Barriers and facilitators to the implementation of nurse's role in primary care settings: an integrative review

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Abstract

Background

The rapid evolution of the epidemiological picture and the recent SARS-COV-2 pandemic has expressed the vulnerabilities of health systems and focuses attention on the population's needs.

The nurse's figure in the care teams is universally identified; however, the implementation of the role within some care settings turns out to be complex and challenging. This integrative review aims to identify the barriers and facilitators in implementing the role of the nurse in primary care settings.

Methods

An integrative review was conducted on the Medline and Cinahl databases until 9 June 2020. Qualitative, quantitative, and Mixed-method research studies were selected to identify studies related to the barriers and facilitators of the nurse's role in nursing facilities' primary care. For the extraction of the results, the Consolidating Framework for Research Implementation (CFIR) was used to identify the factors that influence implementation in health care.

Results

Following the duplicates' removal, the search identified 18257 articles, of which 56 were relevant to the inclusion criteria; therefore, they were included in the summary.

The selected studies were conducted in thirteen countries, most from Oceania, Europe, North America, Latin America, and the Caribbean.

The barriers reported most frequently concern the nursing profession's regulatory and regulatory aspects within the contexts of care, cultural and organizational aspects, training, and the transfer of specific skills, which were previously designated to doctors.

The facilitators are mainly linked to the nurse's adaptability to the various contexts of care, recognizing the patient's role, and the desire to develop multidisciplinary and effective working groups to respond to the health needs of the population in primary care contexts.

Conclusion

This review highlighted the main barriers and facilitators in implementing the nurse's role in primary care settings. These results offer useful elements for stakeholders to identify effective strategies in preparing programs and activities for implementing the nurse's role, acting on the elements identified as barriers and favouring the aspects that emerge as facilitators.

Background
The progressive epidemiological change, deriving from the aging of the population, the increase in non-communicable diseases (NCDs), and, last but not least, the recent COVID-19 pandemic, has necessarily led to a rethinking of the population's needs for assistance, redefining the models of care for the most vulnerable age groups of the population (1, 2).

Non-communicable diseases, including heart disease, stroke, cancer, diabetes, and chronic lung disease, have become the leading causes of death and disability worldwide. They are responsible for nearly 70% of deaths worldwide (3).

In 2017, in most countries of the world, one in eight people was over 60; by 2030, it will be one in six, while by 2050, it will be one in five (4). In this regard, the World Health Assembly of the World Health Organization (WHO) launched a decade of healthy aging 2020–2030 (5). It identifies actions to promote autonomy in the elderly, patient-focused care models are identified, and your long-term care needs.

The result is a progressive increase in health spending, higher tax burdens, and increased inequality in low and middle-income countries (6). This important scenario determines the high expectations of citizens towards health systems.

The spread of the recent COVID-19 pandemic has further increased the complexity of care and added an increase in requests for consideration, especially for acute patients and managing chronic patients at home (7, 8).

This situation necessarily requires an important reflection on the currently existing models of care and what roles the nurse assumes to respond to patients and the community's needs.

In most countries, one of the main reasons for developing and implementing advanced roles and skills for nurses is to improve access to care, especially in those settings where medical resources are scarce (9). Another reason, no less relevant, for the development of nursing roles is related to further promoting the quality of care, providing support through follow-up activities for chronic patients followed at home, thus reducing hospital admissions and readmissions (10).

However, the implementation of nursing roles is not unique at an international level.

Specifically, cultural, regulatory, and organizational factors of individual contexts intervene, in addition to the level of skill-mix of professionals in the field of primary care (11).

In fact, this epidemiological evolution requires the redefinition of the roles of the various professional figures involved in the assistance of primary care, aimed not only at greater collaboration but also at the redefinition of skills (12).

Precisely, the heterogeneity of nursing contexts and roles at the international level highlights a particular aspect in identifying strategies for implementing nursing roles in primary care (13).
In the light of these different factors and contexts, the WHO directives are inserted, which set important indications for sustainable primary health care that complies with the legislation, organization, and health priorities of the individual nations. In fact, the focus of this directive is on giving priority to disease prevention and promoting health. Furthermore, to meet all people's health needs throughout their lives, offering effective services in the field of prevention, promotion, treatment, rehabilitation, and palliative care (14). Therefore, it is inevitable to consider that the skills acquired by nurses and their training play a determining role in the implementation of care roles and impact the outcomes of care in primary care settings (15).

However, the literature highlights barriers and facilities precisely about the insertion and implementation of these nursing figures within the primary care settings (13).

This study aimed to synthesize findings of studies that implemented the nurse's role in primary care settings to identify facilitators and barriers encountered during implementation.

**Methods**

**Study design**

The review question was addressed through an integrative review method that allowed the use of original qualitative research and quantitative research on barriers and enablers to nurse's role implementation in primary care settings (16). The integrative review combines data that were addressed in studies using various designs and contributes an in-depth understanding of this complex phenomenon. The Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) was used (17).

**Search Strategy**

The search was performed in two databases Medline and CINAHL, up to the 9th of June 2020. We developed search strategies for each database (Additional file 1). Search strategies consisted of keywords and controlled vocabulary terms (Table 1). Also, we scanned reference lists of all included studies and key references (i.e., relevant reviews). We limited our searches to English and Italian for the reason of feasibility.

**Eligibility criteria**

We included primary studies that used qualitative or quantitative study designs and mixed methods studies. We excluded case studies, editorials or commentaries, reviews. We included studies that focused on stakeholders' experiences and attitudes about the introduction of a nurse role in primary care settings and barriers and facilitators to the implementation. We included any types of nurses working in primary care settings. Primary care was defined as follows:
The provision of universally accessible, integrated person-centred, comprehensive health and community services provided by a team of professionals accountable for addressing a large majority of personal health needs. These services are delivered in a sustained partnership with patients and informal caregivers, in the context of family and community, and play a central role in the overall coordination and continuity of people’s care”(18).

We excluded studies focused on the nurse or nursing practice concept conducted in settings other than primary care (i.e., accident and emergency departments in hospital). Studies conducted in mixed settings were included if the results related to primary care could clearly be identified from the overall findings.

Selection of studies

Two review authors independently scanned each record’s title and abstract obtained from the electronic searches to determine if they fulfilled the inclusion criteria. Then, we retrieved full-text publications of the selected studies to confirm their relevance to inclusion. At all stages, we resolved any disagreements between the authors via discussion or, if required, by seeking a third review author’s view.

Data extraction

We perform data extraction using the Consolidating Framework for Research Implementation (CFIR) for identifying factors that influence implementation in health care (19) (Table 2). We also extracted information on study characteristics (author, date of publication, country, aims, study design, study population, and study setting) and a description of the nurse role (i.e., training, details about any interventions delivered).

Data synthesis

Three review authors read the selected studies and applied the CFIR framework, moving between the framework’s themes. Relevant data of each theme are extracted from all primary data sources. The review author discussed each emerging theme’s definition and boundaries, then revised and compiled the CFIR framework in line with the categories that emerged.

Quality appraisal

Whittemore and Knafl (2005) state that assessing the quality of the included evidence is not essential in a supplementary review (16). All studies meeting the inclusion criteria, regardless of methodological quality, were retained in the review to examine all evidence of the factors that influenced the nurse role’s implementation in practice settings.
Results

Characteristic of the included studies

We screened 18257 records and considered 283 full texts for inclusion in this integrative review. Fifty-six papers met the inclusion criteria (20,21,30–39,22,40–49,23,50–59,24,60–69,25,70–75,26–29), and six papers (30,45,47,49,59,61) coming from three unique studies (Figure 1).

Studies were conducted across thirteen countries: nine studies in Oceania (26,32,35,44,60,66,68–70), one in Asia (36), twenty-one in Europe (20,21,51–54,57,58,62,65,67,73,22,74,29,33,34,41–43,46), twenty-four in North America (23,24,40,45,47–50,55,56,59,61,25,64,71,72,75,27,28,30,31,37–39) and one in Latin America and the Caribbean (63) (Figure 2). Thirty-six studies employed a qualitative design (20,22,38–42,44,46,48,51,52,24,53–59,61,62,64,25,69–71,73,74,26,29,31,32,35,36), fourteen a quantitative design (21,27,60,63,72,74,28,30,34,37,43,45,47,49) and six used a mixed method (23,33,50,65,66,68).

Participants included registered nurses, nurse practitioners, general practitioners, health leaders (chairpersons of health boards), managers, nursing leaders, key informants (University employees, Ministry of Health employees, policy makers), health and social care professionals, administrators and patients (Additional file 2).

Nurse’s role and Task

Studies included nurse's role referred to nurse practitioner working in advanced role (21,23,37–42,44–47,24,48–56,59,26,61–64,66–69,72,74,27,75,28–31,35) and registered nurse working in advanced practice level or with specialist designation (20,22,60,65,70,71,73,25,32,33,36,42,43,57,58). The registered nurse in many studies takes on different titles: "community nurse", "family health nurse", "public health nurse", "mental health nurse", "community matron", "mental health nurse of community" and "district nurse". Many studies have described the qualification of the nurse, from the bachelor's degree to the post-graduate qualification (master's degree, doctorate in nursing) (24,25,38–42,44,48,49,51,52,26,53,56,63,64,66–69,72,74,27,75,28–31,35,36). The main tasks carried out by nurse practitioners and registered nurses are illustrated in figure 3. All nurses worked in primary care settings, including general practice, health care centre and rural and remote areas.

Legend: NP-nurse practitioner, RN-registered nurse

FACTORS INFLUENCING IMPLEMENTATION

Intervention characteristics

Barriers
Concerning this domain of CFIR framework, four main factors emerge from the studies analysis: scope of practice, nursing workload, nursing education, and funding.

Restrictions of nurse scope of practice and autonomy was the most frequently reported barrier to the nurse’s role implementation (21,23,53,55,56,24,28,31,35,44,45,47,48). Arbitrary laws (31), state restriction, hospital regulations (28), and health care professionals’ expectations (35,55) contributed to restricted nurses’ independence and the full potential of the role. For instance, regulations require that nurses be supervised by physicians when exercising their prescriptive authority (38–40). Also, physicians advocated the use of a protocol (21) or their supervision (45) using a collaborative practice agreement (23,31).

Studies described excessive caseload numbers and complex cases as a barrier (25,30,32,57,58) inhibiting care provision (33,71). Furthermore, patient care complexity combined with other non-clinical (administrative-bureaucratic) functions further increased the nursing workload (57).

Education was identified as a barrier to role development in thirteen studies. Nurses expressed their concern about educational programs: the adequacy of training (41,56,63) and nurses’ ability to meet the competencies required (25,45,62,65,70). Several studies described concerns about training opportunities and ongoing education (50), such as lack of information regarding course availability (26), difficulty taking time off work (26,54), geographical barriers and the need to travel (32), and lack of funding (26,51).

Funding to sustain the nurse position was described across eleven studies (21,23,66,36,39,42–44,50,52,54).

Facilitators

Facilitators described during implementation were adaptability of the nurse’s role to the existing context (53) and trialability (46). Education and training were also reported as contributing factors facilitating nurse’s role implementation. Educational resources (e.g., master’s degree program) have been put in place to improve clinical skills and further retraining options, especially in the setting of primary care (26,29,36,46). Moreover, additional experiences such as residency or fellowship programs after graduation supported role transition in primary care (30). One study reported that motivating nurses to study was also an important factor in achieving an advanced practice level (62). Another facilitator was nurses satisfied with their full scope of practice (24–29). Working in autonomy was described by nurses, also related to their work settings (27,30–33).
Studies have referred to the value of performing tasks and procedures previously assigned to physicians (29,35,36) and the nurses' role as links between the patient and other healthcare professionals (29,34).

**Outer setting**

**Barriers**

*Patients factors* were reported as a key barrier across studies. From a patient perspective, one of the main factors that negatively impacted the acceptance of the nurse's role was the lack of knowledge and understanding of the role (42,48,56,68,69,72). Other factors were negative patients' prior experience (68), patients' preference, and medical condition (68,69).

Five studies considered the *external policies*. Studies highlighted prescribing restriction (38–40) and remuneration policies (46,48).

**Facilitators**

Facilitators identified were related to the *patient's factors*. Patients perceive care delivered by nurses as satisfactory (21,41,50,65,67) and having a number of advantages. Patients referred to nurses' adapted solution and proposal to meet their needs in their environment (25,35,36,57), listened more carefully to them and had time to their concerns (46,50,62,68,69). They also described how access to care was quicker and easier (34,50). Several studies emphasized the acceptance of the nurse's role from patients (23,36,48,63,66,68) due to knowledge and role recognition (59,61) and nurse-community connection (50).

**Inner setting**

**Barriers**

Barriers identified across studies were linked to organizational factors.

*Recruitment and retention* of nurses were described as a barrier across studies. Studies described difficulty in recruiting qualified nurses (29,62,65) and retaining them (20). Organizational factors such as lack of long-term human resource planning (52), uncertainty employment (20,26,29,55) and lack of career opportunities (62) contribute negatively to role implementation. Consequently, some studies reported nurses' high staff turnover (20) and intention to leave among newly hired nurses (20,72).
Some studies referred to the organization's culture, hierarchical structure (29,36,48), and difficulties in adopting a flexible approach to service delivery (73) as the main barrier to nurse's role implementation. The nursing practice was overshadowed by the more dominant medical model (51,58,61,63), giving priority to medical solutions to health problems rather than patient wellness-centred care (35,43).

The nature and quality of communications. The environmental factors as a barrier to access of information and support in a rural area, such as isolation (32,33), poor internet connection, and lack of electricity to run equipment (64), are described. Also, the lack of sharing information between staff administrators and health professionals had negative consequences (38,64,72). Some studies reported that a lack of shared understanding of patients’ needs to be impacted by the team's ability to provide care (57,70,71).

Unfavourable implementation climate was the most frequently reported barrier to the implementation of the nurse's role. The professional relationship between health workers (22,41,42,56) and other inter-professional workers (42,56) associated with the lack of regulation of the role of the nurse (22,41,42) hinders the implementation of the nursing role (42). In this regard, in fact, the lack of professional collaboration is described as a further obstacle (24,29,39,41,42,48,67,74). Nurses stressed that counsellors and secondary care providers either did not accept their referrals (24,39,41,42,48,67,74) or refuse share information (41). Furthermore, the lack of support from doctors, managers, and administrative staff have been reported as a professional collaboration problem (26,30,33,43,44,64,72). From the nurses' point of view, they did not receive the same level of support as doctors (38,40) or the same respect as their peers (30,72). Consequently, nurses have raised the invisibility of their role in the community (22,38,72). Professional isolation was reported as an additional barrier in seven studies (24,30,32,33,50,51,64). Isolation has been described as the lack of nurses' integration into existing (51) or other health professionals in the same workplace(32). The studies also show the non-sharing of objectives between the organization and the nurses, which are not communicated clearly (30,32). Furthermore, the contractual context influenced the climate. Studies have reported the lack of a reward system (20,30) and the effects of a lack of a reward and incentive system on nurse morale (30,55).

The lack of resources has been reported as a barrier to implementing the role of the nurse in the studies (20,29,34,36,38,39,56,57,70).

Facilitators

Facilitators mainly referred to challenges for workforce development, nature, and quality of communication and implementation climate.

Several studies faced workforce challenges providing opportunities to nurse's role development in primary care, including changing patient case-mix (20,42) and shortage of primary care providers (26,50).

Nurses reported that communication strategies and technology helped them to establish a relationship between primary and secondary care. On-call systems to connect health care professionals, telemedicine
equipment, and team sharing of patient information, including case-reviews, were crucial to the continuity of care (59,64). Moreover, studies highlighted that regular communication, preferably using the same electronic patient records, was deemed important in the collaboration and coordination between health care professionals (34,42,50,56).

Professional trust, mutual respect and a close doctor-nurse relationship were seen as an enabler of role implementation and collaborative work by nurses (31,32,42,46,50,51,56,61). In addition, inter-professional relationship and team working played a key part in facilitating development of the nurse's role (25,27,35,39,41,43,48,58). Several studies reported that nurse's role implementation was positively influenced by support from physicians, pharmacists, managers and colleagues (23,24,26,29,31,38,48,64,71). Also mentoring, mainly from doctors and colleagues, was central to providing support during transition into the role (26,30,39,41,44,64).

**Characteristics of individuals**

**Barriers**

Barriers identified across studies were linked to team acceptance and nurse belief in their own capabilities.

Studies described physician’s resistance (23,42,56) related to lack of role clarity and concern about nurses practice (24,25,47–51,66,72,26,30,36,38,43–46). There was consensus among nurses, administrative staff and team members that professionals were not aware of the scope of nurse practice (21,28–30,39,45,52,53,66). In addition, physicians expressed lack of trust in nurses’ skills and knowledge (29,36,45,47,51,54,66,72). From a physician perspective there were concerns about doctor’s workload, nurse-doctor competition, fragmentation and duplication of services (51,52,66), particularly when roles were perceived to overlap.

The last barrier was nurse self-doubt (44,47). In one study, nurses reported that they felt uncertain when colleagues did not utilize them as a resource (61).
Facilitators

The nurse’s role clarity and understanding were identified as important in gaining doctor acceptance (61). The nurse’s role was understood more easily once professionals had previous nurse-doctor collaboration experiences (23,26,41,52). From a physician’s perspective, there were some motivations to employ nurses in primary care, including complementary relationships (52,74) and enhance quality and delivery of healthcare (28,42,66,67). Many physicians were satisfied with nurse collaboration (31,34,45,50). Studies reported that a nurse’s role in primary settings reduce doctors’ workload (21,42,46,62) and allow them to focus on other tasks (e.g., coordinating complex cases (42,45)). From nurses perspective, they believed to improve quality of care and increase patient safety (31,33,35,46,48,52,59,62). This was linked to consider their work “valued” “worthy”. Nurses cited their satisfaction in providing more than patient care compared to other health professionals (25,41). Moreover, studies identified that nurses were confident with their skills and knowledge (49) and aware of their own limits (31,46).

Process

Barriers

Barriers were related to the lack of planning to employ nurse’s roles, including how new services were adapted to meet changing needs (33,73), absence of clear leadership (71), top-down approach (56), and evaluation. Several studies described difficulties in identifying outcomes to measure and tools to track nurse’s contributions (25,59).

Facilitators

Few studies highlighted the importance of developing an implementation plan with a focus on workforce integration. Review of the existing nursing service, definition of roles and functions, and team involvement were useful considerations that guided planning (43,56,65). Factors associated with better role development and integration were nurses’ involvement in developing their role (e.g., drafting job
Universities were identified as external agents to the organization who formally influenced role development (63). The last facilitator was linked to the evaluation process. Nurses cited the need to evaluate their effectiveness (25) and identified research and audit mechanisms as resources to subject their practice to scrutiny (41).

Discussion

This integrative review includes fifty-three primary studies focused on identifying barriers and facilitators during nurses’ roles implementation in primary care settings. We have synthesized different stakeholders’ information and experiences and identified several factors influencing nurse's role implementation strategies. A registered nurse and nurse practitioner are the main titles used for a nurse working in primary care.

Barriers

Our synthesis shows that the major emerging themes are related to intervention characteristics, the inner setting of the individual healthcare professionals' organization, and individuals’ characteristics. These include limited availability and access to special education, which means nurses lack the knowledge and skills to work in primary settings. Also, legislation and regulation influence nurse's role implementation as key factors that allow nurses to autonomously practise to their full scope. Papers reported restrictions to nurses’ full scope of practice, mainly referred to prescribing for nurses in an advanced role (76), that require them to collaborate or be supervised by physicians.

It is impossible to achieve nurse's role implementation if we do not consider the organizational setting in which it is embedded. The gap in the availability of nurses and their retention issues are predominant in the rural underserved area. Lack of career opportunities and lower salaries contributes to nurses moving to other regions, especially newly hired nurses (77).

Consistent with previous literature, this review finds that lack of administrative and physician support and interprofessional collaboration negatively impacted the implementation climate and healthcare provision (78). Knowledge and beliefs of individuals within an organization influences individual acceptance of workforce change.

Therefore, this review supports assertions in the literature that lack of clarity about nurses' role by different stakeholders is a significant and common barrier to optimal role implementation (78). For example, similar to the general practice setting, physicians protecting their professional boundaries and expertise caused tension and confusion (9).

Facilitators

Major facilitators identified under CFIR domains are linked to intervention characteristics, the organization's inner setting, and the implementation process. Key factors include prior planning for role
introduction and nurses’ involvement in the early stage of role implementation. These findings further support stakeholders’ involvement in guiding the implementation process and building consensus on the nurse’s role (79). More broadly, nurse’s role implementation should be preceded by reflecting on the expected nurse’s contribution concerning patients’ needs and each professional on the team (80).

Referring to challenges inherent in role development, job satisfaction, and nurses’ access to high-quality education are the major themes reported by nurses. Standardizing educational requirements for nurses, especially in an advanced role in the primary health care setting, supported role enactment. As reported by DiCenso et al. (76), it was valid for nurse practitioners. The study also highlighted the importance of increasing the practice component of education and more interprofessional training.

Consistent with previous literature, collaborative working and relationships are factors that lead to a positive nurse’s role implementation and promote nurses job satisfaction (78,81). Collaborative practice does not always emerge spontaneously, which fits well with Contandriopoulos et al. (80). From the nurses’ perspective, respect, trust, and communication were the starting point for doctor-nurse collaboration. The same factors were represented by McInnes et al. as facilitating collaboration in general practice (9). Furthermore, the collaboration between physicians and nurses may positively impact on patient outcomes, due to nurses added value to practice (82).

**Strengths and limitations**

This integrative review offers a very accurate view of the main barriers and facilitators in implementing the nursing role in primary care settings. Many aspects are transversal to the different countries involved in the study.

The differences related to the context (political, social, cultural) and health systems make the results described non-standard.

The studies were published between 1996 and 2020, some factors that have been reported in previous studies may no longer apply. The factors contributing to the implantation of the nurse’s role, we have assessed with this supplementary review, are indeed very complex, therefore we may not have identified all factors due to the language restrictions used in the inclusion criteria.

**Conclusions**

This integrative review summarizes the main barriers and facilitators in implementing the nurse’s role in the context of primary care. Some aspects emerge in a significant and transversal way from the results. Attention to the legislative and regulatory aspects of the nursing profession is still sub-optimal. There is still no complete regulation of the autonomy of the profession. Studies are still lacking in the involvement of professionals and various stakeholders in implementing nurses in care settings. Another important aspect is recognizing the nurse’s role and skills, especially within the multidisciplinary team and training. Few studies have explored the training needs of nurses. The lack of funding sources for nurses makes
learning very difficult and often happens in practice. This supplementary review demonstrates that there are still many aspects to investigate in evaluating the nursing role's implementation in primary care settings. In conclusion, we believe that it is important to deepen with further research studies the outcomes on assistance through measurement and evaluation studies derived from the implantation of the nurse's role in primary care settings. We believe that there is not simple and linear advice that leads nurse's role implementation in terms of practice implications. Successful nurse's role implementation into practice setting is a complex process influenced by numerous factors. Medical Research Council framework (83,84) could be used to guide the development of complex interventions, especially for nurses research and practice (85). Facilitators can be shifting in barriers if not addressed appropriately. Thus, tailoring the intervention requires considering many factors at different levels (interprofessional, interpersonal, organizational and systemic), which sometimes need to be tackled simultaneously. From this perspective, the implementation process is dynamic and context dependent.

**Declarations**

Authors’ contributions

EB and ADM have set up the studio facility. EB and MB developed the search strategy. EB, AS and TLC independently reviewed titles and abstracts, assessed the inclusion criteria of all identified publications, and performed data extraction and quality assessment. ADM was consulted in case of conflicts. ADM e MB was an important contribution to the methodological questions. EB and MB drafted the manuscript. All other authors (AS, TLC and BM) have made significant contributions to content-related questions and have read and edited the drafts. All authors agreed on the final manuscript.

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Availability of data and materials Data is available upon reasonable request. The detailed results of the assessment of all barriers and facilitators are available upon reasonable request. All requests relating to data must be addressed to erica.busca@uniupo.it

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Tables

Table 1: Terms used in search strategies

| MeSH terms*                  | Relevant key words**                                |
|------------------------------|-----------------------------------------------------|
| Nurse practitioners          | Nurse practitioner, advanced nurse practitioner     |
| Nurses, Community Health     | Family nurse practitioner, family health nurse, community health nurse, district nurse, public health nurse, rural nurse |
| Family Nurse Practitioners   |                                                     |
| Nurses, Public Health        |                                                     |
| Primary health care          | Primary care, community care, community health care, district |
| Community Health Services    |                                                     |
| Nurse's Role                 | Nurse role                                          |

* MeSH terms were combined in three different searches using Boolean operators AND, and the search terms within each box were combined with OR.

** Keywords were searched using truncation and phrase symbols when appropriate.

Table 2: Descriptions of CFIR domains
| Domain                        | Definition                                                                                                                                                                                                 |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| **Intervention characteristics** | The characteristics of the intervention being implemented include whether the intervention is perceived to be developed external or internal to the organization, there is evidence supporting its effectiveness, and its implementation will be advantageous to its alternatives. Other characteristics include how the intervention is presented, its adaptability, complexity and whether it can be tested on a smaller scale. |
| **Outer setting**             | The external context of the organization includes patient needs and the ability to meet them, networks with other organizations, pressure to implement the intervention and external policies and incentives to adopt the intervention.                                      |
| **Inner setting**             | Features of the organization including its structural characteristics (such as size, age of the organization and division of labour), networks and communication (such as connections and information sharing between individuals, units and services), cultural norms and values, implementation climate, organizational capacity and readiness for change. |
| **Characteristics of individuals** | Staff knowledge and belief about the intervention, their ability to execute their respective aspects of the implementation, and their individual stage of change. Other characteristics include individual identification with the organization and other personal attributes. |
| **Process**                   | Active change process, the purpose of which is to promote uptake of the intervention by the organization. This is influenced by the level of planning prior to implementation, and engaging organization stakeholders through appointing implementation leaders and champions of the intervention. This includes the ability to execute the implementation of the intervention as planned and to continuously reflect on and evaluate the quality of implementation and intervention as it progresses. |