


Patients' Experiences of Interprofessional Collaborative Practice in Primary Care: A Scoping Review of the Literature

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Abstract

Interprofessional collaboration (IPC) has been shown to improve patient safety and quality of care. Particularly, IPC assists health care providers to manage complex and chronic diseases. To this end, primary care centers around the world have begun practicing IPC; however, little is known about the patient's experience of IPC in primary care (IPC-pc). The goals of this scoping review were to identify the studies exploring patients' perspectives on IPC-pc and to reveal gaps in the literature for future research in order to inform policy and practice. A key word search strategy was conducted using PubMed to identify studies published from 1997 to 2017 on IPC-pc that included data collected from patients or their caregivers about patient experience or satisfaction. Seven studies met the inclusion criteria for the scoping review, and these studies were evaluated by interprofessional intervention, collaboration, and outcomes.

Keywords

interprofessional collaboration, interprofessional practice, patient experience, patient satisfaction

Introduction

Chronic, noncommunicable health conditions, such as heart disease, diabetes, lung disease, and high blood pressure, are the leading causes of death worldwide, and people with one or more chronic conditions face significant challenges (1). For example, persons living with multiple chronic conditions often take several medications prescribed by different health care professionals (HCPs). The HCPs involved may not communicate about their separately generated plans of care, a task that falls upon the patient. In such cases, the patient must integrate information and instructions across care plans—plans that can be complex, even dangerous, when one plan interferes with another. The lack of communication and coordination among HCPs, or the fragmentation of health care, is a recognized threat to patient safety and quality of care (2). Accruing evidence suggests that interprofessional care (defined by the World Health Organization as 2 or more HCPs working together to improve the health of a patient (3)) when practiced deliberately through intentional collaboration (4) improves quality of care and patient safety (5,6). The US Veteran's Administration, through its Patient Aligned Care Teams, has offered team-based,

interprofessional care to improve the health of veterans (7) for nearly 2 decades. Similarly, through government initiatives, interprofessional care teams were integrated into primary care practices in Australia, Canada, Great Britain, and New Zealand some 18 to 19 years ago (8). As such, there is a need to evaluate the outcomes and effectiveness of interprofessional care practices (9-11), including asking stakeholders, particularly patients, for evaluative feedback to drive quality improvement and outcomes.

The highest level of interprofessional care is described as an *intentional collaboration* among HCPs for the purpose of creating and coordinating an integrated plan of care for the

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patient and their family (3,4). Having a relationship with the patient, without having any working relationship, association, or intentional communication among the patient's HCPs, does not constitute collaborative interprofessional care, but rather it denotes *care as usual* by separate professions (*care as usual* is often referred to as practicing in *silos* in the literature, with each silo referring to a separate discipline). To be considered an *interprofessional collaborative practice*, HCPs must work together, in some fashion, to share ideas and develop a unified plan of care. Collaboration among HCPs is essential to high-quality, patient-centered care (4,12).

The Institute of Medicine (reorganized as the National Academy of Medicine in 2015) highlighted the importance of interprofessional training (2,13) to prevent medical errors and improve quality of care. Since then, interprofessional competencies and student learning objectives have been integrated into health professions curricula, following guidelines such as those of the Interprofessional Education Collaborative Expert Panel (14). Studies of interprofessional education outcomes have focused on learners' acquired knowledge, skills, and experiences of interprofessional care, largely through self-assessment inventories.

Health-Care Reform, The Triple Aim, and The Patient's Experience of Care

The challenge of improving "the patient's experience of care" moved to the forefront of health care reform following publication of the Triple Aim (15). The Triple Aim highlighted the importance of health reform and focused on improving the health of populations, lowering the cost of care per capita and improving the patient's experience of care (both quality and satisfaction). The patient experience has typically been measured using various quantitative surveys. One example is the Clinician and Group (CG)-Consumer Assessments of Healthcare Providers and Systems (CG-CAHPS) (16). However, it has become increasingly important to understand patient experience in a more nuanced, contextual manner, wherein the patient describes which aspects of care matter. In response to this need, CG-CAHPS released a qualitative Patient Elicitation Protocol for the purpose of gathering narrative descriptions from patients about their health care (17). Thus, while patients' perspectives on primary care have begun to be explored (18), the authors could find no published reviews of interprofessional collaboration in primary care (IPC-pc) involving patients' experiences. The risks, benefits, and outcomes of IPC-pc remain relatively unexplored, from the perspective of patients utilizing this model of care, who are arguably its greatest stakeholders. The purpose of this scoping review was to identify how the patient's experience of IPC-pc has been explored, especially as applied to persons living with complex, chronic conditions, and to identify gaps in the literature to inform future research, policy, and practice.

Methodology

Protocol

Informed consent and ethical approval by an institutional review board were not applicable, since no humans were involved in this study, and data used are in the public domain. This scoping review was designed following the scoping review guidelines of Levac et al (19). Reporting of the methodology follows the more recently published "PRISMA Extension for Scoping Reviews" (PRISMA-ScR) (20). Search terms and constructs were selected in consultation with a university health sciences research librarian. A key word search strategy was designed to identify studies that took place in primary care settings involving "interprofessional practice," including data collection from patients or their caregivers regarding "patient experience" or "patient satisfaction." The search was limited to studies that were published between the years 1997 and 2017, with an emphasis on qualitative data, although quantitative data were also selected for via the term "satisfaction." Online Box 1 lists the keywords and Boolean terms that were included in the search strategy for this review.

Eligibility Criteria

The search was designed to ensure that use of the word "team" included an interprofessional dimension (eg, interprofessional, multidisciplinary, or interdisciplinary). To be included, published studies must have used some description of *collaboration* between 2 or more different professions (eg, social work and physical therapy), rather than *care as usual* by a single HCP or by different disciplines who did not communicate, share knowledge, or work together to plan or provide patient care. Solo, single, or "uniprofessional" professionals exploring primary care "teams" with staff (eg, primary care teams of a physician and staff) were excluded.

This study omits "integrated" care when the term is used to describe a specialized form of interprofessional care between a primary care generalist and a behavioral or mental health care specialist within the same organization (the integration of physical and behavioral health). Because "integrated care" arguably constitutes a specialized subset of the interprofessional care literature and history, it was excluded from this study (except when additional professionals were also involved, such as pharmacists or dentists for example).

To meet inclusion criteria a study must have (1) occurred fully or partially in a primary care setting; (2) included patient experience and/or satisfaction data following a first-hand experience of interprofessional care (either qualitative or quantitative); and (3) been written in English. Inclusion and exclusion criteria are listed in Table 1.

Table I. Inclusion and Exclusion Criteria.

Inclusion criteria	Exclusion criteria
Study included an interprofessional activity between 2 or more professions	No interprofessional activity, only 1 profession, or patient did not experience the interprofessional activity
Primary data from patients (or their caregivers or personal representatives)	Secondary/Tertiary sources (eg, review, opinion, editorial, protocols without data)
Primary care setting	Nonprimary care setting(s)
Patient experience or satisfaction data	No patient experience/satisfaction outcomes
Collaboration between health professionals	No collaboration described
Published between 1997 and 2017	Prior to 1997, or from 2018 and later
English	Languages other than English
	“Integrated care” (primary care and behavioral health without other professions)

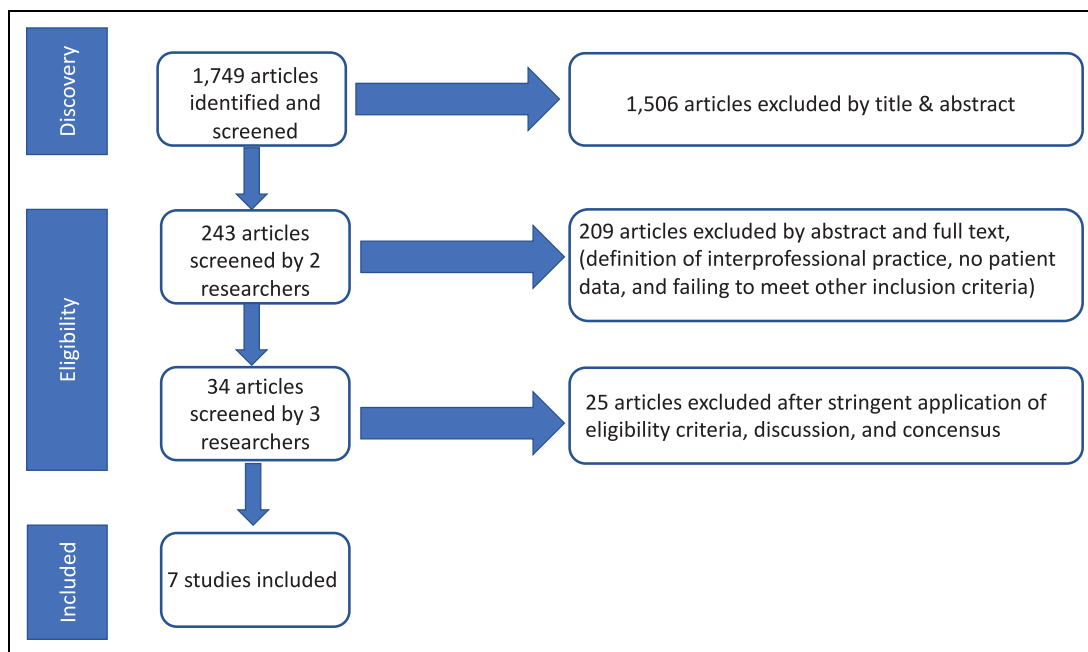


Figure 1. Flow chart of the scoping review processes of discovery, eligibility, and inclusion.

Information Sources

The study was conducted from 2017 through February 2018, within PubMed (21) made available through the University of Tennessee Libraries online.

Selection of Sources of Evidence

During the discovery phase (see Figure 1), 2 researchers sorted the titles and abstracts by article type and setting (eg, primary research articles versus opinion papers, review articles, summaries, proposals, and protocols, and primary care settings versus community, hospice, surgical, inpatient, or other). During the eligibility phase, the 2 researchers reviewed the full texts of articles.

Data Charting Process

Articles in the final eligibility stage were analyzed and coded by one researcher in Excel. Two additional researchers reviewed the eligible articles and Excel codes. Together, these 3 researchers discussed each article until reaching consensus based upon the a priori inclusion and exclusion criteria. Articles meeting all inclusion criteria were further coded for predetermined characteristics as follows: where and when published, the health condition or focus of the interprofessional activity (eg, diabetes), the journal, type of study and approach (eg, qualitative data [QL] or quantitative [QT]), and the number of participants who were patients (see Table 2). The included articles were appraised for the following attributes: whether interprofessional education or training occurred prior to the interprofessional activity or

Table 2. Descriptive Characteristics of Studies Included in Scoping Review.

Author(s)	Country	Journal and year	Study type	Setting	Condition, age (# of patients)
Grohmann et al	Canada	<i>Canadian Family Physician</i> ; 2017	QL	11 primary care sites	Diabetes, Adults 40 yo (n = 23)
Hepworth et al	Australia	<i>Australian Journal of Primary Health</i> ; 2013	QL	1 large general practice	Diabetes, Adults 40-79 yo (n = 10)
Lawrence et al	United States	<i>Journal of Interprofessional Care</i> ; 2015	QT	Academic health center (student-run free ICP clinic)	Acute care (walk-in), Adults 18-64 yo (74% were 18-44 yo) (n = 87, ICP clinic) (n = 40, comparator clinic)
Nasmith et al	Canada	<i>Family Medicine</i> ; 2004	QL	10 family practices	Diabetes, Adults 27-83 yo ($\mu = 59$ yo) (n = 322)
Shaw	Canada	<i>Journal of Interprofessional Care</i> ; 2008	QL	urban clinic	Chronic or complex conditions, Adults 25 to 88 yo (n = 7)
van Dongen	the Netherlands	<i>Health Expectations</i> ; 2017	QL	8 settings (1 in primary care) with interprofessional team meetings	Chronic or complex conditions, Adults 66-74 yo (n = 11)
Zorek et al	United States	<i>Family Medicine</i> ; 2015	QT	University interprofessional teaching clinic	Preventive care services (PCS), Adults 66-74 yo (n = 43)

Abbreviations: ICP, interprofessional collaborative practice; IPE, interprofessional education; QL, qualitative study; QT, quantitative study; yo, years old.

intervention; how the IPC was delivered; which professions were involved; how patient data were obtained; whether the IPC was part of the standard of care at that clinic or by contrast whether it represented a novel intervention; and a brief summary of the findings relevant to the research questions of this scoping review.

Results

An initial search of PubMed returned 1749 articles. After applying exclusion criteria to titles and abstracts, studies which took place outside of primary care or did not report data on patient satisfaction or experience were removed, and 243 remained. After applying exclusion criteria, the remaining 34 articles were evaluated and discussed by 3 researchers until consensus was reached (see Figure 1).

Seven studies met the scoping review criteria for inclusion, offering IPC-pc for the following conditions or purposes: diabetes, chronic or complex conditions, acute-care needs, and preventative care screening associated with Medicare health assessments (see Table 2). The studies took place in Australia, Canada, the Netherlands, the United Kingdom, and the United States. Only 2 of the studies described an interprofessional training or educational phase prior to interprofessional care.

The studies were appraised for activity, collaboration, and outcomes. Interprofessional collaboration in primary care activities followed 3 different patterns: (1) Team meetings—the patient intermittently saw different professions, followed by periodic IPC team meetings among the professionals involved in the patient's care with or without the patient (22,23); (2) team-based care—the patient simultaneously saw an IPC team of 2 or more HCPs (24-27); or (3) mixed approaches—the patient received a suite of services,

provided by different solo HCPs, who collaborated through different media (eg, personal communications, computer records, and facsimile) (28).

Four studies implemented IPC as a time-limited intervention in primary care (24, 26-28). Three studies implemented IPC-pc longitudinally as the standard of care (22,23,25). Additionally, 2 of the studies took place in university training clinics where students provided care, which was supervised by faculty (25,27).

None of the studies used mixed methods. Two of the 4 qualitative studies published their interview questions, which similarly elicited positive and negative attributes of patients' experiences. Across all 4 qualitative studies, patients identified improvements in access to different disciplines, patient-provider relationships, respectful treatment, shared decision-making, better understanding or patient empowerment as a result of IPC, and ability of the involved professionals to provide care (see Table 3 for study themes and findings). Patients perceived IPC as an improvement in primary care practice, whether applied as the standard of care or as an intervention. Of note, some patients expressed concern about the privacy of their health information when professionals who are not involved in their care are present during team meetings (23) or when treated at a student run clinic (25).

Two studies assessed quantitative data through patient satisfaction scores using Likert-type questions similar to those found in the CG-CAHPS survey in the domains of accessibility, facilities, provider behaviors, wait time, and likelihood of recommending services. Zorek et al (27) also demonstrated that IPC improved patient completion of recommended preventative health screenings compared to a random sample from the population. Lawrence et al (25) found that a student-run, free IPC clinic achieved similar

Table 3. Appraisal of Studies Included in the Scoping Review.

Author(s)	IPE or training	Professions	Standard of care or intervention & form of delivery of interprofessional care	Data source(s) (Patients were the respondents)	Reported study findings related to the scoping review research aims ^a
Grohmann et al	No	<ul style="list-style-type: none"> RNs RDs PHYS 	<ul style="list-style-type: none"> Intervention Patients worked individually with diabetes education teams (RN and RD), who collaborated with the patient's physician 	<ul style="list-style-type: none"> Semi-structured interviews (n = 23) 	<ul style="list-style-type: none"> Personalized care: care environment shared decision making and preference for one-to-one care (vs group classes) Patient-provider relationship: respect supportive interaction facilitating patient engagement Enhanced patient motivation to improve self-care Patient-centered care Effective multidisciplinary team work Empowering patients Immediate referrals Effective communication links between health care professionals
Hepworth et al	No	<ul style="list-style-type: none"> Endocrinologist Clinical Fellow (MD) DE Podiatrist Other allied health Student run free clinic: Medical students APRN students Usual care: PHY or APRN RN MA 	<ul style="list-style-type: none"> Intervention Patients received comprehensive diabetes screening, extended consultations, and plans of care with follow-up at 6 weeks, 3 months, and 12 months 	<ul style="list-style-type: none"> Semi-structured interviews (n = 10) 	<ul style="list-style-type: none"> Equivalent measures of satisfaction in domains related to provider interactions between control and comparator Outcomes equal or better in usual care (non-ICP) in accessibility, information privacy, and likelihood to recommend
Lawrence et al	Yes	<ul style="list-style-type: none"> Student run free clinic: Medical students APRN students Usual care: PHY or APRN RN MA 	<ul style="list-style-type: none"> Standard of care Patients were cared for by APRN/physician student teams, or at the comparator clinic by licensed physicians or APRNs 	<ul style="list-style-type: none"> Patient satisfaction surveys. ICP Intervention (n = 87/91 or 96%). Usual care (n = 40) 	<ul style="list-style-type: none"> Physicians and patients appreciated having access to a multidisciplinary team and related services Personalized communication was preferred to computerized links. Patients also perceived the benefit of individualized assessment and self-care educational sessions allowing them to participate in their illness management Patients noted reduced follow-up visit times
Nasmith et al	No	<ul style="list-style-type: none"> Coordinator RNs RD Foot care tech CO SW EC PHY 	<ul style="list-style-type: none"> Intervention Patients were referred by physicians to the project team, assessed for diabetes-related health behaviors, then educated and monitored on progress, and followed over time 	<ul style="list-style-type: none"> Interviews (n = 25). Focus groups with patients. Observations by participants and nonparticipants. Documentation related to the intervention. 	<ul style="list-style-type: none"> Physicians and patients appreciated having access to a multidisciplinary team and related services Personalized communication was preferred to computerized links. Patients also perceived the benefit of individualized assessment and self-care educational sessions allowing them to participate in their illness management Patients noted reduced follow-up visit times

(continued)

Table 3. (continued)

Author(s)	IPE or training	Professions	Standard of care or intervention & form of delivery of interprofessional care	Data source(s) (Patients were the respondents)	Reported study findings related to the scoping review research aims ^a
Shaw	No	<ul style="list-style-type: none"> RNs Family PHYs Family Medicine Residents RDs PharmDs Others 	<ul style="list-style-type: none"> Standard of care Monthly interprofessional case conferences to develop plans for complex patients (chronic diseases). Patients see family practice providers plus a minimum of 2 other professionals 	<ul style="list-style-type: none"> Interviews (n = 7). Observational field notes. 	<ul style="list-style-type: none"> “Good care” is interprofessional care in the sense that patients perceive it as based in a strong patient–professional relationship that facilitates access to and communication among health professionals. Patients affirmed a frequent refrain of family physicians that the most valued characteristics of a health care team are the three “A’s”: Availability, Affability, and Ability
van Dongen et al	No	<ul style="list-style-type: none"> 3 professions in 8 diverse settings In the family practice setting: Family PHY Family PHY in training Care coordinator Physiotherapist Family representative Patient 2 Relatives 	<ul style="list-style-type: none"> Standard of care Patients or their representatives participated in interprofessional team meetings for persons with chronic or complex conditions 	<ul style="list-style-type: none"> Total interviews including professionals (n = 19) Semi-structured interviews with patients and/or relatives (n = 11) Observations of meetings (n = 8) Field notes 	<ul style="list-style-type: none"> Structure and task distribution Clear structure Preparation of patient and professional Clear task distribution Presence of a chairperson and leader Group composition Presence of involved professionals Active patient participation Number of participants Supportive role of relatives Relationship between professionals and patients or relatives Trust and equality Pleasant atmosphere Knowing each other Shared language Patients’ characteristics Attitude Cognition Emotions Purpose of the meeting Sharing information between disciplines Goal setting
Zorek et al	No	<ul style="list-style-type: none"> PHYs PharmDs RNs Students (disciplines unspecified) 	<ul style="list-style-type: none"> Intervention First annual welfare review of preventative care services (PCS) for patients new to Medicare 	<ul style="list-style-type: none"> Survey of patient satisfaction 	<ul style="list-style-type: none"> High patient satisfaction scores > 4.7 (Likert-type scale of 1 to 5, where 5 = excellent) The pilot and comparator groups differed significantly at baseline on 45% (5/11) of all PCS variables evaluated and at end point on 91% (10/11) of variables.

Abbreviations: APRN, advanced practice registered nurse; CO, community organizer; DE, diabetes educator; EC, exercise consultant; ICP, interprofessional collaborative practice; IPE, interprofessional education; MA, medical assistant; MD, medical doctor; PCS, preventative care services; PharmD, pharmacologist; PHY, physician; RN, registered nurse; RD, registered dietitian; SW, social worker.
^aThemes: italicized.

patient satisfaction scores to a comparator solo provider clinic but had lower satisfaction in domains related to availability and privacy of information.

Discussion

Practice Settings

Only 7 studies were included in this scoping review, leading us to conclude that patients' experiences with IPC-pc have been little studied. All of the studies took place in urban areas from high-income countries, most of which have a single-payor health care system. Only 2 were from the United States, and both collected quantitative data from patient respondents. As in other countries, patients' experiences of IPC-pc in the United States remain relatively unexplored. Ongoing, formalized IPCs in primary care may still occur rarely in the United States. Based upon the few IPC-pc studies uncovered by this scoping review with patient data, additional studies of patient involvement in interprofessional primary care in the United States are needed to assess stakeholder experiences for quality improvement.

Standard of Care or Intervention

Whether practiced as the standard of care or as an intervention, when IPC-pc was delivered longitudinally and evaluated qualitatively, the narrative themes were positive, and patients began to redefine "good care," as IPC-pc, as described by Shaw (22) and echoed in other qualitative studies (22,24,26,28). Patients and family members who participated in interprofessional team meetings provided instructive feedback and appreciated participating, with a small number of participants feeling overwhelmed by the number of clinicians regarding them (23).

There were 2 quantitative, cross-sectional studies. In Lawrence et al (25), patient satisfaction with HCP interactions in an interprofessional student-run clinic was not statistically different from patient satisfaction at a noninterprofessional, comparator clinic, but patients were less satisfied with accessibility, less likely to recommend, and more concerned about the privacy of their health information at the interprofessional student-run clinic (25). It is possible that the lower satisfaction scores relate to factors other than interprofessionalism, such as fewer hours of care offered per week at the student-run clinic or having health care provided by learners. In another cross-sectional study, interprofessional care delivered by students under faculty supervision produced better adherence to screening guidelines than a comparative sample (27). The outcomes of the studies, considered as a whole, demonstrate that patients can provide useful feedback and assist in improving care or the experience of care.

Practice and Outcomes of IPC-pc

The narrative themes developed across all included studies were positive for a variety of IPC-pc activities, purposes, and implementation. Therefore, IPC-pc appears to be well suited for different needs and settings. While the studies involved different IPC-pc activities and scopes of implementation, similar qualitative themes emerged. In particular, patients noted that they experienced a very high quality of care, improved relationships with HCPs, and improved patient-centered qualities of care such as better HCP attitudes, attention, and availability (22,24,26,28). Interprofessional care made patients feel more like part of the team (24,26). Also, patients credited their experiences of IPC-pc with improved participation, self-management of condition(s), self-efficacy, and engagement (22,24,26,28). Each of these related concepts links to a continuum of improved health behaviors and outcomes (29,30). Further exploration of how IPC-pc may affect patients' perceptions of the abovementioned concepts, and any resultant health care behaviors is warranted.

Interprofessional Education and Training

Surprisingly, interprofessional education was described in only one article (see Table 3). Further studies are needed to trace the effects of training on patient experience outcomes (10). There is a growing body of evidence indicating that quality and safety are positively correlated with team-based training (6). Such training could improve how IPC-pc is delivered, which could subsequently affect patient experiences, treatment outcomes, and cost of care in keeping with the Triple Aim (15).

Appraisal of IPCs

We recommend that future reviews appraise and classify types of practices (eg, interprofessional, interdisciplinary, multiprofessional, and "team-based practices") and levels of collaboration (31,32). Because we defined interprofessional collaboration carefully—as an intentional practice among 2 or more professions in the care of a patient—many studies omitting a description or indication of interactions or communications between HCPs were excluded from this scoping review. A more inclusive review would enable comparisons among types of IPCs to be made (independent variables) with the outcomes achieved (dependent variables), such as patient feedback, experiences, and health-related outcomes. For example, does one form of IPC versus another achieve more desirable outcomes? We cannot currently answer this question because few studies of IPC exist that are designed to control and evaluate the independent variables (eg, types of professionals, number of professionals, types of collaborations or lack thereof, content of interprofessional education and training (if any) prior to the IPC intervention with patients). As the body of IPC literature

grows, a more expansive review of the literature could in time tease apart these important characteristics of IPC and their effects on patient experience and health outcomes.

Limitations and Recommendations

This scoping review has a few limitations. The search was conducted within 1 database, which could be expanded to include several others such as the Education Resource Information Center (ERIC) and the Cumulative Index of Nursing and Allied Health Literature (CINAHL). The researchers did not solicit gray papers or other forms of literature outside the peer-reviewed, published literature and therefore may have missed some resources maintained by organizations such as the National Center for Interprofessional Practice and Education, called the NEXUS (<https://nexusipe.org/>), and The Beryl Institute (<https://www.theberylinstitute.org/>). Integrated care was beyond the scope of this review, which could also be included in a more extensive review of IPC-pc.

Conclusion

The results of this review indicate that patients' experiences of IPC-pc are largely missing from the published literature, which constitutes a significant gap in a field holding such promise to improve patient experience, quality of care, and treatment outcomes. Also, the literature has not yet converged on an accepted meaning of IPC. Instead, IPC can describe widely varying practices from the most disconnected (eg, different professionals in proximity who do not communicate much or at all in the care of a shared patient) to the most collaborative (eg, highly communicative professionals who form a team, including the patient, and together generate a unified plan of care). This scoping review identifies the few studies to date that include any patient experience or patient satisfaction outcomes in IPC-pc, where collaborative practice was evident.

Patients' perspectives are needed to improve the delivery of IPC-pc and to provide the groundwork for future studies. A mixed-methods exploration of patient experience of IPC was notably missing. To the best knowledge of the authors, this review of the literature represents the first published exploration of the patient's experience of IPC-pc. We recommend a systematic review of patients' experiences of interprofessional care across a variety of health care settings to expand the discussion beyond primary care. An appraisal across health care settings of IPC, from the patient's perspective, would identify common themes, issues, benefits, and weaknesses in order to improve quality, efficacy, and patient outcomes.


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Supplemental Material

Supplemental material for this article is available online.

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Author Biographies

Katherine H Morgan, PhD, MSN, MS, RN, FNP-BC, is an Assistant Professor in the College of Nursing at the University of Tennessee (UT) in Knoxville, Tennessee. Her research focuses on the prevention and treatment of chronic conditions, particularly in underserved areas of Appalachia. She trains, leads, and studies interprofessional teams using an interprofessional collaborative practice (ICP) model. She is particularly interested in the patient's experience of ICP during office visits and subsequently as they manage their health. Dr. Morgan is also a biologist with a doctorate in comparative and experimental medicine. Her lab investigates the role of the gut microbiome in shaping acute and chronic health outcomes and its interventional capacity to improve human health.

Cristina S Barroso, DrPH, is an Associate Professor in the Department of Public Health at the University of Tennessee (UT) in Knoxville, Tennessee. Her research aims to improve the lives of underrepresented individuals, placing a priority around health disparities while using a health promotion perspective to implement incremental and impactful social, environmental, and policy changes. Specially, she researches the interrelations among diverse personal and environmental factors in health, primarily among Latinos and other underrepresented groups.

Sarah S Bateman, MSN, RN, FNP-BC, is currently practicing as a nurse practitioner in neurosurgery in Knoxville, Tennessee. She obtained her masters of science in nursing at the University of Tennessee (UT). She began her studies of interprofessional collaborative practice (ICP) during her masters program. She continues to implement knowledge obtained from her studies of ICP in her practice today and believes it is necessary in order to be successful at holistically caring for the patient.

Melanie Dixon serves as a Health Sciences Librarian for the University of Tennessee, Knoxville Libraries. Melanie provides instruction and research support for the College of Nursing, and the Departments of Audiology and Speech Pathology, Nutrition,

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Kathleen Brown, PhD, MPH, CHES is an Associate Professor of Practice and Director of the MPH Program in the Department of Public Health at the University of Tennessee (UT) in Knoxville, Tennessee. In addition to administrative responsibilities, she

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