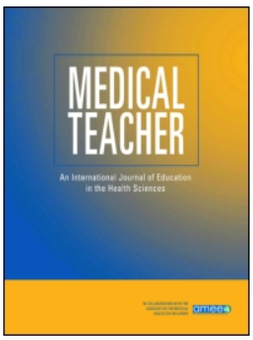

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Workplace learning through collaboration in primary healthcare: A BEME realist review of what works, for whom and in what circumstances: BEME Guide No. 46

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ABSTRACT

Background: Changes in healthcare practice toward more proactive clinical, organizational and interprofessional working require primary healthcare professionals to learn continuously from each other through collaboration. This systematic review uses realist methodology to consolidate knowledge on the characteristics of workplace learning (WPL) through collaboration by primary healthcare professionals.

Methods: Following several scoping searches, five electronic bibliographic databases were searched from January 1990 to December 2015 for relevant gray and published literature written in English, French, German and Dutch. Reviewers worked in pairs to identify relevant articles. A set of statements, based on the findings of our scoping searches, was used as a coding tree to analyze the papers. Interpretation of the results was done in alternating pairs, discussed within the author group and triangulated with stakeholders' views.

Results: Out of 6930 references, we included 42 publications that elucidated who, when, how and what primary healthcare professionals learn through collaboration. Papers were both qualitative and quantitative in design, and focused largely on WPL of collaborating general practitioners and nurses. No striking differences between different professionals within primary healthcare were noted. Professionals were often unaware of the learning that occurs through collaboration. WPL happened predominantly through informal discussions about patient cases and modeling for other professionals. Any professionals could both learn and facilitate others' learning. Outcomes were diverse, but contextualized knowledge seemed to be important.

Discussion/conclusions: Primary care professionals' WPL is multifaceted. Existing social constructivist and social cognitivist learning theories form a framework from which to interpret these findings. Primary care policy makers and managers should ensure that professionals have access to protected time, earmarked for learning. Time is required for reflection, to learn new ways of interaction and to develop new habits within clinical practice.

Background

Over the last few decades, rapid demographic and epidemiological transitions (i.e. more older people with chronic multimorbidities), coupled with increased patient proactivity regarding health-seeking behaviors, have resulted in an increase in the number of tasks and responsibilities being placed upon the shoulders of primary healthcare professionals (Plsek and Greenhalgh 2001; Frenk et al. 2010; Schellevis and Groenewegen 2015). Awareness of these changes has led to a change in both the organization of health care services and the ways in which healthcare professionals deliver care. To this end, current models of healthcare delivery now advocate a shift away from reactive clinical work toward proactive clinical and organizational work (Paulus and Mertens 2012), and from working individually toward interprofessional collaborative practice (ICP) (Organization 2008; Bohmer 2010; Gilbert et al. 2010).

Professionals are expected to keep pace with these changes within healthcare by means of lifelong learning. However, this can be challenging, because after graduation and during the career of all healthcare professionals, patient care seems to be the main focus of all activities and learning is often considered a mere side effect of practice (Eraut 2000). Furthermore, although professionals are expected to engage in formal continuing medical education sessions to promote learning, these have limited value for physicians in terms of facilitating learning (Marinopoulos et al. 2007; Forsetlund et al. 2009). Instead, professionals are expected to learn during clinical practice through collaboration with others in the workplace (Eraut 2007), particularly in primary healthcare, where the need to maintain multiple, diverse relationships makes collaboration an essential aspect of professionals' work.

Workplace learning (WPL) has been broadly defined as "learning taking place at work, through work and for work" (Tynjälä 2013). The literature on WPL notes that working and learning are inseparable and fundamental (Parsell and Bligh 1998; Eraut 2007; Reeves et al. 2011). Learning through work may result from collaboration between professionals with the same educational background

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Supplemental data for this article can be accessed here.

Practice points

- Primary healthcare professionals are often unaware that they learn through collaboration. Professionals can both learn and facilitate others' learning. Making this more explicit can improve the WPL.
- Managers in primary healthcare should ensure protected learning time. Workplace's layout affects learning. Managers need to organize the workplace to enhance communication and casual encounters.
- Healthcare educators should be aware that discussions, asking questions and feedback during work provides affordances for learning. Curricula should emphasize the importance of this kind of learning. Interprofessional modules, focusing on collaboration should be included in undergraduate education.
- Most of the included studies had individuals as unit of analysis. We recommend that researchers focus on supplementing current research with studies on organizational learning in primary healthcare.

(intraprofessional), but as a consequence of the rise in ICP, often arises from the interaction between professionals from several disciplines working together to care for a patient (interprofessional) (Parboosingh 2002; Hammick et al. 2007). During undergraduate medical education, where WPL is accepted as the way students learn, WPL has been studied extensively (Dornan et al. 2007; Theunissen 2008). In such an educational context, it is clear that learning is an important goal of participation in practice. However, this is less obvious during clinical practice after graduation. Theories of WPL have been described in the general learning sciences literature (Eraut 2004, 2007; Illeris 2011; Billett and Choy 2013; Tynjälä 2013; Billett 2014), including, for example, the "communities of practice" model proposed by Lave and Wenger (Lave and Wenger 1991), which is based on the idea of learning through participation (Lave and Wenger 1991; Li et al. 2009; Ranmuthugala et al. 2011). For healthcare professionals working and learning after graduation, theories that have a clear social dimension, such as sociocultural learning theories and social cognitive learning theories (Bandura 2001; Wenger et al. 2002), have particular relevance for understanding WPL. However, there is still a lack of clarity regarding the mechanisms by which WPL through collaboration in primary healthcare settings takes place, and the contextual factors that facilitate or inhibit such learning.

We intend to move the field forwards with regards to WPL in primary healthcare by using realist methodology to investigate what works, for whom, in what circumstances and in what respects (Pawson et al. 2005; Wong et al. 2012). By developing a better understanding of primary healthcare professionals' WPL through collaboration, we hope to identify implications for practice and research that will ultimately contribute to the optimization of life-long learning for these healthcare professionals.

Review aims and research questions

This review aims to better understand: (i) the process of WPL through collaboration in primary healthcare and (ii) the conditions influencing WPL. The following research questions will be addressed:

Who learns during WPL through collaboration in primary healthcare?
When does this learning take place?
How does this learning occur?
What is being learned?

Method

Rationale for using realist review

A realist review is an interpretative, theory-driven evidence synthesis that uses cross-case comparison to understand, and ideally explain, how and why different outcomes have been observed in a sample of primary studies (Pawson et al. 2005). We chose to use this methodology because WPL results from complex interactions during practice, during which contextual factors trigger mechanisms to generate different outcomes such as professionals' behavior (Wong et al. 2012). We felt that, in order to understand the process of WPL through collaboration in primary healthcare, the links between context (C), mechanisms (M) and outcomes (O), or C-M-O, needed to be explored. These links could be best explored using realist methodology. We used the Realist Synthesis RAMESES Training Materials to provide practical guidance during the review process (Wong, Westhorp, et al. 2013).

Development of an analytical framework

Typically, one of the first steps of a realist synthesis is to make explicit a program theory for interventions (Pawson et al. 2005). However, we did not feel that one overarching program theory of WPL would suffice or be applicable, given the intrinsic complexity of WPL (Jagosh et al. 2014). Instead, we followed the approach taken by Walshe and Luker (Walshe and Luker 2010) and developed a broad analytical framework, against which we could extract relevant data to address the review questions.

To do so, we first conducted broad scoping searches to examine the breadth and depth of the broad literature base pertaining to WPL. During a stakeholders meeting (with researchers and faculty members of the department of Family Medicine and Primary Healthcare in Ghent University: general practitioners, nurses, psychologists and sociologists), we discussed the ways in which practicing healthcare professionals are likely to learn in primary healthcare to elicit implicit assumptions and to ensure that our review focused on practice-relevant issues. Informed by the results of our stakeholders' discussion and the explicit theories identified by our scoping searches, we developed

statements on WPL (Box 1), which formed an analytical framework.

Box 1. Statements which were used as an analytical framework.

a. Every professional learns from others during practice
b. Being a facilitator for others can be learned
c. Willingness to learn influences learning
d. Number of years in practice influences learning
e. Professional expertise influences the effectiveness of the facilitator
f. Awareness of learning needs influences learning
g. Workplace artifacts can be used for learning during practice
h. A shared aim or responsibility of a team influences the learning
i. Workload influences learning
j. Learning during practice can be planned or unplanned
k. Difficult clinical situations have learning potential
l. Learning during clinical practice is guided by actual patients' care needs
m. Interprofessional relationships affect learning through collaboration
n. Interprofessional hierarchy affects learning through collaboration
o. The history of a team working together influences learning during practice
p. Learning during practice is partially implicit
q. Reflection on practice is a major process during learning
r. Participating in practice has a better learning outcome than observing practice by others
s. Every professional facilitates others' learning during practice
t. Demonstrating learning behavior affects facilitators' behavior
u. Demonstrating facilitative behavior affects learners' behavior
v. During collaboration, new knowledge can be created (besides circulating knowledge between professionals)

Some statements align with well-known learning theories such as socio-cognitive theory, which stresses the importance of role-models (Bandura 2001) (e.g. "demonstrating learning behavior affects facilitators' behavior"). Other statements were more experience-based, proposed by the stakeholders, such as "being a facilitator for others can be learned". Models of workplace learning, such as the one proposed by Tynjälä (Tynjälä 2013) suggest that prerequisites for WPL may be clustered under the headings "learner factors" and "learning contexts". Learner factors were derived from the idea that motivation and experience are important for learning (Chisholm et al. 2009; Järvelä and Niemivirta 1999). From the work of Illeris (Illeris 2011), it is well known that how the work is organized and the relations at the workplace are important with respect to the affordances for learning a workplace provides. Therefore, we developed statements with respect to the organization of the workplace (e.g. whether responsibility is shared), and statements about interpersonal aspects of the workplace that may affect learning. Outcomes of learning were not covered extensively in our statements but were derived through axial – and selective coding of the data. Learning processes, clustered under the heading "how does learning occur?," were informed by learning theories, such as the theory on reflective practice (Mezirow 1997; Bleakley 2006). We saw reflection as an interactive and interactional process (Bleakley 2006). Overall, we adopted a focus on social learning (theories) in our review, even though the wordings of some statements in our framework appear to reflect an individualistic learning approach.

Search strategy

Following several scoping searches, five electronic databases (Pubmed, ERIC, ProQuest, Embase and CINAHL) were searched for relevant published and unpublished literature. These databases were chosen to span literature on health sciences and education and to be as comprehensive as possible when considered together. Search syntaxes were informed by the research questions and not solely by initially derived learning theories, as it was not clear at that stage of the review process whether all WPL aspects would be covered by the learning theories. Search syntaxes were devised in collaboration with a librarian. Syntax was initially developed and piloted in Pubmed before being modified to fit the requirements of the other databases, and combined synonyms of a combination of relevant components: learning, collaboration and primary healthcare. Since the purpose of the review was to consider WPL, we limited the search to papers published after January 1990. This was based on our initial scoping searches, which showed that most of the literature on WPL started from the nineties. To reduce the number of irrelevant references, the additional filters "human" and "language" (English, French, German, Dutch) were used for CINAHL and Embase. For the same reason, additional publication filters ("article," "article in press," "conference paper," "conference review" and "short survey") were used for Embase. ProQuest was used to search gray literature. Appendix 1 contains full details of the search syntaxes used in this review.

Endnote X7 was used to store all identified references.

Screening and selection

To achieve maximum reliability, a team meeting (PP, FM, EDG and LM) was first held to clarify the in- and exclusion criteria, jointly practice the abstract selection and discuss screening and selection procedures. Screening and selection was then performed in pairs (PP/FM and EDG/LM). Each pair screened the titles and abstracts of half of the identified citations. The two reviewers of each pair independently evaluated the retrieved citations to determine their relevance to the aims of the review. Paper selection was done in two stages: in the first stage, only the titles and/or abstracts were considered. Potentially eligible papers were obtained in full text and re-screened against inclusion and exclusion criteria in the second stage. At each stage, disagreements were discussed in pairs until obtaining agreement, with an additional researcher conducted where consensus could not be found.

Studies were included if they: (a) clearly described the learning processes of healthcare professionals in primary care settings; and (b) contained sufficient information to determine the content or processes by which learning took place and/or was assessed. With respect to criterion a), data were considered if they were reported either in the method section (e.g. intervention study) or in the results section (e.g. interview study on experiences and beliefs towards WPL).

Studies were excluded if: (a) they exclusively described classroom-based education; (b) the learning context and

Table 1. Bibliographic sources of included citations.

Database	Citations found (*n*)	Duplicates (*n*)	New citations (*n*)
Initial Pubmed search	3744		3744
Adapted Pubmed search based on ERIC search	4788	3744	1044
ERIC and additional ProQuest databases (20)	844	128	716
Embase	879	21	858
CINAHL	603	35	568
	10,858	**3928**	**6930**

processes were insufficiently described; (c) the study population consisted solely of undergraduate and graduate students or hospital healthcare professionals; (d) they were written in languages other than English, French, German or Dutch; and/or (e) they were reported as dissertations or books if they were not electronically available'.

Analytical procedure[1]

Relevant study data (e.g. study design, publication year, country) were extracted and tabulated using Microsoft Excel. Data were then coded, extracted and analyzed in accordance with their relevance to the review questions. To aid this, a code tree was first created using the initially formulated statements (see Box 1) as nodes. A team meeting (PP, FM, EDG, LM) was held to discuss a pilot coding of four papers and fine-tune the coding procedure, following which data coding and extraction then took place in pairs (PP/LM and FM/EDG). Each member of each pair independently read and re-read half of the included papers and coded text fragments within the results or discussion section of the paper, provided that they were potentially relevant to one or more of the statements. These were discussed within each pair, and the resulting data were imported into NVivo 11. Next, data pertaining to each statement were examined. This phase was again executed in pairs: PP/FM and EDG/LM. Each pair discussed and analyzed half of the data pertaining to the statements. C-M-O configurations were identified as follows: pairs interpreted which sections of the data functioned as context or a mechanism for a particular outcome within a paper. The duos checked each others' interpretations of the data and discussed differences. Next, comparisons between different contexts and underlying mechanisms were made, and statements were categorized in acccordance with the review questions after careful discussion within the research group ("Who": statement (a)–(f), "When": statement (g)–(o), "How": statement (p)–(u), "What": statement (v)). Analysis was facilitated through regular team meetings, during which progress was discussed and reflected upon.

Quality appraisal

Realist reviews seek to explain complex interventions by drawing together evidence from varied sources to illuminate the richer picture (Pawson et al. 2005). This includes various sources of evidence contributing to the underlying theories being explored and does not rank or exclude studies according to their research design (Pawson et al. 2005; Hewitt et al. 2015). Pawson argues that studies should be assessed against the criteria of "*relevance*" (whether the study addressed the theories considered) and "*rigor*" (whether a particular interference drawn by the original researcher has sufficient weight to make a methodologically credible contribution to the test of a particular intervention). As such, both relevance and rigor are not absolute criteria but dimensions of fitness of the data for the purpose of the review (Pawson et al. 2005). In light of this, we did not use conventional approaches to quality appraisal but instead scrutinized the relevance and rigor of papers prior to inclusion in this review.

Results

In total, the search strategy identified 10,858 citations, resulting in 6930 citations after de-duplication (Table 1 and Figure 1). Of these, 42 papers were selected for inclusion in this review, the details of which are summarized in Supplementary Table.

General characteristics of the included studies

Supplementary Table provides a summary of the 42 included papers. Of these, 23 (55%) came from Europe; nine (21%) from the USA; four from Canada; three from Australia and one each from New Zealand, Mexico and Brazil. The studies varied in design. Twenty-eight studies used a qualitative research design (66%), four studies concerned a project description and qualitative evaluation (9%), four concerned a project description and quantitative evaluation (9%), three studies concerned a project description with both quantitative and qualitative evaluation (7%), one study concerned a project and case exemplar description, one study used action research, one study used both a quantitative and a qualitative research design. Thirty-two studies (76%) reported on interprofessional learning, whereas 10 studies (24%) described intraprofessional learning through collaboration. Seven papers referred to communities of practices as a learning theory and two papers referred to sociocognitive learning theories, while the rest of the papers were not explicit about a learning theory but referred to general concepts such as workplace learning ($n = 3$) or described what activities were performed without mentioning a learning theory.

Main results

Results are presented according to the research questions; throughout, figures are used to illustrate an overview of all C-M-O configurations identified from the included papers.[2] Additional examples of C-M-O configurations from individual papers are presented in Appendix 2.

Who learns during WPL through collaboration in primary healthcare?

Different perspectives were represented in the included studies, and therefore this section presents the perspectives of learners and facilitators[3] separately for clarity.

Perspective of the learners

During WPL in practice, any professional can learn from others, both within the same profession (C) and between

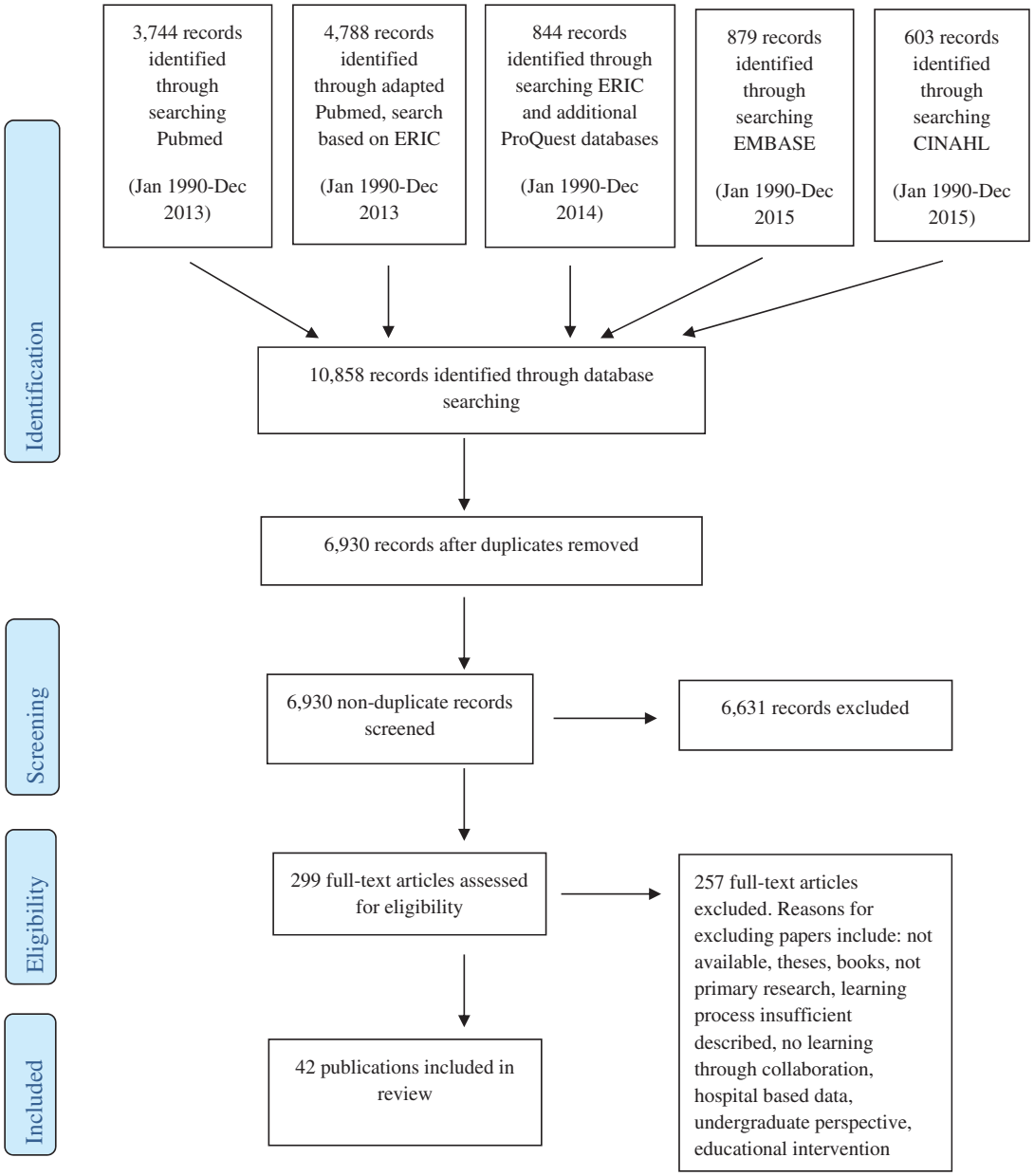

Figure 1. Flow chart of included studies.

different professions (C). This was evident across all 42 included studies. Ten papers reported on WPL between members of the same profession, of which five (Jones 2003; Beam et al. 2010; Halcomb et al. 2012, Pype et al. 2014, 2015) described the learning of nurses (Beam et al. 2010) and five (Marshall 1998; MacFarlane et al. 2006; Shershneva et al. 2006; Sullivan et al. 2007; Nilsen 2011) described learning taking place between specialists and GPs (Shershneva et al. 2006). The remaining 32 included papers reported on WPL during interprofessional collaboration, with a broad spectrum of participants: GPs, nurses, midwives, health and social care practitioners, dentists, pharmacists, occupational therapists, physiotherapists, community health workers, receptionists, practice managers and faculty members.

Professionals learn from those who are sufficiently different from themselves (C) to be able to offer additional knowledge and expertise (Siriwardena et al. 2008; Stamp et al. 2008; Taber et al. 2008; Collins and McCray 2012), yet to whom they are still similar enough (C) to relate (Brown et al. 2011). Professionals' learning appeared to be influenced by different mechanisms (M), namely having confidence (Stenner and Courtenay 2008) and recognizing others as experts in their own right (Marshall 1998; Allan et al. 2005; Sullivan et al. 2007; Bunniss and Kelly 2008; Stenner and Courtenay 2008; Collins and McCray 2012, Halcomb et al. 2012; Hoare et al. 2013); being open about uncertainties (Rowlands et al. 2001; Mann et al. 2011); and perceiving partnerships as mutually satisfying (Allan et al. 2005; Halcomb et al. 2012). Conversely, if others are not seen as experts and there is limited communication or trust in others' expertise (Shershneva et al. 2006; O'Brien et al. 2008; van der Dam et al. 2013), learning may be impeded (O). The feeling that some viewpoints supersede others (M) may also impede learning (O) within a traditional hierarchical context (C) (Bunniss and Kelly 2008; van der Dam et al. 2013).

Motivation to learn as an individual or within a group is a necessary mechanism (M) (Bunniss and Kelly 2008; Guirguis-Younger et al. 2009; Mann et al. 2011; Humphreys et al. 2012; Morton 2012; van der Dam et al. 2013; Pype et al. 2014) to enhance learning (O) (Rowlands et al. 2001;

Leslie et al. 2003; Guirguis-Younger 2009; Collins and McCray 2012; Randstrom et al. 2014), which contributes to better service delivery (Bunniss and Kelly 2008; Guirguis-Younger et al. 2009; Morton 2012; Randstrom et al. 2014). Awareness of practice problems that require solving and belief in the usefulness of certain learning activities contribute to willingness to learn (M) (Bunniss and Kelly 2008; Mann et al. 2011; Morton 2012; van der Dam 2013). Motivation helps professionals to overcome resistance, build confidence, accept feedback and become more proactive with respect to asking questions and seeking feedback (Mann et al. 2011; Morton 2012, van der Dam et al. 2013; Coleman et al. 2014). However, willingness to learn is not sufficient to motivate learners to achieve all of their learning goals; learning goals must also be closely aligned with the context of the learner (C) (Marshall 1998; Sullivan 2007; Humphreys et al. 2012; van der Dam et al. 2013).

People who become aware of their own learning needs (C) (Jones 2003; Shershneva et al. 2006), others' learning needs or the learning needs of the group (C) (Rowlands et al. 2001; Leslie et al. 2003; Allan et al. 2005; Shershneva et al. 2006; Burgess and Sawchenko 2011) are more motivated to learn (Rowlans et al. 2001; Bunniss and Kelly 2008; Nilsen 2011; van der Dam et al. 2013). Awareness of one's learning needs helps professionals to prioritize and to control one's own learning agenda (Marshall 1998; Allan et al. 2005; Mann et al. 2011; Hoare et al. 2013). Professionals (e.g. collaborating GPs, nurses, practice managers; pharmacists) learn values, as well as new roles (O), by actually performing tasks (Moore 2007; Humphreys et al. 2012), particularly those which are closely connected to their daily practice (C) (Moore 2007). However, the learning process is hampered (O) when professionals are not aware of others' learning needs (C) (Marshall 1998; Shershneva et al. 2006). Learning ends when needs are sufficiently met (Shershneva et al. 2006). We found insufficient data about the number of years in practice influencing professionals' WPL (Figure 2).

Perspective of the facilitators

Becoming a facilitator for others' learning is, in principle, achievable but does not happen all by itself. Several studies reported on interventions whereby professionals became facilitators for others' learning, namely specialized palliative care nurses facilitating GPs' learning (Pype et al. 2014), specialists facilitating GPs' and nurses' learning (MacFarlane et al. 2006; Shershneva et al. 2006), and nurse specialists facilitating each other's learning (Leslie et al. 2003). Facilitating another's learning is a competence which can be learned over time but which requires continuous reflective practice (Beam et al. 2010; Walters et al. 2011; Hoare et al. 2013), learning by doing (Beam et al. 2010) and, occasionally, additional formal learning as well (Beam et al. 2010). Becoming a facilitator can take place: within the context of a learning community (C) with space to exchange ideas and improve skills (Coleman et al. 2014); in an action

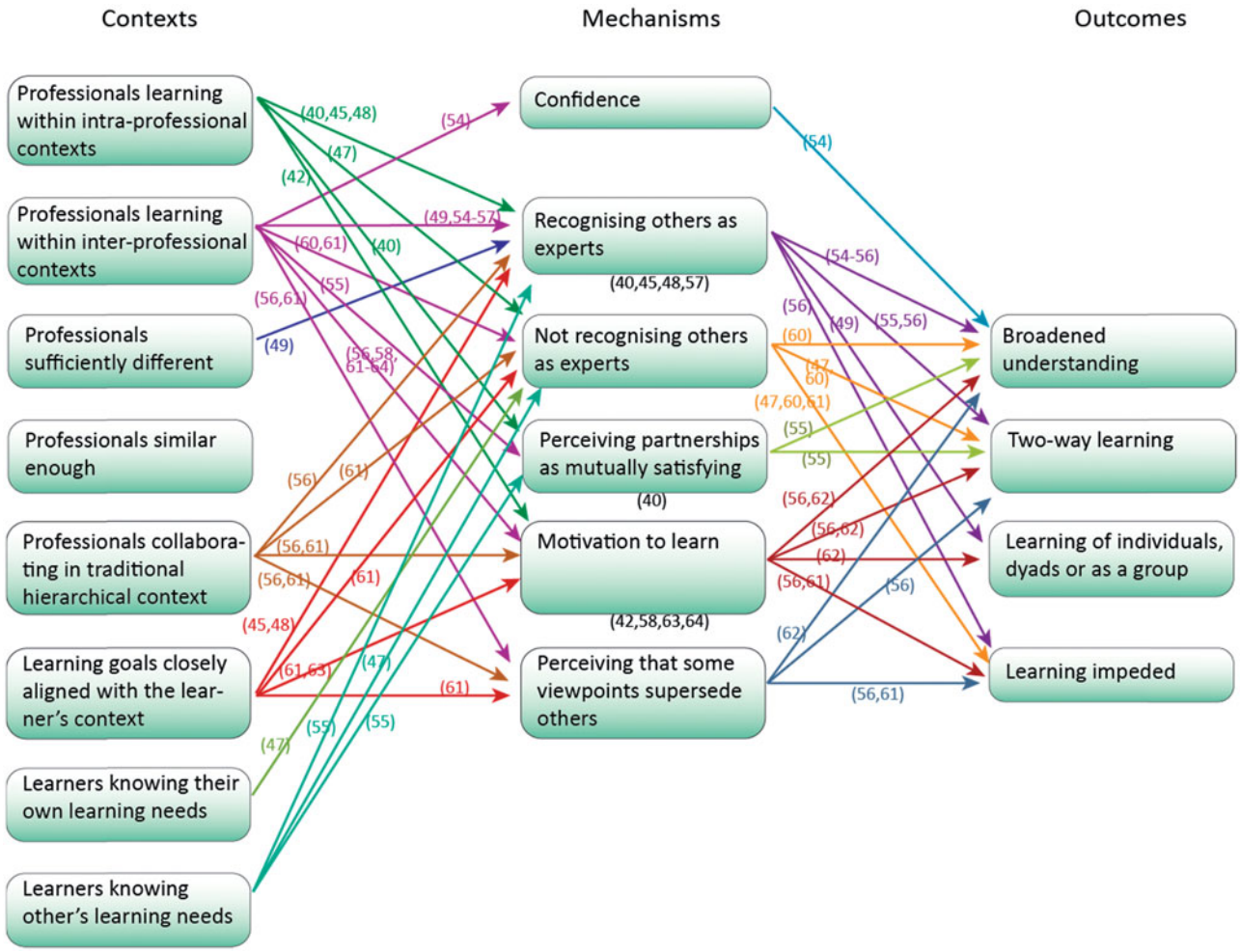

Figure 2. C-M-O for "Who learns" – perspective of the learner.

learning group (C) with other trainee facilitators (Leslie et al. 2003); by observing more experienced colleagues (C), and talking through and deliberating cases with colleagues (C) (Collins and McCray 2012) and/or by being nurtured and guided by supervising leaders (C) (Burgess and Sawchenko 2011). Becoming a facilitator changes self-perceptions (O) (Walters et al. 2011), increases self-confidence (M and O) in the role and stimulates further growth as a facilitator (O) (Arora et al. 2010, 2011; Hoare et al. 2013). Additionally, becoming more mindful of thought processes can result in long-term changes in one's own clinical practice (O) (Arora et al. 2011; Walters et al. 2011).

Group members' and facilitators' professional expertise or lack thereof, influences the effectiveness of the facilitator, both in a positive and in a negative way (Stenner and Courtenay 2008; Guirguis-Younger et al. 2009; Walters et al. 2011). This influences others' learning in different ways. A novice learner benefits from the support of an experienced clinician and from being exposed to practice under the direction and tutorship of experienced professionals (C) (O'Brien et al. 2008; Stenner and Courtenay 2008; Guirguis-Younger et al. 2009; Walters et al. 2011). The professional expertise of the facilitator needs to be contextual (Sullivan et al. 2007; Walters et al. 2011), that is, they must be experienced in treating a specific group of patients (Stenner and Courtenay 2008; Guirguis-Younger et al. 2009). In addition, it must be viewed as being relevant to the context of the learner (M) (Marshall 1998). An experienced facilitator is seen as the source for answers to questions and is addressed as such (O'Brien et al. 2008). Furthermore, the facilitator needs to be aware of his own expertise (C) (Hoare, Mills and Francis 2013). However, being seen as too much as an expert, may hinder the learning process because learners might be reluctant to ask questions (M) (Pype et al. 2014). The support of an experienced facilitator results in continuous learning and the development of clinical and diagnostic skills (O) (Stenner and Courtenay 2008).

The professional role one adopts in a team influences the development and expression of facilitating competencies. A professional who adopts the facilitator role (C) uses their knowledge to advise others (Arora et al. 2010; Pype et al. 2014, 2015), sometimes implicitly by vocalizing their own clinical reasoning (Walters et al. 2011; Pype et al. 2015) or by thinking out loud (Walters et al. 2011; Pype et al. 2014, 2015). This encourages other team members to get involved in the reflective process, resulting in learning (O). On the contrary, a professional who adopts the role of the "clinical expert" by contributing expertise in direct patient care to the team may find it more difficult to assimilate knowledge and competencies in facilitation if this is not seen as part of their role (M) (Pype et al. 2015) (Figure 3).

When does WPL take place?

Broadly, data suggested that both organizational and social factors influence WPL. These are discussed below.

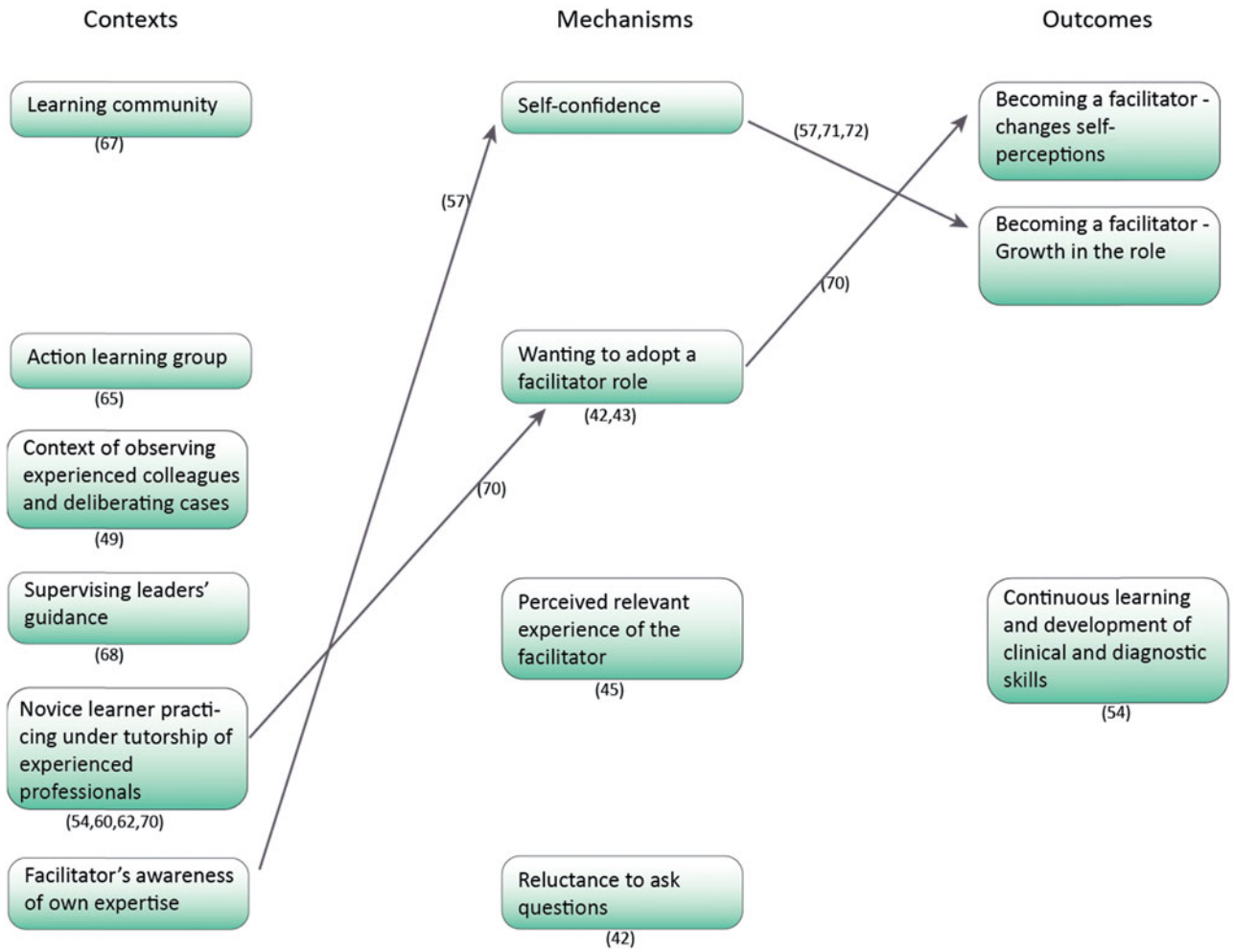

Figure 3. C-M-O for "Who learns" – Perspective of the facilitators.

Organizational factors

Learning during practice may be influenced by the way the workplace/work environment is equipped and laid-out (Wilcock et al. 2002; Bunniss and Kelly 2008; O'Brien et al. 2008; Siriwardena et al. 2008; Stenner and Courtenay 2008; Arora et al. 2010; Randstrom et al. 2014). For example, workplace artifacts (C), shared aims (C) and marked time (C) all influence WPL (Wilcock et al. 2002; Allan et al. 2005; Bunniss and Kelly 2008; O'Brien et al. 2008; Orzano et al. 2008; Siriwardena et al. 2008; Arora et al. 2010; Mann et al. 2011; Nilsen 2011; Hjalmarson and Strandmark 2012; van der Dam et al. 2013).

Workplace artifacts are diverse tools (e.g. reflective logs, (flow-) charts, daily care reports, portfolios, protocols, and technological tools) which make learning more shared, contextualized, personalized and patient-centered (O) (Wilcock et al. 2002; Bunniss and Kelly 2008; O'Brien et al. 2008; Siriwardena et al. 2008; Stenner and Courtenay 2008; Nilsen 2011). Artifacts such as protocols (C) can mandate conversations between nurses, GPs and multiple professionals about care (Wilcock et al. 2002; Orzano et al. 2008; Brown et al. 2011; Stenner and Courtenay 2008). The influence of technological tools on learning only occurs in a context where learners have adequate skills (Stenner and Courtenay 2008; Arora et al. 2010; Hoare et al. 2013; Coleman et al. 2014) and recognize the added value (M) (Marshall 1998; Wilcock et al. 2002; Sullivan et al. 2007). However, even when these conditions are met, change does not occur automatically (although it should be noted that the majority of these studies studied GPs only) (Allan et al. 2005; Sullivan et al. 2007; Orzano et al. 2008; Mann et al. 2011; van der Dam et al. 2013).

Less tangible aspects of the workplace, such as a shared aim or responsibility (C), also facilitate learning. For example, a feeling of shared responsibility for patient care (Bunniss and Kelly 2008) triggers professionals, whether they are of the same discipline or differing disciplines, to share their knowledge and expertise with others (M) (Jones 2003; Bunniss and Kelly 2008). Within the context of a safe learning environment, with shared values and a belief in patient-centered care, recognition of the value of sharing knowledge (M) is an underlying mechanism which facilitates learning (Jones 2003; Bunniss and Kelly 2008). Interprofessional learning in itself may also be a shared aim (C) (Bunniss and Kelly 2008) which can enhance the whole team's care quality (Sullivan 2007) and can trigger continuous team learning dynamics (O) (Leslie et al. 2003).

In organizations, both planned opportunities (e.g. structured reflection time) and unplanned learning opportunities (C) lead to WPL (Campion-Smith and Head 2002; Wilcock et al. 2002; Shershneva et al. 2006; Guirguis-Younger et al. 2009; Stenner and Courtenay 2008; Burgess and Sawchenko 2011; Morton 2012, van der Dam et al. 2013). However, unplanned activities seem to be more motivational (Marshall 1998; MacFarlane et al. 2006; Bunniss and Kelly 2008; Plumb and Jolemore 2008; Morton 2012; Hoare et al. 2013; Taber et al. 2008; Pype et al. 2014). For example, seeking out on-the-spot opportunities for peer feedback leads to greater responsiveness to the needs of the moment and facilitates two-way learning (O) (Marshall 1998; Bunniss and Kelly 2008; Guirguis-Younger et al. 2009; Morton 2012; van der Dam et al. 2013). Professionals value and appreciate formal opportunities to learn from one another, such as shared visits (Sullivan et al. 2007), visits to each other's workplace (Marshall 1998) or comparative feedback (O'Brien et al. 2008), but do not prioritize these opportunities over routine clinical activities.

Irrespective of professional discipline, standardizing and regulating learning dynamics is not recommended (Bunniss and Kelly 2008; Morton 2012; van der Dam et al. 2013). However, unplanned learning appears to happen less frequently in situations characterized by time constraints and high workloads (C) Wilcock et al. 2002; (Bunniss and Kelly 2008; Liveng 2010). High workload affects WPL (O) directly (by limiting the time available for time teaching–learning interactions (Pype et al. 2014), and indirectly (by impacting on professionals' ability and willingness to learn (M) (Wilcock et al. 2002; Liveng 2010; Hoare et al. 2013; van der Dam et al. 2013)). Reflection on practice experience is time-consuming and even when convinced of the need to learn through reflection, engagement in reflection can be hindered by time constraints (van der Dam et al. 2013) and clinical responsibilities (Marshall 1998). Suggested solutions are protected time for team reflection and taking a break from daily practice in order to engage with educational opportunities, such as interprofessional discussions or personal reflection (Wilcock et al. 2002; Liveng 2010; Hoare 2013).

In the workplace, primary healthcare professionals encounter cases with a high level of complexity at a patient level (such as cultural diversity (Morton 2012)), a contextual level (practices for which resources are scarce (Guirguis-Younger et al. 2009; Morton 2012)) and/or a professional level (Guirguis-Younger et al. 2009; Morton 2012). All of these complexities provide opportunities for learning. Difficult case management occurs mostly in multidisciplinary and interprofessional collaborations (C), for example, case discussions in multidisciplinary teams (Stenner and Courtenay 2008; Liveng 2010; Mann et al. 2011; van der Dam et al. 2013), joint patient visits with different professionals (Sullivan et al. 2007), joint interprofessional teleconsultations (MacFarlane et al. 2006). However, intra-professional case discussions, for example GP-specialist videoconferencing, also provide opportunities for learning. Besides complex cases, other opportunities for WPL are situations in which patients' care needs lead to consultation. The clinical problems at stake trigger primary healthcare professionals to seek answers as a team (M) (Bunniss and Kelly 2008), through purposeful engagement with other professionals who have the necessary knowledge and expertise (Guirguis-Younger et al. 2009). This enables them to learn from each other about the specific patient problems at hand. Discussion of patient cases are seen as reciprocal teaching-learning transactions (Shershneva et al. 2006; Nilsen 2011; Carr et al. 2012). Learning that results from interactions during (difficult) case management is motivated by both professional development outcomes and patient-related outcomes (O) (Rowlands et al. 2001; Orzano et al. 2008; Arora et al. 2010; Beam et al. 2010; Mann et al. 2011; van der Dam et al. 2013; Pype et al. 2014). Important driving mechanisms for learning are the desire to provide high-quality patient care (M) (Sullivan et al. 2007; Stenner and Courtenay 2008; Guirguis-Younger et al. 2009; Mann et al. 2011; Nilsen 2011); seeking information on professional decisions (M) (Rowlands et al. 2001); seeking

guidance on professional development (M) (Beam et al. 2010); and an eagerness to learn (M) (MacFarlane et al. 2006; Bunniss and Kelly 2008; van der Dam et al. 2013) or teach (M) (Arora et al. 2010; Pype et al. 2014). Nevertheless, in a study on GPs and specialists, learning was negatively affected (O) by facilitators' reluctance to teach (M) in the presence of patients (C) (MacFarlane et al. 2006) (Figure 4).

Social factors

The social environment, such as the composion of teams and the nature of relationships at work, influences learning. Strong relationships between healthcare professionals (C) can facilitate learning, because practitioners know one another well (Bunniss and Kelly 2008), feel equivalent (Rowlands et al. 2001; Shershneva et al. 2006; Bunniss and Kelly 2008, Stamp et al. 2008; Mann et al. 2011), trust each other (Leslie et al. 2003; Sullivan et al. 2007; Stamp et al. 2008; Stenner and Courtenay 2008; Guirguis-Younger et al. 2009; Mann et al. 2011), develop relational awareness (in teams) (Shershneva et al. 2006; Bunniss and Kelly 2008; O'Brien et al. 2008; Stenner and Courtenay 2008), keep lines of (constructive critical) communication open (Marshall 1998; Shershneva et al. 2006; Bunniss and Kelly 2008; Stenner and Courtenay 2008; O'Brien et al. 2008; Mann et al. 2011) and have a willingness to learn (Hoare et al. 2013). In interprofessional settings, good relationships contribute to a safe environment which supports learning, particularly when collaborating on complex cases (Rowlands et al. 2001; Jones 2003; Shershneva et al. 2006; Moore 2007; Bunniss and Kelly 2008; Stamp et al. 2008; Stenner and Courtenay 2008; Liveng 2010; Burgess and Sawchenko 2011; Mann et al. 2011). Both past positive and past negative experiences of working together in teams (C) or in dyads have an effect on learning during practice. Underlying mechanisms are the intrinsic motivation, anticipation and comfort in knowledge-seeking (M) (Wilcock et al. 2002; Allan et al. 2005; Shershneva et al. 2006; Bunniss and Kelly 2008; Orzano et al. 2008; Mann et al. 2011; van der Dam et al. 2013) or the lack of self-direction or considering certain learning approaches to be unsuitable (M) (Allan et al. 2005; Bunniss and Kelly 2008; Collins and McCray 2012; van der Dam et al. 2013). They result in shared (and mostly informal) learning (O) (Wilcock et al. 2002; Allan et al. 2005; Shershneva et al. 2006; Bunniss and Kelly 2008; Orzano et al. 2008; Mann et al. 2011; van der Dam et al. 2013) or learning being hindered (O) (Allan et al. 2005; Shershneva et al. 2006; Bunniss and Kelly 2008; Mann et al. 2011; van der Dam et al. 2013).

Hierarchy between professionals (C) also influences the learning process (Marshall 1998; O'Brien et al. 2008; Mann et al. 2011; Kousgaard and Thorsen 2012), for example, in locations where expert palliative care nurses wish to facilitate general practitioners' learning (Pype et al. 2015). The learning process can be influenced negatively when a physician emphasizes or reinforces a perceived hierarchy by adopting a lecture-like style when providing information to

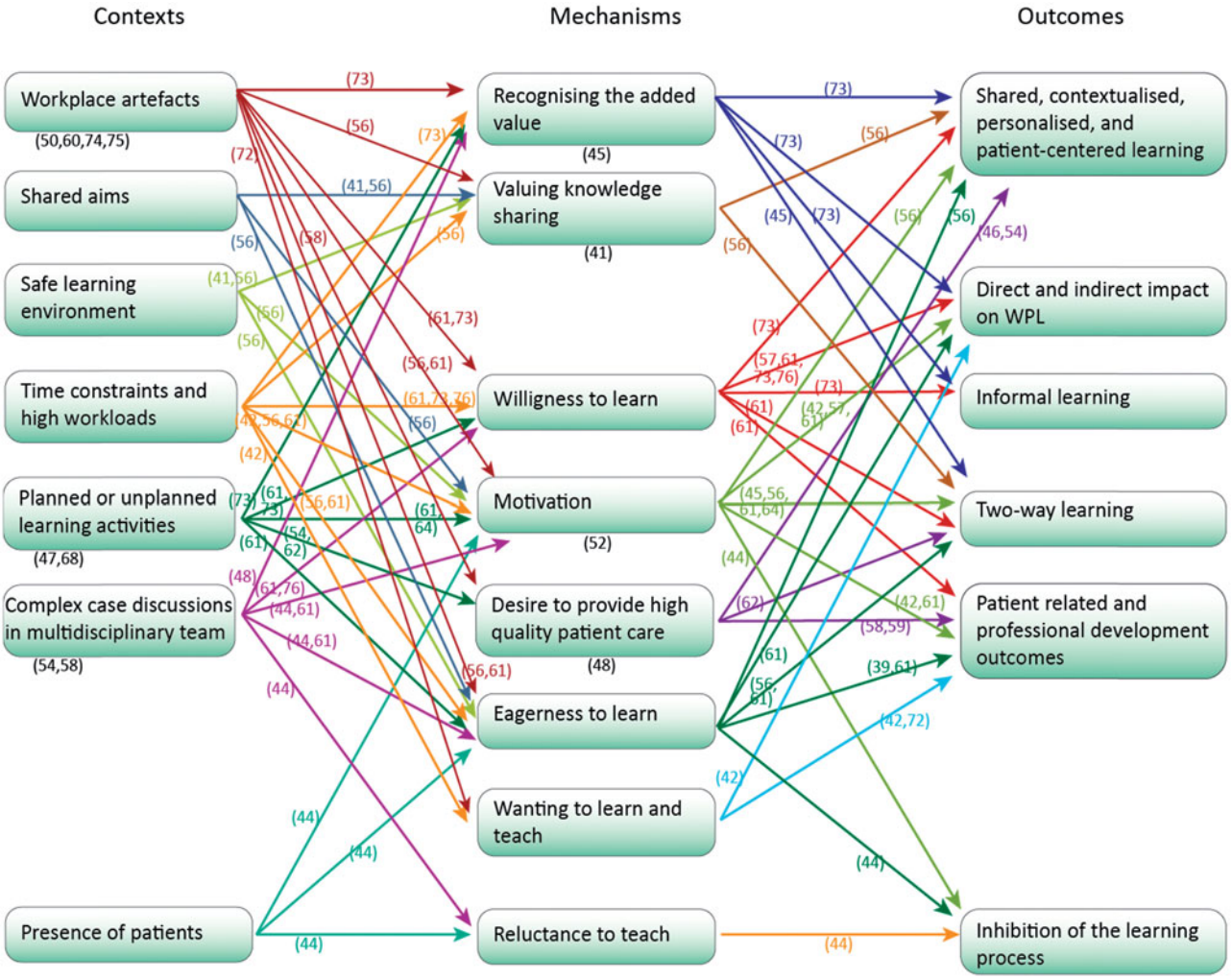

Figure 4. C-M-O for "When" – Organizational factors.

advanced practice nurses, resulting in nurses' decreased motivation to learn (M) (O'Brien et al. 2008). However, a study about a medical specialist, acting as facilitator for learning in general practice, showed that facilitators could help to overcome barriers to learning (O) associated with hierarchy when the specialist is able to communicate with GPs while "pragmatically relating expert knowledge to clinical experience" (Marshall 1998; Kousgaard and Thorsen 2012). Furthermore, getting to know each other in an informal and different context (e.g. a team building weekend) makes it possible to learn from each other afterwards without perceived barriers of authority (O) (Bunniss and Kelly 2008) (Figure 5).

How does this learning occur?

Learning takes place via a number of channels, including interactions with other professionals and through others' facilitative behaviors (including discussions, explanations, modeling and facilitating). These are each discussed in turn.

Interactions with other professionals

Learning often occurs without an explicit intention to learn. Sometimes learning occurs but is not explicitly discussed e.g. specialists who explain something to a generalist (C) do not always want their teaching effort noticed (Shershneva et al. 2006). Sometimes learning happens unconsciously and implicitly between team members while working together (C) (Bunniss and Kelly 2008). However, even though professionals in primary healthcare engage in implicit learning, not all learning is unintentional. The main driving mechanism for implicit learning is the wish to provide high-quality patient care (M) (Bunniss and Kelly 2008; Liveng 2010; Collins and McCray 2012; Kousgaard and Thorsen 2012) by sharing and discussing tasks (Pype et al. 2014). Resulting outcomes are collective clinical learning (O) (Bunniss and Kelly 2008) or identification of knowledge gaps through comparing clinical practice and seeking peer data to inform self assessment (O) (Mann et al. 2011).

A study of interprofessional learning in GP practices, pharmacies and dental practices found that performing an action (C) is very important for the learning outcome; merely observing someone else doing it or getting an explanation on how to do it seems less efficient (Bunniss and Kelly 2008). However, studies carried out in interprofessional settings (GPs and social workers respectively) showed that observation and practice visits of colleagues (C) could be a first step in the learning process (Collins and McCray 2012; Coleman et al. 2014). The intention and willingness to pass on tacit knowledge (M) is a driving mechanism to allow colleagues to learn by experience (Taber et al. 2008). Resulting learning outcomes are situated at the level of performing patient care tasks (O) (Bunniss and Kelly 2008), professional development (O) (Taber et al. 2008) and practice organization (O) (Collins and McCray 2012).

Within the context of experiential learning, reflection on practice (C) is an important part of the learning process. This reflection can be spontaneous or triggered (Beam et al. 2010; Mann et al. 2011; Pype et al. 2014), individual or guided or collective (Guirguis-Younger et al. 2009; Nilsen 2011; Shaw et al. 2012; van der Dam et al. 2013) and can be related to the task at hand (O'Brien et al. 2008) or to one's professional role and identity (van der Dam et al. 2013). Driving mechanisms for reflection are the motivation (M) to continue doing it after experiencing the positive effects (van der Dam et al. 2013), aiming for quality improvement (M) (Shaw et al. 2012) or explicitly wanting to learn (M) (e.g. primary healthcare professionals learning from local community health workers in a transcultural context) (Morton 2012) (Figure 6).

Others' facilitative behavior

During daily practice activities, any professional can trigger the learning of another professional. This reciprocal process

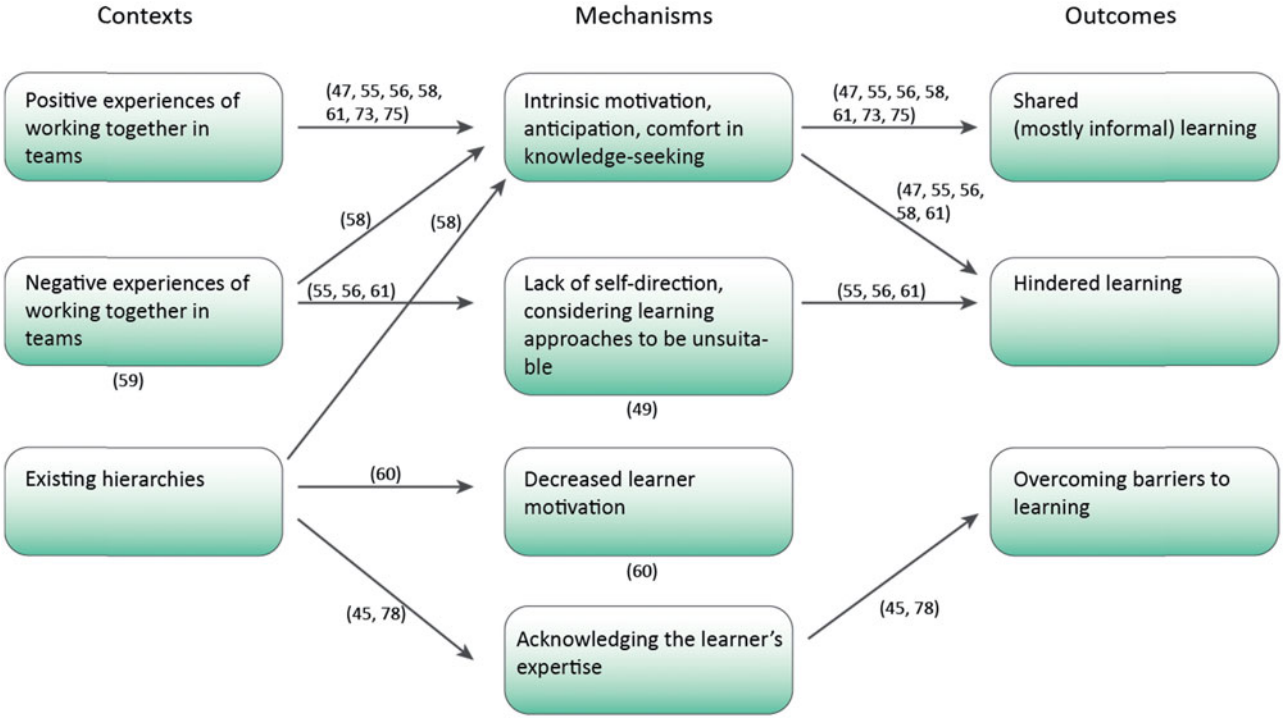

Figure 5. C-M-O for "When" – Social factors.

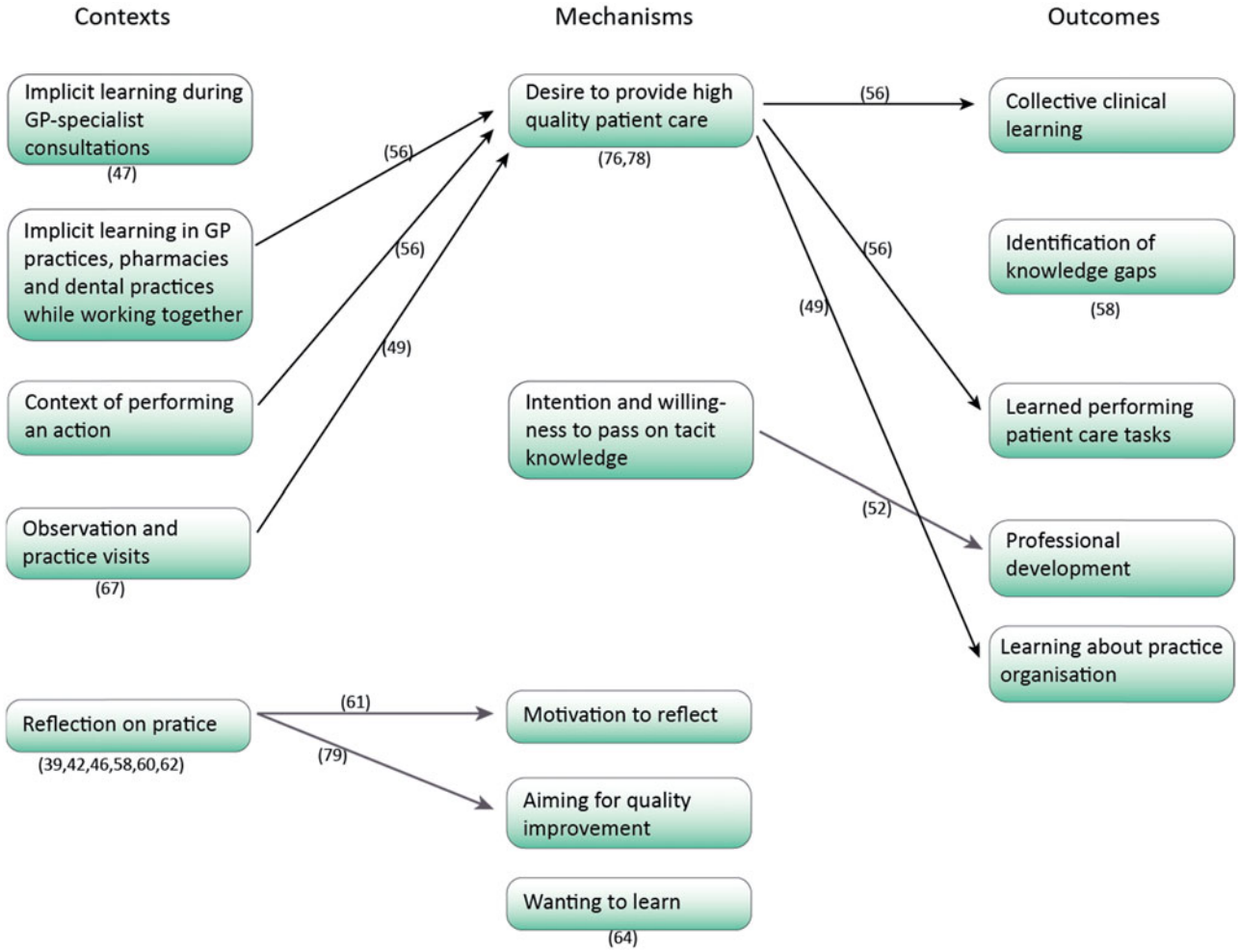

Figure 6. C-M-O for "How" – Interactions with other professionals.

is also seen in the influence learners have on their facilitators, and vice versa. When learners ask questions in an open and positive manner, request feedback and bring up-to-date knowledge into practice (C) (Marshall 1998; Shershneva et al. 2006; Walters et al. 2011; de Araujo et al. 2013), the facilitator learns to recognize opportunities to facilitate others' learning (O) (Halcomb et al. 2012; Pype et al. 2014), which in turn triggers teaching and facilitative behavior and challenges them to ensure that their knowledge base is up-to-date (O) (Halcomb et al. 2012). The learner's actions motivate the facilitator (M) to continue teaching and facilitating in different ways (Hoare et al. 2013; Pype et al. 2014). Regardless of the triggering effect of the learner's learning behavior, some facilitators try to share their knowledge and give advice without being prompted, e.g. in a study with specialized palliative care nurses giving advice to GPs (Pype et al. 2014, 2015). Professionals who exhibit facilitative behavior can also affect the learning behavior of others (Orzano et al. 2008; Beam et al. 2010; van der Dam et al. 2013). Facilitators may guide joint reflection but should do so cautiously and implicitly (C) so as not to harm the interprofessional relationship as learning is secondary to maintaining good collaborative relationships (M) (Pype et al. 2014).

Reflective learning, implicit learning through participation in practice, modeling and reciprocal learning were all identified in the included studies on primary healthcare professionals. In interprofessional contexts, more studies focused on learning through participation and reciprocal learning, whereas in intraprofessional contexts more studies were done about reflection and modeling through facilitators. Studies examining the context in which GPs learn mostly focused upon learning through participation, compared with studies about the learning of primary healthcare nurses, which focused more on reflection. In both disciplines, modeling through facilitators was seen (Figure 7).

What is being learned?

Outcomes of WPL differed across the 42 included studies, with eight focused specifically on WPL at the team or organization level (Wilcock et al. 2002; Sullivan et al. 2007; Bunniss and Kelly 2008; Orzano et al. 2008; Brown et al. 2011; Burgess and Sawchenko 2011; Coleman et al. 2014; Randstrom et al. 2014). As such, studies primarily reported data pertaining to professionals' individual learning outcomes, with a minority focusing on what was considered relevant for the team.

During collaboration and through interaction with each other, professionals acquire and contextualize knowledge (Rowlands et al. 2001; Wilcock et al. 2002; Sullivan et al. 2007; Bunniss and Kelly 2008; Orzano et al. 2008; Stamp et al. 2008; Siriwardena et al. 2008; Guirguis-Younger et al. 2009; Beam et al. 2010). In addition, new attitudes (Beam et al. 2010; Hjalmarson and Strandmark 2012), increased self-awareness (Jones 2003; Bunniss and Kelly 2008,

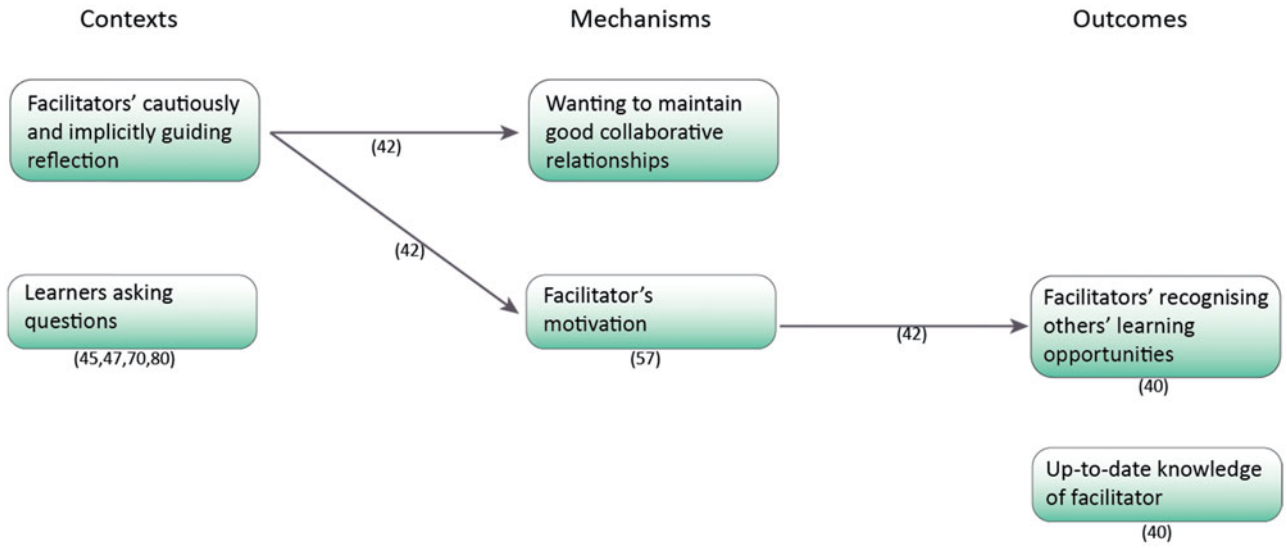

Figure 7. C-M-O for "How": Others' facilitative behavior.

Humphreys et al. van der Dam 2013) and new values and roles may develop (Moore 2007). Professionals develop skills (Moore 2007; Beam 2010; van der Dam 2013) and behavior (Orzano et al. 2008; Hjalmarson and Strandmark 2012; van der Dam et al. 2013) that they did not previously possess. Learning outcomes are a more realistic and relevant view on medicine (Allan et al. 2005; Carr et al. 2012); growth in clinical care competence (Leslie et al. 2003; Bunniss and Kelly 2008); refined coping mechanisms (Burgess and Sawchenko 2011); evolved interprofessional relationships (Allan et al. 2005; Sullivan et al. 2007; Liveng 2010); an impact on the growing learning culture (Allan 2005); and insight and awareness of one's own and others' professional possibilities (Allan 2005; Liveng 2010).

Regular patient care and difficult case management (C) result in diverse learning outcomes, centered on both patient-related and professional development outcomes. They relate to: acquisition of clinical knowledge (Shershneva et al. 2006; Bunniss and Kelly 2008; Stenner and Courtenay 2008; Arora et al. 2010), and a broader understanding of the clinical problem (Rowlands et al. 2001; Stenner and Courtenay 2008; Nilsen 2011); contextualization of generic knowledge (Guirguis-Younger et al. 2009), acquisition of cultural knowledge and cultural proficiency (Morton 2012) creativity in problem solving (Morton 2012; van der Dam et al. 2013); the development of strategies to integrate knowledge into the work setting (Guirguis-Younger et al. 2009); reciprocal learning of each other's skills (Sullivan et al. 2007); development of skills for reflective practice (Mann et al. 2011; van der Dam et al. 2013); improved patient care (Mann et al. 2011); individual professional growth (Beam et al. 2010; Liveng 2010); enhanced patient-centeredness (Carr et al. 2012); changed attitudes and beliefs towards diseases (Carr et al. 2012); and clarification of professional roles.

Learning outcomes are evident not only with respect to independent performance of patient care tasks (Bunniss and Kelly 2008) but also at the level of nonpatient related tasks, such as practice organization or chairing a meeting (Collins and McCray 2012). Additional outcomes may include transmission of tacit knowledge and professional skills (e.g. professional flexibility and creativity in unclear situations) (Taber et al. 2008) and increased insight into one's own and others' personal values and norms (van der Dam et al. 2013). Reflective practice can make it easier for professionals to understand the moral dimensions of care, which can benefit both individual practitioners and the team (van der Dam et al. 2013).

Facilitating the learning of others also results in enjoyment from being an expert (Bunniss and Kelly 2008); role transition from expert to facilitator (van der Dam et al. 2013; Pype et al. 2015); acquisition of clinical or cultural-specific knowledge (Bunniss and Kelly 2008; Stamp et al. 2008; Stenner and Courtenay 2008; Guirguis-Younger et al. 2009; Mann et al. 2011) which can also be a reciprocal dynamic (Allan et al. 2005; Shershneva et al. 2006); and improved self-confidence (Guirguis-Younger et al. 2009). Other outcomes relevant for the team are professional hierarchy being replaced by knowledge hierarchy (Stenner and Courtenay 2008) and acquisition of team building skills (Allan et al. 2005). Demonstrating facilitative behavior may lead to group members' passion for work or learning (Burgess and Sawchenko 2011) or to the realization that one's own judgment on a case needs to be postponed in order to view the problem from different perspectives (van der Dam et al. 2013). This leads to the acquisition, sharing and development of knowledge (Orzano et al. 2008), of ways to communicate guidelines' content (Humphreys et al. 2012), of a more exploratory attitude (van der Dam et al. 2013) and/or of reflection as a skill (Beam et al. 2010).

Discussion

This review aimed to better understand the process of WPL through collaboration in primary healthcare and the conditions influencing such WPL. In this discussion, we first discuss the results of the review. We then reflect on whether our findings fit with theories of social (workplace) learning mentioned in the introduction and compare them with other theoretical frameworks. Finally, we then discuss the strengths and limitations of the review itself and outline gaps in the current evidence base, before concluding by summarizing the key findings of this review.

Who learns during WPL through collaboration in primary healthcare?

In our review, we were interested in WPL across a broad range of primary healthcare professionals. Participants in the included studies were mainly GPs and nurses, working in intraprofessional or interprofessional settings; studies investigating WPL of pharmacists or dentists were underrepresented. Interestingly, we did not find large differences in what would be considered to be successful learning approaches or beneficial aspects of the learning environment for GPs and nurses. What we did find, however, is that learners who are willing to learn, and who are aware of the importance of finding solutions to practice problems and relevance of the subject matter, are strongly motivated to engage in learning. This finding is not surprising, given the prevalence of motivation theories throughout the WPL literature (Illeris 2011; Tynjälä 2013), for example self-determination theory (Kusurkar and Croiset 2015).

What is surprising, however, is that only three of the included studies reported team-level analyzes. Needs and wants, essential for experiential learning from daily practice, are often viewed as something that belongs to an individual learner (Järvelä and Niemivirta 1999) but seems to be equally relevant for understanding WPL at the group level (Chisholm et al. 2009). Unfortunately, given the paucity of team-level data, we were unable to draw conclusions about the influence of motivation of teams; future research is needed to address this gap and shed further light on the process of WPL through collaboration.

In addition to needs and wants, we also identified the importance of being aware of one another's expertise when it comes to WPL through collaboration. This phenomena was mostly observed in papers focused on interprofessional settings, and fits with Transactive Memory Theory, which posits that 'knowing who knows what' is essential for professional practice as it diminishes the need for every professional to have all facts in their own memory (Yuan et al. 2014). As such, communicating each other's expertise in an explicit way may enhance both patient care and interprofessional WPL.

When does this learning take place?

Collectively, data from the included studies indicate that learning takes place when conditions provide opportunities for learning which aligns with the work by Illeris about workplace learning (25). When resources ("artifacts") are available to professionals, they influence WPL. Artifacts include technical resources (such as electronic patient records or technical devices to facilitate video communication between professionals in different locations) and practical resources (such as lay-out of the work environment or days-out). Artifacts act as boundary objects, "that allow connection between different perspectives among communities to achieve a common goal" (Impedovo and Manuti 2016). Consideration of theories of the hybrid or extended mind (Säljö 2010) and other sociomaterial learning theories (Fenwick 2014) may help us to better understand the potential role of artifacts. Interestingly, however, these theories were not referenced in the papers included in our review, even though artifacts were studied frequently.

When practices are very busy, professionals' WPL is influenced by this high workload. We identified 14 studies that explicitly referred to workload; the remaining 28 studies did not mention any influence of workload. However, the relationship between learning and workload is complex, not least because workload is often seen a subjective rather than objective entity (Haney et al. 2006). When workload is low, with a small number of complex interesting patient cases, WPL through collaboration does not occur. When workload is too high, no room for constructive critical communication remains, thus hindering WPL.

Interprofessional learning is of increasing importance within the medical domain (Sargeant 2009; Hean et al. 2012). In our review, 32 studies focused on interprofessional learning of primary healthcare professionals, often referring to communities of practice as a relevant learning theory. We expect that, in healthcare, the idea of novices who become experts through participation is appealing because learning through socialization is common. Not mentioned in the included studies was Cultural Historic Activity Theory (Engestrom et al. 2007), which might have been a useful framework for understanding learning arising from collaboration between professionals from different professions and different organizations. In Cultural Historic Activity Theory, the wish to reach a specific goal is essential for learning to take place (Engestrom et al. 2007), which fits with our finding that a shared aim is important, but realizing shared aims in an interprofessional setting does not always emerge naturally (D'Amour et al. 2008). Shared responsibility for patient care reflects the importance of authentic learning environments (Andersson and Andersson 2005; Ashton 2010; Wenger et al. 2002).

Within primary healthcare, the team's history and past experiences was found to influence the quality of team relationships and, as such, their WPL. The history of a team is a concept that might explain successful learning thanks to shared mental models that people have developed in time while working together (Santos et al. 2015). This might also help to clarify unsuccessful learning, particularly if conflicts have arisen during the team's history that negatively affect learning (van Woerkom and van Engen 2009). Conversely, a sense of hierarchy can hinder WPL, as it can impede learners' willingness to ask questions or to seek feedback. Existing (perceived) hierarchy can also form a barrier to providing feedback or to critical questioning. In the included studies, hierarchy was reported upon, yet at the same time measures were proposed to overcome this barrier, such as acknowledgement of others' expertise and awareness of others' specific contexts. Although the literature describes communication approaches to overcome communication difficulties in hierarchical situations (Brindley and Reynolds 2011), the role of acknowledging expertise has – to our knowledge – not been studied in detail.

How does this learning occur?

Practitioners can learn by sharing activities or working in collaboration, or by observing each other. The finding that healthcare professionals learn through participation during every-day working aligns with sociocultural learning theories, in which learning is posited to occur during regular

interaction, for example in learning communities (Wenger et al. 2002). An explicit reference to theory about learning communities was found in several studies, while in other studies learning theories were often mentioned much more implicitly by, for example, primarily describing the value of group discussion for learning (MacFarlane et al. 2006; Sullivan et al. 2007; Liveng 2010; Mann et al. 2011; Nilsen 2011; Stenner and Courtenay 2008; van der Dam et al. 2013). In such discussions, it is important to be able to ask questions and seek feedback, and value the importance of being critical in a constructive and reflective manner (De Groot 2012, de Groot et al. 2014). We also found that planned formal learning seem to contribute to (opportunities for) informal learning. Studies emphasized the importance of 'finding a middle ground between formal and informal learning; that is, not solely relying on informal learning opportunities (Guirguis-Younger et al. 2009; Stenner and Courtenay 2008).

Not all of our findings match a conceptualization of learning as an interactional process that occurs while participating in practice. The findings that professionals can learn through observation of others is more in line with Bandura's social cognitive learning theory (Kenny et al. 2003), and with the notion of transformative learning (Mezirow 1997). Social cognitive theory (Bandura 2001) stresses the importance of observation, imitation and modeling of other professionals when it comes to learning new skills or behaviors. Transformative learning in this context, emphasizes the role of learning from a formal, structured mentoring arrangement, and conceptualizes mentoring as a two-way learning process (Kenny 2003). Collectively, social cognitive theory and transformative learning put less emphasis on doing things together and discussing with one another; instead, observation of people who are perceived as role models and explicit instruction are seen as more important.

Practitioners can also learn through reflection. In our analytical framework, we drew from contemporary, social conceptualisations of reflection when producing our statement on reflection. The majority of theories of reflection focus on individual learning, often as a result of formal learning activities (Bleakley 2006). In recent years the idea of reflection as an individualistic –and mainly mental- activity has been challenged. For example, critically reflective work behavior is now considered to be interactive, and something which is shown in the discourse between professionals (de Groot et al. 2013, 2014). In the studies included in our review, the value of reflective conversations next to individual reflection was confirmed.

What is being learned?

Studies reported varied outcomes. Improvements in care provision appeared to be both an important and primary motivator for learning and an intended outcome of learning, thus fitting with recent data from trainee doctors. Indeed, it seems that a major advantage of WPL is that new knowledge is contextualized by adapting it to their local context (Tan 2012). However, it is important to note that as most studies were qualitative and not longitudinal, evidence about improved care being an actual outcome was missing. Furthermore, the majority of included studies indicated that their interventions were successful, that outcomes were reached, or that conditions were beneficial, leading us to suspect evidence of publication bias (i.e. bias occurring as a result of positive findings being more easily publishable than negative findings (Banks et al. 2012)).

Reflections

In the previous section, we compared our findings with existing learning theories. Most of our findings could be situated in theories on workplace learning of other (healthcare) professionals. The starting point for this review was that professionals within primary healthcare have to engage in life-long learning and that WPL through collaboration might be an essential part of life-long learning. When reflecting on our findings, we found it remarkable that patient care played such a central role as a motivator for learning, while at the same time learning through collaboration was often not recognized as real learning. In sum, the findings of our review fit with general WPL literature stating that working and learning are inseparable and fundamental. Patient care appears to be a primary motivator for learning, but greater attention ought to be paid to the potential learning opportunities arising from ICP in order to optimize professionals' WPL.

Implications for practice

The stakeholders with a primary interest in this research are primary healthcare professionals, WPL researchers, managers and educators in primary healthcare. The findings of this review have the following implications for these stakeholders.

Primary healthcare professionals

- Professionals are often unaware that they learn through collaboration. As in undergraduate medical education (Reid et al. 2015), learning during work in professional life should be made explicit and framed as being 'inherent in the practice of patient care' (p.667). As such, developing the competency to learn while caring may diminish the need to organize formal training in situations with a high workload.
- Healthcare professionals do not exclusively identify themselves either as learners or as facilitators. Any professional can both learn and facilitate others' learning. Making this more explicit may help to improve WPL through collaboration.
- Acknowledgement of others' expertise and awareness of others' specific contexts, especially when hierarchy is involved, reduces barriers to learning.
- Unplanned learning activities provide more opportunities for "just-in-time" learning and for nonhierarchical collaboration than planned learning sessions. The former are perceived as being more motivational.

Professionals who act as managers in primary healthcare

- Policy makers and managers working in primary care should ensure that protected time for learning is available. This time is needed to reflect upon practice, to customize oneself with the new ways of interaction and to develop new habits within clinical practice.

- The layout of the workplace affects learning. Managers need to organize the workplace layout to enhance communication in the workplace. Facilitating casual encounters between different professionals provides opportunities to ask for feedback and to exchange ideas. In addition, workplace layout could promote conversations around artifacts (such as electronic patient records), when they are co-located and accessible to multiple professionals simultaneously. Managers should explicitly state that artifacts such as patient records are not only useful for recording and accounting, but can play a role in learning conversations as well.

Primary healthcare educators

- (Post)-graduate educators should help learners to become aware that all kind of situations provide affordances for learning (i.e. learners do not just learn through lectures delivered outside of the workplace but learn when asking questions, discussing and asking feedback during the work to be done). Curricula should emphasize the importance of informally asking questions and requesting feedback.
- Knowing and valuing the expertise of others is essential for learning, yet this is more difficult in interprofessional settings. Interprofessional modules, focusing on collaboration, should therefore be included in undergraduate education.

WPL researchers

- The studies in our review refer to a limited subset of learning theories. Relying on a wider range of social learning theories as theoretical framework for future studies would improve the knowledge base on WPL through collaboration. Additionally, as most of the selected studies had individuals as their unit of analysis, we recommend that researchers focus on supplementing current research with studies on organizational learning in primary healthcare.
- Although barriers for workplace learning in general have been described, surprisingly, findings of the intervention studies in our review were most often positive. Researchers should build on this observation and focus on clarifying barriers to WPL

Strengths and limitations

This review has a number of strengths. For example, we included only papers that provided a sufficiently detailed description of WPL, so as to allow for greater theoretical understanding of WPL in primary care. Furthermore, we ensured that all papers were independently screened, selected, assessed and coded by two researchers from different professional backgrounds, thus strengthening the rigor of our review. Also, we used the RAMESES training materials for realist synthesis (Wong et al. 2013) and the RAMESES Publications Standards (Wong, Greenhalgh, et al. 2013) to provide practical guidance throughout the review and the writing process. However, it is pertinent to also consider the limitations of this review. First, we started with a broad spectrum of statements. This approach precluded us from presenting a fine-grained overview of CMOs for each and every paper supporting each statement separately. Although this may be seen as a limitation, we believe that our review provides an excellent starting point for studies designed to explore some of the complex (causal) chains of change contained within our statements. Second, we did not refine the focus of our review mid-way as is common in realist synthesis, because we did not think it appropriate to exclude aspects of our analytical framework at this stage. Instead, we chose to broadly explore each statement, as we felt that a broad overview of all the different learning processes that occur within primary care would provide the most value as present. Third, updating our search during the review was not considered feasible. This limitation is unlikely to have substantively impacted on the findings of this review but should be borne in mind, particularly given that a number of studies pertaining to interprofessional learning have been published since our search was conducted. Fourth, as is customary in a realist review (Pawson et al. 2005), we focused on the rigor and relevance and did not assess the quality of each and every paper included in our review. Furthermore, most studies were qualitative papers, which makes our conclusions less generalizable. However, we included papers that describe WPL in sufficient detail, and, during our process of including and excluding papers, it became clear that papers using quantitative research methodologies were less likely to describe the learning process in any detail (i.e. one of the inclusion criteria).

Conclusions

The results of this review indicate that interprofessional WPL through collaboration in primary healthcare is multifaceted. When situated within the context of existing social learning theories, our findings indicate that WPL does indeed take place when primary care professionals work together, within the same profession or with professionals from other disciplines and that the mechanisms involved do not differ in major ways from those known from studies about other professionals, both inside and outside healthcare. As such, WPL should be considered to be an essential part of the continuing professional development continuum during lifelong practice. The findings of this review have a number of implications for practice. Future research should focus on clarifying and exploring the processes identified in this review further so as to optimize WPL and, ultimately, patient care.

Notes

1. Although the phases of abstract selection and analysis are presented as sequential, they happened overlapping and iterative, as is characteristic for realist reviews (Pawson et al. 2005).
2. In each figure, C-M-O configurations are illustrated using arrows, with references to the relevant included papers in the review. Where no configurations could be made, references pertain to individual C-M-O elements.
3. Throughout this review, we use the term 'facilitator' to refer to anyone who facilitates another's learning. As such, the facilitator may be a teacher, as well a professional functioning as a role model.

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Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

Glossary

Workplace learning (WPL) is "learning taking place at work, through work and for work" (Tynjälä 2013), which for medical professionals occurs during clinical practice. This review focuses on WPL occurring as a result of collaboration with healthcare professionals from the same or from different disciplines, at the same location or across organizational boundaries.

Collaboration happens when multiple health workers from different professional backgrounds work together with patients, families, caregivers and communities to deliver the highest quality of care. It allows health workers to involve any individual whose skills can help to achieve health goals (Gilbert et al. 2010). WPL may arise as a result of collaboration between professionals with the same educational background (intraprofessional), but as a consequence of the rise in interprofessional collaborative practice, increasingly arises from the interaction between professionals from several disciplines working together to care for the same patient (interprofessional) (Hammick et al. 2007; Parboosingh 2002). In this review, we focus on understanding WPL arising as a result of both interprofessional and intraprofessional collaboration.

Primary healthcare is a discipline that has not been defined uniformly in diverse healthcare systems around the world. In Europe, the term is used to refer to community-based settings rather than hospital settings. General practitioners (family physicians), pharmacists, nurse practitioners and physiotherapists are just some members of this discipline (Schellevis and Groenewegen 2015). In the United States, the term 'primary healthcare' is used to refer to office-based practices (either family medicine, internal medicine or pediatrics) where the focus is on primary care delivery. In this review, in order to be relevant to practice worldwide, we adopted an inclusive view on primary healthcare and included papers describing primary healthcare as defined in the country where the research was undertaken.

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References

Allan H, Bryan K, Clawson L, Smith P. 2005. Developing an interprofessional learning culture in primary care. J Interprof Care. 19:452–464.
Andersson SB, Andersson I. 2005. Authentic Learning in a Sociocultural Framework: A case study on non-formal learning. Scand J Educ Res. 49:419–436.
Arora S, Kalishman S, Dion D, Som D, Thornton K, Bankhurst A, Boyle J, Harkins M, Moseley K, Murata G, et al. 2011. Partnering urban academic medical centers and rural primary care clinicians to provide complex chronic disease care. Health Aff. 30:1176–1184.
Arora S, Kalishman S, Thornton K, Dion D, Murata G, Deming P, Parish B, Brown J, Komaromy M, Colleran K, et al. 2010. Expanding access to hepatitis C virus treatment–Extension for Community Healthcare Outcomes (ECHO) project: disruptive innovation in specialty care. Hepatology. 52:1124–1133.
Ashton S. 2010. Authenticity in adult learning. Int J Lifelong Educ. 29:3–19.
Bandura A. 2001. Social cognitive theory: An agentic perspective. Annu Rev Psychol. 52:1–26.
Banks GC, Kepes S, Banks KP. 2012. Publication bias: The antagonist of meta-analytic reviews and effective policymaking. Educ Eval Policy Anal. 34:259–277.
Beam RJ, O'Brien RA, Neal M. 2010. Reflective practice enhances public health nurse implementation of nurse-family partnership. Public Health Nurs. 27:131–139.
Billett S. 2014. Integrating learning experiences across tertiary education and practice settings: A socio-personal account. Educ Res Rev. 12:1–13.
Billett S, Choy S. 2013. Learning through work: Emerging perspectives and new challenges. JWL. 25:264–276.

Bleakley A. 2006. Broadening conceptions of learning in medical education: the message from teamworking. Med Educ. 40:150–157.

Bohmer RM. 2010. Managing the new primary care: the new skills that will be needed. Health Aff. 29:1010–1014.

Brindley PG, Reynolds SF. 2011. Improving verbal communication in critical care medicine. J Crit Care. 26:155–159.

Brown DR, Brewster CD, Karides M, Lukas LA. 2011. The phenomenon of collaboration: A Phenomenologic Study of Collaboration between Family Medicine and Obstetrics and Gynecology Departments at an Academic Medical Center. Qual Rep. 16:657–681.

Bunniss S, Kelly DR. 2008. 'The unknown becomes the known': collective learning and change in primary care teams. Med Educ. 42:1185–1194.

Burgess J, Sawchenko L. 2011. Community of practice: a nurse practitioner collaborative model. CJNL. 24:99–112.

Carr EC, Worswick L, Wilcock PM, Campion-Smith C, Hettinga D. 2012. Improving services for back pain: putting the patient at the centre of interprofessional education. Qual Prim Care. 20:345–353.

Chisholm C, Harris M, Northwood D, Johrendt J. 2009. The characterisation of work-based learning by consideration of the theories of experiential learning. Eur J Educ. 44:319–337.

Coleman K, Phillips KE, Van Borkulo N, Daniel DM, Johnson KE, Wagner EH, Sugarman JR. 2014. Unlocking the black box: supporting practices to become patient-centered medical homes. Med Care. 52:S11–S17.

Collins F, McCray J. 2012. Relationships, learning and team working in UK services for children. Journal of Integrated Care.20:39–50.

D'Amour D, Goulet L, Labadie J-F, San Martín-Rodriguez L, Pineault R. 2008. A model and typology of collaboration between professionals in healthcare organizations. BMC Health Serv Res. 8:188.

de Araujo PN, Viana MA, Fortuna CM, Matumoto S, Clapis MJ. 2013. [Primary health care workers' view on the presence of nursing students]. Rev Esc Enferm Usp. 47:694–701.

De Groot E. 2012. Learning of veterinary professionals in communities: Using the theory of critically reflective work behaviour with regard to evidence based practice Utrecht University.

de Groot E, Endedijk M, Jaarsma D, van Beukelen P, Simons R-J. 2013. Development of critically reflective dialogues in communities of health professionals. Adv in Health Sci Educ. 18:627–643.

de Groot E, Endedijk MD, Jaarsma ADC, Simons PR-J, van Beukelen P. 2014. Critically reflective dialogues in learning communities of professionals. Stud Contin Educ. 36:15–37.

Dornan T, Boshuizen H, King N, Scherpbier A. 2007. Experience-based learning: a model linking the processes and outcomes of medical students' workplace learning. Med Educ. 41:84–91.

Engestrom Y, Kerosuo H, Engeström Y, Kerosuo H. 2007. From workplace learning to inter-organizational learning and back: the contribution of activity theory. JWL. 19:336–342.

Eraut M. 2000. Non-formal learning and tacit knowledge in professional work. Br J Educ Psychol. 70: (Pt 113–136.

Eraut M. 2004. Informal learning in the workplace. Stud Contin Educ. 26:247–273.

Eraut M. 2007. Learning from other people in the workplace. Oxford Rev Educ. 33:403–422.

Fenwick T. 2014. Sociomateriality in medical practice and learning: attuning to what matters. Med Educ. 48:44–52.

Forsetlund L, Bjorndal A, Rashidian A, Jamtvedt G, O'Brien MA, Wolf F, Davis D, Odgaard-Jensen J, Oxman AD. 2009. Continuing education meetings and workshops: effects on professional practice and health care outcomes. Cochrane Database Syst Rev (Online). (2):Cd003030.

Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, Fineberg H, Garcia P, Ke Y, Kelley P, et al. 2010. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 376:1923–1958.

Gilbert JH, Yan J, Hoffman SJ. 2010. A WHO report: framework for action on interprofessional education and collaborative practice. J Allied Health. 39:196–197.

Guirguis-Younger M, McNeil R, Runnels V. 2009. Learning and knowledge-integration strategies of nurses and client care workers serving homeless persons. Can J Nurs Res. 41:21–34.

Halcomb EJ, Peters K, McInnes S. 2012. Practice nurses experiences of mentoring undergraduate nursing students in Australian general practice. Nurse Educ Today. 32:524–528.

Hammick M, Freeth D, Koppel I, Reeves S, Barr H. 2007. A best evidence systematic review of interprofessional education: BEME Guide no. 9. Med Teach. 29:735–751.

Haney EM, Nicolaidis C, Hunter A, Chan BK, Cooney TG, Bowen JL. 2006. Relationship between resident workload and self-perceived learning on inpatient medicine wards: a longitudinal study. BMC Med Educ. 6:35.

Hean S, Craddock D, Hammick M, Hammick M. 2012. Theoretical insights into interprofessional education: AMEE Guide No. 62. Med Teach. 34:e78–e101.

Hewitt G, Sims S, Harris R. 2015. Evidence of communication, influence and behavioural norms in interprofessional teams: a realist synthesis. J Interprof Care. 29:100–105.

Hjalmarson HV, Strandmark M. 2012. Forming a Learning Culture to Promote Fracture Prevention Activities. Health Education. 112:421–435.

Hoare KJ, Mills J, Francis K. 2013. New graduate nurses as knowledge brokers in general practice in New Zealand: a constructivist grounded theory. Health Soc Care Community. 21:423–431.

Humphreys J, Harvey G, Coleiro M, Butler B, Barclay A, Gwozdziewicz M, O'Donoghue D, Hegarty J. 2012. A collaborative project to improve identification and management of patients with chronic kidney disease in a primary care setting in Greater Manchester. BMJ Qual Saf. 21:700–708.

Illeris K. 2011. Workplaces and learning. The SAGE handbook of workplace learning. 32–45.

Impedovo MA, Manuti A. 2016. Boundary objects as connectors between communities of practices in the organizational context. Dev Learn Org. 30:7–10.

Jagosh J, Pluye P, Wong G, Cargo M, Salsberg J, Bush PL, Herbert CP, Green LW, Greenhalgh T, Macaulay AC. 2014. Critical reflections on realist review: insights from customizing the methodology to the needs of participatory research assessment. Res Synth Methods. 5:131–141.

Järvelä S, Niemivirta M. 1999. The changes in learning theory and the topicality of the recent research on motivation. Learn Instr. 9:57–65.

Jones A. 2003. Some benefits experienced by hospice nurses from group clinical supervision. Eur J Cancer Care. 12:224–232.

Kenny NP, Mann KV, MacLeod H. 2003. Role modeling in physicians' professional formation: reconsidering an essential but untapped educational strategy. Acad Med. 78:1203–1210.

Kousgaard MB, Thorsen T. 2012. Positive experiences with a specialist as facilitator in general practice. Dan Med J. 59:A4443.

Kusurkar RA, Croiset G. 2015. Self-determination theory and scaffolding applied to medical education as a continuum. Acad Med. 90:1431.

Lave J, Wenger E. 1991. Situated learning: Legitimate peripheral participation: Cambridge university press.

Leslie K, Curtis M, Lunn D. 2003. Education to achieve symptom control for patients with cancer. Nurs Times. 99:34–36.

Li LC, Grimshaw JM, Nielsen C, Judd M, Coyte PC, Graham ID. 2009. Evolution of Wenger's concept of community of practice. Implementation Sci. S4:11.

Liveng A. 2010. Learning and Recognition in Health and Care Work: An Inter-Subjective Perspective. JWL. 22:12.

MacFarlane A, Harrison R, Murray E, Berlin A, Wallace P. 2006. A qualitative study of the educational potential of joint teleconsultations at the primary-secondary care interface. J Telemed Telecare. 12:22–24.

Mann K, van der Vleuten C, Eva K, Armson H, Chesluk B, Dornan T, Holmboe E, Lockyer J, Loney E, Sargeant J. 2011. Tensions in informed self-assessment: how the desire for feedback and reticence to collect and use it can conflict. Acad Med. 86:1120–1127.

Marinopoulos SS, Dorman T, Ratanawongsa N, Wilson LM, Ashar BH, Magaziner JL, Miller RG, Thomas PA, Prokopowicz GP, Qayyum R. 2007. Effectiveness of continuing medical education. Evid Rep Technol Assess (Full Rep). 149:1–69.

Marshall MN. 1998. Qualitative study of educational interaction between general practitioners and specialists. BMJ. 7316:442–445.

Mezirow J. 1997. Transformative learning: theory to practice. New Direct Adult Contin Educ. 1997:5–12.

Moore LJ. 2007. Partnerships and Work-Based Learning: An Evaluation of an Opportunity to Pioneer New Ways to Care for the Older People in the Community. Assessment & Evaluation in Higher Education. 32:61–77.

Morton J. 2012. Transcultural healthcare immersion: a unique interprofessional experience poised to influence collaborative practice in cultural settings. Work (Reading, Mass). 41:303–312.
Nilsen LL. 2011. Workplace Learning among General Practitioners and Specialists: the use. of videoconferencing as a tool. JWL. 23:501–517.
O'Brien JL, Martin DR, Heyworth J, Meyer NR. 2008. Negotiating transformational leadership: a key to effective collaboration. Nurs Health Sci. 10:137–143.
Organization WH. 2008. Primary care: now more than ever, 2008 World Health Report. Geneva: World Health Organization Press.
Orzano AJ, McInerney CR, Tallia AF, Scharf D, Crabtree BF. 2008. Family medicine practice performance and knowledge management. Health Care Manage Rev. 33:21–28.
Parboosingh JT. 2002. Physician communities of practice: where learning and practice are inseparable. J Contin Educ Health Prof. 22:230–236.
Parsell G, Bligh J. 1998. Interprofessional learning. Postgrad Med J. 74:89–95.
Paulus DVHK, Mertens R. 2012. Organisatie van zorg voor chronisch zieken in België: ontwikkeling van een position paper.
Pawson R, Greenhalgh T, Harvey G, Walshe K. 2005. Realist review – a new method of systematic review designed for complex policy interventions. J Health Serv Res Policy. 10 Suppl 1:21–34.
Plsek PE, Greenhalgh T. 2001. Complexity science: the challenge of complexity in health care. BMJ. 5323:625–628.
Pype P, Mertens F, Deveugele M, Stes A, Van den Eynden B, Wens J. 2014. 'I beg your pardon?' Nurses' experiences in facilitating doctors' learning process – an interview study. Patient Educ Couns. 96:389–394.
Pype P, Mertens F, Wens J, Stes A, Van den Eynden B, Deveugele M. 2015. Preparing palliative home care nurses to act as facilitators for physicians' learning: Evaluation of a training programme. Palliat Med. 29:458–463.
Randstrom KB, Wengler Y, Asplund K, Svedlund M. 2014. Working with 'hands-off' support: a qualitative study of multidisciplinary teams' experiences of home rehabilitation for older people. Int J Older People Nurs. 9:25–33.
Ranmuthugala G, Plumb JJ, Cunningham FC, Georgiou A, Westbrook JI, Braithwaite J. 2011. How and why are communities of practice established in the healthcare sector? A systematic review of the literature. BMC Health Serv Res. 11:273.
Reeves S, Lewin S, Espin S, Zwarenstein M. 2011. Interprofessional teamwork for health and social care. Chichester: John Wiley & Sons.
Reid A-M, Ledger A, Kilminster S, Fuller R. 2015. Can the tools of activity theory help us in advancing understanding and organisational change in undergraduate medical education? Adv Health Sci Educ. 20:655–668.
Rowlands G, Willis S, Singleton A. 2001. Referrals and relationships: in-practice referrals meetings in a general practice. Fam Pract. 18:399–406.
Säljö R. 2010. Digital tools and challenges to institutional traditions of learning: technologies, social memory and the performative nature of learning. J Comp Assist Learn. 26:53–64.
Santos CM, Uitdewilligen S, Passos AM. 2015. A temporal common ground for learning: The moderating effect of shared mental models on the relation between team learning behaviours and performance improvement. Eur J Work Org Psychol. 24:710–725.
Sargeant J. 2009. Theories to aid understanding and implementation of interprofessional education. J Contin Educ Health Prof. 29:178–184.
Schellevis FG, Groenewegen PP. 2015. Together we change: an ambitious blueprint for primary healthcare in Flanders. Eur J Gen Pract. 21:215–216.
Shaw EK, Howard J, Etz RS, Hudson SV, Crabtree BF. 2012. How team-based reflection affects quality improvement implementation: a qualitative study. Qual Manag Health Care. 21:104–113.
Shershneva MB, Carnes M, Bakken LL. 2006. A model of teaching-learning transactions in generalist-specialist consultations. J Contin Educ Health Prof. 26:222–229.
Siriwardena AN, Middlemass JB, Ward K, Wilkinson C. 2008. Drivers for change in primary care of diabetes following a protected learning time educational event: interview study of practitioners. BMC Med Educ. 8:4. Epub 2008/01/22.
Stamp G, Champion S, Anderson G, Warren B, Stuart-Butler D, Doolan J, Boles C, Callaghan L, Foale A, Muyambi C. 2008. Aboriginal maternal and infant care workers: partners in caring for Aboriginal mothers and babies. Rural Remote Health. 8:883.
Stenner K, Courtenay M. 2008. The role of inter-professional relationships and support for nurse prescribing in acute and chronic pain. J Adv Nurs. 63:276–283.
Sullivan MP, Parenteau P, Dolansky D, Leon S, Le Clair JK. 2007. Shared geriatric mental health care in a rural community. Canadian journal of rural medicine: the official journal of the Society of Rural Physicians of Canada = Journal canadien de la medecine rurale: le journal officiel de la Societe de medecine rurale du Canada. Winter;12:22-29.
Taber N, Plumb D, Jolemore S. 2008. "Grey" areas and "Organized Chaos" in emergency response. JWL. 20:272–285.
Tan CY. 2012. Instructional leadership: toward a contextualised knowledge creation model. School Leadership Manag. 32:183–194.
Theunissen P. 2008. Unravelling learning by doing – A study of workplace learning in postgraduate medical education. PhD-thesis.
Tynjälä P. 2013. Toward a 3-P model of workplace learning: a literature review. Vocat Learn. 6:11–36.
van der Dam S, Schols JM, Kardol TJ, Molewijk BC, Widdershoven GA, Abma TA. 2013. The discovery of deliberation. From ambiguity to appreciation through the learning process of doing Moral Case Deliberation in Dutch elderly care. Soc Sci Med. 83:125–132.
van Woerkom M, van Engen ML. 2009. Learning from conflicts? The relations between task and relationship conflicts, team learning and team performance. Eur J Work Org Psychol. 18:381–404.
Walshe C, Luker KA. 2010. District nurses' role in palliative care provision: a realist review. Int J Nurs Stud. 47:1167–1183.
Walters L, Prideaux D, Worley P, Greenhill J. 2011. Demonstrating the value of longitudinal integrated placements to general practice preceptors. Med Educ. 45:455–463.
Wenger E, McDermott RA, Snyder W. 2002. Cultivating communities of practice: a guide to managing knowledge. Harvard Business Press.
Wilcock PM, Campion-Smith C, Head M. 2002. The Dorset Seedcorn Project: interprofessional learning and continuous quality improvement in primary care. Br J Gen Pract. 52 Suppl:S39–S44.
Wong G, Greenhalgh T, Westhorp G, Buckingham J, Pawson R. 2013. RAMESES publication standards: realist syntheses. BMC Med. 2911:21.
Wong G, Greenhalgh T, Westhorp G, Pawson R. 2012. Realist methods in medical education research: what are they and what can they contribute?. Med Educ. 46:89–96.
Wong G, Westhorp G, Pawson R, Greenhalgh T. 2013. Realist synthesis: RAMESES training materials. University of Oxford: RAMESES Project. http://www.ramesesproject.org/Home_Page.php#rameses1
Yuan YC, Carboni I, Ehrlich K. 2014. The impact of interpersonal affective relationships and awareness on expertise seeking: A multilevel network investigation. Eur J Work Org Psychol. 23:554–569.