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A scoping review to identify strategies and interventions improving interprofessional collaboration and integration in primary care

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Title: A scoping review to identify strategies and interventions improving interprofessional collaboration and integration in primary care

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Abstract

Objective: To identify strategies and interventions used to improve interprofessional collaboration and integration in primary care.

Design: Scoping review

Data Sources: Specific Medical Subject Headings (MeSH-terms) were used, and a search strategy was developed for Pubmed and afterwards adapted to Medline, Eric, and Web of Science.

Study selection: In the first stage of the selection, two researchers screened the article abstracts to select eligible papers. When decisions conflicted, three other researchers joined the decision-making process. Same strategy was used with full-text screening. Articles were included if they: (i) were in English, (ii) described an intervention to improve interprofessional collaboration or integration (IPCI) in primary care involving at least two different healthcare disciplines, (iii) originated from a high-income country, (iv) were peer-reviewed; and (v) were published between 2001 and 2020.

Data extraction and synthesis: From each paper, eligible data were extracted, and the selected papers were analysed inductively. Studying the main focus of the papers, researchers searched for common patterns answering the research question and exposing research gaps. The identified themes, were discussed and adjusted until consensus was reached among all authors.

Results: The literature search yielded a total of 1816 papers. After removing duplicates, screening titles, and abstracts, and performing full-text readings, 34 papers were incorporated in this scoping review. The identified strategies and interventions were inductively categorized under five main themes; (i) Acceptance and team readiness towards collaboration, (ii) acting as a team and not as an individual; (iii) communication strategies and shared decision making, (iv) coordination in primary care, and (v) integration of caregivers and their skills and competences.

Conclusions: We identified a mix of strategies and interventions that can function as 'building blocks', for the development of a generic intervention to improve collaboration in different types of primary care settings and organisations.

Strengths and limitations of this study

- The review focuses exclusively on primary care; thus, our findings are not directly transferable to other healthcare levels.
- Only studies performed in high-income countries were included in this review; hence, our findings are not directly transferable to other countries because differences in health systems, financing, governance, title protection and culture can pose significant implementation challenges.
- The risk of bias to the interpretation of the data was minimised by triangulating researchers from different backgrounds (e.g. nurses, pharmacists and a psychologist) through the whole review process and conducting the selection of articles with a team of at least two researchers.
- We did not limit the search to the collaboration between specific types of caregivers, or in relation to a specific disease, or condition of patients. Therefore, our data and analysis can be used in the context of or added to a broad scope of interprofessional collaboration and integration in primary care.

Introduction

As the world population is ageing, the growing complexity of health care and health needs, together with the associated financial challenges[1] and the fragmentation of primary care, [2-4] are prompting a fundamental rethink of how primary care should be organised and how professionals in different settings should collaborate.[5] As approximately one-third of the world population lives with a chronic disease,[6] and as primary care is usually the first point of access to the care system, integrated care at that level in which professionals closely collaborate, both interdisciplinary and interprofessional, is unquestionably important in current and future care organisations.

Interprofessional collaboration can be beneficial to achieve a more integrated primary health care and should overcome the aforementioned challenges and problems. According to the World Health Organisation, interprofessional collaboration occurs when two or more professions work together to achieve common goals.[7] Orchard et al.[8] defines it as involving a partnership between a team of health professionals and a client in a participatory, collaborative and coordinated approach to shared decision-making around health and social issues. Goodwin et al.[9] and Lewis et al.[10] see an efficient interprofessional collaboration as a prerequisite for integrated care. To achieve and maintain interprofessional collaboration in

primary care, Bardet et al.[11] identified the following five key elements: (i) trust, (ii) interdependence, (iii) perceptions and (iv) expectations from the other health care professionals, their skills, their interest for collaborative practice, their role definition and their communication.[12-18] These key elements match with the five dimensions of integrated care described by Valentijn et al.[19, 20]

Although several literature reviews identified strategies to influence, improve or facilitate interprofessional collaboration, a thorough analysis of the interventions is lacking. Most review papers focused on the collaboration of a single type of caregiver or one specific disease.[21-30] Therefore, it is difficult to broaden these findings to primary care and chronic conditions in general.

To fill this gap, we performed a scoping review to identify strategies and interventions improving and/or facilitating interprofessional collaboration and integration (IPCI) in primary care. More specifically, we listed and analysed the existing strategies, interventions and their outcomes, without focussing on a specific profession or disease. Based on the definitions of interprofessional collaboration[7, 8] and integrated care[9, 10, 19, 20], we included papers, thus outlining strategies and interventions working on micro, meso and macro-level. The included papers described organisational, relational and processual factors influenced by these interventions and strategies.

This review was conducted as the first phase of a research project to develop an evidence-based toolkit, guiding health professionals in their transition towards IPCI of different competencies, skills and roles as well as the role of patients and their needs in primary care.

Methods

We conducted a scoping review using the Arksey and O'Malley framework[31]: (i) identifying the research questions, (ii) identifying relevant studies, (iii) selecting studies, (iv) charting the data and (v) collating, summarising and reporting results. We used the PRISMA-ScR guidelines and the PRISMA-ScR templates to help conduct the scoping review[32].

Step 1: Identifying the research questions

An exploratory literature search was performed preliminarily to identifying the research question on IPCI in primary care. Based on this literature search, we developed the following research question: Which strategies and/or interventions improve or facilitate interprofessional collaboration and integration in primary care? We aimed to search for articles containing generic strategies and methods used in primary care settings, to facilitate IPCI in primary care. Five researchers were involved in identifying this research question for the scoping review.

Step 2: Identifying relevant studies: search strategy

We used specific Medical Subject Headings (MeSH-terms) and free text terms to design a search strategy around the following key concepts: primary care, health care team, integration and interprofessional collaboration. We combined the keywords and MeSH terms presented in Table 1 with the Boolean terms 'OR', 'AND' and 'NOT'. The search strategy was developed for Pubmed and afterwards adapted to Medline, Eric and Web of Science. The search was performed between March and June 2020.

MeSh/search terms and combinations for Pubmed
1. primary care
2. primary health care
3. primary health care
1 or 2 or 3 (Title/abstract)
5. integrative team
6. integrative teams
7. collaborative practice
8. collaborative practices
9. interdisciplinary team
10. interdisciplinary teams
11. multidisciplinary team
12. multidisciplinary teams
13. interprofessional team
14. interprofessional teams
15. health care team
16. health care teams
17. health care team
18. health care teams
5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 (title/abstract)
20. interprofessional collaboration
21. interprofessional teamwork
22. interprofessional teamwork
23. interdisciplinary collaboration
24. interdisciplinary teamwork
25. interdisciplinary teamwork
26. multidisciplinary collaboration
20 or 21 or 22 or 23 or 24 or 25 or 26 (All fields)
4 AND 19 AND 27

Table 1: keywords and MeSH terms used to identify relevant data.

Step 3: Study selection

Articles were included if they: (i) were in English, (ii) described an intervention to improve interprofessional collaboration or integration in primary care involving at least two different healthcare disciplines, (iii) originated from a high-income country,[33] (iv) were peer-reviewed and (v) were published between 2001 and 2020. Articles were excluded when: (i) the research methods and findings were not thoroughly described, (ii) it concerned opinion papers, (iii) the study focused on a single disease or group of patients/clients and (iv) when the full text was not available.

We used Rayyan[34] to collect and organise eligible articles. In the first stage of the selection, MMS and PVB screened the article abstracts to select eligible papers, according to the inclusion and exclusion criteria, and to eliminate the duplicates. When decisions conflicted, three other researchers (HDL, KdV, KVdB) joined the decision-making process; they were blind to the decisions of the first two reviewers, and each screened a third of the conflicting

abstracts. In the second stage of the selection, the initial two reviewers read the full texts of the selected articles. As in the first stage, studies were included or excluded depending on the agreement of both reviewers. When the decisions of the two reviewers conflicted, the other researchers joined the decision-making process and a procedure similar to the one outlined above was followed.

2.4. Charting the data

From each paper, eligible data were extracted using a self-developed descriptive template. The following characteristics were recorded: a full reference citation (author, title, journal and publication date); the methodology used to conduct the research; a summary of the intervention or strategy used to facilitate IPCI and the impact on IPCI.

Step 5: Collating, summarising and reporting the data

The selected papers were analysed inductively. Studying the main focus of the papers, we searched for common patterns among them, answering the research question and/or exposing research gaps. We, thus, identified themes and subthemes, which were discussed and adjusted until consensus was reached among all authors. Subsequently, all selected papers were coded using the defined themes. Using a tabular overview and summary of the selected literature, the iterative analysis and discussion among the authors were facilitated and allowed the extraction of the interventions and strategies of interest.

Patient and public involvement

This scoping review did not directly involve patients or public.

Results

The literature search yielded a total of 1,816 papers, of which 445 duplicates were removed (Figure 1). Upon screening titles and abstracts of the remaining 1,371 records, only 100 were eligible given the inclusions criteria outlined above. After further reading, 47 studies, lacking an intervention, were excluded. Finally, 19 more articles were excluded because they did not include strategies or interventions. This resulted in 34 papers describing strategies and interventions to facilitate IPCI in primary care. A Flow diagram on the selection procedure is available in figure 1.

Study characteristics

Twenty studies used a qualitative research design, three studies used quantitative designs and seven studies used mixed-method designs. Additionally, three reviews and one case study were included. The included studies originated in Australia (n = 3), Canada (n = 14), USA (n = 5), N. Zealand (n = 4), the Netherlands (n = 4), United Kingdom (n = 2), Ireland (n = 1) and Switzerland (n = 1). Table 2 provides an overview of the characteristics of the papers included in our review, and table 3 provides an overview of study design and interventions conducted in the papers.

Author	Title	Journal	Year	Country
Bentley et al	Interprofessional teamwork in comprehensive primary healthcare services: findings from a mixed methods study	Journal of interprofessional care	2017	Australia
Berkowitz et al	Case study: johns hopkins community health partnership: a model for transformation	The journal of delivery science and innovation	2016	Usa
Chan et al	Finding common ground? Evaluating an intervention to improve teamwork among primary health-care professionals	International journal of quality in health care	2010	Australia
Coleman et al	Interprofessional ambulatory primary care practice-based educational program	Journal of interprofessional care	2008	Usa
Curran et al	Evaluation of an interprofessional continuing professional development initiative in primary health care	Journal of continuing education in the health professions	2007	Canada
Goldman et al	Interprofessional primary care protocols: a strategy to promote an evidence-based approach to teamwork and the delivery of care	Journal of interprofessional care	2010	Canada
Grace et al	Flexible implementation and integration of new team members to support patient-centred care	The journal of delivery science and innovation	2014	Usa
Hilts et al	Helping primary care teams emerge through a quality improvement program	Oxford academic: family practice	2013	Canada
Josi et al	Advanced practice nurses in primary care in switzerland: an analysis of interprofessional collaboration	Bmc nursing	2020	Switzerland
Kim et al	What makes team communication effective: a qualitative analysis of interprofessional primary care team members' perspectives	Journal of interprofessional care	2019	Usa
Kotecha et al	Influence of a quality improvement learning collaborative program on team functioning in primary healthcare	Journal of collaborative family healthcare	2015	Canada
Légaré et al	Validating a conceptual model for an inter-professional approach to shared decision making: a mixed methods study	Journal of evaluation in clinical practice	2020	Canada
Lockhart et al	Engaging primary care physicians in care coordination for patients with complex medical conditions	Canadian family physician	2019	Canada
Macnaughton et al	Role construction and boundaries in interprofessional primary health care teams: a qualitative study	Bmc health service research	2013	Canada
Mahmood-yousef et al	Interprofessional relationships and communication in primary palliative care: impact of the gold standards framework	The british journal of general practice	2008	United kingdom
Morgan 2015	Observation of interprofessional collaborative practice in primary care teams: an integrative literature review	International journal of nursing studies	2015	New zealand
Morgan 2020	Collaborative care in primary care: the influence of practice interior architecture on informal face-to-face communication—an observational study	Health environments research & design journal	2020	New zealand
Murphy et al	Change in mental health collaborative care attitudes and practice in australia impact of participation in mhpn network meetings	Journal of integrated care	2017	Australia
Pullon et al	Observation of interprofessional collaboration in primary care practice: a multiple case study	Journal of interprofessional care	2016	New zealand
Reay et al	Legitimizing new practices in primary health care	Health care management review	2013	Canada

Reeves et al	Interprofessional collaboration to improve professional practice and healthcare outcomes	Cochrane review	2017	Canada
Robben et al	Impact of interprofessional education on collaboration attitudes, skills, and behaviour among primary care professionals	Journal of continuing education in the health professions	2012	Netherlands
Rodriquez 2010	The implementation evaluation of primary care groups of practice: a focus on organizational identity	Bmc family practice	2010	Canada
Rodriquez 2015	Availability of primary care team members can improve teamwork and readiness for change	Health care management review	2015	USA
Russell et al	Contextual levers for team-based primary care: lessons from reform interventions in five jurisdictions in three countries	Health service research	2018	Canada
Sargeant et al	Effective interprofessional teams: "contact is not enough" to build a team	Journal of continuing education in the health professions	2008	Canada
Tierney et al	Interdisciplinary team working in the irish primary healthcare system: analysis of 'invisible' bottom up innovations using normalisation process theory	Journal of health policy	2019	Ireland
Valaitis et al	Examining interprofessional teams structures and processes in the implementation of a primary care intervention (health tapestry) for older adults using normalization process theory	Bmc family practice	2020	Canada
Van dongen 2018a	Suitability of a programme for improving interprofessional primary care team meetings	International journal of integrated care	2018	Netherlands
Van dongen 2016	Interprofessional collaboration regarding patients' care plans in primary care: a focus group study into influential factors	Bmc family practice	2016	Netherlands
Van dongen 2018b	Development of a customizable programme for improving interprofessional team meetings: an action research approach	International journal of integrated care	2018	Netherlands
Wener & woodgate	Collaborating in the context of co-location: a grounded theory study	Bmc family practice	2016	Canada
Wilcock et al	The dorset seedcorn project: interprofessional learning and continuous quality improvement in primary care	British journal of general practice	2002	United kingdom
Young et al	Shared care requires a shared vision: communities of clinical practice in a primary care setting	Bmc health service research	2017	New Zealand

Table 2: An overview of characteristics of the selected articles.

Author	Study design	Intervention/strategy
Bentley et al	Mixed methods study. Online survey, and interviews with managers and practitioners	Introduction of a comprehensive primary healthcare (CPHC) method
Berkowitz et al	Case study	The Johns Hopkins Community Health Partnership (J-CHiP). A community-based intervention using multidisciplinary care.
Chan et al	Mixed methods study: Qualitative interviews, observations and a survey assessing multidisciplinary teamwork was used.	A 6-month intervention (The Team-link intervention) consisting of an educational workshop and structured facilitation using specially designed materials, backed up by informal telephone support.
Coleman et al	A longitudinal cohort study with a quantitative evaluation.	STAR-project: an educational program for teams of nurse practitioners, family medicine residents and social work students to work together at clinical sites in the delivery of longitudinal care in primary care ambulatory clinics.
Curran et al	Mixed methods study: An evaluation research design, pre- to poststudy with quantitative and qualitative instruments.	Introducing The Building a Better Tomorrow Initiative (BBTI), which is a continuing professional development (CPD) program.

Goldman et al	Qualitative study.	Implementation of an interprofessional protocol
Grace et al	Mixed methods: Interviews and a survey with primary care professionals.	Introduction of interprofessional primary care protocols
Hilts et al	A qualitative exploratory case study approach.	Introducing a quality improvement program.
Josi et al	Qualitative study with an ethnographic design.	Integration of an advanced practice nurse in a primary care team.
Kim et al	Qualitative study. Grounded theory method of constant comparison.	Standardized communication tools used with the implementation of the patient-centred medical home (PCMH)
Kotecha et al	A qualitative study using a phenomenological approach was conducted as part of a mixed-method evaluation.	Quality Improvement Learning Collaborative Program to support the development of interdisciplinary team function and improve chronic disease management, disease prevention, and access to care.
Légaré et al	Qualitative study. Thematic analysis of the transcripts and a descriptive analysis of the questionnaires was performed.	An interprofessional shared decision-making model.
Lockhart et al	Qualitative study. Care professionals interviewed 14 to 19 months after the initiation of an intervention.	Initiation of the Seamless Care Optimizing the Patient Experience (SCOPE) project.
Macnaughton et al	A qualitative, comparative case study with observations was conducted.	Introduction of a model to explore how roles are constructed within interprofessional health care teams. It focuses on elucidating the different types of role boundaries, the influences on role construction and the implications for professionals and patients.
Mahmood-yousef et al	Qualitative interview case study.	Adoption of a interprofessional collaboration framework to investigate the extent to which the framework influences interprofessional relationships and communication, and to compare general practitioners' and nurses' experiences.
Morgan 2015	Integrative literature review	Several strategies to improve interprofessional collaboration in primary care teams
Morgan 2020	Qualitative study with observations	Changing architecture of primary care settings to explore the influence of primary care practice interior architecture on face-to-face on-the-fly communication for collaborative care.
Murphy et al	Quantitative study: an online survey.	Introduction of the Mental Health Professionals Network. Investigating attitudinal and practice changes amongst health professionals after participation in MHPN's network meetings.
Pullon et al	Qualitative study, using a case study design with observations.	Identifying existing strategies to maintain and improve interprofessional collaboration in primary care practices.
Reay et al	A qualitative, longitudinal comparative case study.	Developing effective interdisciplinary teams in primary health care.
Reeves et al	Systematic review	Nine interventions analysed.
Robben et al	Mixed methods study: Before–after study, using the Interprofessional Attitudes Questionnaire, Attitudes Toward Health Care Teams Scale, and Team Skills Scale. Additionally, semi-structured interviews were conducted	Introduction of an interprofessional education program with interdisciplinary workshops.
Rodriquez 2010	Qualitative study. An in-depth longitudinal case study was conducted over two and a half years.	Implementation of primary care groups of practice, with a focus on the emergence of the organizational identity.
Rodriquez 2015	Quantitative study with a survey, using path analysis.	A four-stage developmental interprofessional collaborative relationship-building model: To assess primary care team structure (team size, team member availability, and access to interdisciplinary expertise),teamwork, and readiness for change.
Russell et al	An international consortium of researchers met via teleconference and regular face-to-face meetings using a Collaborative Reflexive Deliberative Approach to re-analyse and synthesize their published and unpublished data and their own work experience.	Determining existing strategies and methods to improve interprofessional collaboration and integration in primary care.

Sargeant et al	Qualitative, grounded theory study.	Introducing an interprofessional educational program.
Tierney et al	Mixed methods study: An online survey and an interview study.	Bottom up innovations using Normalisation Process Theory: (1)Design and delivery of educational events in the community for preventive care and health promotion. (2)Development of integrated care plans for people with complex health needs. (3) Advocacy on behalf of patients.
Valaitis et al	Qualitative study. This study applied Normalization Process Theory (NPT) and used a descriptive qualitative approach embedded in a mixed-methods, pragmatic randomized controlled trial.	Strengthening Quality [Health TAPESTRY] is a primary care intervention aimed at supporting older adults that involves trained volunteers, interprofessional teams, technology, and system navigation.
Van dongen 2018a	Mixed methods study: a process evaluation using a mixed-methods approach including both qualitative and quantitative data.	Introducing a multifaceted programme including a reflection framework, training activities and a toolbox.
Van dongen 2016	Qualitative study with an inductive content analysis.	Improving interprofessional collaboration by using patients' care plans.
Van dongen 2018b	Qualitative study with an action research approach.	A Customizable Programme for Improving Interprofessional Team Meetings
Wener & woodgate	A qualitative research paradigm where the exploration is grounded in the providers' experiences.	A four-stage developmental interprofessional collaborative relationship-building model to guide health care providers and leaders as they integrate mental health services into primary care settings.
Wilcock et al	Mixed methods study. Participants kept reflective journals. Evaluation was undertaken using a mix of questionnaires and staff interviews.	The Dorset Seedcorn Project: interprofessional learning and continuous quality improvement in primary care. Implementing the principles and methods of continuous quality improvement.
Young et al	Qualitative study with observations. A focused ethnography of nine 'Communities of Clinical Practice.	Introducing the 'Community of Clinical Practice' (CoCP) model. Forming a vision of care which is shared by patients and the primary care professionals involved in their care.

Table 3: An overview of study design and interventions incorporated in the selected articles.

Findings

Five main themes, essential for IPCI, emerged from our analyses: (i) Acceptance and team readiness towards collaboration (n=21), (ii) acting as a team and not as an individual (n=26); (iii) communication strategies and shared decision making (n=16), (iv) coordination in primary care (n=20), and (v) integration of caregivers and their skills and competences (n=16). An overview of the interventions is presented in Table 3, while an overview of the articles sorted in themes is presented in Table 4.

Articles	Acceptance and team readiness towards collaboration	Acting as a team and not as an individual	Communication strategies and shared decision making	Coordination in primary care	Integration of caregivers and their skills and competences
Bentley et al.[35]		X	X	X	
Berkowitz et al.[36]				X	
Chan et al.[37]	X	X		X	
Coleman et al.[38]	X		X	X	
Curran et al.[39]	X	X	X	X	X
Goldman et al. [40]	X	X	X		X
Grace et al.[41]	X	X	X		X
Hilts et al.[42]	X	X			X
Josi et al.[43]		X	X		X
Kim et al.[44]	X		X	X	

Kotecha et al.[45]		X	X	X	
Légaré et al.[46]	X	X	X		X
Lockhart et al.[47]		X		X	
MacNaughton et al.[48]		X		X	X
Mahmood-Yousef et al.[49]	X		X	X	
Morgan 2015[50]	X	X	X		
Morgan 2020[51]				X	
Murphy et al.[52]	X			X	X
Pullon et al.[53]		X		X	
Reay et al.[54]	X	X		X	
Reeves et al.[55]			X	X	
Robben et al.[56]		X			
Rodriquez 2010.[57]					X
Rodriquez 2015[58]	X	X		X	
Russell et al.[59]	X	X			X
Sargeant et al.[60]	X	X		X	X
Tierney et al.[61]	X	x	X		X
Valaitis et al.[62]		X		X	X
Van Dongen 2018a[63]	X	X	X	X	X
Van Dongen 2018b**[64]**	X	X	X		X
Van Dongen 2016[65]		X			
Wener & Woodgate[66]	X	X		X	X
Wilcock et al.[67]	X	X			
Young et al.[68]	X	X	X		
# Articles	**21**	**26**	**16**	**20**	**16**

Table 4: Articles sorted in themes (X= paper included under that theme)

Theme 1: Acceptance and team readiness towards collaboration

Twenty-one articles provided strategies to improve the acceptance and team readiness towards collaboration.[37-42, 44, 46, 49, 50, 52, 54, 58-61, 63, 64, 66-68] Before being able to collaborate, caregivers need to accept working as a team. Team readiness towards collaboration occurs when team members obtain the right mindset to take necessary measures for efficient collaboration. This does not mean that an efficient collaboration has been reached, but both acceptance and team readiness were a prerequisite to achieving it. Acceptance and team readiness of caregivers towards collaboration were strongly influenced by their attitude, awareness, knowledge and understanding, and caregiver satisfaction.

Interventions on changing caregivers' attitudes towards collaboration seem to facilitate teamwork.[69] Workshops and information sessions were organised to make changes in caregivers' attitudes, in which advantages of teamwork and finding common ground were explained and lectured.[38, 46, 58, 59, 63, 64, 66, 68] Basic knowledge about the potential of teamwork was learned using logical explanations.[36, 38, 46, 58, 59, 63, 64, 66, 68] Caregivers to whom the advantages of collaboration were explained were more likely to accept and adopt the principles of interprofessional collaboration. Simple and accessible knowledge transfer seems to be an important characteristic of a successful intervention on the attitude and knowledge of caregivers.[37, 49, 60, 63, 64]

Some articles[38, 40, 44, 52, 63, 68] reported on strategies to increase awareness about collaboration in primary care. Increased awareness resulted in a better acceptance and team readiness towards collaboration. Making caregivers aware of their shortcomings and the

need for collaboration with different disciplines seemed an effective way to facilitate interprofessional collaboration. In addition to awareness, potential improvements in care quality[38, 41, 67], caused by better collaboration, motivate caregivers to change their attitude. Furthermore, some studies[39, 42, 50, 54, 61, 66, 67] reported that increased caregiver satisfaction was considered as a facilitator of collaboration between caregivers.

Theme 2: Acting as a team and not as an individual

Twenty-six articles provided strategies to act as a team and not as an individual.[35, 37, 39-43, 45-48, 50, 53, 54, 56, 58-68] In some articles[54, 58, 60, 66, 67], this was mentioned as collaborative behaviour, which was considered to be a facilitator of teamwork. Moreover, showing mutual respect and trust[45, 46, 48, 58, 63, 64, 66-68] between caregivers were important facilitators towards collaboration: it improves acting as a team, and it supports a safe team climate. Increasing safety was used to improve collaborative behaviour, and in some cases, it replaced working in silos into working as a team.[39, 42, 47, 53, 65, 67]

Developing and enhancing a shared vision, shared values and shared goals were mentioned as facilitators towards interprofessional collaboration.[35, 37, 41, 46, 66, 68] This was achieved by a structural inclusion of every team member in the development of the teams' vision, values and goals.[68] By simply writing down these principles, caregivers were more likely to participate in developing shared principles.[37, 41] Although the development process was not explained in detail, three articles mentioned that once developed, shared vision, goals and values were crucial to maintaining a beneficial collaboration.[46, 66, 68] To establish these shared principles, a patient-centred focus may be an important asset. By prioritising the patient's needs and preferences, caregivers can find common ground more easily.[43, 61-64, 68]

Leadership seems of utmost importance to act as a team. Strategies towards collaborative leadership and shared leadership were mentioned in the articles,[35, 40, 43, 45, 48, 56, 59, 63, 65] and leaders and decision makers should be aware of the potential effects of policy and structural changes on interprofessional teamwork. By using a clear role assignment, caregivers can prevent issues in their collaboration.[50, 63, 66, 68] However, in one case,[42] a rotational leadership was implemented and suggested, in which there was no permanent leader.

One paper emphasised that awareness of potential unintended negative effects of changes on the functioning of interprofessional teams should be taken into account by decision makers.[43]

Theme 3: Communication strategies and shared decision-making

Sixteen articles provided communication strategies and strategies to facilitate shared decision-making, to improve interprofessional collaboration in primary care.[35, 38-41, 43-46, 49, 50, 55, 61, 63, 64, 68] These strategies can be further delineated into the following subthemes: (i) knowledge about each other,[41, 61, 63] (ii) formal and informal meetings,[35, 39, 43, 50, 55, 63, 64] (iii) the use of structured guidelines and protocols,[40, 41, 61, 64] (iv) conflict resolution[38, 43, 49, 63, 64, 68] and (v) relational equality.[44-46, 68]

Knowing each other's professional roles and tasks seems a precondition for teamwork. However, knowing more about each other's family situation, interests and hobbies was also mentioned to be important to improve the communication and collaboration between caregivers.[41, 61, 63]

Both formal[39, 43, 55, 63, 64] and informal[35, 50, 64] team meetings, mainly happening between caregivers working in the same practice (under one roof),[50] were considered as an important communication strategy. Formal meetings were mostly used to share information about patients or clients, distribute tasks and identify and solve problems in the organisation. Planning and structuring a team meeting can increase the efficiency and productivity of these meetings.[39, 43, 55, 63, 64] Informal meetings were important to know more about each other and facilitated the trust relations between caregivers. Information that could not be shared in the formal meetings often appeared in the informal meetings. Even lunches with team members were used as a communication strategy.[35, 50, 64]

Structured guidelines, standardised tools and protocols were used to improve the communication and coordination between caregivers working in primary care. These protocols provided more effective communication and the provision of an evidence-based approach towards collaboration and care delivery. Besides using protocols, workshops were organised to improve communication.[40, 41, 61, 64]

Making decisions as a team was an indicator of good and effective communication. Shared decision-making was mentioned in nine studies,[38, 43-46, 49, 63, 64, 68] and our analysis identified conflict resolution[38, 43, 49, 63, 64, 68] and relational equality[44-46, 68] as key factors to improve shared decision-making.

Theme 4: Coordination in primary care

By collaborating with different disciplines and professions, many caregivers were experiencing problems regarding information sharing[36, 37, 44, 45, 53, 54, 60, 62, 63, 66] and referring[35, 36, 38, 39, 44, 45, 49, 58, 63, 66] between primary health care workers. Twenty articles, therefore, provided strategies to improve coordination in order to ameliorate information sharing between caregivers, to facilitate referrals for the patient and to guarantee the continuity of care.[35-39, 44, 45, 47-49, 51-56, 58, 62, 63, 66] Accordingly, reciprocity and reciprocal interdependence were shown to play a crucial role in the coordination of primary care.[58, 66]

Co-location and the importance of architecture and building characteristics were, in some cases, mentioned as influential factors for collaboration.[48, 51, 55] By optimising the architecture and working under one roof, brief face-to-face interactions may increase. The architecture could be optimised by having shared spaces, thus leading to increased staff proximity or visibility. Especially informal communication was positively affected by the presence of convenient circulatory and transitional spaces.[48, 51, 55] Additionally, weekly or monthly face-to-face meetings were organised to coordinate care. Face-to-face meetings and electronic task queues facilitate information sharing and efficient care coordination for complex patients.[51, 55]

Theme 5: Integration of caregivers and their skills and competences

Fifteen papers provided strategies to improve the integration of caregivers and their skills and competences in primary care practices[39-43, 46, 48, 52, 57, 59-64, 66] and tried to get the most out of every team member's presence.

For new team members, a successful integration was facilitated by welcoming the newcomers and making them know and understand the vision of the practice. Inclusion of the caregiver required additional proactive efforts regarding communication and

coordination among practice members.[41, 66] In some cases, a personal, one-to-one meeting with the new team member could facilitate problem-solving.[41]

Eleven papers presented an improved integration of caregivers skills and competences, as a facilitator for task distribution and role clarification.[39, 40, 42, 43, 46, 48, 59, 62-64, 66] Knowing each other's capabilities, including skills and competences, was very important in this regard.[40, 42, 48, 66] Additionally, making sure that caregivers not only know each other's skills and competences but also enable more transparency about their daily needs and preferences were mentioned as facilitators.[42, 48, 59, 63, 66] Six articles presented strategies to optimise the use of team members' skills and competences. By acknowledging and affirming their capabilities, integration of skills and competences was facilitated.[46, 52, 57, 61, 63, 66]

In one article, researchers indicated that the organisation of team communication-training workshops and implementation of flexible protocols gave practice stakeholders significant discretion to integrate new care team roles to best fit local needs. Furthermore, it improved team communication and functioning because of increased engagement and local leadership facilitation.[41]

Discussion

This scoping review identified five themes for interventions and strategies aimed at improving and facilitating IPCI in primary care. The first category, which incorporates acceptance, and team readiness, was a precondition for enhancing and maintaining efficient interprofessional collaboration. Accepting to collaborate requires a change of attitude, which involves valuing team members and actively soliciting the opinions or receiving feedback from other team members.[70] An major barrier to adopting a suitable attitude towards collaboration is the difficulty and complexity of sharing responsibility for patient care within a team. [71, 72] Making caregivers aware of their shortcomings and the need for collaboration with different disciplines are effective ways to facilitate interprofessional collaboration.[38, 40, 44, 52, 63, 68] In addition, Liedvogel et al.[73] demonstrates that experiencing teamwork itself increases the awareness of the advantages, and the importance of collaboration, as well as gives caregivers opportunities to demonstrate their skills and capabilities. In the broader community, increased awareness of the importance of interprofessional collaboration can lead to an improved experience and understanding of the totality of healthcare services.[74] Furthermore, according to Lockwood and Maguire et al.,[75] it can also help to reduce the sense of isolation experienced by solo medical practitioners.

Second, collaborative behaviour has been described as a facilitator of teamwork.[54, 58, 60, 66, 67] To enhance and maintain a collaborative behaviour, the development of shared principles (such as shared vision, values and goals) is an important prerequisite.[35, 37, 41, 46, 66, 68] Our review revealed that maintaining a safe team climate in which care professionals feel comfortable is important to act as a team and not as an individual.[39, 42, 47, 53, 65, 67] Although psychological safety is not often mentioned in primary care research,[17] Edmondson et al.[76] and Kim et al.[77] have indicated the essential role of a safe workplace environment in enhancing teamwork. Team psychological safety is defined as a shared value; the team is safe for interpersonal risk taking.[78] This means that team members feel they will not be punished or humiliated for speaking up with ideas, questions, concerns or mistakes. A team may not be able to collaborate properly if there is a lack of psychological safety; hence, it is

assumed that psychological safety is a necessary but insufficient condition for increasing interprofessional collaboration and workplace effectiveness.[79]

Third, structured guidelines and protocols seem to be beneficial for communication between care professionals, thereby impacting IPCI. Team meetings, especially formal meetings can be held more efficiently by using protocols, that have positive effects on hierarchy and conflicts resolution between team members.[80] The shared decision-making model has been put forward as a guide for discussing and making decisions in the most effective way.[81] This model includes three principles: recognizing and acknowledging that a decision is required, knowing and understanding the best available evidence, and incorporating the patient's values and preferences into the decision.[82]

Fourth, as an element of interprofessional collaboration and integration, care coordination is of utmost importance for patient safety. The situation-background-assessment-recommendation protocol is an existing method to perform information sharing efficiently and appropriately.[83] In addition, Lo et al.[84] suggest that the protocol may be a cost-effective method for coordinating between general practitioners and nurses.[84]

Finally, optimal integration of caregivers skills and competences has been associated with maximalising every team member's presence and shortening the adaptation process of new team members.[85] Family caregivers provide a significant portion of health and support services to individuals with serious illnesses; however, existing literature and health care systems have often overlooked them and mostly focused on integrating care professionals.[86, 87] Friedman et al.[86] suggest using a framework, in which the family caregiver is an indispensable partner of care professionals and patients.

Although all interventions or strategies are useful to a certain point, none is suitable to be used in isolation as a unique solution for IPCI in primary care. However, a mix of the interventions and strategies compiled in this scoping review may be capable of doing so. The consistency, design, and order of this mix of interventions and strategies cannot be specified based on the results of this scoping review.

This scoping review has several limitations. The review focuses exclusively on primary care; thus, our findings are not directly transferable to other healthcare levels. Only studies performed in high-income countries were included in this review; hence, our findings are not directly transferable to other countries because differences in health systems, financing, governance, title protection and culture can pose significant implementation challenges. In addition, by including only English-language articles and avoiding the grey literature, we might have missed some relevant papers. It is worthwhile to note, that this scoping review aimed to identify interventions that can improve interprofessional collaboration and integration in primary care and to list their impact on outcomes related to collaboration and integration. Our review did not report the effectiveness of interventions regarding health outcomes.

We selected articles based on WHO's[7] and Orchard et al.'s[8] definition of interprofessional collaboration. For integrated care, we adopted the definitions of Lewis et al.'s [10] and Valentijn et al.'s[20] definitions, which represent a widely accepted consensus. However, there are many other definitions of IPCI care that, if adopted, could affect the inclusion or exclusion of articles.

The literature has established that researchers can influence the interpretation of data. This risk of bias was minimised by triangulating researchers from different backgrounds (e.g. nurses, pharmacists and a psychologist) through the whole process and conducting the selection of articles with a team of at least two researchers. This triangulation, intensive cooperation and inductive process increased the credibility and reduced the risk of bias to the interpretation of the data based on preconceived understanding and personal opinions.

A strength of this review is the fact that we did not limit the search to the collaboration between specific types of caregivers, or in relation to a specific disease, or condition of patients. Therefore, our data and analysis can be used in the context of or added to a broad scope of IPCI in primary care. Furthermore, we performed an inductive analysis within a multidisciplinary team of researchers, to expand the analysis and to identify generic strategies and interventions.

Conclusion

This scoping review identified five categories of strategies and interventions to improve or facilitate IPCI in primary care: (i) acceptance and team readiness towards collaboration, (ii) acting as a team and not as an individual, (iii) communication strategies and shared decision making, (iv) coordination in primary care and (v) integration of caregivers and their skills and competences. We did not identify a single strategy or intervention which is broad or generic enough to be used in every type of primary care setting.

We can conclude that a mix of the identified strategies and interventions, which we illustrated as 'building blocks', can provide valuable input to develop a generic intervention to be used in different settings and levels of primary health care.

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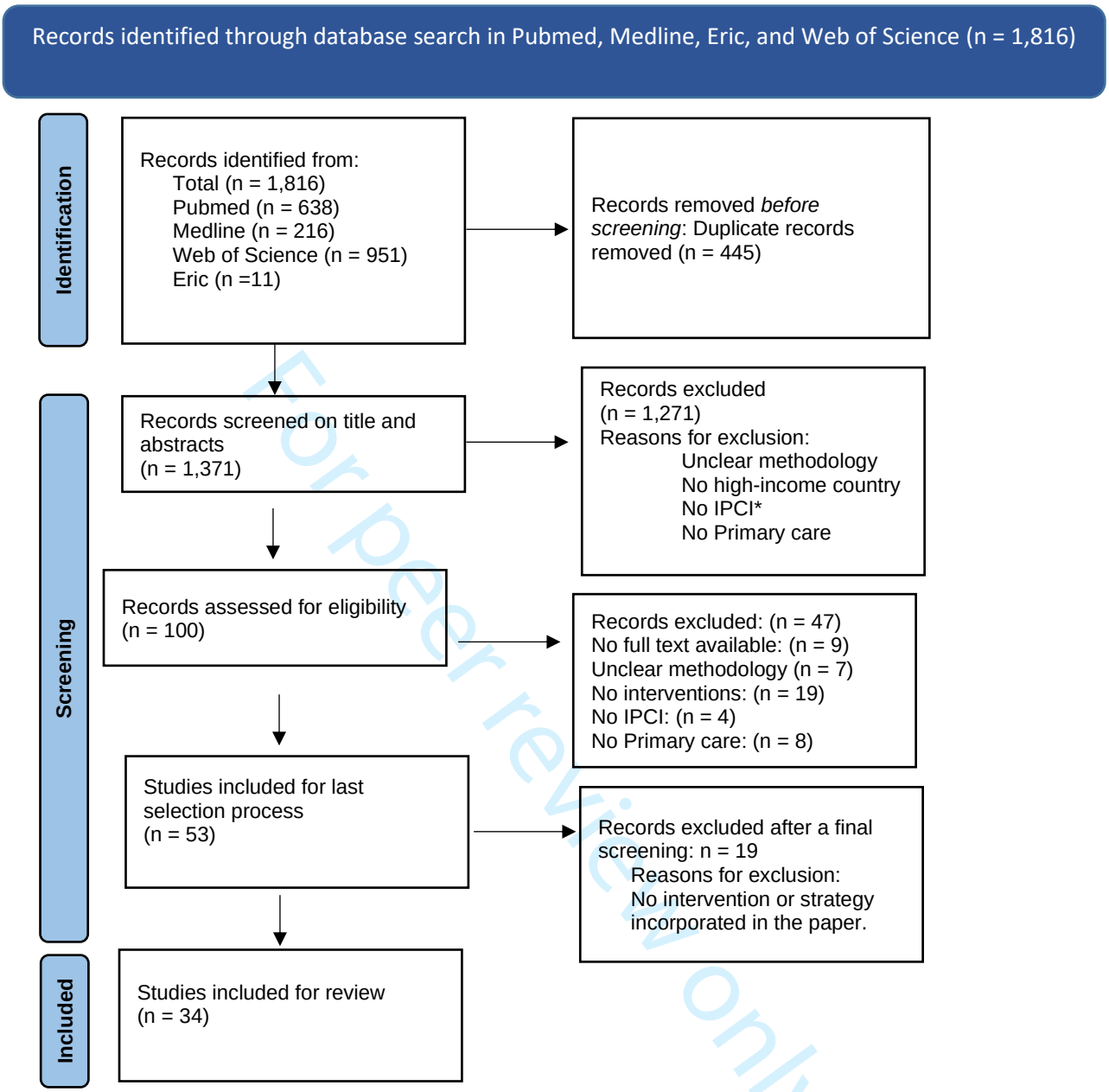

Figure 1: PRISMA flow diagram. PRISMA, Preferred Reporting Items for Scoping reviews (*IPCI= Interprofessional collaboration or integration)

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1,2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	2 and 3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	2 and 3
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	/
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	4 and 5
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	3
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	3 and 4 + table 1
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	3 and 4
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	4 and 5
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	3-5
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	Not required for ScR

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	5
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	5, 6, and figure 1
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	5, table 2 and table 3
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	/
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	5 – 10 + table 3 and 4
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	10-13
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	13 and 14
Limitations	20	Discuss the limitations of the scoping review process.	14 and 15
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	15
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	15

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.

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A scoping review to identify strategies and interventions improving interprofessional collaboration and integration in primary care

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Title: A scoping review to identify strategies and interventions improving interprofessional collaboration and integration in primary care

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Abstract

Objective: To identify strategies and interventions used to improve interprofessional collaboration and integration in primary care.

Design: Scoping review

Data Sources: Specific Medical Subject Headings (MeSH-terms) were used, and a search strategy was developed for Pubmed and afterwards adapted to Medline, Eric, and Web of Science.

Study selection: In the first stage of the selection, two researchers screened the article abstracts to select eligible papers. When decisions conflicted, three other researchers joined the decision-making process. The same strategy was used with full-text screening. Articles were included if they: (i) were in English, (ii) described an intervention to improve interprofessional collaboration or integration (IPCI) in primary care involving at least two different healthcare disciplines, (iii) originated from a high-income country, (iv) were peer-reviewed; and (v) were published between 2001 and 2020.

Data extraction and synthesis: From each paper, eligible data were extracted, and the selected papers were analysed inductively. Studying the main focus of the papers, researchers searched for common patterns in answering the research question and exposing research gaps. The identified themes were discussed and adjusted until a consensus was reached among all authors.

Results: The literature search yielded a total of 1816 papers. After removing duplicates, screening titles, and abstracts, and performing full-text readings, 34 papers were incorporated in this scoping review. The identified strategies and interventions were inductively categorized under five main themes; (i) Acceptance and team readiness towards collaboration, (ii) acting as a team and not as an individual; (iii) communication strategies and shared decision making, (iv) coordination in primary care, and (v) integration of caregivers and their skills and competences.

Conclusions: We identified a mix of strategies and interventions that can function as 'building blocks', for the development of a generic intervention to improve collaboration in different types of primary care settings and organisations.

Strengths and limitations of this study

- The review focuses exclusively on primary care; thus, our findings are not directly transferable to other healthcare levels.
- Only articles written in English were included. Therefore we may have missed valuable literature.
- Only studies performed in high-income countries were included in this review; hence, our findings are not directly transferable to other countries because differences in health systems, financing, governance, title protection and culture can pose significant implementation challenges.
- The risk of bias to the interpretation of the data was minimised by triangulating researchers from different backgrounds (e.g. nurses, pharmacists and a psychologist) throughout the whole review process and conducting the selection of articles with a team of at least two researchers.
- We did not limit the search to the collaboration between specific types of caregivers, or in relation to a specific disease, or condition of patients. Therefore, our data and analysis can be used in the context of or added to a broad scope of interprofessional collaboration and integration in primary care.

Introduction

As the world population is ageing, the growing complexity of health care and health needs, together with the associated financial challenges[1] and the fragmentation of primary care, [2-4] are prompting a fundamental rethink of how primary care should be organised and how professionals in different settings should collaborate.[5] As approximately one-third of the world population lives with a chronic disease,[6] and as primary care is usually the first point of access to the care system, integrated care at that level in which professionals closely collaborate, both interdisciplinary and interprofessional, is unquestionably important in current and future care organisations.

Interprofessional collaboration can be beneficial to achieving a more integrated primary health care and should overcome the aforementioned challenges and problems. According to the World Health Organisation, interprofessional collaboration occurs when two or more professions work together to achieve common goals.[7] Orchard et al.[8] defines it as involving a partnership between a team of health professionals and a client in a participatory, collaborative and coordinated approach to shared decision-making around health and social

issues. As Goodwin et al.[9] and Lewis et al.[10] see an efficient interprofessional collaboration as a prerequisite for integrated care, Edmondson et al.[11] indicated that psychological safety, defined as a shared belief that the team is safe for interpersonal risk-taking, is a critical factor in understanding teamwork and organisational learning.

Next to health professionals, informal caregivers are involved in interprofessional collaboration.[12] According to the World Health Organisation,[13] informal caregivers should be considered full partners in care and they mostly consist of families and friends of the patient. To measure the collaboration and coordination of these formal and informal caregivers many questionnaires are available.[14] The assessment of interprofessional team collaboration scale (AITCS) is an example consisting of the subscales; partnership, cooperation and coordination, and can be deployed in primary healthcare.[15]

To achieve and maintain interprofessional collaboration in primary care, Bardet et al.[16] identified the following key elements: trust, interdependence, perceptions and expectations from the other health care professionals, their skills, their interest for collaborative practice, their role definition and their communication.[17-23] These key elements are also present in the five dimensions of integrated care that Valentijn et al.[24, 25] described in the Rainbow model as follows: system, organisational, professional, clinical, functional, and normative integration. Integrated care and quality collaboration between professionals leads to improved access to care [26], better health outcomes [27], and enhanced prevention.[28, 29]

Although several literature reviews identified strategies to influence, improve or facilitate interprofessional collaboration, a thorough analysis of the interventions is lacking. Most review papers focused on the collaboration of a single type of caregiver or one specific disease.[27, 30-38] Therefore, it is difficult to broaden these findings to primary care and chronic conditions in general.

To fill this gap, we performed a scoping review to identify strategies and interventions improving and/or facilitating interprofessional collaboration and integration (IPCI) in primary care. More specifically, we listed and analysed the existing strategies, interventions and their outcomes, without focussing on a specific profession or disease. Based on the definitions of interprofessional collaboration[7, 8] and integrated care[9, 10, 24, 25], we included papers, thus outlining strategies and interventions working on micro, meso and macro-level. The included papers described organisational, relational and processual factors influenced by these interventions and strategies.

This review was conducted as the first phase of a research project to develop an evidence-based toolkit, guiding health professionals in their transition towards IPCI of different competencies, skills and roles as well as the role of patients and their needs in primary care.

Methods

We conducted a scoping review using the Arksey and O'Malley framework[39]: (i) identifying the research questions, (ii) identifying relevant studies, (iii) selecting studies, (iv) charting the data and (v) collating, summarising and reporting results. We used the PRISMA-ScR guidelines and the PRISMA-ScR templates to help conduct the scoping review[40].

Step 1: Identifying the research questions

An exploratory literature search was performed preliminarily to identifying the research question on IPCI in primary care. Based on this literature search, we developed the following research question: Which strategies and/or interventions improve or facilitate interprofessional collaboration and integration in primary care? We aimed to search for articles containing generic strategies and methods used in primary care settings, to facilitate IPCI in primary care. Five researchers were involved in identifying this research question for the scoping review.

Step 2: Identifying relevant studies: search strategy

We used specific Medical Subject Headings (MeSH-terms) and free text terms to design a search strategy around the following key concepts: primary care, health care team, integration and interprofessional collaboration. We combined the keywords and MeSH terms presented in Table 1 with the Boolean terms 'OR', 'AND' and 'NOT'. The search strategy was developed for Pubmed and afterwards adapted to Medline, Eric and Web of Science. The search was performed between March and June 2020.

MeSh/search terms and combinations for Pubmed
1. primary care
2. primary healthcare
3. primary health care
1 or 2 or 3 (Title/abstract)
5. integrative team
6. integrative teams
7. collaborative practice
8. collaborative practices
9. interdisciplinary team
10. interdisciplinary teams
11. multidisciplinary team
12. multidisciplinary teams
13. interprofessional team
14. interprofessional teams
15. healthcare team
16. healthcare teams
17. health care team
18. health care teams
5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 (title/abstract)
20. interprofessional collaboration
21. interprofessional teamwork
22. interprofessional team work
23. interdisciplinary collaboration
24. interdisciplinary teamwork
25. interdisciplinary team work
26. multidisciplinary collaboration
20 or 21 or 22 or 23 or 24 or 25 or 26 (All fields)
4 AND 19 AND 27

Table 1: keywords and MeSH terms used to identify relevant data.

Step 3: Study selection

Articles were included if they: (i) were in English, (ii) described an intervention to improve interprofessional collaboration or integration in primary care involving at least two different healthcare disciplines, (iii) originated from a high-income country,[41] (iv) were peer-reviewed and (v) were published between 2001 and 2020. Articles were excluded when: (i) the research methods and findings were not thoroughly described, (ii) it concerned opinion papers, (iii) the study focused on a single disease or group of patients/clients and (iv) when the full text was not available.

We used Rayyan[42] to collect and organise eligible articles. In the first stage of the selection, MMS and PVB screened the article abstracts to select eligible papers, according to the inclusion and exclusion criteria, and to eliminate the duplicates. When decisions conflicted, three other researchers (HDL, KdV, KVdB) joined the decision-making process; they were blind to the decisions of the first two reviewers, and each screened a third of the conflicting abstracts. In the second stage of the selection, the initial two reviewers read the full texts of the selected articles. As in the first stage, studies were included or excluded depending on the agreement of both reviewers. When the decisions of the two reviewers conflicted, the other researchers joined the decision-making process and a procedure similar to the one outlined above was followed.

2.4. Charting the data

From each paper, eligible data were extracted using a self-developed descriptive template. The following characteristics were recorded: a full reference citation (author, title, journal and publication date); the methodology used to conduct the research; a summary of the intervention or strategy used to facilitate IPCI and the impact on IPCI.

Step 5: Collating, summarising and reporting the data

The selected papers were analysed inductively. Studying the main focus of the papers, we searched for common patterns among them, answering the research question and/or exposing research gaps. We, thus, identified themes and subthemes, which were discussed and adjusted until consensus was reached among all authors. Subsequently, all selected papers were coded using the defined themes. Using a tabular overview and summary of the selected literature, the iterative analysis and discussion among the authors were facilitated and allowed the extraction of the interventions and strategies of interest.

Patient and public involvement

This scoping review did not directly involve patients or public.

Results

The literature search yielded a total of 1,816 papers, of which 445 duplicates were removed (Figure 1). Upon screening titles and abstracts of the remaining 1,371 records, only 100 were eligible given the inclusions criteria outlined above. After further reading, 47 studies, lacking an intervention, were excluded. Finally, 19 more articles were excluded because they did not include strategies or interventions. This resulted in 34 papers describing strategies and

interventions to facilitate IPCI in primary care. A Flow diagram on the selection procedure is available in figure 1.

Study characteristics

Author and year	Title	Journal	Country	Study design	Intervention/strategy
Bentley et al. 2017	Interprofessional teamwork in comprehensive primary healthcare services: findings from a mixed methods study	Journal of interprofessional care	Australia	Mixed methods study. Online survey, and interviews with managers and practitioners	Introduction of a comprehensive primary healthcare (CPHC) method
Berkowitz et al. 2016	Case study: Johns Hopkins community health partnership: a model for transformation	The journal of delivery science and innovation	USA	Case study	The Johns Hopkins Community Health Partnership (J-CHiP). A community-based intervention using multidisciplinary care.
Chan et al. 2010	Finding common ground? Evaluating an intervention to improve teamwork among primary health-care professionals	International journal of quality in health care	Australia	Mixed methods study: Qualitative interviews, observations and a survey assessing multidisciplinary teamwork were used.	A 6-month intervention (The Team-link intervention) consisting of an educational workshop and structured facilitation using specially designed materials, backed up by informal telephone support.
Coleman et al. 2008	Interprofessional ambulatory primary care practice-based educational program	Journal of interprofessional care	USA	A longitudinal cohort study with a quantitative evaluation.	STAR-project: an educational program for teams of nurse practitioners, family medicine residents and social work students to work together at clinical sites in the delivery of longitudinal care in primary care ambulatory clinics.
Curran et al. 2007	Evaluation of an interprofessional continuing professional development initiative in primary health care	Journal of continuing education in the health professions	Canada	Mixed methods study: An evaluation research design, pre- to post-study with quantitative and qualitative instruments.	Introducing The Building a Better Tomorrow Initiative (BBTI), which is a continuing professional development (CPD) program.
Goldman et al. 2010	Interprofessional primary care protocols: a strategy to promote an evidence-based approach to teamwork and the delivery of care	Journal of interprofessional care	Canada	Qualitative study.	Implementation of an interprofessional protocol
Grace et al. 2014	Flexible implementation and integration of new team members to support patient-centred care	The journal of delivery science and innovation	USA	Mixed methods: Interviews and a survey with primary care professionals.	Introduction of interprofessional primary care protocols
Hilts et al. 2013	Helping primary care teams emerge through a quality improvement program	Oxford academic: family practice	Canada	A qualitative exploratory case study approach.	Introducing a quality improvement program.
Josi et al. 2020	Advanced practice nurses in primary care in Switzerland: an analysis of interprofessional collaboration	BMC nursing	Switzerland	Qualitative study with an ethnographic design.	Integration of an advanced practice nurse in a primary care team.
Kim et al. 2019	What makes team communication effective: a qualitative analysis of interprofessional primary care team members' perspectives	Journal of interprofessional care	USA	Qualitative study. Grounded theory method of constant comparison.	Standardized communication tools used with the implementation of the patient-centred medical home (PCMH)

Kotecha et al. 2015	Influence of a quality improvement learning collaborative program on team functioning in primary healthcare	Journal of collaborative family healthcare	Canada	A qualitative study using a phenomenological approach was conducted as part of a mixed-method evaluation.	Quality Improvement Learning Collaborative Program to support the development of interdisciplinary team function and improve chronic disease management, disease prevention, and access to care.
Légaré et al. 2020	Validating a conceptual model for an inter-professional approach to shared decision making: a mixed methods study	Journal of evaluation in clinical practice	Canada	Qualitative study. Thematic analysis of the transcripts and a descriptive analysis of the questionnaires were performed.	An interprofessional shared decision-making model.
Lockhart et al. 2019	Engaging primary care physicians in care coordination for patients with complex medical conditions	Canadian family physician	Canada	Qualitative study. Care professionals were interviewed 14 to 19 months after the initiation of an intervention.	Initiation of the Seamless Care Optimizing the Patient Experience (SCOPE) project.
Macnaughton et al. 2013	Role construction and boundaries in interprofessional primary health care teams: a qualitative study	BMC health service research	Canada	A qualitative, comparative case study with observations was conducted.	Introduction of a model to explore how roles are constructed within interprofessional health care teams. It focuses on elucidating the different types of role boundaries, the influences on role construction and the implications for professionals and patients.
Mahmood-Yousef et al. 2008	Interprofessional relationships and communication in primary palliative care: impact of the gold standards framework	The British journal of general practice	United kingdom	Qualitative interview case study.	Adoption of an interprofessional collaboration framework to investigate the extent to which the framework influences interprofessional relationships and communication, and to compare general practitioners' and nurses' experiences.
Morgan et al. 2015	Observation of interprofessional collaborative practice in primary care teams: an integrative literature review	International journal of nursing studies	New Zealand	Integrative literature review	Several strategies to improve interprofessional collaboration in primary care teams
Morgan et al. 2020	Collaborative care in primary care: the influence of practice interior architecture on informal face-to-face communication—an observational study	Health environments research & design journal	New Zealand	Qualitative study with observations	Changing the architecture of primary care settings to explore the influence of primary care practice interior architecture on face-to-face on-the-fly communication for collaborative care.
Murphy et al. 2017	Change in mental health collaborative care attitudes and practice in Australia impact of participation in MHPN network meetings	Journal of integrated care	Australia	Quantitative study: an online survey.	Introduction of the Mental Health Professionals Network. Investigating attitudinal and practice changes amongst health professionals after participation in MHPN's network meetings.
Pullon et al. 2016	Observation of interprofessional collaboration in primary care practice: a multiple case study	Journal of interprofessional care	New Zealand	Qualitative study, using a case study design with observations.	Identifying existing strategies to maintain and improve interprofessional collaboration in primary care practices.

Reay et al. 2013	Legitimizing new practices in primary health care	Health care management review	Canada	A qualitative, longitudinal comparative case study.	Developing effective interdisciplinary teams in primary health care.
Reeves et al. 2017	Interprofessional collaboration to improve professional practice and healthcare outcomes	Cochrane review	Canada	Systematic review	Nine interventions were analysed.
Robben et al. 2012	Impact of interprofessional education on collaboration attitudes, skills, and behaviour among primary care professionals	Journal of continuing education in the health professions	Netherlands	Mixed methods study: Before-after study, using the Interprofessional Attitudes Questionnaire, Attitudes Toward Health Care Teams Scale, and Team Skills Scale. Additionally, semi-structured interviews were conducted	Introduction of an interprofessional education program with interdisciplinary workshops.
Rodriquez et al. 2010	The implementation evaluation of primary care groups of practice: a focus on organizational identity	BMC family practice	Canada	Qualitative study. An in-depth longitudinal case study was conducted over two and a half years.	Implementation of primary care groups of practice, with a focus on the emergence of the organizational identity.
Rodriquez et al. 2015	Availability of primary care team members can improve teamwork and readiness for change	Health care management review	USA	Quantitative study with a survey, using path analysis.	A four-stage developmental interprofessional collaborative relationship-building model: To assess primary care team structure (team size, team member availability, and access to interdisciplinary expertise), teamwork, and readiness for change.
Russell et al. 2018	Contextual levers for team-based primary care: lessons from reform interventions in five jurisdictions in three countries	Health service research	Canada	An international consortium of researchers met via teleconference and regular face-to-face meetings using a Collaborative Reflexive Deliberative Approach to re-analyse and synthesize their published and unpublished data and their own work experience.	Determining existing strategies and methods to improve interprofessional collaboration and integration in primary care.
Sargeant et al. 2008	Effective interprofessional teams: “contact is not enough” to build a team	Journal of continuing education in the health professions	Canada	Qualitative, grounded theory study.	Introducing an interprofessional educational program.
Tierney et al. 2019	Interdisciplinary team working in the Irish primary healthcare system: analysis of ‘invisible’ bottom-up innovations using normalisation process theory	Journal of health policy	Ireland	Mixed methods study: An online survey and an interview study.	Bottom-up innovations using Normalisation Process Theory: (1)Design and delivery of educational events in the community for preventive care and health promotion. (2)Development of integrated care plans for people with complex health needs. (3) Advocacy on behalf of patients.
Valaitis et al. 2020	Examining interprofessional teams structures and processes in the implementation of a primary care intervention (health tapestry) for older adults using normalization process theory	BMC family practice	Canada	Qualitative study. This study applied Normalization Process Theory (NPT) and used a descriptive qualitative approach embedded in a mixed-methods, pragmatic randomized controlled trial.	Strengthening Quality [Health TAPESTRY] is a primary care intervention aimed at supporting older adults that involves trained volunteers, interprofessional teams, technology, and system navigation.

Van Dongen et al. 2018a	Suitability of a programme for improving interprofessional primary care team meetings	International journal of integrated care	Netherlands	Mixed methods study: a process evaluation using a mixed-methods approach including both qualitative and quantitative data.	Introducing a multifaceted programme including a reflection framework, training activities and a toolbox.
Van Dongen et al. 2016	Interprofessional collaboration regarding patients' care plans in primary care: a focus group study into influential factors	BMC family practice	Netherlands	Qualitative study with an inductive content analysis.	Improving interprofessional collaboration by using patients' care plans.
Van dongen et al. 2018b	Development of a customizable programme for improving interprofessional team meetings: an action research approach	International journal of integrated care	Netherlands	Qualitative study with an action research approach.	A Customizable Programme for Improving Interprofessional Team Meetings
Wener & Woodgate et al. 2016	Collaborating in the context of co-location: a grounded theory study	BMC family practice	Canada	A qualitative research paradigm where the exploration is grounded in the providers' experiences.	A four-stage developmental interprofessional collaborative relationship-building model to guide health care providers and leaders as they integrate mental health services into primary care settings.
Wilcock et al. 2002	The Dorset Seedcorn project: interprofessional learning and continuous quality improvement in primary care	British journal of general practice	United Kingdom	Mixed methods study. Participants kept reflective journals. The evaluation was undertaken using a mix of questionnaires and staff interviews.	The Dorset Seedcorn Project: interprofessional learning and continuous quality improvement in primary care. Implementing the principles and methods of continuous quality improvement.
Young et al. 2017	Shared care requires a shared vision: communities of clinical practice in a primary care setting	BMC health service research	New Zealand	Qualitative study with observations. A focused ethnography of nine 'Communities of Clinical Practice.	Introducing the 'Community of Clinical Practice' (CoCP) model. Forming a vision of care which is shared by patients and the primary care professionals involved in their care.

Table 2: An overview of the characteristics of the selected articles.

Findings

Five main themes, essential for IPCI, emerged from our analyses: (i) Acceptance and team readiness towards collaboration (n=21), (ii) acting as a team and not as an individual (n=26); (iii) communication strategies and shared decision making (n=16), (iv) coordination in primary care (n=20), and (v) integration of caregivers and their skills and competences (n=16). An overview of the interventions is presented in Table 2, while an overview of the articles sorted in themes is presented in Table 3.

Articles	Acceptance and team readiness towards collaboration	Acting as a team and not as an individual	Communication strategies and shared decision making	Coordination in primary care	Integration of caregivers and their skills and competences
Bentley et al.[43]		X	X	X	
Berkowitz et al.[44]				X	
Chan et al.[45]	X	X		X	
Coleman et al.[46]	X		X	X	
Curran et al.[47]	X	X	X	X	X
Goldman et al. [48]	X	X	X		X
Grace et al.[49]	X	X	X		X

Hilts et al.[50]	X	X			X
Josi et al.[51]		X	X		X
Kim et al.[52]	X		X	X	
Kotecha et al.[53]		X	X	X	
Légaré et al.[54]	X	X	X		X
Lockhart et al.[55]		X		X	
MacNaughton et al.[56]		X		X	X
Mahmood-Yousef et al.[57]	X		X	X	
Morgan 2015[58]	X	X	X		
Morgan 2020[59]				X	
Murphy et al.[60]	X			X	X
Pullon et al.[61]		X		X	
Reay et al.[62]	X	X		X	
Reeves et al.[63]			X	X	
Robben et al.[64]		X			
Rodriquez 2010.[65]					X
Rodriquez 2015[66]	X	X		X	
Russell et al.[67]	X	X			X
Sargeant et al.[68]	X	X		X	X
Tierney et al.[69]	X	x	X		X
Valaitis et al.[70]		X		X	X
Van Dongen 2018a[71]	X	X	X	X	X
Van Dongen 2018b**[72]**	X	X	X		X
Van Dongen 2016[73]		X			
Wener & Woodgate[74]	X	X		X	X
Wilcock et al.[75]	X	X			
Young et al.[76]	X	X	X		
# Articles	**21**	**26**	**16**	**20**	**16**

Table 3: Articles sorted in themes (X= paper included under that theme)

Theme 1: Acceptance and team readiness towards collaboration

Twenty-one articles provided strategies to improve the acceptance and team readiness towards collaboration.[45-50, 52, 54, 57, 58, 60, 62, 66-69, 71, 72, 74-76] Before being able to collaborate, caregivers need to accept working as a team. Team readiness towards collaboration occurs when team members obtain the right mindset to take necessary measures for efficient collaboration. This does not mean that an efficient collaboration has been reached, but both acceptance and team readiness were a prerequisite to achieving it. Acceptance and team readiness of caregivers towards collaboration were strongly influenced by their attitude, awareness, knowledge and understanding, and caregiver satisfaction.

Interventions on changing caregivers' attitudes towards collaboration seem to facilitate teamwork.[77] Workshops and information sessions were organised to make changes in caregivers' attitudes, in which advantages of teamwork and finding common ground were explained and lectured.[46, 54, 66, 67, 71, 72, 74, 76] Basic knowledge about the potential of teamwork was learned using logical explanations.[44, 46, 54, 66, 67, 71, 72, 74, 76] Caregivers to whom the advantages of collaboration were explained were more likely to accept and adopt the principles of interprofessional collaboration. Simple and accessible knowledge transfer seems to be an important characteristic of a successful intervention on the attitude and knowledge of caregivers.[45, 57, 68, 71, 72]

Some articles[46, 48, 52, 60, 71, 76] reported on strategies to increase awareness about collaboration in primary care. Increased awareness resulted in a better acceptance and team readiness towards collaboration. Making caregivers aware of their shortcomings and the need for collaboration with different disciplines seemed an effective way to facilitate interprofessional collaboration. In addition to awareness, potential improvements in care quality[46, 49, 75], caused by better collaboration, motivate caregivers to change their attitude. Furthermore, some studies[47, 50, 58, 62, 69, 74, 75] reported that increased caregiver satisfaction was considered as a facilitator of collaboration between caregivers.

Theme 2: Acting as a team and not as an individual

Twenty-six articles provided strategies to act as a team and not as an individual.[43, 45, 47-51, 53-56, 58, 61, 62, 64, 66-76] In some articles[62, 66, 68, 74, 75], this was mentioned as collaborative behaviour, which was considered to be a facilitator of teamwork. Moreover, showing mutual respect and trust[53, 54, 56, 66, 71, 72, 74-76] between caregivers were important facilitators towards collaboration: it improves acting as a team, and it supports a safe team climate. An environment of greater psychological safety improved collaborative behaviour, and in some cases, it replaced working in silos with working as a team.[47, 50, 55, 61, 73, 75]

Developing and enhancing a shared vision, shared values and shared goals were mentioned as facilitators towards interprofessional collaboration.[43, 45, 49, 54, 74, 76] This was achieved by a structural inclusion of every team member in the development of the teams' vision, values and goals.[76] By simply writing down these principles, caregivers were more likely to participate in developing shared principles.[45, 49] Although the development process was not explained in detail, three articles mentioned that once developed, shared vision, goals and values were crucial to maintaining a beneficial collaboration.[54, 74, 76] To establish these shared principles, a patient-centred focus may be an important asset. By prioritising the patient's needs and preferences, caregivers can find common ground more easily.[51, 69-72, 76]

Leadership seems of utmost importance to act as a team. Strategies towards collaborative leadership and shared leadership were mentioned in the articles,[43, 48, 51, 53, 56, 64, 67, 71, 73] and leaders and decision makers should be aware of the potential effects of policy and structural changes on interprofessional teamwork. By using a clear role assignment, caregivers can prevent issues in their collaboration.[58, 71, 74, 76] However, in one case,[50] a rotational leadership was implemented and suggested, in which there was no permanent leader.

One paper emphasised that awareness of potential unintended negative effects of changes on the functioning of interprofessional teams should be taken into account by decision makers.[51]

Theme 3: Communication strategies and shared decision-making

Sixteen articles provided communication strategies and strategies to facilitate shared decision-making, to improve interprofessional collaboration in primary care.[43, 46-49, 51-54, 57, 58, 63, 69, 71, 72, 76] These strategies can be further delineated into the following subthemes: (i) knowledge about each other,[49, 69, 71] (ii) formal and informal meetings,[43, 47, 51, 58, 63, 71, 72] (iii) the use of structured guidelines and protocols,[48, 49, 69, 72] (iv) conflict resolution[46, 51, 57, 71, 72, 76] and (v) relational equality.[52-54, 76]

Knowing each other's professional roles and tasks seems a precondition for teamwork. However, knowing more about each other's family situation, interests and hobbies was also

mentioned to be important to improve the communication and collaboration between caregivers.[49, 69, 71]

Both formal[47, 51, 63, 71, 72] and informal[43, 58, 72] team meetings, mainly happening between caregivers working in the same practice (under one roof),[58] were considered as an important communication strategy. Formal meetings were mostly used to share information about patients or clients, distribute tasks and identify and solve problems in the organisation. Planning and structuring a team meeting can increase the efficiency and productivity of these meetings.[47, 51, 63, 71, 72] Informal meetings were important to know more about each other and facilitated the trust relations between caregivers. Information that could not be shared in the formal meetings often appeared in the informal meetings. Even lunches with team members were used as a communication strategy.[43, 58, 72]

Structured guidelines, standardised tools and protocols were used to improve the communication and coordination between caregivers working in primary care. These protocols provided more effective communication and the provision of an evidence-based approach towards collaboration and care delivery. Besides using protocols, workshops were organised to improve communication.[48, 49, 69, 72]

Making decisions as a team was an indicator of good and effective communication. Shared decision-making was mentioned in nine studies,[46, 51-54, 57, 71, 72, 76] and our analysis identified conflict resolution[46, 51, 57, 71, 72, 76] and relational equality[52-54, 76] as key factors to improve shared decision-making.

Theme 4: Coordination in primary care

By collaborating with different disciplines and professions, many caregivers were experiencing problems regarding information sharing[44, 45, 52, 53, 61, 62, 68, 70, 71, 74] and referring[43, 44, 46, 47, 52, 53, 57, 66, 71, 74] between primary health care workers. Twenty articles, therefore, provided strategies to improve coordination in order to ameliorate information sharing between caregivers, to facilitate referrals for the patient and to guarantee the continuity of care.[43-47, 52, 53, 55-57, 59-64, 66, 70, 71, 74] Accordingly, reciprocity and reciprocal interdependence were shown to play a crucial role in the coordination of primary care.[66, 74]

Co-location and the importance of architecture and building characteristics were, in some cases, mentioned as influential factors for collaboration.[56, 59, 63] By optimising the architecture and working under one roof, brief face-to-face interactions may increase. The architecture could be optimised by having shared spaces, thus leading to increased staff proximity or visibility. Especially informal communication was positively affected by the presence of convenient circulatory (e.g. foyers and lobbies) and transitional (e.g. courtyards, verandas, and corridors) spaces.[56, 59, 63] Additionally, weekly or monthly face-to-face meetings were organised to coordinate care. Face-to-face meetings and electronic task queues facilitate information sharing and efficient care coordination for complex patients.[59, 63]

Theme 5: Integration of caregivers and their skills and competences

Fifteen papers provided strategies to improve the integration of caregivers and their skills and competences in primary care practices[47-51, 54, 56, 60, 65, 67-72, 74] and tried to get the most out of every team member's presence.

For new team members, a successful integration was facilitated by welcoming the newcomers and making them know and understand the vision of the practice. Inclusion of the caregiver required additional proactive efforts regarding communication and coordination among practice members.[49, 74] In some cases, a personal, one-to-one meeting with the new team member could facilitate problem-solving.[49]

Eleven papers presented an improved integration of caregivers skills and competences, as a facilitator for task distribution and role clarification.[47, 48, 50, 51, 54, 56, 67, 70-72, 74] Knowing each other's capabilities, including skills and competences, was very important in this regard.[48, 50, 56, 74] Additionally, making sure that caregivers not only know each other's skills and competences but also enable more transparency about their daily needs and preferences were mentioned as facilitators.[50, 56, 67, 71, 74] Six articles presented strategies to optimise the use of team members' skills and competences. By acknowledging and affirming their capabilities, integration of skills and competences was facilitated.[54, 60, 65, 69, 71, 74]

In one article, researchers indicated that the organisation of team communication-training workshops and implementation of flexible protocols gave practice stakeholders significant discretion to integrate new care team roles to best fit local needs. Furthermore, it improved team communication and functioning because of increased engagement and local leadership facilitation.[49]

Discussion

This scoping review identified five themes for interventions and strategies aimed at improving and facilitating IPCI in primary care. The first category, which incorporates acceptance, and team readiness, was a precondition for enhancing and maintaining efficient interprofessional collaboration. Accepting to collaborate requires a change of attitude, which involves valuing team members and actively soliciting the opinions or receiving feedback from other team members.[78] An major barrier to adopting a suitable attitude towards collaboration is the difficulty and complexity of sharing responsibility for patient care within a team. [79, 80] Making caregivers aware of their shortcomings and the need for collaboration with different disciplines are effective ways to facilitate interprofessional collaboration.[46, 48, 52, 60, 71, 76] In addition, Liedvogel et al.[81] demonstrates that experiencing teamwork itself increases the awareness of the advantages, and the importance of collaboration, as well as gives caregivers opportunities to demonstrate their skills and capabilities. In the broader community, increased awareness of the importance of interprofessional collaboration can lead to an improved experience and understanding of the totality of healthcare services.[82] Furthermore, according to Lockwood and Maguire et al.,[83] it can also help to reduce the sense of isolation experienced by solo medical practitioners.

Second, collaborative behaviour has been described as a facilitator of teamwork.[62, 66, 68, 74, 75] To enhance and maintain a collaborative behaviour, the development of shared principles (such as shared vision, values and goals) is an important prerequisite.[43, 45, 49, 54, 74, 76] Our review revealed that maintaining a safe team climate in which care professionals feel comfortable is important to act as a team and not as an individual.[47, 50, 55, 61, 73, 75] Although psychological safety is not often mentioned in primary care research,[22] Edmondson et al.[11] and Kim et al.[84] have indicated the essential role of a safe workplace environment in enhancing teamwork. Team psychological safety is defined as a shared value; the team is

safe for interpersonal risk taking.[85] This means that team members feel they will not be punished or humiliated for speaking up with ideas, questions, concerns or mistakes. A team may not be able to collaborate properly if there is a lack of psychological safety; hence, it is assumed that psychological safety is a necessary but insufficient condition for increasing interprofessional collaboration and workplace effectiveness.[86]

Third, structured guidelines and protocols seem to be beneficial for communication between care professionals, thereby impacting IPCI. Team meetings, especially formal meetings can be held more efficiently by using protocols, that have positive effects on hierarchy and conflicts resolution between team members.[87] Although interventions in our review did not give attention to informal meetings as much as existing literature[88-90], Burm et al.[88] indicated that, by recognising the importance of informal meetings, care providers are more motivated to organise or participate in informal meetings. These meetings tended to be ad-hoc and improvised, and in some cases discussion topics were recorded in notebooks.[89, 90] The shared decision-making model has been put forward as a guide for discussing and making decisions in the most effective way.[91] This model includes three principles: recognizing and acknowledging that a decision is required, knowing and understanding the best available evidence, and incorporating the patient's values and preferences into the decision.[92]

Fourth, as an element of interprofessional collaboration and integration, care coordination is of utmost importance for patient safety. The situation-background-assessment-recommendation protocol is an existing method to perform information sharing efficiently and appropriately.[93] In addition, Lo et al.[94] suggest that the protocol may be a cost-effective method for coordinating between general practitioners and nurses.[94] To solve problems regarding care coordination, especially after the Covid19 pandemic, the use of digital healthcare tools was established.[95] Fagherazzi et al.[96] indicated that these digital tools improved triage and risk assessment.

Finally, optimal integration of caregivers skills and competences has been associated with maximalising every team member's presence and shortening the adaptation process of new team members.[97] Family caregivers provide a significant portion of health and support services to individuals with serious illnesses; however, existing literature and health care systems have often overlooked them and mostly focused on integrating care professionals.[98, 99] Friedman et al.[98] suggest using a framework, in which the family caregiver is an indispensable partner of care professionals and patients.

Although all interventions or strategies are useful to a certain point, none is suitable to be used in isolation as a unique solution for IPCI in primary care. However, a mix of the interventions and strategies compiled in this scoping review may be capable of doing so. The consistency, design, and order of this mix of interventions and strategies cannot be specified based on the results of this scoping review.

This scoping review has several limitations. The review focuses exclusively on primary care; thus, our findings are not directly transferable to other healthcare levels. Only studies performed in high-income countries were included in this review; hence, our findings are not directly transferable to other countries because differences in health systems, financing, governance, title protection and culture can pose significant implementation challenges. In addition, by including only English-language articles and avoiding the grey literature, we might have missed some relevant papers. It is worthwhile to note, that this scoping review

aimed to identify interventions that can improve interprofessional collaboration and integration in primary care and to list their impact on outcomes related to collaboration and integration. Our review did not report the effectiveness of interventions regarding health outcomes. Contrary to generic interventions focusing on IPCI, interventions focusing on a single disease and improving health outcomes were implemented more successfully and were evaluated in a more sophisticated way, using validated scales.[27, 100-102]

We selected articles based on WHO's[7] and Orchard et al.'s[8] definition of interprofessional collaboration. For integrated care, we adopted the definitions of Lewis et al.'s[10] and Valentijn et al.'s[25] definitions, which represent a widely accepted consensus. However, there are many other definitions of IPCI care that, if adopted, could affect the inclusion or exclusion of articles.

The literature has established that researchers can influence the interpretation of data. This risk of bias was minimised by triangulating researchers from different backgrounds (e.g. nurses, pharmacists and a psychologist) through the whole process and conducting the selection of articles with a team of at least two researchers. This triangulation, intensive cooperation and inductive process increased the credibility and reduced the risk of bias to the interpretation of the data based on preconceived understanding and personal opinions.

A strength of this review is the fact that we did not limit the search to the collaboration between specific types of caregivers, or in relation to a specific disease, or condition of patients. Therefore, our data and analysis can be used in the context of or added to a broad scope of IPCI in primary care. Furthermore, we performed an inductive analysis within a multidisciplinary team of researchers, to expand the analysis and to identify generic strategies and interventions.

Conclusion

This scoping review identified five categories of strategies and interventions to improve or facilitate IPCI in primary care: (i) acceptance and team readiness towards collaboration, (ii) acting as a team and not as an individual, (iii) communication strategies and shared decision making, (iv) coordination in primary care and (v) integration of caregivers and their skills and competences. We did not identify a single strategy or intervention which is broad or generic enough to be used in every type of primary care setting.

We can conclude that a mix of the identified strategies and interventions, which we illustrated as 'building blocks', can provide valuable input to develop a generic intervention to be used in different settings and levels of primary health care.

Figure legends: Figure 1: PRISMA flow diagram. PRISMA, Preferred Reporting Items for Scoping reviews (*IPCI= Interprofessional collaboration or integration)

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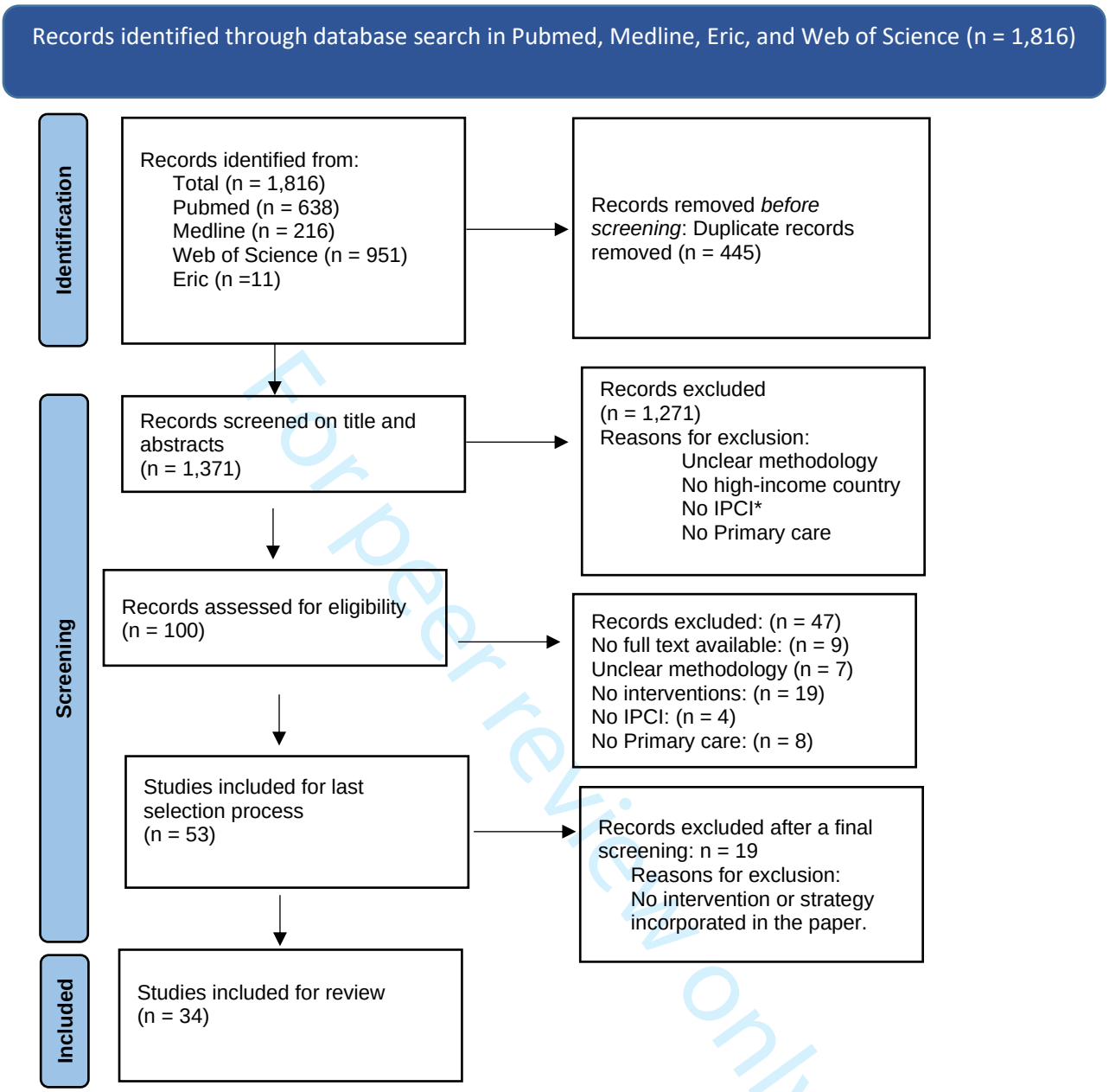

Figure 1: PRISMA flow diagram. PRISMA, Preferred Reporting Items for Scoping reviews (*IPCI= Interprofessional collaboration or integration)

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1,2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	2 and 3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	2 and 3
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	/
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	5
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	4,5
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	3 and 4 + table 1
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	3 and 4
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	3-5
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	Not required for ScR

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	4, 5
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	5, 6, and figure 1
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	5, table 2
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	/
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	6 – 10 + table 2 and 4
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	10-13
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	13 and 14
Limitations	20	Discuss the limitations of the scoping review process.	14 and 15
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	15
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	15

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

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Title: A scoping review to identify strategies and interventions improving interprofessional collaboration and integration in primary care

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Abstract

Objective: To identify strategies and interventions used to improve interprofessional collaboration and integration in primary care.

Design: Scoping review

Data Sources: Specific Medical Subject Headings (MeSH-terms) were used, and a search strategy was developed for Pubmed and afterwards adapted to Medline, Eric, and Web of Science.

Study selection: In the first stage of the selection, two researchers screened the article abstracts to select eligible papers. When decisions conflicted, three other researchers joined the decision-making process. The same strategy was used with full-text screening. Articles were included if they: (i) were in English, (ii) described an intervention to improve interprofessional collaboration or integration (IPCI) in primary care involving at least two different healthcare disciplines, (iii) originated from a high-income country, (iv) were peer-reviewed; and (v) were published between 2001 and 2020.

Data extraction and synthesis: From each paper, eligible data were extracted, and the selected papers were analysed inductively. Studying the main focus of the papers, researchers searched for common patterns in answering the research question and exposing research gaps. The identified themes were discussed and adjusted until a consensus was reached among all authors.

Results: The literature search yielded a total of 1816 papers. After removing duplicates, screening titles, and abstracts, and performing full-text readings, 34 papers were incorporated in this scoping review. The identified strategies and interventions were inductively categorized under five main themes; (i) Acceptance and team readiness towards collaboration, (ii) acting as a team and not as an individual; (iii) communication strategies and shared decision making, (iv) coordination in primary care, and (v) integration of caregivers and their skills and competences.

Conclusions: We identified a mix of strategies and interventions that can function as 'building blocks', for the development of a generic intervention to improve collaboration in different types of primary care settings and organisations.

Strengths and limitations of this study

- The review focuses exclusively on primary care; thus, our findings are not directly transferable to other healthcare levels.
- Only articles written in English were included. Therefore we may have missed valuable literature.
- Only studies performed in high-income countries were included in this review; hence, our findings are not directly transferable to other countries because differences in health systems, financing, governance, title protection and culture can pose significant implementation challenges.
- The risk of bias to the interpretation of the data was minimised by triangulating researchers from different backgrounds (e.g. nurses, pharmacists and a psychologist) throughout the whole review process and conducting the selection of articles with a team of at least two researchers.
- We did not limit the search to the collaboration between specific types of caregivers, or in relation to a specific disease, or condition of patients. Therefore, our data and analysis can be used in the context of or added to a broad scope of interprofessional collaboration and integration in primary care.

Introduction

As the world population is ageing, the growing complexity of health care and health needs, together with the associated financial challenges[1] and the fragmentation of primary care, [2-4] are prompting a fundamental rethink of how primary care should be organised and how professionals in different settings should collaborate.[5] As approximately one-third of the world population lives with a chronic disease,[6] and as primary care is usually the first point of access to the care system, integrated care at that level in which professionals closely collaborate, both interdisciplinary and interprofessional, is unquestionably important in current and future care organisations.

Interprofessional collaboration can be beneficial to achieving a more integrated primary health care and should overcome the aforementioned challenges and problems. According to the World Health Organisation, interprofessional collaboration occurs when two or more professions work together to achieve common goals.[7] Orchard et al.[8] defines it as involving a partnership between a team of health professionals and a client in a participatory, collaborative and coordinated approach to shared decision-making around health and social

issues. As Goodwin et al.[9] and Lewis et al.[10] see an efficient interprofessional collaboration as a prerequisite for integrated care, Edmondson et al.[11] indicated that psychological safety, defined as a shared belief that the team is safe for interpersonal risk-taking, is a critical factor in understanding teamwork and organisational learning.

Next to health professionals, informal caregivers are involved in interprofessional collaboration.[12] According to the World Health Organisation,[13] informal caregivers should be considered full partners in care and they mostly consist of families and friends of the patient. To measure the collaboration and coordination of these formal and informal caregivers many questionnaires are available.[14] The assessment of interprofessional team collaboration scale (AITCS) is an example consisting of the subscales; partnership, cooperation and coordination, and can be deployed in primary healthcare.[15]

To achieve and maintain interprofessional collaboration in primary care, Bardet et al.[16] identified the following key elements: trust, interdependence, perceptions and expectations from the other health care professionals, their skills, their interest for collaborative practice, their role definition and their communication.[17-23] These key elements are also present in the five dimensions of integrated care that Valentijn et al.[24, 25] described in the Rainbow model as follows: system, organisational, professional, clinical, functional, and normative integration. Integrated care and quality collaboration between professionals leads to improved access to care [26], better health outcomes [27], and enhanced prevention.[28, 29]

Although several literature reviews identified strategies to influence, improve or facilitate interprofessional collaboration, a thorough analysis of the interventions is lacking. Most review papers focused on the collaboration of a single type of caregiver or one specific disease.[27, 30-38] Therefore, it is difficult to broaden these findings to primary care and chronic conditions in general.

To fill this gap, we performed a scoping review to identify strategies and interventions improving and/or facilitating interprofessional collaboration and integration (IPCI) in primary care. More specifically, we listed and analysed the existing strategies, interventions and their outcomes, without focussing on a specific profession or disease. Based on the definitions of interprofessional collaboration[7, 8] and integrated care[9, 10, 24, 25], we included papers, thus outlining strategies and interventions working on micro, meso and macro-level. The included papers described organisational, relational and processual factors influenced by these interventions and strategies.

This review was conducted as the first phase of a research project to develop an evidence-based toolkit, guiding health professionals in their transition towards IPCI of different competencies, skills and roles as well as the role of patients and their needs in primary care.

Methods

We conducted a scoping review using the Arksey and O'Malley framework[39]: (i) identifying the research questions, (ii) identifying relevant studies, (iii) selecting studies, (iv) charting the data and (v) collating, summarising and reporting results. We used the PRISMA-ScR guidelines and the PRISMA-ScR templates to help conduct the scoping review[40].

Step 1: Identifying the research questions

An exploratory literature search was performed preliminarily to identifying the research question on IPCI in primary care. Based on this literature search, we developed the following research question: Which strategies and/or interventions improve or facilitate interprofessional collaboration and integration in primary care? We aimed to search for articles containing generic strategies and methods used in primary care settings, to facilitate IPCI in primary care. Five researchers were involved in identifying this research question for the scoping review.

Step 2: Identifying relevant studies: search strategy

We used specific Medical Subject Headings (MeSH-terms) and free text terms to design a search strategy around the following key concepts: primary care, health care team, integration and interprofessional collaboration. We combined the keywords and MeSH terms presented in Table 1 with the Boolean terms 'OR', 'AND' and 'NOT'. The search strategy was developed for Pubmed and afterwards adapted to Medline, Eric and Web of Science, and was performed between March and June 2020. The full search strategy is available in the supplementary material.

MeSh/search terms and combinations for Pubmed
1. primary care
2. primary healthcare
3. primary health care
1 or 2 or 3 (Title/abstract)
5. integrative team
6. integrative teams
7. collaborative practice
8. collaborative practices
9. interdisciplinary team
10. interdisciplinary teams
11. multidisciplinary team
12. multidisciplinary teams
13. interprofessional team
14. interprofessional teams
15. healthcare team
16. healthcare teams
17. health care team
18. health care teams
5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 (title/abstract)

20. interprofessional collaboration
21. interprofessional teamwork
22. interprofessional team work
23. interdisciplinary collaboration
24. interdisciplinary teamwork
25. interdisciplinary team work
26. multidisciplinary collaboration
20 or 21 or 22 or 23 or 24 or 25 or 26 (All fields)
4 AND 19 AND 27

Table 1: keywords and MeSH terms used to identify relevant data.

Step 3: Study selection

Articles were included if they: (i) were in English, (ii) described an intervention to improve interprofessional collaboration or integration in primary care involving at least two different healthcare disciplines, (iii) originated from a high-income country,[41] (iv) were peer-reviewed and (v) were published between 2001 and 2020. Articles were excluded when: (i) the research methods and findings were not thoroughly described, (ii) it concerned opinion papers, (iii) the study focused on a single disease or group of patients/clients and (iv) when the full text was not available.

We used Rayyan[42] to collect and organise eligible articles. In the first stage of the selection, MMS and PVB screened the article abstracts to select eligible papers, according to the inclusion and exclusion criteria, and to eliminate the duplicates. When decisions conflicted, three other researchers (HDL, KdV, KVdB) joined the decision-making process; they were blind to the decisions of the first two reviewers, and each screened a third of the conflicting abstracts. In the second stage of the selection, the initial two reviewers read the full texts of the selected articles. As in the first stage, studies were included or excluded depending on the agreement of both reviewers. When the decisions of the two reviewers conflicted, the other researchers joined the decision-making process and a procedure similar to the one outlined above was followed.

2.4. Charting the data

From each paper, eligible data were extracted using a self-developed descriptive template. The following characteristics were recorded: a full reference citation (author, title, journal and publication date); the methodology used to conduct the research; a summary of the intervention or strategy used to facilitate IPCI and the impact on IPCI.

Step 5: Collating, summarising and reporting the data

The selected papers were analysed inductively. Studying the main focus of the papers, we searched for common patterns among them, answering the research question and/or exposing research gaps. We, thus, identified themes and subthemes, which were discussed and adjusted until consensus was reached among all authors. Subsequently, all selected papers were coded using the defined themes. Using a tabular overview and summary of the selected literature, the iterative analysis and discussion among the authors were facilitated and allowed the extraction of the interventions and strategies of interest.

Patient and public involvement

This scoping review did not directly involve patients or public.

Results

The literature search yielded a total of 1,816 papers, of which 445 duplicates were removed (Figure 1). Upon screening titles and abstracts of the remaining 1,371 records, only 100 were eligible given the inclusions criteria outlined above. After further reading, 47 studies, lacking an intervention, were excluded. Finally, 19 more articles were excluded because they did not include strategies or interventions. This resulted in 34 papers describing strategies and interventions to facilitate IPCI in primary care. A Flow diagram on the selection procedure is available in figure 1.

Study characteristics

Author and year	Title	Journal	Country	Study design	Intervention/strategy
Bentley et al. 2017	Interprofessional teamwork in comprehensive primary healthcare services: findings from a mixed methods study	Journal of interprofessional care	Australia	Mixed methods study. Online survey, and interviews with managers and practitioners	Introduction of a comprehensive primary healthcare (CPHC) method
Berkowitz et al. 2016	Case study: Johns Hopkins community health partnership: a model for transformation	The journal of delivery science and innovation	USA	Case study	The Johns Hopkins Community Health Partnership (J-CHiP). A community-based intervention. using multidisciplinary care.
Chan et al. 2010	Finding common ground? Evaluating an intervention to improve teamwork among primary health-care professionals	International journal of quality in health care	Australia	Mixed methods study: Qualitative interviews, observations and a survey assessing multidisciplinary teamwork were used.	A 6-month intervention (The Team-link intervention) consisting of an educational workshop and structured facilitation using specially designed materials, backed up by informal telephone support.
Coleman et al. 2008	Interprofessional ambulatory primary care practice-based educational program	Journal of interprofessional care	USA	A longitudinal cohort study with a quantitative evaluation.	STAR-project: an educational program for teams of nurse practitioners, family medicine residents and social work students to work together at clinical sites in the delivery of longitudinal care in primary care ambulatory clinics.
Curran et al. 2007	Evaluation of an interprofessional continuing professional development initiative in primary health care	Journal of continuing education in the health professions	Canada	Mixed methods study: An evaluation research design, pre- to post-study with quantitative and qualitative instruments.	Introducing The Building a Better Tomorrow Initiative (BBTI), which is a continuing professional development (CPD) program.
Goldman et al. 2010	Interprofessional primary care protocols: a strategy to promote an evidence-based approach to teamwork and the delivery of care	Journal of interprofessional care	Canada	Qualitative study.	Implementation of an interprofessional protocol
Grace et al. 2014	Flexible implementation and integration of new team members to support patient-centred care	The journal of delivery science and innovation	USA	Mixed methods: Interviews and a survey with primary care professionals.	Introduction of interprofessional primary care protocols
Hilts et al. 2013	Helping primary care teams emerge through a quality improvement program	Oxford academic: family practice	Canada	A qualitative exploratory case study approach.	Introducing a quality improvement program.
Josi et al. 2020	Advanced practice nurses in primary care in Switzerland: an analysis of interprofessional collaboration	BMC nursing	Switzer-land	Qualitative study with an ethnographic design.	Integration of an advanced practice nurse in a primary care team.
Kim et al. 2019	What makes team communication effective: a qualitative analysis of interprofessional primary care team members' perspectives	Journal of interprofessional care	USA	Qualitative study. Grounded theory method of constant comparison.	Standardized communication tools used with the implementation of the patient-centred medical home (PCMH)
Kotecha et al. 2015	Influence of a quality improvement learning collaborative program on team functioning in primary healthcare	Journal of collaborative family healthcare	Canada	A qualitative study using a phenomenological approach was conducted as part of a mixed-method evaluation.	Quality Improvement Learning Collaborative Program to support the development of interdisciplinary team function, and improve chronic disease management, disease prevention, and access to care.
Légaré et al. 2020	Validating a conceptual model for an inter-professional approach to shared decision making: a mixed methods study	Journal of evaluation in clinical practice	Canada	Qualitative study. Thematic analysis of the transcripts and a descriptive analysis of the questionnaires were performed.	An interprofessional shared decision-making model.
Lockhart et al. 2019	Engaging primary care physicians in care coordination for patients with complex medical conditions	Canadian family physician	Canada	Qualitative study. Care professionals were interviewed 14 to 19 months after the initiation of an intervention.	Initiation of the Seamless Care Optimizing the Patient Experience (SCOPE) project.
Macnaughton et al. 2013	Role construction and boundaries in interprofessional primary health care teams: a qualitative study	BMC health service research	Canada	A qualitative, comparative case study with observations was conducted.	Introduction of a model to explore how roles are constructed within interprofessional health care teams. It focuses on elucidating the different types of role boundaries, the influences on role construction and the implications for professionals and patients.

Mahmood-Yousef et al. 2008	Interprofessional relationships and communication in primary palliative care: impact of the gold standards framework	The British journal of general practice	United-kingdom	Qualitative interview case study.	Adoption of an interprofessional collaboration framework to investigate the extent to which the framework influences interprofessional relationships and communication, and to compare general practitioners' and nurses' experiences.
Morgan et al. 2015	Observation of interprofessional collaborative practice in primary care teams: an integrative literature review	International journal of nursing studies	New Zealand	Integrative literature review	Several strategies to improve interprofessional collaboration in primary care teams
Morgan et al. 2020	Collaborative care in primary care: the influence of practice interior architecture on informal face-to-face communication—an observational study	Health environments research & design journal	New-Zealand	Qualitative study with observations	Changing the architecture of primary care settings to explore the influence of primary care practice interior architecture on face-to-face on-the-fly communication for collaborative care.
Murphy et al. 2017	Change in mental health collaborative care attitudes and practice in Australia impact of participation in MHPN network meetings	Journal of integrated care	Australia	Quantitative study: an online survey.	Introduction of the Mental Health Professionals Network. Investigating attitudinal and practice changes amongst health professionals after participation in MHPN's network meetings.
Pullon et al. 2016	Observation of interprofessional collaboration in primary care practice: a multiple case study	Journal of interprofessional care	New-Zealand	Qualitative study, using a case study design with observations.	Identifying existing strategies to maintain and improve interprofessional collaboration in primary care practices.
Reay et al. 2013	Legitimizing new practices in primary health care	Health care management review	Canada	A qualitative, longitudinal comparative case study.	Developing effective interdisciplinary teams in primary health care.
Reeves et al. 2017	Interprofessional collaboration to improve professional practice and healthcare outcomes	Cochrane review	Canada	Systematic review	Nine interventions were analysed.
Robben et al. 2012	Impact of interprofessional education on collaboration attitudes, skills, and behaviour among primary care professionals	Journal of continuing education in the health professions	Netherlands	Mixed methods study: Before-after study, using the Interprofessional Attitudes Questionnaire, Attitudes Toward Health Care Teams Scale, and Team Skills Scale. Additionally, semi-structured interviews were conducted	Introduction of an interprofessional education program with interdisciplinary workshops.
Rodriquez et al. 2010	The implementation evaluation of primary care groups of practice: a focus on organizational identity	BMC family practice	Canada	Qualitative study. An in-depth longitudinal case study was conducted over two and a half years.	Implementation of primary care groups of practice, with a focus on the emergence of the organizational identity.
Rodriquez et al. 2015	Availability of primary care team members can improve teamwork and readiness for change	Health care management review	USA	Quantitative study with a survey, using path analysis.	A four-stage developmental interprofessional collaborative relationship-building model: To assess primary care team structure (team size, team member availability, and access to interdisciplinary expertise), teamwork, and readiness for change..
Russell et al. 2018	Contextual levers for team-based primary care: lessons from reform interventions in five jurisdictions in three countries	Health service research	Canada	An international consortium of researchers met via teleconference and regular face-to-face meetings using a Collaborative Reflexive Deliberative Approach to re-analyse and synthesize their published and unpublished data and their own work experience.	Determining existing strategies and methods to improve interprofessional collaboration and integration in primary care.
Sargeant et al. 2008	Effective interprofessional teams: "contact is not enough" to build a team	Journal of continuing education in the health professions	Canada	Qualitative, grounded theory study.	Introducing an interprofessional educational program.
Tierney et al. 2019	Interdisciplinary team working in the Irish primary healthcare system: analysis of 'invisible' bottom-up innovations using normalisation process theory	Journal of health policy	Ireland	Mixed methods study: An online survey and an interview study.	Bottom-up innovations using Normalisation Process Theory: (1)Design and delivery of educational events. in the community for preventive care and health promotion. (2)Development of integrated care plans for people with complex health needs. (3) Advocacy on behalf of patients.
Valaitis et al. 2020	Examining interprofessional teams structures and processes in the implementation of a primary care intervention (health tapestry) for older adults using normalization process theory	BMC family practice	Canada	Qualitative study. Applying the NPT and a descriptive qualitative approach embedded in a mixed-methods, pragmatic RCT.	Strengthening Quality [Health TAPESTRY] is a primary care intervention aimed at supporting older adults that involves trained volunteers, interprofessional teams, technology, and system navigation.
Van Dongen et al. 2018a	Suitability of a programme for improving interprofessional primary care team meetings	International journal of integrated care	Netherlands	Mixed methods study: a process evaluation using a mixed-methods approach including both qualitative and quantitative data.	Introducing a multifaceted programme including a reflection framework, training activities and a toolbox.
Van Dongen et al. 2016	Interprofessional collaboration regarding patients' care plans in primary care: a focus group study into influential factors	BMC family practice	Netherlands	Qualitative study with an inductive content analysis.	Improving interprofessional collaboration by using patients' care plans.
Van dongen et al. 2018b	Development of a customizable programme for improving interprofessional team meetings: an action research approach	International journal of integrated care	Netherlands	Qualitative study with an action research approach.	A Customizable Programme for Improving Interprofessional Team Meetings
Wener & Woodgate et al. 2016	Collaborating in the context of co-location: a grounded theory study	BMC family practice	Canada	A qualitative research paradigm where the exploration is grounded in the providers' experiences.	A four-stage developmental interprofessional collaborative relationship-building model to guide health care providers and leaders as they integrate mental health services into primary care settings.

Wilcock et al. 2002	The Dorset Seedcorn project: interprofessional learning and continuous quality improvement in primary care	British journal of general practice	United Kingdom	Mixed methods study. Participants kept reflective journals. The evaluation was undertaken using a mix of questionnaires and staff	The Dorset Seedcorn Project: interprofessional learning and continuous quality improvement in primary care. Implementing the principles and methods of continuous quality improvement.
Young et al. 2017	Shared care requires a shared vision: communities of clinical practice in a primary care setting	BMC health service research	New Zealand	Qualitative study with observations. A focused ethnography of nine 'Communities of Clinical Practice.	Introducing the 'Community of Clinical Practice' (CoCP) model. Forming a vision of care which is shared by patients and the primary care professionals involved in their care.

Table 2: An overview of the characteristics of the selected articles.

Findings

Five main themes, essential for IPCI, emerged from our analyses: (i) Acceptance and team readiness towards collaboration (n=21), (ii) acting as a team and not as an individual (n=26); (iii) communication strategies and shared decision making (n=16), (iv) coordination in primary care (n=20), and (v) integration of caregivers and their skills and competences (n=16). An overview of the interventions is presented in Table 2, while an overview of the articles sorted in themes is presented in Table 3.

Articles	Acceptance and team readiness towards collaboration	Acting as a team and not as an individual	Communication strategies and shared decision making	Coordination in primary care	Integration of caregivers and their skills and competences
Bentley et al.[43]		X	X	X	
Berkowitz et al.[44]				X	
Chan et al.[45]	X	X		X	
Coleman et al.[46]	X		X	X	
Curran et al.[47]	X	X	X	X	X
Goldman et al. [48]	X	X	X		X
Grace et al.[49]	X	X	X		X
Hilts et al.[50]	X	X			X
Josi et al.[51]		X	X		X
Kim et al.[52]	X		X	X	
Kotecha et al.[53]		X	X	X	
Légaré et al.[54]	X	X	X		X
Lockhart et al.[55]		X		X	
MacNaughton et al.[56]		X		X	X
Mahmood-Yousef et al.[57]	X		X	X	
Morgan 2015[58]	X	X	X		
Morgan 2020[59]				X	
Murphy et al.[60]	X			X	X
Pullon et al.[61]		X		X	
Reay et al.[62]	X	X		X	
Reeves et al.[63]			X	X	
Robben et al.[64]		X			
Rodriquez 2010.[65]					X
Rodriquez 2015[66]	X	X		X	
Russell et al.[67]	X	X			X
Sargeant et al.[68]	X	X		X	X
Tierney et al.[69]	X	x	X		X
Valaitis et al.[70]		X		X	X
Van Dongen 2018a[71]	X	X	X	X	X

Van Dongen 2018b[72]	X	X	X		X
Van Dongen 2016[73]		X			
Wener & Woodgate[74]	X	X		X	X
Wilcock et al.[75]	X	X			
Young et al.[76]	X	X	X		
# Articles	**21**	**26**	**16**	**20**	**16**

Table 3: Articles sorted in themes (X= paper included under that theme)

Theme 1: Acceptance and team readiness towards collaboration

Twenty-one articles provided strategies to improve the acceptance and team readiness towards collaboration.[45-50, 52, 54, 57, 58, 60, 62, 66-69, 71, 72, 74-76] Before being able to collaborate, caregivers need to accept working as a team. Team readiness towards collaboration occurs when team members obtain the right mindset to take necessary measures for efficient collaboration. This does not mean that an efficient collaboration has been reached, but both acceptance and team readiness were a prerequisite to achieving it. Acceptance and team readiness of caregivers towards collaboration were strongly influenced by their attitude, awareness, knowledge and understanding, and caregiver satisfaction.

Interventions on changing caregivers' attitudes towards collaboration seem to facilitate teamwork.[77] Workshops and information sessions were organised to make changes in caregivers' attitudes, in which advantages of teamwork and finding common ground were explained and lectured.[46, 54, 66, 67, 71, 72, 74, 76] Basic knowledge about the potential of teamwork was learned using logical explanations.[44, 46, 54, 66, 67, 71, 72, 74, 76] Caregivers to whom the advantages of collaboration were explained were more likely to accept and adopt the principles of interprofessional collaboration. Simple and accessible knowledge transfer seems to be an important characteristic of a successful intervention on the attitude and knowledge of caregivers.[45, 57, 68, 71, 72]

Some articles[46, 48, 52, 60, 71, 76] reported on strategies to increase awareness about collaboration in primary care. Increased awareness resulted in a better acceptance and team readiness towards collaboration. Making caregivers aware of their shortcomings and the need for collaboration with different disciplines seemed an effective way to facilitate interprofessional collaboration. In addition to awareness, potential improvements in care quality[46, 49, 75], caused by better collaboration, motivate caregivers to change their attitude. Furthermore, some studies[47, 50, 58, 62, 69, 74, 75] reported that increased caregiver satisfaction was considered as a facilitator of collaboration between caregivers.

Theme 2: Acting as a team and not as an individual

Twenty-six articles provided strategies to act as a team and not as an individual.[43, 45, 47-51, 53-56, 58, 61, 62, 64, 66-76] In some articles[62, 66, 68, 74, 75], this was mentioned as collaborative behaviour, which was considered to be a facilitator of teamwork. Moreover, showing mutual respect and trust[53, 54, 56, 66, 71, 72, 74-76] between caregivers were important facilitators towards collaboration: it improves acting as a team, and it supports a safe team climate. An environment of greater psychological safety improved collaborative behaviour, and in some cases, it replaced working in silos with working as a team.[47, 50, 55, 61, 73, 75]

Developing and enhancing a shared vision, shared values and shared goals were mentioned as facilitators towards interprofessional collaboration.[43, 45, 49, 54, 74, 76] This was achieved by a structural inclusion of every team member in the development of the teams' vision, values

and goals.[76] By simply writing down these principles, caregivers were more likely to participate in developing shared principles.[45, 49] Although the development process was not explained in detail, three articles mentioned that once developed, shared vision, goals and values were crucial to maintaining a beneficial collaboration.[54, 74, 76] To establish these shared principles, a patient-centred focus may be an important asset. By prioritising the patient's needs and preferences, caregivers can find common ground more easily.[51, 69-72, 76]

Leadership seems of utmost importance to act as a team. Strategies towards collaborative leadership and shared leadership were mentioned in the articles,[43, 48, 51, 53, 56, 64, 67, 71, 73] and leaders and decision makers should be aware of the potential effects of policy and structural changes on interprofessional teamwork. By using a clear role assignment, caregivers can prevent issues in their collaboration.[58, 71, 74, 76] However, in one case,[50] a rotational leadership was implemented and suggested, in which there was no permanent leader.

One paper emphasised that awareness of potential unintended negative effects of changes on the functioning of interprofessional teams should be taken into account by decision makers.[51]

Theme 3: Communication strategies and shared decision-making

Sixteen articles provided communication strategies and strategies to facilitate shared decision-making, to improve interprofessional collaboration in primary care.[43, 46-49, 51-54, 57, 58, 63, 69, 71, 72, 76] These strategies can be further delineated into the following subthemes: (i) knowledge about each other,[49, 69, 71] (ii) formal and informal meetings,[43, 47, 51, 58, 63, 71, 72] (iii) the use of structured guidelines and protocols,[48, 49, 69, 72] (iv) conflict resolution[46, 51, 57, 71, 72, 76] and (v) relational equality.[52-54, 76]

Knowing each other's professional roles and tasks seems a precondition for teamwork. However, knowing more about each other's family situation, interests and hobbies was also mentioned to be important to improve the communication and collaboration between caregivers.[49, 69, 71]

Both formal[47, 51, 63, 71, 72] and informal[43, 58, 72] team meetings, mainly happening between caregivers working in the same practice (under one roof),[58] were considered as an important communication strategy. Formal meetings were mostly used to share information about patients or clients, distribute tasks and identify and solve problems in the organisation. Planning and structuring a team meeting can increase the efficiency and productivity of these meetings.[47, 51, 63, 71, 72] Informal meetings were important to know more about each other and facilitated the trust relations between caregivers. Information that could not be shared in the formal meetings often appeared in the informal meetings. Even lunches with team members were used as a communication strategy.[43, 58, 72]

Structured guidelines, standardised tools and protocols were used to improve the communication and coordination between caregivers working in primary care. These protocols provided more effective communication and the provision of an evidence-based approach towards collaboration and care delivery. Besides using protocols, workshops were organised to improve communication.[48, 49, 69, 72]

Making decisions as a team was an indicator of good and effective communication. Shared decision-making was mentioned in nine studies,[46, 51-54, 57, 71, 72, 76] and our analysis identified

conflict resolution[46, 51, 57, 71, 72, 76] and relational equality[52-54, 76] as key factors to improve shared decision-making.

Theme 4: Coordination in primary care

By collaborating with different disciplines and professions, many caregivers were experiencing problems regarding information sharing[44, 45, 52, 53, 61, 62, 68, 70, 71, 74] and referring[43, 44, 46, 47, 52, 53, 57, 66, 71, 74] between primary health care workers. Twenty articles, therefore, provided strategies to improve coordination in order to ameliorate information sharing between caregivers, to facilitate referrals for the patient and to guarantee the continuity of care.[43-47, 52, 53, 55-57, 59-64, 66, 70, 71, 74] Accordingly, reciprocity and reciprocal interdependence were shown to play a crucial role in the coordination of primary care.[66, 74]

Co-location and the importance of architecture and building characteristics were, in some cases, mentioned as influential factors for collaboration.[56, 59, 63] By optimising the architecture and working under one roof, brief face-to-face interactions may increase. The architecture could be optimised by having shared spaces, thus leading to increased staff proximity or visibility. Especially informal communication was positively affected by the presence of convenient circulatory (e.g. foyers and lobbies) and transitional (e.g. courtyards, verandas, and corridors) spaces.[56, 59, 63] Additionally, weekly or monthly face-to-face meetings were organised to coordinate care. Face-to-face meetings and electronic task queues facilitate information sharing and efficient care coordination for complex patients.[59, 63]

Theme 5: Integration of caregivers and their skills and competences

Fifteen papers provided strategies to improve the integration of caregivers and their skills and competences in primary care practices[47-51, 54, 56, 60, 65, 67-72, 74] and tried to get the most out of every team member's presence.

For new team members, a successful integration was facilitated by welcoming the newcomers and making them know and understand the vision of the practice. Inclusion of the caregiver required additional proactive efforts regarding communication and coordination among practice members.[49, 74] In some cases, a personal, one-to-one meeting with the new team member could facilitate problem-solving.[49]

Eleven papers presented an improved integration of caregivers skills and competences, as a facilitator for task distribution and role clarification.[47, 48, 50, 51, 54, 56, 67, 70-72, 74] Knowing each other's capabilities, including skills and competences, was very important in this regard.[48, 50, 56, 74] Additionally, making sure that caregivers not only know each other's skills and competences but also enable more transparency about their daily needs and preferences were mentioned as facilitators.[50, 56, 67, 71, 74] Six articles presented strategies to optimise the use of team members' skills and competences. By acknowledging and affirming their capabilities, integration of skills and competences was facilitated.[54, 60, 65, 69, 71, 74]

In one article, researchers indicated that the organisation of team communication-training workshops and implementation of flexible protocols gave practice stakeholders significant discretion to integrate new care team roles to best fit local needs. Furthermore, it improved team communication and functioning because of increased engagement and local leadership facilitation.[49]

Discussion

This scoping review identified five themes for interventions and strategies aimed at improving and facilitating IPCI in primary care. The first category, which incorporates acceptance, and team readiness, was a precondition for enhancing and maintaining efficient interprofessional collaboration. Accepting to collaborate requires a change of attitude, which involves valuing team members and actively soliciting the opinions or receiving feedback from other team members.[78] An major barrier to adopting a suitable attitude towards collaboration is the difficulty and complexity of sharing responsibility for patient care within a team. [79, 80] Making caregivers aware of their shortcomings and the need for collaboration with different disciplines are effective ways to facilitate interprofessional collaboration.[46, 48, 52, 60, 71, 76] In addition, Liedvogel et al.[81] demonstrates that experiencing teamwork itself increases the awareness of the advantages, and the importance of collaboration, as well as gives caregivers opportunities to demonstrate their skills and capabilities. In the broader community, increased awareness of the importance of interprofessional collaboration can lead to an improved experience and understanding of the totality of healthcare services.[82] Furthermore, according to Lockwood and Maguire et al.,[83] it can also help to reduce the sense of isolation experienced by solo medical practitioners.

Second, collaborative behaviour has been described as a facilitator of teamwork.[62, 66, 68, 74, 75] To enhance and maintain a collaborative behaviour, the development of shared principles (such as shared vision, values and goals) is an important prerequisite.[43, 45, 49, 54, 74, 76] Our review revealed that maintaining a safe team climate in which care professionals feel comfortable is important to act as a team and not as an individual.[47, 50, 55, 61, 73, 75] Although psychological safety is not often mentioned in primary care research,[22] Edmondson et al.[11] and Kim et al.[84] have indicated the essential role of a safe workplace environment in enhancing teamwork. Team psychological safety is defined as a shared value; the team is safe for interpersonal risk taking.[85] This means that team members feel they will not be punished or humiliated for speaking up with ideas, questions, concerns or mistakes. A team may not be able to collaborate properly if there is a lack of psychological safety; hence, it is assumed that psychological safety is a necessary but insufficient condition for increasing interprofessional collaboration and workplace effectiveness.[86]

Third, structured guidelines and protocols seem to be beneficial for communication between care professionals, thereby impacting IPCI. Team meetings, especially formal meetings can be held more efficiently by using protocols, that have positive effects on hierarchy and conflicts resolution between team members.[87] Although interventions in our review did not give attention to informal meetings as much as existing literature[88-90], Burm et al.[88] indicated that, by recognising the importance of informal meetings, care providers are more motivated to organise or participate in informal meetings. These meetings tended to be ad-hoc and improvised, and in some cases discussion topics were recorded in notebooks.[89, 90] The shared decision-making model has been put forward as a guide for discussing and making decisions in the most effective way.[91] This model includes three principles: recognizing and acknowledging that a decision is required, knowing and understanding the best available evidence, and incorporating the patient's values and preferences into the decision.[92]

Fourth, as an element of interprofessional collaboration and integration, care coordination is of utmost importance for patient safety. The situation-background-assessment-recommendation protocol is an existing method to perform information sharing efficiently and appropriately.[93] In addition, Lo et al.[94] suggest that the protocol may be a cost-effective method for coordinating between general practitioners and nurses.[94] To solve problems regarding care coordination, especially after the Covid19 pandemic, the use of digital healthcare tools was established.[95] Fagherazzi et al.[96] indicated that these digital tools improved triage and risk assessment.

Finally, optimal integration of caregivers skills and competences has been associated with maximalising every team member's presence and shortening the adaptation process of new team members.[97] Family caregivers provide a significant portion of health and support services to individuals with serious illnesses; however, existing literature and health care systems have often overlooked them and mostly focused on integrating care professionals.[98, 99] Friedman et al.[98] suggest using a framework, in which the family caregiver is an indispensable partner of care professionals and patients.

Although all interventions or strategies are useful to a certain point, none is suitable to be used in isolation as a unique solution for IPCI in primary care. However, a mix of the interventions and strategies compiled in this scoping review may be capable of doing so. The consistency, design, and order of this mix of interventions and strategies cannot be specified based on the results of this scoping review.

This scoping review has several limitations. The review focuses exclusively on primary care; thus, our findings are not directly transferable to other healthcare levels. Only studies performed in high-income countries were included in this review; hence, our findings are not directly transferable to other countries because differences in health systems, financing, governance, title protection and culture can pose significant implementation challenges. In addition, by including only English-language articles and avoiding the grey literature, we might have missed some relevant papers. It is worthwhile to note, that this scoping review aimed to identify interventions that can improve interprofessional collaboration and integration in primary care and to list their impact on outcomes related to collaboration and integration. Our review did not report the effectiveness of interventions regarding health outcomes. Contrary to generic interventions focusing on IPCI, interventions focusing on a single disease and improving health outcomes were implemented more successfully and were evaluated in a more sophisticated way, using validated scales.[27, 100-102]

We selected articles based on WHO's[7] and Orchard et al.'s[8] definition of interprofessional collaboration. For integrated care, we adopted the definitions of Lewis et al.'s[10] and Valentijn et al.'s[25] definitions, which represent a widely accepted consensus. However, there are many other definitions of IPCI care that, if adopted, could affect the inclusion or exclusion of articles.

The literature has established that researchers can influence the interpretation of data. This risk of bias was minimised by triangulating researchers from different backgrounds (e.g. nurses, pharmacists and a psychologist) through the whole process and conducting the selection of articles with a team of at least two researchers. This triangulation, intensive cooperation and inductive process increased the credibility and reduced the risk of bias to the interpretation of the data based on preconceived understanding and personal opinions.

A strength of this review is the fact that we did not limit the search to the collaboration between specific types of caregivers, or in relation to a specific disease, or condition of patients. Therefore, our data and analysis can be used in the context of or added to a broad scope of IPCI in primary care. Furthermore, we performed an inductive analysis within a multidisciplinary team of researchers, to expand the analysis and to identify generic strategies and interventions.

Conclusion

This scoping review identified five categories of strategies and interventions to improve or facilitate IPCI in primary care: (i) acceptance and team readiness towards collaboration, (ii) acting as a team and not as an individual, (iii) communication strategies and shared decision making, (iv) coordination in primary care and (v) integration of caregivers and their skills and competences. We did not identify a single strategy or intervention which is broad or generic enough to be used in every type of primary care setting.

We can conclude that a mix of the identified strategies and interventions, which we illustrated as 'building blocks', can provide valuable input to develop a generic intervention to be used in different settings and levels of primary health care.

Figure legends: Figure 1: PRISMA flow diagram. PRISMA, Preferred Reporting Items for Scoping reviews (*IPCI= Interprofessional collaboration or integration)

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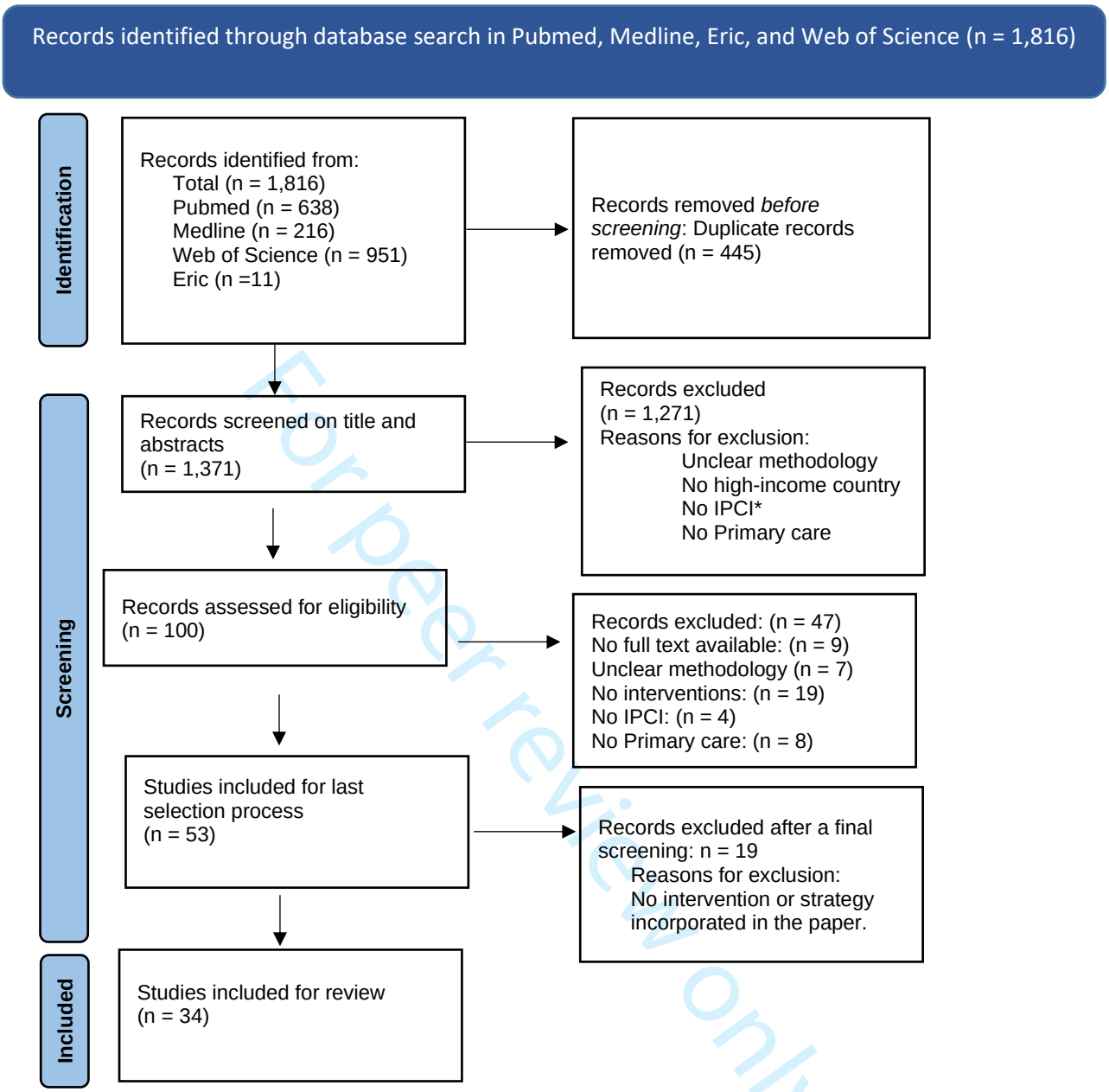

Figure 1: PRISMA flow diagram. PRISMA, Preferred Reporting Items for Scoping reviews (*IPCI= Interprofessional collaboration or integration)

To identify relevant articles we used the following search strategies in PubMed, Web Of Science, and Eric

The search strategy we used in PubMed is included in the manuscript. For the remaining databases, we used the same search strategy, however, since their search engine is designed differently, we found it necessary to include the search strategies as a supplementary file. As mentioned in the article, no websites or grey literature were examined in this review. Additionally, we didn't use any limitations. The manuscripts were approved based on the eligibility criteria.

1. PubMed

MeSH/search terms and combinations for PubMed
1. primary care
2. primary healthcare
3. primary health care
1 or 2 or 3 (Title/abstract)
5. integrative team
6. integrative teams
7. collaborative practice
8. collaborative practices
9. interdisciplinary team
10. interdisciplinary teams
11. multidisciplinary team
12. multidisciplinary teams
13. interprofessional team
14. interprofessional teams
15. healthcare team
16. healthcare teams
17. health care team
18. health care teams
5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 (title/abstract)
20. interprofessional collaboration
21. interprofessional teamwork
22. interprofessional teamwork
23. interdisciplinary collaboration
24. interdisciplinary teamwork
25. interdisciplinary teamwork
26. multidisciplinary collaboration
20 or 21 or 22 or 23 or 24 or 25 or 26 (All fields)
4 AND 19 AND 27

Table 1: keywords and MeSH terms used to identify relevant data.

2. Web Of Science

In the Web Of Science search engine, it was not possible to search for title/abstract simultaneously. Thus, we searched for them separately as illustrated below.

Queries:

(TI=(primary care OR primary health care OR primary health care)) AND AB=(primary care OR primary health care OR primary health care)

AND

(TI=((integrative team OR integrative teams OR collaborative practice OR collaborative practices OR interdisciplinary team OR interdisciplinary teams OR multidisciplinary team OR multidisciplinary teams OR interprofessional team OR interprofessional teams OR health care team OR health care teams OR health care team OR health care teams))) AND AB=(((integrative team OR integrative teams OR collaborative practice OR collaborative practices OR interdisciplinary team OR interdisciplinary teams OR multidisciplinary team OR multidisciplinary teams OR interprofessional team OR interprofessional teams OR health care team OR health care teams OR health care team OR health care teams)))

AND

ALL=(interprofessional collaboration OR interprofessional teamwork OR interprofessional teamwork OR interdisciplinary collaboration OR interdisciplinary teamwork OR interdisciplinary teamwork OR multidisciplinary collaboration)

MeSH/search terms and combinations for PubMed
1. primary care
2. primary health care
3. primary healthcare
4 = 1 or 2 or 3 (Title)
5. primary care
6. primary health care
7. primary healthcare
8 = 5 or 6 or 7 (Abstract)
9. integrative team
10. integrative teams
11. collaborative practice
12. collaborative practices
13. interdisciplinary team
14. interdisciplinary teams
15. multidisciplinary team
16. multidisciplinary teams
17. interprofessional team
18. interprofessional teams
19. health care team
20. health care teams
21. healthcare team

22. healthcare teams
23 = 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 (Title)
24. integrative team
25. integrative teams
26. collaborative practice
27. collaborative practices
28. interdisciplinary team
29. interdisciplinary teams
30. multidisciplinary team
31. multidisciplinary teams
32. interprofessional team
33. interprofessional teams
34. health care team
35. health care teams
36. healthcare team
37. healthcare teams
38 = 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 (Abstract)
39. interprofessional collaboration
40. interprofessional teamwork
41. interprofessional teamwork
42. interdisciplinary collaboration
43. interdisciplinary teamwork
44. interdisciplinary teamwork
45. multidisciplinary collaboration
46 = 39 or 40 or 41 or 42 or 43 or 44 or 45 (All fields)
47 = 4 AND 8 AND 23 AND 38 AND 46

Table 2: keywords and MeSH terms used to identify relevant data in Web Of Science.

3. ERIC

(TI=(primary care OR primary health care OR primary health care)) AND AB=(primary care OR primary health care OR primary health care)

AND

(TI=((integrative team OR integrative teams OR collaborative practice OR collaborative practices OR interdisciplinary team OR interdisciplinary teams OR multidisciplinary team OR multidisciplinary teams OR interprofessional team OR interprofessional teams OR health care team OR health care teams OR health care team OR health care teams))) AND AB=(((integrative team OR integrative teams OR collaborative practice OR collaborative practices OR interdisciplinary team OR interdisciplinary teams OR multidisciplinary team OR multidisciplinary teams OR interprofessional team OR interprofessional teams OR health care team OR health care teams OR health care team OR health care teams)))

AND

TX=(interprofessional collaboration OR interprofessional teamwork OR interprofessional teamwork OR interdisciplinary collaboration OR interdisciplinary teamwork OR interdisciplinary teamwork OR multidisciplinary collaboration)

MeSH/search terms and combinations for PubMed
1. primary care
2. primary healthcare
3. primary health care
4 = 1 or 2 or 3 (Title)
5. primary care
6. primary healthcare
7. primary health care
8 = 5 or 6 or 7 (Abstract)
9. integrative team
10. integrative teams
11. collaborative practice
12. collaborative practices
13. interdisciplinary team
14. interdisciplinary teams
15. multidisciplinary team
16. multidisciplinary teams
17. interprofessional team
18. interprofessional teams
19. healthcare team
20. healthcare teams
21. health care team
22. health care teams
23 = 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 (Title)
24. integrative team
25. integrative teams
26. collaborative practice
27. collaborative practices
28. interdisciplinary team
29. interdisciplinary teams
30. multidisciplinary team
31. multidisciplinary teams
32. interprofessional team
33. interprofessional teams
34. healthcare team
35. healthcare teams
36. health care team
37. health care teams
38 = 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 (Abstract)
39. interprofessional collaboration
40. interprofessional teamwork
41. interprofessional teamwork
42. interdisciplinary collaboration
43. interdisciplinary teamwork

44. interdisciplinary teamwork
45. multidisciplinary collaboration
46 = 39 or 40 or 41 or 42 or 43 or 44 or 45 (All text)
47 = 4 AND 8 AND 23 AND 38 AND 46

Table 3: keywords and MeSH terms used to identify relevant data in ERIC.

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1,2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	2 and 3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	2 and 3
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	/
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	5
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	4,5
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	3 and 4 + table 1
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	3 and 4
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	3-5
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	Not required for ScR

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	4, 5
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	5, 6, and figure 1
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	5, table 2
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	/
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	6 – 10 + table 2 and 4
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	10-13
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	13 and 14
Limitations	20	Discuss the limitations of the scoping review process.	14 and 15
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	15
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	15

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.