

ORIGINAL ARTICLE

## A scoping review of interprofessional collaborative practice and education using the lens of the Triple Aim

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### Abstract

The Triple Aim unequivocally connects interprofessional healthcare teams to the provision of better healthcare services that would eventually lead to improved health outcomes. This review of the interprofessional education (IPE) and collaborative practice empirical literature from 2008 to 2013 focused on the impact of this area of inquiry on the outcomes identified in the Triple Aim. The preferred reporting items for systematic reviews and meta-analyses methodology were employed including: a clearly formulated question, clear inclusion criteria to identify relevant studies based on the question, an appraisal of the studies or a subset of the studies, a summary of the evidence using an explicit methodology and an interpretation of the findings of the review. The initial search yielded 1176 published manuscripts that were reduced to 496 when the inclusion criteria were applied to refine the selection of published manuscripts. Despite a four-decade history of inquiry into IPE and/or collaborative practice, scholars have not yet demonstrated the impact of IPE and/or collaborative practice on simultaneously improving population health, reducing healthcare costs or improving the quality of delivered care and patients' experiences of care received. We propose moving this area of inquiry beyond theoretical assumptions to systematic research that will strengthen the evidence base for the effectiveness of IPE and collaborative practice within the context of the evolving imperative of the Triple Aim.

### Introduction

There is now a pressing need to foster high quality research examining the impact of collaborative practice and interprofessional education (IPE) around the world (Goldman, Zwarenstein, Bhattacharyya, & Reeves, 2009; Thistlethwaite & the GRIN working group, 2012; Zwarenstein, Goldman, & Reeves, 2009). This is one defining role of the United States (US) National Center for Interprofessional Practice and Education at the University of Minnesota, a public-private partnership created from a competitive process to provide leadership, scholarship, evidence, coordination and national visibility advancing IPE and collaborative practice as a viable and efficient healthcare delivery model.<sup>1</sup> In this role, the National Center is developing a series of articles to stimulate meaningful inquiry to ascertain the impact of interprofessional collaborative practice and IPE (ICP/IPE) on health and healthcare delivery outcomes (hereafter, we use the acronym ICP/IPE, while recognizing that others may use different

### Keywords

Health system reform, interprofessional collaboration, interprofessional education, interprofessional research

### History

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ones). To frame this work, we conducted an extensive scoping review of the ICP/IPE literatures from 2008 – the year that Berwick, Nolan, and Whittington (2008) promulgated the Triple Aim focused on reforming US healthcare delivery – through 2013. The purpose of this review was to determine the current state of ICP/IPE inquiry, in light of the Triple Aim (Berwick et al., 2008), as a starting point for two of the National Center's transformative goals – strengthening the evidence base for the effectiveness of ICP/IPE and creating, implementing and assessing new models of ICP/IPE – within the context of the US healthcare delivery system and its global counterparts.

While reviewing the two literatures of ICP and IPE is often done independently, the work of the National Center conceptually links them in a NEXUS (D'Amour & Oandasan, 2005). This NEXUS entails the process of redesigning both healthcare education and healthcare delivery to be better integrated and more interprofessional. The ultimate goal of the NEXUS is to create a unified system from currently disparate ones focusing on achieving the outcomes of the Triple Aim.

The Triple Aim (Berwick et al., 2008) has become a galvanizing force drawing attention to a generalized approach needed to fix the US healthcare system by simultaneously improving patient experiences of care (including quality and satisfaction), improving the health of populations and reducing the per capita cost of healthcare. Ultimately, the Triple Aim outcomes entail the domains of *quality* (the delivery of safe and effective care by healthcare teams as well as patient outcomes); *cost* (total cost and measures of utilization that drive costs); and *experience* (not only patients' experiences but also the

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<sup>1</sup>For more information about the National Center, see: <http://www.ahceducation.umn.edu/national-center-for-interprofessional-practice-and-education/index.htm>.

experiences of providers working in interprofessional teams as well) (Berwick et al., 2008). The Triple Aim has re-enforced the possible importance of ICP/IPE in the context of multiple organizations and systems.

Since the mid-1970s, educators, health professionals, health-care researchers and policy makers have acknowledged that ICP/IPE have the potential to play key parts in possibly improving healthcare delivery and health outcomes (Reeves et al., 2008). In 2010, the World Health Organization (WHO) affirmed its commitment to ICP/IPE with its *Framework for Action on Interprofessional Education and Collaborative Practice* (WHO, 2010). This framework, highlighting the importance of IPE in the development of a collaboration-ready workforce armed with the skills needed to become part of collaborative practice, also outlined the possible importance of ICP/IPE in improving fragmented healthcare delivery systems globally. In this 2010 publication, the WHO, in similar fashion to the Triple Aim, unequivocally connected interprofessional healthcare teams to the provision of better healthcare services that would eventually lead to improved health outcomes (WHO, 2010). In addition, authors of this report intentionally linked these outcomes to the long-held definition of IPE, or learning about, from and with each other to enhance collaboration and improve health outcomes (Barr & Waterton, 1996; WHO, 2010).

The fields of ICP/IPE have experienced ebbs and flows of interest since the 1970s. Concurrent with the creation of the Triple Aim and the WHO (2010) report, the US has been experiencing another resurgence of interest in the promise of IPC/IPE. In 2011, the US IPE Collaborative defined 38 core competencies in four domains of ICP (IPEC, 2011). Pragmatically, these competencies build on the WHO's (2010) definition of collaborative practice and are geared to prepare "all health professions students for *deliberatively working together* with the common goal of building a safer and better patient-centered and community/population-oriented US health care system" (p. 3, emphasis in original) (IPEC, 2011).

Many reviews of the ICP/IPE literatures have been conducted (Abu-Rish et al., 2012; Budgen & Gamroth, 2008; Mann, Gordon, & MacLeod, 2009; Morgan & Jones, 2009; Reeves, 2009; Reeves, Goldman, Burton, & Sawatzky-Girling, 2010a; Reeves et al., 2011; Reeves et al., 2010b; Reeves, Perrier, Goldman, Freeth, & Zwarenstein, 2013; Rodger & Hoffman, 2010; Suter et al., 2009; Thannhauser, Russell-Mayhew & Scott, 2010; Thistlethwaite, 2012; Thistlethwaite & Moran, 2010; Xyrichis & Lowton, 2008; Zwarenstein et al., 2009). These have included scoping reviews (Reeves et al., 2011), literature syntheses (Thistlethwaite & Moran, 2010), environmental scans (Rodger & Hoffman, 2010), Cochrane reviews (Reeves et al., 2013; Zwarenstein et al., 2009), systematic reviews (Reeves et al., 2010a), syntheses of systematic reviews (Reeves et al., 2010b) and reviews focused on clarifying the fields of IPE and collaborative practice (Abu-Rish et al., 2012) and on defining the field's research agenda (Thistlethwaite, 2012). While prior reviews have focused on quality (e.g. effective care) and experience (e.g. experiences of healthcare providers), to date, no comprehensive review of the ICP/IPE literatures has focused on the impact of this area of inquiry on the outcomes of the Triple Aim as articulated by Berwick et al. (2008).

## Methods

For this scoping review, we employed the preferred reporting items for systematic reviews and meta-analyses (PRISMA) approach (Liberati et al., 2009; Moher, Liberati, Tetzlaff, & Altman, 2009a; Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009b), which is organized by five distinct elements or steps: beginning with a clearly formulated question,

using the question to develop clear inclusion criteria to identify relevant studies, an approach to appraise the studies or a subset of the studies, a summary of the evidence using an explicit methodology and interpreting the findings of the review. The details of these five steps are described below.

### Step 1: formulating the question

Prior to conducting the literature search, the purpose of the study and a specific question were established, leading to the clarification of the inclusion criteria. The question was: since 2008, have the ICP/IPE literatures been focused on examining how these (ICP/IPE) simultaneously improve population health outcomes, delivery of quality and safe healthcare and healthcare cost reduction?

### Step 2: identifying the relevant work

The inclusion criteria emerged directly from the question guiding this review and were specified *a priori*. The review began in consultation with librarians who helped develop a rigorous analysis of the best terms and search strategy. This initial search was limited to papers written in English and produced between 2008 (the year Berwick et al. published the Triple Aim paper) and 2013. The initial search terms, narrowed from a list of approximately 50 search terms that were compiled from 17 IPE and collaborative practice review articles (Abu-Rish et al., 2012; Budgen & Gamroth, 2008; Mann et al., 2009; Morgan & Jones, 2009; Reeves, 2008, 2009, 2010a,b, 2011, 2013; Rodger & Hoffman, 2010; Suter et al., 2009; Thannhauser et al., 2010; Thistlethwaite, 2012; Thistlethwaite & Moran, 2010; Xyrichis & Lowton, 2008; Zwarenstein et al., 2009), were as follows: Interprofessional\*, Multiprofession\*, Teamwork\*, Interprofessional Relations\*, Patient Care Team\* and Education\*. Our target was to retrieve and review a range of 1200–1500 articles from Ovid. The Ovid MEDLINE database (US National Library of Medicine, Bethesda, MD) contains bibliographic citations and author abstracts for an estimated 4600 biomedical journals published in the US and in approximately 70 other countries. The favored language for Ovid is English. Gray literature was excluded from this review.

### Step 3: an approach to appraise the studies

The abstracts were sorted by article type (research reports, program descriptions, opinion/position papers, summaries of previous articles and unknown/other) (Table I) and type of professional interaction around learning and/or practice (inter-professional as defined earlier, multiprofessional, uniprofessional and unknown/other) (Table II).

The criterion for inclusion for further examination was as follows: a research article that either reported on the development of or evaluation of an ICP/IPE program. A research article, regardless of methodological approach, is grounded in the rigorous and systematic collection and analysis of data, with investigators paying attention to reliability and validity as well as generalizable findings and conclusions. Sometimes the descriptors of dependability or consistency are used for reliability and trustworthiness or applicability for external validity in qualitative research studies (Guba & Lincoln, 1981; Stake, 1995; Thyer, 2001). By contrast, evaluation, which is also systematic and rigorous, is grounded in a specific program's context where evaluators answer questions of interest to potential users. Although the terms are sometimes used interchangeably, research seeks to generalize while evaluation to particularize. By and large, articles examined for this review focused on either the creation of an ICP/IPE program or a study of its effects. All articles classified

Table I. Article type code.

Code	Classification	Description
P	Program or research report	An interprofessional education or collaborative practice program or activity is described. May include some data, analysis or research methods. Activities could include developing programs, data collection tools, planning processes, drafting competency models, conducting qualitative or quantitative research or collecting data.
O	Opinion/position paper	Thoughts about interprofessional education and collaborative practice. No research or program development presented.
S	Summary or meta-analysis of prior articles	Review of existing literature or research.
U	Unknown/other	Also code as U if there is no abstract.

Table II. Level of interprofessionalism code.

Code	Classification	Description
I	Interprofessional	Two or more professions learning or practicing interprofessional competencies: teamwork, communication, ethics and/or professional roles. Includes abstracts that claim interprofessional activities, even if it is not clear which professions or competencies.
M	Multiprofessional	Two or more professions working side by side for any purpose.
N	Not interprofessional (uniprofessional)	Focused on one profession or not on professions at all. Also, if the professions described are not health care practitioners
U	Unknown/Other	Also code as U if there is no abstract or if it is unclear if multiple professions are involved.

as multiprofessional were excluded as were opinion pieces, reviews and editorials.

To answer our question, only research (and not evaluation) articles were germane. The review and coding of the abstracts identified 552 potential articles for additional examination. Two readers reviewed and coded each of the 552 articles using the same coding scheme. Their inter-coder reliability was checked with the goal of reaching consensus. Fifty-six articles, examined to reconcile coder ratings, were eliminated either because they were not original research or because, upon further review, they were actually opinion pieces or reviews. The 496 remaining articles became the corpus for this literature review.

#### Step 4: summarizing the presented evidence

All of the 496 papers selected for final appraisal were classified by article content, country of origin, health system type, study setting, sample size range, methodology and number of professions included in the study. In addition, specific professions involved, as well as the frequency and percent of their inclusion in studies, were captured. In a sub-analysis, we examined the research questions and findings of the 133 papers<sup>2</sup> classified as *research into interprofessional collaborative practice*. For this additional analysis, each of these articles was coded by whether or not *any* Triple Aim identified outcome was part of the data collected and analysis conducted. Each paper was coded as either 0, 1, 2 or 3. Papers coded as zero included no Triple Aim outcome, whereas those coded as three included all of the Triple Aim outcomes. Had we chosen to examine these papers using the criteria of including the Triple Aim outcomes simultaneously, no paper would have passed muster. Two reviewers (C.C. and M.N.L.) examined and coded the 133 papers classified as research into ICP. During the coding process, disagreement occurred over 15 or 11.3% of the papers. The disagreement was resolved by re-reading the paper's abstract and coming to agreement on all 15 papers. Finally, two of the paper's authors (C.C. and M.N.L.) coded the level of analysis (practice-based process; individual change in knowledge, skill or attitude; and organizational level

change) (Goldman et al., 2009; Reeves, Goldman, & Zwarenstein, 2009) addressed in the findings of the 133 papers classified as research into ICP.

#### Step 5: interpreting the findings

In the discussion section, the findings of this scoping review are interpreted in light of the Triple Aim. In addition, a summary of the current focus of this area of inquiry is presented along with suggestions for re-orientation.

### Results

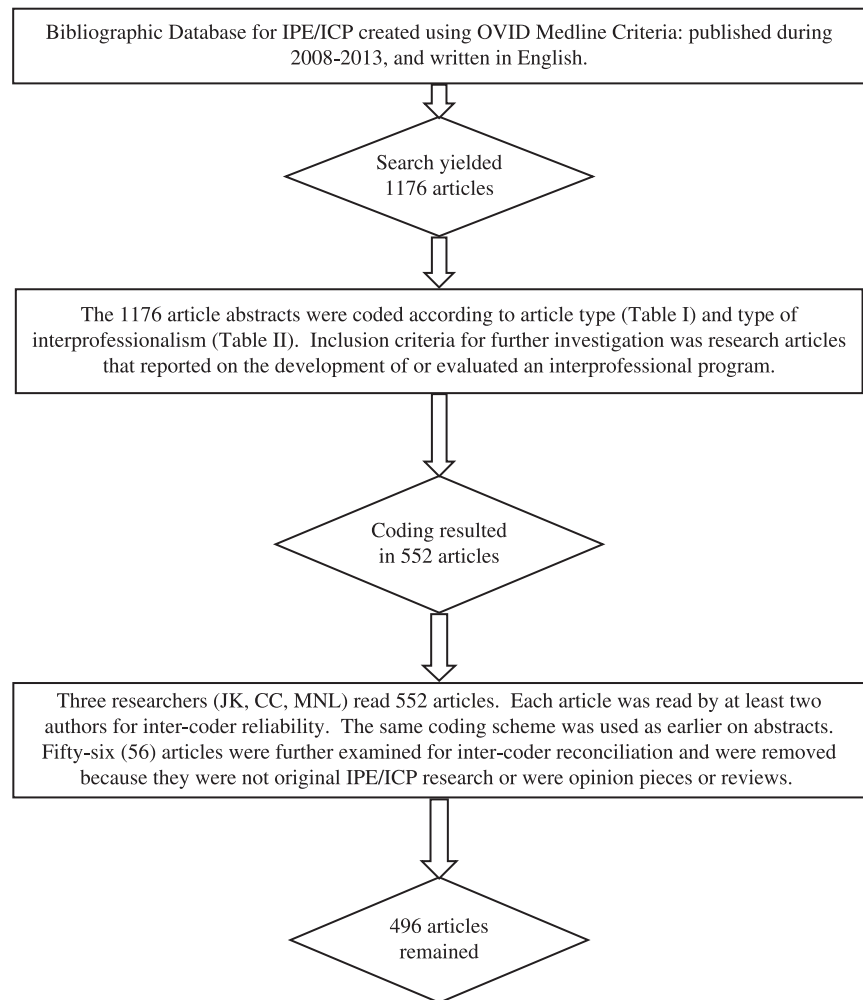
The initial search yielded 1176 published manuscripts that were reduced to 496 when the inclusion criteria were used to refine the selection of published manuscripts (Figure 1). Table III displays the frequency and percent of ICP/IPE manuscripts by analytic descriptors. The analysis revealed that, of the 496 manuscripts examined, 254 papers (51.2%) focused on an assessment/evaluation of a specific IPE program or intervention, whereas 133 papers (26.8%) focused on research into ICP. In addition, 42 papers (8.5%) were a combination of assessing ICP/IPE instruments and programs, 32 (6.5%) described the development of programs, 14 papers (2.8%) assessed and/or evaluated instruments, 13 papers (2.6%) of the papers reviewed presented models or discussed competencies and 6 papers (1.2%) were focused on instruments. The largest share of the papers reviewed were Canadian (32.5%), followed by US (23.2%) and UK (20.4%) papers. The work described in 75% of the articles reviewed originated within universal coverage health systems.

Only 12.7% of the 496 papers involved a setting that combined higher education and healthcare practice sites where health profession students were placed. One in three of the papers reviewed employed mixed methods, whereas 41.4% of the articles relied on quantitative methods. In the majority of the papers, 55.2% investigators reported a sample size <50 and 15.1% included a sample size ≥300. Of those papers reviewed, 43.1% included 2–4 professions.

Table IV displays the frequency and percent of professions included in the 496 articles. Twenty different professions appeared in the literature reviewed, with nursing the most

<sup>2</sup>For a complete list of all papers included in this review, see: <http://nexusipe.org/resource-exchange/scoping-review-ipc-ipe>.

Figure 1. Article selection flowchart by reviewer inclusion criteria.



frequently included (62.2%) followed by medicine (57.9%). Veterinary medicine was the least frequently included in the papers reviewed (1.2%). Public health was notably absent.

In analyses to examine the questions and findings of the 133 papers classified as research into IPE and/or collaborative practice, reviewers coded each article by whether or not at least one Triple Aim outcome was part of the data collected and analysis conducted. These results are displayed in Table V. From this analysis, 108 (81.2%) papers were coded as 0 (no Triple Aim outcome), 22 (16.5%) as 1 (at least one Triple Aim outcome, and all these papers focused on patient experience of care) and 3 (2.3%) papers as 2 (at least two Triple Aim outcomes, and these papers focused on patient experience of care as well as population health). None of the papers reviewed were coded as 3. Therefore, none of the papers included the Triple Aim focusing on the reduction of healthcare costs, an important and critical element in transforming the healthcare delivery system.

The 133 manuscripts were also classified by methods used (quantitative, qualitative or mixed), study setting, sample size range and level of analysis for study findings reported. In over half of the studies (51.1%), investigators used qualitative methods, as compared to quantitative (30.8%) or mixed methods (18.0%). The highest proportion of studies was conducted in healthcare practice sites – 36.1% in multiple sites and 17.3% in a single site. The majority (61.7%) of the studies reported sample sizes <50. Only 23 of these studies (17.3%) reported sample sizes ≥300. An examination of the level of analysis for study findings indicated that 59.4% of the 133 papers had a practice-based process focus, 21.0% were focused on individual level skills, knowledge and

attitudes and in 16.5% organization level change was reported. Finally, 83 papers (62.4%) were classified as collaborative practice, while 50 (37.6%) as IPE.

## Discussion

ICP/IPE have been areas of inquiry for many decades now. This inquiry has been carried out by scholars from multiple disciplines such as education, psychology, sociology, pharmacy, nursing and medicine. The professions included in the research of ICP/IPE have also been quite diverse. Healthcare reform in the US, spurred on by the articulation of the Triple Aim outcomes, has provided an avenue for re-vitalizing this area of inquiry, encouraging the elevation of the research foci from the level of program-specific impacts to the impact of ICP/IPE on simultaneously focusing on patient healthcare cost, healthcare quality and improvement in population health.

Our review revealed that, at present, the inquiry remains focused on examining three levels of impact – individual level in terms of immediate or short-term changes that ICP/IPE has on knowledge, skills and attitudes; practice level in terms of practice-based processes – but not outcomes; and organizational level in terms of intermediate policy changes. We are not alone in making this observation (Goldman et al., 2009; Reeves et al., 2009). None of the literature reviewed was situated directly in the context of current US healthcare reform *explicitly* mapping the outcomes of ICP/IPE to those identified as the Triple Aim. Very little of the literature reviewed focused on population health or patient health outcomes, and none on the reduction in the cost of health care. Given that population health is most often the purview of the

Table III. Frequency and percent of ICP/PE literature descriptors 2008–2013 ( $n = 496$ ).

Variable and factors	Frequency	Percent
<b>Article content</b>		
Assessment/evaluation of ICP/PE program	254	51.2
Research into IP practice	133	26.8
Combination of assessing ICP/PE instruments and programs	42	8.5
Development or description of ICP/PE program	32	6.5
Assessment/evaluation of ICP/PE instrument(s)	14	2.8
Models or competencies	13	2.6
Development or description of IP instrument(s)	6	1.2
Other	2	0.4
<b>Article classification for research into</b>		
IP practice papers		
Collaborative practice	83	62.4
Interprofessional education	50	37.6
<b>Country</b>		
Canada	161	32.5
US	115	23.2
UK	101	20.4
Australia/Asia	48	9.7
Scandinavia	40	8.1
Other <sup>a</sup>	31	6.3
<b>Health system type</b>		
Universal coverage	372	75.0
USA	115	23.2
Other	9	1.8
<b>Study setting</b>		
Higher education – 1 institution	162	32.7
Health care practice – multiple sites	132	26.6
Health care practice – 1 site	79	15.9
Combination of higher education and practice sites	63	12.7
Higher education – multiple institutions	46	9.3
Other	14	2.8
<b>Sample size range</b>		
<50	274	55.2
50–99	69	13.9
100–299	78	15.7
≥300	75	15.1
<b>Methodology</b>		
Mixed methods	125	25.2
Qualitative methods	167	33.7
Quantitative methods	204	41.1
<b>Number of professions</b>		
Unclear	95	19.2
1	38	7.7
2–4	214	43.1
5–8	103	20.7
9 or more	46	9.3

<sup>a</sup>Other countries included: Belgium, The Netherlands, Germany, Israel, Iran, Mexico, Italy, Chile, India, Nepal, Hungary, Honduras, Switzerland, Nigeria and Spain.

discipline of public health, perhaps it is not surprising that none of the papers reviewed in this study included public health as an integral discipline in IPE or collaborative practice. Since everyone has a part in the game, this absence is unfortunate and provides important actionable information.

A critical reason for the creation of the National Center in 2012 was the resurgence of interest in IPE and collaborative practice in a healthcare environment energized by significant practice and health policy change. Research needs to focus on the health-related outcomes, specifically the Triple Aim, at the

intersection of IPE and collaborative practice (the NEXUS). Our review documents that few researchers have studied either this NEXUS or its connection with the Triple Aim. We would argue that the time is right for such a focus. If ICP/PE hold the promise of moving health professions education and collaborative practice together along the path of achieving the Triple Aim outcomes, then creating a well-documented, rigorous research base is essential. Crucial first steps are as follows: (1) developing a consensus about concepts for this area of inquiry, (2) a systematic integration of the IPEC ICP core competencies framework and (3) consensus on measurement of the concepts. Others have noted these same concerns (Thistlethwaite & the GRIN working group, 2013).

We chose to examine the inquiry into ICP more closely to ascertain what the current research foci were because, by our definition, investigators were attempting to answer questions beyond localized programs. Moreover, we believe that continuing to produce reviews of this area of inquiry employing narrow inclusion criteria that result in only a few papers (if any) being examined (Reeves et al., 2008, 2013; Zwarenstein et al., 2009) does not maximize the potential for moving the field forward. By proposing a research agenda for the National Center based on a broader examination of the current state of the field and research within it, we recognize what has been accomplished and set our sights on the next stages of a critically important journey.

Moving forward requires asking questions about the impact of ICP/PE in new ways, which call for the collection and generation of data allowing examination of as yet untested causal pathways between and among the domains of IPE, practice and healthcare delivery, health outcomes and healthcare costs. This work is not for the faint of heart – it is conceptually difficult and encompasses the potential challenge of discovering that ICP/PE may not have the impact we believe it might. For example, given the complexity of the healthcare world, training learners in effective team work may not ultimately lead to improved health outcomes or reduce the cost of care. The NEXUS is the innovative framing of tackling these complex issues. In the NEXUS, both clinical practice and education join forces to ensure sustainable change.

Generalizable findings are paramount if the hope of ICP/PE is to be realized. For findings to be generalizable, they must come from rigorous research and data analysis employing quantitative, qualitative and mixed methods. Among the untested associations and/or causal pathways we foresee are those that posit and develop Triple Aim outcomes as dependent variables and data collected on multiple dimensions of IPE and collaborative practice as independent variables, with demographic and ecological variables as covariates. Of equal importance is high-quality qualitative research that documents the context-specific experience with implications for other settings. While generating and collecting these data will require a serious commitment of resources, the ultimate value of understanding the extent to which – and in what ways – ICP/PE may affect the achievement of the Triple Aim will make the commitment of time and research funding worthwhile. For 40 years, the promise of ICP/PE has inspired a small group of researchers, health professions educators and clinical practitioners. It is time to call the question of the extent to which ICP/PE may help catalyze a major transformation of the US healthcare system.

There are a number of limitations to this review that should be explicitly noted. First, although ICP and IPE have been areas of inquiry for 40-some years, the review was not comprehensive, but limited to the years 2008–2013. While this limit was purposive, it nevertheless should be acknowledged. Second, while also purposive, the lens for analysis was the Triple Aim. This is one lens of many that could be applied to a scoping review of these materials. We chose it because of the connection between the

Table IV. Frequency and percent of professions included in reviewed literature (2008–2013;  $n = 496$ ).

Variables and factors	Frequency	Percent
Nursing	309	62.2
Medicine	288	57.9
Physical therapy	138	27.8
Pharmacy	120	23.1
Occupational therapy	116	23.3
Social work	111	22.3
Other professions <sup>a</sup>	87	17.5
Mental and behavioral health	53	10.7
Healthcare assistants	52	10.5
Nutrition/dietetics	50	10.1
Audiology	40	8.0
Dentistry	32	6.4
Midwifery	29	5.8
Health administration	26	5.2
Diagnostic radiography	20	4.0
Paramedic	16	3.2
Medical laboratory science	15	3.0
Dental hygiene	10	2.0
Complementary and alternative medicine (CAM)	8	1.6
Veterinary medicine	6	1.2

<sup>a</sup>Other professions included: pastoral/spiritual care, engineering, business, respiratory therapy, and “Volunteers” with no other professional identified.

Table V. Characteristics of papers classified as research into interprofessional education/collaborative practice ( $n = 133$ ).

Variables and factors	Frequency	Percent
Papers with an identifiable Triple Aim-related outcome		
No Triple Aim health-related outcome	108	81.2
At least one Triple Aim health-related outcome	22	16.5
At least two Triple Aim health-related outcomes	3	2.3
At least three Triple Aim health-related outcomes	0	0
Methods		
Qualitative	68	51.1
Quantitative	41	30.8
Mixed	24	18.0
Study setting		
Higher education – 1 institution	22	16.5
Health care practice – multiple sites	48	36.1
Health care practice – 1 site	23	17.3
Combination of higher education and practice sites	14	10.5
Higher education – multiple institutions	20	15.0
Other	6	4.5
Sample size		
<50	82	61.7
50–99	17	12.8
100–299	11	8.3
≥300	23	17.3
Level of analysis for study findings		
Practice-based process	79	59.4
Individual level skills, knowledge and attitudes	28	21.0
Organization level change	22	16.5
Unclear	4	3.0
Article classification		
Collaborative practice	83	62.4
Interprofessional education	50	37.6

Triple Aim and healthcare delivery reform in the US. Third, this review was focused on examining ICP/IPE in the context of US healthcare reform. There are many other ways to examine and understand ICP/IPE. Specifically, different issues might be pertinent in other types of healthcare systems (e.g. universal healthcare systems). Finally, our assessment of the quality of the 133 research into collaborative practice papers did not entail a meta-analysis. Again, this was purposive since we wanted to include quantitative, qualitative and mixed methods papers it was not possible to combine the data for additional analysis. These limitations are not detrimental to the work presented in this study but do suggest the boundaries for interpreting the findings.

### Concluding comments

Even though research into ICP/IPE efforts has been an area of inquiry for almost four decades, it has not as yet demonstrated the impact of these on improving population health, reducing healthcare costs, improving the quality of delivered care and/or patients' experiences of care received. This is not to say that much of the published literature does not situate the importance of ICP/IPE in the context of health services and health-related outcomes. It is to say that when the studies are designed, analysis plans developed and data generated and collected, these impacts have not to date been identified. We hope that this review of literature and the research agenda we have proposed will begin to move this area of inquiry beyond theoretical statements to hypothesis testing aimed at strengthening the evidence base for the effectiveness of ICP/IPE within the context of healthcare delivery.

### Declaration of interest

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

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