived themselves as a source of security for patients by helping them manage uncertain feelings (Lundh et al., 2006) related to the disease and ensuring SM is being practiced appropriately (Wilkinson et al., 2016). Moreover, nurses' abilities to *communicate* in a *realistic* manner facilitated patients' active *engagement* and participation in disease related discussions (James et al., 2020).

The literature clearly indicates how lack of competence and low confidence impede nurses' SMS behaviour when dealing with chronic conditions (Faithfull et al., 2016; Kennedy et al., 2014; van Hooft et al., 2016; Young et al., 2015; Zakrisson & Häggglund, 2010). Nurses found it challenging to identify *patient's readiness to change* behaviour (Young et al., 2015) and to *engage* them in health related discussions (Kennedy et al., 2014). Nurses also reported feeling insufficiently confident in addressing sensitive topics like *sexuality, fertility, and libido* (Faithfull et al., 2016) with patients.

4.5.2.4. Significance of SMS practice. Acknowledging the significance of SMS and nurses' role within it was reported as facilitative in role performance. Nurses' sense of *professional accountability* to provide SMS was considered important for their behavioural performance (Macintosh et al., 2003; Walters et al., 2012; Wilkinson et al., 2016; Zakrisson and Häggglund, 2010). Personal interest and readiness to perform SMS was evident through nurses' behavioural intention and positive attitude (Duprez et al., 2018; Guo et al., 2018; Lundh et al., 2006; Macintosh et al., 2003; van Hooft et al., 2016; Walters et al., 2012; Zakrisson and Häggglund, 2010). Supporting patients for SM was considered integral to routine care provided by nurses (Duprez et al., 2018; Walters et al., 2012; Zakrisson and Häggglund, 2010). Encountering challenges in providing SMS made nurses realize that this was an area that demanded a high level of skill and readiness, which in turn made them feel more responsible and motivated to perform better (Walters et al., 2012). A correlational study found no association between nurses' preferred role (as educator, coach, gatekeeper, clinician) and the provision of SMS (van Hooft et al., 2016).

Five studies have considered nurses' indifferent attitude towards providing SMS as an impeding factor. Nurses considered SMS as less valued work and *not worth the effort*, since it is not subject to be *audited* as a *quality indicator* (Kennedy et al., 2014). Nurses tended to give priority to more *superficial* and *brief relational* work as compared to the *hard* work of addressing patients' challenging behaviours (Kennedy et al., 2014). They also *resisted* expanding their APNs role due to *lack of clarity* for required role performance (Woo et al., 2019). Nurses foresaw many barriers to taking on a supportive role in SM (Buriak et al., 2015; Halcomb et al., 2008). They perceived their current task-based role satisfactory and preferred maintaining the *status-quo* of carrying out provided instructions (Halcomb et al., 2008; Kennedy et al., 2014). Additionally, they were unable to identify possible training that could enhance their supportive role (Young et al., 2015) in SM.

4.5.2.5. Other nurse-related factors. Some of the studies have connected nurses' satisfaction and sense of achievement to promoting SMS behaviour. In a mixed methods study (Halcomb et al., 2008), nurses' sense of *gratification* with their work and positive patient feedback served as *motivators* for extending their supportive role. Nurses felt being responsible for patients' role performance in SM (Macintosh et al., 2003). Moreover, the correlational study by Duprez et al. (2018) reported that nurses' professional self-esteem was contingent on patients' achievement in managing their disease condition. There was also a positive correlation of nurses' self-reported SMS behaviour with those having a *close relative living with a chronic condition* (Duprez et al., 2018). However, no relationship was reported for nurses' own survivorship experience with their likelihood to engage in SMS behaviour (Buriak et al., 2015).

4.5.3. Factors related to the care relationship

4.5.3.1. Building rapport and reciprocity with patients. Nurses considered themselves to be *sounding boards* while supporting patients to manage their daily life with chronic illness Zakrisson and Häggglund (2010). The long process of attaining SM required nurses

to have patience and remain respectful while providing patient-centred care (James et al., 2020; Kennedy et al., 2014; Lundh et al., 2006; Wilkinson et al., 2016; Zakrisson and Hägglund, 2010). Nurses' willingness to build on patients' experience allowed patients to take an active role in the care relationship and recognize their need for support (James et al., 2020; Wilkinson et al., 2016). Nurses preferred setting mutually agreed goals with patients to enhance their knowledge (Young et al., 2015; van Hooft et al., 2016) and acceptance (Lundh et al., 2006; Zakrisson and Hägglund, 2010) of the disease. Nurses feared that their existing rapport may be affected if they insist on patients to practice SM (Kennedy et al., 2014). At times, nurses reported using language focusing on behavioural consequences (for example, long-term suffering with smoking and leg amputation) to promote patients' engagement and self-care (James et al., 2020; Lundh et al., 2006). Another factor impacting rapport building involves patient perception of the nurse's competence. A study found that nurses had trouble building rapport with patients who seemed to doubt the nurse's professional competence (Halcomb et al., 2008).

4.5.4. Factors related to education and training of nurses

4.5.4.1. Nurses' qualification to provide SMS. Nurses' preceding education was considered an important factor for SMS provision by five studies (Duprez et al., 2018; Kaufman et al., 2012; Kennedy et al., 2014; Young et al., 2015; Zakrisson and Hägglund, 2010). Two of these studies have connected confidence and the supportive role of nurses in SM with attainment of higher education (Duprez et al., 2018; Kaufman et al., 2012). One article reported that there was no correlation between education and nurses' roles in SMS (van Hooft et al., 2016).

4.5.4.2. Nurses' continuing education and training. Ten studies affirmed that relevant knowledge and training was facilitative for nurses to support SM of patients with chronic conditions (Buriak et al., 2015; Duprez et al., 2018; Faithfull et al., 2016; Guo et al., 2018; Halcomb et al., 2008; Kaufman et al., 2012; Macintosh et al., 2003; van Hooft et al., 2016; Walters et al., 2012; Woo et al., 2019), particularly if the training or knowledge was acquired in the last three years (Kaufman et al., 2012). The ongoing training helped nurses build competence to manage both, physiological and psychological needs of patients (Faithfull et al., 2016). In two studies, nurses perceived that lack of regular knowledge update and relevant training impeded their provision of SMS (Buriak et al., 2015; Zakrisson and Hägglund, 2010).

4.5.5. Factors related to organization and the healthcare system

4.5.5.1. Patients' follow-up and referral system. Having a formal structure in place for patients' referral and follow-up allowed for continuity of support and was facilitative for nurses' SMS provision (Young et al., 2015; Zakrisson and Hägglund, 2010). Lack of coordination in the referral system between primary to secondary care and absence of an electronic medical record were barriers for supportive care (Buriak et al., 2015). Nurses perceived that weak referral systems often resulted in poor monitoring or lost cases (Macintosh et al., 2003).

4.5.5.2. Structured guidelines for patient support and education. Four studies indicated that nurses found structured guidelines for executing SMS to be facilitative for its provision. Self-management support was considered effective if clear protocols were provided (Macintosh et al., 2003), and the method of its delivery aligned with the intended (self-care) behaviour of patients to be addressed (Young et al., 2015). The SMS guidelines were supposed to be non-rigid and accommodative for patients' preferences (Wilkinson et al., 2016). Nurses felt that having a structured operating procedure

for providing face-to-face support to patients was more conducive than providing telephonic support, which was often delayed due to nurses' involvement in tasks higher on their priority list (Walters et al., 2012).

Insufficient guidelines for SMS led to a weakened understanding of the support process and of the nurse's responsibility. The absence of a standard model and a survivorship care plan was considered an impeding factor in providing supportive care (Buriak et al., 2015). Nurses reported lack of clear guidelines for patient education in the study by Zakrisson and Hägglund (2010). Unclear guidelines for role performance resulted in the passing through of SMS responsibility from physician to nurse and nurse to patient (Kennedy et al., 2014).

4.5.5.3. Supportive management to perform the SMS role. Nurses reported that they feel a sense of security when they are supported by their supervisors and are given the freedom to modify patient education on an as-needed basis (Zakrisson and Hägglund, 2010). In two mixed methods studies, nurses reported that better employment conditions and less restrictive management (Halcomb et al., 2008), and acknowledgement of their individualized skills (Walters et al., 2012) were facilitative for their SMS role.

Nurses considered lack of support (Woo et al., 2019) and encouragement (Zakrisson and Hägglund, 2010) as barriers in providing SMS for chronic conditions. In a correlational study, supervisory support was identified as negatively associated with nurses' perceptions of SMS behaviour (Duprez et al., 2018). However, this study did not report the elements of this support. Nurses pointed to a lack of financial support as another barrier in providing SMS. Nurses were expected to self-finance their (post basic) education and training, which is a prerequisite for providing SMS (Halcomb et al., 2008).

4.5.5.4. Clear role expectation for SMS. Nurses felt more inclined to provide SMS when provided with clear expectations (Wilkinson et al., 2016) and had prior experience of patients' education (Duprez et al., 2018). Three studies found that unclear (Zakrisson and Hägglund, 2010) or no expectations (Guo et al., 2018; Lundh et al., 2006) of nurses to perform SMS impede their supportive behaviour.

4.5.5.5. Lack of work setting priority for SMS. The literature suggests that a lack of work setting priorities resulted in time constraints for nurses to perform the supportive role (Kennedy et al., 2014; Macintosh et al., 2003). Nurses were expected to comply with quality indicator tasks (Kennedy et al., 2014; Young et al., 2015) and other (non)clinical tasks (Guo et al., 2018; Walters et al., 2012; Woo et al., 2019) as work priorities. Work settings often required nurses to take a task-oriented approach (Kennedy et al., 2014; Zakrisson and Hägglund, 2010). However, no association of time with the role performance of nurses in SMS was identified in the correlational study of Duprez et al. (2018).

4.5.5.6. Opportunity and autonomy to perform SMS role. Seven studies described the relationship between nurses' autonomy and opportunity to practice SMS for chronic diseases. Work environments, such as rural settings (Halcomb et al., 2008; Kaufman et al., 2012) and outpatient clinics (van Hooft et al., 2016), provided opportunities for nurses to make patient management and work related decisions. Nurses' autonomy also facilitated their greater engagement in supportive behaviour (Kennedy et al., 2014; Walters et al., 2012).

Kaufman et al. (2012) have also addressed the geographical disparity in care resources and services, where nurses working in central hospitals were more confident in filling the supportive role than nurses working in the provincial hospitals. Lack

of autonomy for nurses to perform their role in SMS provision was indicated as a barrier in two studies (Halcomb et al., 2008; Woo et al., 2019). Working under doctors in a hierarchical structure impacted the nurses' opportunities to participate in SMS provision (Halcomb et al., 2008). However, in one study, nurses' perceived autonomy and relatedness with the work environment showed no association with their SMS behaviour (Duprez et al., 2018).

4.5.5.7. Legal implications on nurses' role performance in SMS. Legal inference was referred to as a hindrance in nurses' provision of SMS in two studies. The mixed methods study by Halcomb et al. (2008) extensively described the legal implications associated with the nurses' role performance. Limited remuneration and funding for nurses meant that nurses were expected to pay for the education and training required for role advancement (Halcomb et al., 2008) to provide SMS. Lack of insurance coverage for nurses for the cost of supporting patients in long term (survivor) care was reported as another funding barrier in the study by Buriak et al. (2015).

4.5.5.8. Resources and infrastructure for SMS. Resources and infrastructure were considered important practical factors impacting SMS provision. Availability of written material facilitated nurses in fulfilling the SMS tasks (Kennedy et al., 2014). In two studies, nurses reported that lack of physical space and equipment was limiting their ability to provide SMS (Halcomb et al., 2008; Woo et al., 2019).

4.5.5.9. Other factors related to organization and healthcare systems. Nurses who were provided with the dedicated consultation time were more likely to practice SMS. However, this role performance was associated with nurses who had attained additional training or education (Duprez et al., 2018). As discussed earlier, nurses were less likely to pursue this training due to limited financial compensation for the supportive role (Halcomb et al., 2008). Lack of financial compensation impeding nurses' supportive role was also reported in the study by Walters et al. (2012).

4.5.6. Intra- and interprofessional-related factors

4.5.6.1. Nurses being recognized and supported for the collaborative work. Intra- and inter-professional factors indicated how nurses were recognized for and supported in their provision of SMS. In four studies, good working relationships and support from the healthcare team (physicians and other nurses) was reported as facilitative (Kennedy et al., 2014; Macintosh et al., 2003; Walters et al., 2012; Zakrisson and Hägglund, 2010). Nurses reflected that they were able to perform their supportive role effectively when they were accepted as part of the care team (Wilkinson et al., 2016), and when their suggestions and interventions were recognized (Macintosh et al., 2003; Walters et al., 2012). The mixed methods study by Halcomb et al. (2008) identified collaboration with physicians as a prime facilitator and motivator for nurses engaging in the supportive role. Role clarity and supportive feedback also allowed nurses to build confidence for performing the SMS role (Kennedy et al., 2014; Macintosh et al., 2003; Walters et al., 2012).

Lack of support from other nurses and physicians posed a challenge for nurses to provide SMS (Buriak et al., 2015; Kennedy et al., 2014; Halcomb et al., 2008; Woo et al., 2019). Factors related to the healthcare system were identified as creating challenges for effective interprofessional communication; this in turn hindered the provision of SMS by nurses (Halcomb et al., 2008). However, two correlational studies reported unclear or no association of team support with nurses' supportive behaviour in SM (Duprez et al., 2018; van Hooft et al., 2016).

5. Discussion

As the first of its kind, our mixed studies review synthesized factors influencing the provision of SMS, from the perspective of nurses. This review also provides an overview of factors from the top four non-communicable chronic diseases. Similar factors are likely to impact the provision of SMS for other long-term diseases as well (Ahn, Kim, Ham and Kim, 2015; Wierdsma, Vervoort, van Zuilen, Berkhout and Gundlach, 2016). From our synthesis, it became apparent that these factors are multi-faceted and interdependent in nature. Creating clusters of factors and aligning their descriptions and themes was a rigorous exercise, since the factors extracted appeared to overlap and could have been considered under several themes simultaneously. As an exemplar, nurses' continuing education and training to support SM is closely tied to whether they consider SMS to be a significant part of their role. Simultaneously, workplace support for nurses to pursue further education and training is also linked if it is an organizational priority. Literature and team expertise around the phenomenon of SMS helped to elicit explicit meanings and to include the factors under the best suited description and theme.

In this review, numerous organizational and healthcare-related factors were considered influential for nurses' provision of SMS. Stipulating concrete structures and guidelines in healthcare was considered significant for clarity and acceptance of nurses' supportive role. Defined structures were contemplated to promote the acceptance of nurses' supportive role in SMS by the intra- and inter-professional team, that is required for nurses' autonomous role performance and sense of being valued (Wagner (2000)). In line with the Theory of Reasoned Action (Fishbein and Ajzen (2010)), nurses' positive attitude towards the practice of SMS was recognised as a significant factor. Surfeit influences were related to nurses' self-efficacy, which was closely ingrained with their knowledge and skills to provide SMS (Bandura, 2001; Schunk and Usher, 2012; Schwarzer and Luszczynska, 2005). In terms of patient related factors, their knowledge and motivation to adopt a SM role were retrieved as important influences on nurses' provision of SMS. Alternatively, factors related to patients' and nurses' background, as well as their personal life experiences and circumstances were less reported.

We found that these influencing factors are interdependent and further elaborate 'reciprocal determinism' that impacts behaviour (Bandura, 2001). Thus, we propose a framework of these interdependent factors affecting nurses provision of SMS (refer to Fig. 2).

Presumably, a more directive and informational approach in SMS was reflected in the included studies, that might place nurses in authority while providing support. Consequently, empathy and emotional support expected in an effective care-relationship are often overlooked within such an informational approach (Donnelly et al., 2020; Feo and Kitson, 2016). Widely accepted the 5As model of behavioural change in SMS also appears inclined towards the informational aspect, with a small amount of attention given to emotional support during the Assist and Advice steps (Donnelly et al., 2020). An important concern is the distinct understanding for SMS that directs healthcare professionals to decide what to include in supportive behaviour. Since SM is a patient-led activity, patients' also have their own expectations of what appropriate support would look like to them. From this review, the need for a comprehensive definition of SMS that is internationally recognized became apparent. A broad definition will allow healthcare providers to expand their supportive role, with an equivalent inclusion of emotional strategies and patient partnership. Inclusion of patients' perspectives and experiences as a partner in SMS will possibly enhance patient's motivation and ownership to practice self-care in daily living.

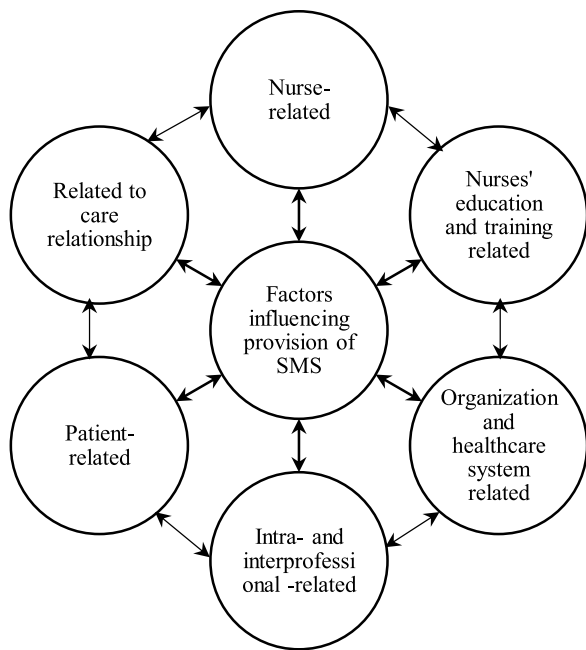


Fig. 2. Framework for factors influencing nurses' provision of self-management support.

Currently, evidence is mainly derived from studies concentrated in high- and upper-middle income countries. These countries have better structures for health coverage models and healthcare schemes with (some) existence of supportive role of nurses in chronic care. We cannot deny the many possible sets of challenges that may be evident from lower-middle- and low-income countries. Their healthcare structures are different than the ones represented in the review, and they potentially operate with very limited resource allocation affecting quality of provision. Thus, we need to gather more evidence for the phenomenon of SMS, and for what works in these countries with different healthcare systems, considering needs, resources, capacities, and perspectives of various stakeholders such as patients, their families and members of the healthcare team. It is possible that sequential mixed method studies will be able to generate in-depth evidence for a comprehensive understanding of related factors. Understanding contextual factors may help countries to tailor relevant interventions for better healthcare outcomes in chronic care.

As informed in this review, a plethora of organizational and legislative solutions are necessary to strengthen the role of nurses in SMS, combined with an enhancement in team-based work (Elissen et al., 2013; Funnell and Anderson, 2003; Halcomb and Ashley, 2017; Hoare, Mills, and Francis, 2012). We recommend adapting the proposed framework of interdependent factors to devise contextually relevant interventions that are imperative to improve provision of SMS by nurses in chronic care. Factors synthesized in this review are aligned with multi-level construct of implementation frameworks such as the Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2009) and the Practical, Robust Implementation and Sustainability Model (PRISM) (Feldstein and Glasgow (2008). As an example, patients, organizations and healthcare systems, and intra- and inter-professional factors from this review are parallel to the CFIR (in the domains of *inner* and *outer setting* of the framework) and PRISM (in the domains of *external environment*, *perspectives of the intervention*, and *characteristics of the recipients*). These frameworks can be useful in developing complex interventions for transforming the SMS practice in a sustainable way. Devising longitudinal studies can further

facilitate in measuring the effect of interventions on nurses' supportive behaviour in SM.

5.1. Limitations of this review

The outcomes of the included studies might be subject to potential bias with regards to the clarity of the selection process and low response rate of the participants. A few of the included papers had limited generalizability as the eligibility criteria includes nurses with experience and/or training to support SM. Such criteria may capture dichotomous views for influencing factors by nurses. Lack of (sufficient) information in the retrieved papers about managing other (confounding) factors could have impacted the herein synthesized factors. In the qualitative studies, credibility could be a point of concern due to a lack of reflexivity of the researchers.

In this review, pooling of data was not possible for quantitative studies due to heterogeneous outcomes. Hence, this limits the understanding of the magnitude of each factor's contribution to SMS among nurses and limits proposing a strong conclusion. Considering the heterogeneous outcome of the studies, efforts were made to minimize the possible subjectivity during data extraction. In this review, we cannot neglect the possible bias during analysis with our prior (research) experience. Thus, we provided a clear and transparent description of the methodology to mitigate this. In addition, grey literature and non-English studies were not included in this review.

6. Conclusion

This review synthesized nurses' perspectives of factors influencing their provision of SMS in the care for patients living with chronic illnesses. The need for a comprehensive definition of SMS became obvious, as one that includes varying essential elements of support, such as the emotional aspect and the patient-as-partner approach. A broader definition of SMS will facilitate in expanding nurses' supportive role and comparison of studies on this topic. We have proposed a framework of interdependent factors that can be useful for tailoring multi-faceted interventions to strengthen nurses' supportive role in SM. However, more studies are required that focus on exploring contextually relevant factors impacting nurses' supportive role.

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References

- Adams, K., Corrigan, J.M. (Eds.), 2003. Institute of Medicine: Priority Areas for National Action: Transforming Health Care Quality. National Academies Press, Washington, D.C.
- Ahn, Y.H., Kim, B.J., Ham, O.K., Kim, S.H., 2015. Factors associated with patient activation for self-management among community residents with Osteoarthritis in Korea. *J. Korean Acad. Commun. Health Nurs.* 26 (3), 303–311. doi:10.12799/jkachn.2015.26.3.303.
- Bandura, A., 2001. Social cognitive theory: an agentic perspective. *Annu. Rev. Psychol.* 52 (1), 1–26. doi:10.1111/1467-839X.00024.
- Barlow, J., 2001. How to use education as an intervention in osteoarthritis. *Best Pract. Res. Clin. Rheumatol.* 15 (4), 545–558. doi:10.1053/berh.2001.0172.

- Barlow, J., Wright, C., Sheasby, J., Turner, A., Hainsworth, J., 2002. Self-management approaches for people with chronic conditions: a review. *Patient Educ. Couns.* 48 (2), 177–187. doi:10.1016/S0738-3991(02)00032-0.
- Been-Dahmen, J.M., Dwarswaard, J., Hazes, J.M., van Staa, A., Ista, E., 2015. Nurses' views on patient self-management: a qualitative study. *J. Adv. Nurs.* 71 (12), 2834–2845. doi:10.1111/jan.12767.
- Bodenheimer, T., Lorig, K., Holman, H., Grumbach, K., 2002. Patient self-management of chronic disease in primary care. *JAMA* 288 (19), 2469–2475. doi:10.1001/jama.288.19.2469.
- Bos-Touwen, I., Dijkamp, E., Kars, M., Trappenburg, J., De Wit, N., Schuurmans, M., 2015. Potential for self-management in chronic care: Nurses' assessments of patients. *Nurs. Res.* 64 (4), 282–290. doi:10.1097/NNR.000000000000103.
- Buriak, S., Potter, J., Bleckley, M.K., 2015. Using a predictive model of clinician intention to improve continuing health professional education on cancer survivorship. *J. Contin. Educ. Health Prof.* 35 (1), 57–64. doi:10.1002/chp.21266.
- Corbin, J.M., Strauss, A., 1988. *Unending Work and Care: Managing Chronic Illness at Home*. Jossey-Bass.
- CRD, 2009. *Systematic Reviews*. Retrieved from Layerthorpe, York.
- Damschroder, L.J., Aron, D.C., Keith, R.E., Kirsh, S.R., Alexander, J.A., Lowery, J.C., 2009. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implement. Sci.* 4 (1), 1–15. doi:10.1186/1748-5908-4-50.
- Denver, E.A., Barnard, M., Woolfson, R.G., Earle, K.A., 2003. Management of uncontrolled hypertension in a nurse-led clinic compared with conventional care for patients with type 2 diabetes. *Diabetes Care*. 26 (8), 2256–2260. doi:10.2337/diacare.26.8.2256.
- Donnelly, J., Dykes, M., Griffioen, R., Moore, J., Hale, L., Wilkinson, A., 2020. Self-management support training for undergraduate and graduate entry healthcare professional students: an integrative review. *Phys. Ther. Rev.* 25 (5–6), 422–434. doi:10.1080/10833196.2020.1832720.
- Dorn, S., 2010. Systematic review: self-management support interventions for irritable bowel syndrome. *Aliment. Pharmacol. Ther.* 32 (4), 513–521. doi:10.1111/j.1365-2036.2010.04374.x.
- Duprez, V., Beeckman, D., Verhaeghe, S., Van Hecke, A., 2018. Are person-related and socio-structural factors associated with nurses' self-management support behavior? A correlational study. *Patient Educ. Couns.* 101 (2), 276–284. doi:10.1016/j.pec.2017.08.011.
- Duprez, V., Vandecasteele, T., Verhaeghe, S., Beeckman, D., Van Hecke, A., 2017. The effectiveness of interventions to enhance self-management support competencies in the nursing profession: a systematic review. *J. Adv. Nurs.* 73 (8), 1807–1824. doi:10.1111/jan.13249.
- Duprez, V., Vansteenkiste, M., Beeckman, D., Verhaeghe, S., Van Hecke, A., 2019. Capturing motivating versus demotivating self-management support: Development and validation of a vignette-based tool grounded in Self-determination theory. *Int. J. Nurs. Stud.*, 103354 doi:10.1016/j.ijnurstu.2019.04.019.
- Elissen, A., Nolte, E., Knai, C., Brunn, M., Chevrel, K., Conklin, A., . . . , Frølich, A., 2013. Is Europe putting theory into practice? A qualitative study of the level of self-management support in chronic care management approaches. *BMC Health Services Res.* 13 (1), 1–9. doi:10.1186/1472-6963-13-117.
- Faithfull, S., Samuel, C., Lemanska, A., Warnock, C., Greenfield, D., 2016. Self-reported competence in long term care provision for adult cancer survivors: a cross sectional survey of nursing and allied health care professionals. *Int. J. Nurs. Stud.* 53, 85–94. doi:10.1016/j.ijnurstu.2015.09.001.
- Feldstein, A.C., Glasgow, R.E., 2008. A practical, robust implementation and sustainability model (PRISM) for integrating research findings into practice. *Joint Commission J. Qual. Patient Safety* 34 (4), 228–243. doi:10.1016/S1553-7250(08)34030-6.
- Feo, R., Kitson, A., 2016. Promoting patient-centred fundamental care in acute healthcare systems. *Int. J. Nurs. Stud.* 57, 1–11. doi:10.1016/j.ijnurstu.2016.01.006.
- Fishbein, M., Ajzen, I., 2010. *Predicting and Changing Behavior: The Reasoned Action Approach*. Psychology Press.
- Funnell, M.M., Anderson, R.M., 2003. Changing office practice and health care systems to facilitate diabetes self-management. *Curr. Diab. Rep.* 3 (2), 127–133. doi:10.1007/s11892-003-0036-7.
- Grant, M.J., Booth, A., 2009. A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Inform. Libraries J.* 26 (2), 91–108. doi:10.1111/j.1471-1842.2009.00848.x.
- Guo, S.-E., Shen, H.-C., Okoli, C., Liao, Y.-C., Tsai, K.-D., Lin, M.-S., Hsu, H.-T., 2018. Generalist versus specialist nurses' knowledge, attitudes, and behavioral intentions toward promoting pulmonary rehabilitation for patients with chronic obstructive pulmonary disease: a cross-sectional correlational study. *Medicine (Baltimore)*. 97 (43). doi:10.1097/MD.00000000000012975.
- Halcomb, E., Ashley, C., 2017. Australian primary health care nurses most and least satisfying aspects of work. *J. Clin. Nurs.* 26 (3–4), 535–545. doi:10.1111/jocn.13479.
- Halcomb, E., Davidson, P.M., Griffiths, R., Daly, J., 2008. Cardiovascular disease management: time to advance the practice nurse role? *Aust. Health Rev.* 32 (1), 44–55. doi:10.1071/AH080044.
- Hoare, K.J., Mills, J., Francis, K., 2012. The role of Government policy in supporting nurse-led care in general practice in the United Kingdom, New Zealand and Australia: an adapted realist review. *J. Adv. Nurs.* 68 (5), 963–980. doi:10.1111/j.1365-2648.2011.05870.x.
- Hong, Q.N., Pluye, P., Bujold, M., Wassef, M., 2017. Convergent and sequential synthesis designs: implications for conducting and reporting systematic reviews of qualitative and quantitative evidence. *Syst. Rev.* 6 (1), 61. doi:10.1186/s13643-017-0454-2.
- Hong, Q.N., Pluye, P., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., . . . , Nicolau, B., 2018. *Mixed Methods Appraisal Tool (MMAT)*, version 2018. IC Canadian Intellectual Property Office, Canada.
- James, S., McInnes, S., Halcomb, E., Desborough, J., 2020. Lifestyle risk factor communication by nurses in general practice: understanding the interactional elements. *J. Adv. Nurs.* 76 (1), 234–242. doi:10.1111/jan.14221. http://dx.doi.org/.
- JBI, 2017. *The Joanna Briggs Institute Critical Appraisal Tools for Use in JBI Systematic Reviews Checklist for Analytical Cross Sectional Studies*. Australia The Joanna Briggs Institute, North Adelaide.
- Kang, E., Gillespie, B.M., Tobiano, G., Chaboyer, W., 2018. Discharge education delivered to general surgical patients in their management of recovery post discharge: a systematic mixed studies review. *Int. J. Nurs. Stud.* 87, 1–13. doi:10.1016/j.ijnurstu.2018.07.004.
- Kaufman, N.D., Rajataramya, B., Tanomsingh, S., Ronis, D.L., Potempa, K., 2012. Nurse preparedness for the non-communicable disease escalation in Thailand: A cross-sectional survey of nurses. *Nurs. Health Sci.* 14 (1), 32–37. doi:10.1111/j.1442-2018.2011.00657.x.
- Kennedy, A., Rogers, A., Bowen, R., Lee, V., Blakeman, T., Gardner, C., . . . , Chew-Graham, C., 2014. Implementing, embedding and integrating self-management support tools for people with long-term conditions in primary care nursing: a qualitative study. *Int. J. Nurs. Stud.* 51 (8), 1103–1113. doi:10.1016/j.ijnurstu.2013.11.008.
- Lenzen, S.A., Daniëls, R., van Bokhoven, M.A., van der Weijden, T., Beurskens, A., 2018. What makes it so difficult for nurses to coach patients in shared decision making? A process evaluation. *Int. J. Nurs. Stud.* 80, 1–11. doi:10.1016/j.ijnurstu.2017.12.005.
- Lockwood, C., Munn, Z., Porritt, K., 2015. Qualitative research synthesis: methodological guidance for systematic reviewers utilizing meta-aggregation. *Int. J. Evidence Based Healthcare* 13 (3), 179–187. doi:10.1097/XEB.000000000000062.
- Lundh, L., Rosenhall, L., Törnkvist, L., 2006. Care of patients with chronic obstructive pulmonary disease in primary health care. *J. Adv. Nurs.* 56 (3), 237–246. doi:10.1111/j.1365-2648.2006.04027.x.
- Macintosh, M.J., Lacey, E.A., Ford, A., 2003. Secondary prevention for coronary heart disease: a qualitative study. *Br. J. Nurs.* 12 (8), 462–469. doi:10.12968/bjon.2003.12.8.11272.
- Massimi, A., De Vito, C., Brufola, I., Corsaro, A., Marzuillo, C., Migliara, G., . . . , Damiani, G., 2017. Are community-based nurse-led self-management support interventions effective in chronic patients? results of a systematic review and meta-analysis. *PLoS One* 12 (3), e0173617. doi:10.1371/journal.pone.0173617.
- Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., . . . , Stewart, L.A., 2015. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst. Rev.* 4 (1), 1. doi:10.1186/2046-4053-4-1.
- Panagioti, M., Richardson, G., Small, N., Murray, E., Rogers, A., Kennedy, A., . . . , Bower, P., 2014. Self-management support interventions to reduce health care utilisation without compromising outcomes: a systematic review and meta-analysis. *BMC Health Services Res.* 14 (1), 356. doi:10.1186/1472-6963-14-356.
- Pluye, P., Hong, Q.N., 2014. Combining the power of stories and the power of numbers: mixed methods research and mixed studies reviews. *Annu. Rev. Public Health* 35, 29–45.
- Richard, A.A., Shea, K., 2011. *Delineation of self-care and associated concepts*. *J. Nurs. Scholarsh.* 43 (3), 255–264.
- Ryan, R.M., Deci, E.L., 2000. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am. Psychol.* 55 (1), 68–78. doi:10.1037/0003-066X.55.1.68.
- Schulman-Green, D., Jaser, S., Martin, F., Alonzo, A., Grey, M., McCorkle, R., Whittemore, R., 2012. Processes of self-management in chronic illness. *J. Nurs. Scholarsh.* 44 (2), 136–144. doi:10.1111/j.1547-5069.2012.01444.x.
- Schunk, D. H., and Usher, E. L. (2012). *Social cognitive theory*. APA educational psychology handbook, 1.
- Schwarzer, R., Luszczynska, A., 2005. *Social cognitive theory*. *Predict. Health Behav.* 2, 127–169.
- Stern, C., Jordan, Z., McArthur, A., 2014. Developing the review question and inclusion criteria. *AJN Am. J. Nurs.* 114 (4), 53–56. doi:10.1097/01.NAJ.0000445689.67800.86.
- Stern, C., Lizarondo, L., Carrier, J., Godfrey, C., Rieger, K., Salmond, S., Loveday, H., 2020. Methodological guidance for the conduct of mixed methods systematic reviews. *JBI Evidence Synthesis* 18 (10), 2108–2118. doi:10.11124/JBISIR-D-19-00169.
- Uhm, J.Y., Choi, M.Y., Lee, H., 2020. School nurses' perceptions regarding barriers and facilitators in caring for children with chronic diseases in school settings: A mixed studies review. *Nurs. Health Sci.* 22, 868–880. doi:10.1111/nhs.12786.
- Uhm, J.Y., Choi, M.Y., 2020. Barriers to and facilitators of school health care for students with chronic disease as perceived by their parents: a mixed systematic review. *Healthcare* 8 (4), 506. doi:10.3390/healthcare8040506.
- van Hoof, S.M., Dwarswaard, J., Bal, R., Strating, M.M., van Staa, A., 2016. What factors influence nurses' behavior in supporting patient self-management? An explorative questionnaire study. *Int. J. Nurs. Stud.* 63, 65–72. doi:10.1016/j.ijnurstu.2016.08.017.
- van Hoof, S.M., Dwarswaard, J., Jedeloo, S., Bal, R., van Staa, A., 2015. Four perspectives on self-management support by nurses for people with chronic conditions: a Q-methodological study. *Int. J. Nurs. Stud.* 52 (1), 157–166. doi:10.1016/j.ijnurstu.2014.07.004.

- Wagner, E.H., 2000. The role of patient care teams in chronic disease management. *BMJ* 320 (7234), 569–572. doi:[10.1136/bmj.320.7234.569](https://doi.org/10.1136/bmj.320.7234.569).
- Walters, J.A., Courtney-Pratt, H., Cameron-Tucker, H., Nelson, M., Robinson, A., Scott, J., . . . , Wood-Baker, R., 2012. Engaging general practice nurses in chronic disease self-management support in Australia: insights from a controlled trial in chronic obstructive pulmonary disease. *Australian J. Primary Health* 18 (1), 74–79. doi:[10.1071/PY10072](https://doi.org/10.1071/PY10072).
- Westland, H., Schröder, C.D., de Wit, J., Frings, J., Trappenburg, J.C., Schuurmans, M.J., 2018. Self-management support in routine primary care by nurses. *Br. J. Health Psychol.* 23 (1), 88–107. doi:[10.1111/bjhp.12276](https://doi.org/10.1111/bjhp.12276).
- WHO. (2017). Updated Appendix 3 of the WHO Global NCD Action Plan 2013–2020. Geneva, Switzerland. Retrieved from https://www.who.int/ncds/governance/technical_annex.pdf
- WHO. (2018). Noncommunicable diseases and their risk factors. Retrieved from <http://www.who.int/ncds/en/>
- Wierdsma, J.M., Vervoort, S.C., van Zuilen, A.D., Berkhout, N.C., Gundlach, P.J., 2016. Evaluation of the role of nurse practitioners in Masterplan. *J. Renal Care* 42 (1), 23–33. doi:[10.1111/jorc.12128](https://doi.org/10.1111/jorc.12128).
- Wilkinson, M., Whitehead, L., Crowe, M., 2016. Nurses perspectives on long-term condition self-management: a qualitative study. *J. Clin. Nurs.* 25 (1–2), 240–246. doi:[10.1111/jocn.13072](https://doi.org/10.1111/jocn.13072).
- Woo, B.F.Y., Zhou, W., Lim, T.W., Tam, W.W.S., 2019. Practice patterns and role perception of advanced practice nurses: A nationwide cross-sectional study. *J. Nurs. Manage.* 27 (5), 992–1004. doi:[10.1111/jonm.12759](https://doi.org/10.1111/jonm.12759).
- Young, H.M., Apps, L.D., Harrison, S.L., Johnson-Warrington, V.L., Hudson, N., Singh, S.J., 2015. Important, misunderstood, and challenging: a qualitative study of nurses' and allied health professionals' perceptions of implementing self-management for patients with COPD. *Int. J. Chronic Obstruct. Pulmonary Dis.* 10, 1043. doi:[10.2147/COPD.S78670](https://doi.org/10.2147/COPD.S78670).
- Zakrisson, A.B., Häggglund, D., 2010. The asthma/COPD nurses' experience of educating patients with chronic obstructive pulmonary disease in primary health care. *Scand. J. Caring Sci.* 24 (1), 147–155. doi:[10.1111/j.1471-6712.2009.00698.x](https://doi.org/10.1111/j.1471-6712.2009.00698.x).