

# Scoping review of inter-professional teamwork theories in health care: Implications for policy, practice and research

Received (in revised form): 27th August, 2016



## Grace Liu

has worked in a variety of health care settings as a physiotherapist, research analyst and policy analyst in Ontario, Canada. She has a bachelor's degree in physiotherapy and a master's degree in business administration. Currently, she is pursuing her doctoral degree in health policy and equity at York University, Canada. Her research interest is in health policy, focusing on inter-professional practice and health care integration at the systems level. She is interested in developing strategic health policies and transforming the health care delivery system to ensure sustainability.

York University, Faculty of Health (PhD Candidate), Health, Nursing and Environmental Studies Building, 4700 Keele Street, Room HNES 421, Toronto, ON, Canada M3J 1P3  
Tel: +1 416 736 2100 Ext: 22171  
E-mail: gliuchan@yorku.ca



## Peter Tsasis

is an Associate Professor of Management at the Faculty of Health at York University, Canada. He has research expertise in organisational change, health care management and complexity and is recognised as a leader in the field. He has disseminated his work nationally and internationally and his research scholarship has been widely published in interdisciplinary academic journals. He is an executive member of the York Institute for Health Research (YIHR), a Fellow with the American College of Healthcare Executives and is board certified with the Canadian College of Health Leaders.

York University, Faculty of Health, Health, Nursing and Environmental Studies Building, 4700 Keele Street, Room HNES 421, Toronto, ON, Canada M3J 1P3  
Tel: +1 416 736 2100 Ext: 22171  
E-mail: tsasis@yorku.ca

**Abstract** As theoretical underpinning is a priority for inter-professional teamwork, this scoping review examines theories for inter-professional teamwork in health care in the academic literature over the last 10 years. The review found 56 papers from 4 databases (CINAHL, Medline, Scholar's Portal and Web of Science) published in English. A content strategy approach was used to categorise the theories, interventions and outcomes. The literature revealed a trend moving away from single theories, into multifaceted theories. There were more papers on inter-professional education interventions, compared to inter-professional practice or organisation interventions. Many papers reported the importance of patient outcomes as the driving force for teamwork. However, there is a lack of evidence to support this notion. Further research is suggested on teamwork effectiveness, including measurement and evaluation of patient and system outcomes. Based on the scoping literature review, a conceptual model is developed to align interventions with

theory to outcomes, which considers four broad theoretical perspectives highlighted herein (learning, social-psychological, organisation and system), interventions at various levels (patient, profession, micro, meso and macro) and measurement of outcomes. This framework identifies various theories, interventions and outcomes, which will help direct policy, practice and research in matching the right theory(ies) to intervention(s) and outcome(s).

**KEYWORDS:** theory, teamwork in health care, inter-professional education, inter-professional collaboration, conceptual model

## INTRODUCTION

Inter-professional teamwork is not a new or recent phenomenon in health care.<sup>1</sup> The inter-professional field is widely discussed and constantly evolving.<sup>2–3</sup> Many authors have reported on the lack of theory used in the inter-professional field,<sup>4–9</sup> and some authors find minimal explicit use of theories in the design of interventions.<sup>10</sup> Furthermore, it is commonly argued that inter-professional education (IPE) and inter-professional collaboration (IPC) play an important role in improving health care services and patient outcomes.<sup>11</sup> The impact of IPE in professional practice and health care outcomes has not been demonstrated primarily due to descriptive or anecdotal studies<sup>12</sup> and lack of research rigour or longitudinal time frame.<sup>13</sup> Nevertheless, there has been increasing interest in the theoretical underpinning of IPE and IPC and development of theoretical frameworks to advance inter-professional practice (IPP) and aid in policy and research.<sup>14</sup>

The purpose of this scoping review is to examine the theories used for inter-professional teamwork in health care and develop a conceptual model for application, while highlighting the changes and thinking on conceptual paradigms for inter-professional teamwork within the academic literature from 2004 to 2014. In order to advance policy and research, a theoretical framework must be developed to include programme impacts and outcomes.<sup>15</sup>

This review identifies the perspectives in the use of theories, interventions and outcomes for inter-professional teamwork in health care.

## DEFINITIONS

As there are various definitions utilised in the inter-professional field, we will use the following meanings — as defined by the World Health Organization (WHO): ‘IPE is when learners from two or more professionals learn about, from, and with each other to enable effective collaboration and improve outcomes’ and ‘*Collaborative practice* occurs when multiple health workers from different professional backgrounds provide comprehensive services by working with patients/families, carers and communities to deliver the highest quality of care across settings’.<sup>16</sup> As defined by Reeves, Lewin, Espin & Zwarenstein, ‘*Interprofessional teamwork* is a type of work that involves different health and/or social professions who share a team identity and work closely together in an integrated and interdependent manner to solve problems and deliver services’ and ‘*Interprofessional interventions* involve two or more health and social care professionals who learn and/or work together to improve their approach to collaboration’.<sup>17</sup>

## BACKGROUND

In earlier work, Martin-Rodriguez, Beaulieu, D’Amour & Ferrada-Videla

searched the databases (Medline, CINAHL and Sociological Abstract Databases) for 1980–2003 and found ten theoretical and empirical studies on collaboration.<sup>18</sup> The papers were categorised with ‘+’ for *fosters collaboration* or ‘–’ for *hinders collaboration* for (1) interactional determinants, (2) organisational determinants and (3) systematic determinants. In a critical review of the literature by Craddock, O’Halloran, Borthwick & McPherson, the authors reported that a theoretical framework was lacking to guide the development and provided an evaluative frame of reference.<sup>19</sup> Payler, Meyer & Humphris concluded that detailed descriptions of the underlying pedagogy are scarce and an accepted framework is needed to move the field of inter-professional teamwork forward.<sup>20</sup>

Later, Reeves, Lewin, Espin & Zwarenstein began to identify various teamwork factors (relational, processual, organisational and contextual) to show how different theories yield different insights and understanding of inter-professional teamwork.<sup>21</sup> A scoping review was undertaken by Reeves, Goldman, Gilbert, Tepper, Silver, Suter & Zwarenstein to map the literature on IPE and IPC.<sup>22</sup> Since there was a very limited use of theory in the 104 studies reviewed, the authors could not incorporate theoretical aspects in the framework. The authors developed a framework with three main concepts of inter-professional interventions (IPE, IPP and inter-professional organisation) and three types of outcomes (immediate, patient and system). Further work is needed to develop a conceptual model that includes theoretical underpinnings in order to evaluate interventions and outcomes.

In a Cochrane systematic review entitled ‘A systematic review of interprofessional education’ by Zwarenstein, Atkins, Hammick, Barr, Koppel & Reeves, there were no studies that met the inclusion

criteria.<sup>23</sup> In a subsequent Cochrane systematic review entitled, ‘Interprofessional education: Effects on professional practice and healthcare outcomes’, Reeves, Zwarenstein, Goldman, Barr, Freeth, Koppel & Hammick identified six studies from 1999 to 2006 that met the inclusion criteria.<sup>24</sup> In a recent study, Paradis & Reeves conducted a macrosociological study to determine the evolution of the inter-professional field from 1970 to 2010 by mapping titles.<sup>25</sup> The researchers demonstrated a tremendous growth of collaborative interventions and activities, including a growth in conceptual, empirical and theoretical publications in the inter-professional field and in research methodologies. As noted by the authors, by mapping the field by titles, this method demonstrated trends over time, but lost some of the nuances in scholarship and implications for practice, policy and research.

## RESEARCH AIMS

Given the conceptual challenges and the research gaps identified in the inter-professional field, it is important to conduct a scoping review to provide further understanding and detailed analysis of the theoretical trends, evaluation of interventions and impact on outcomes as this is lacking in the literature. The review examines the underlying theoretical perspectives used and discussed on inter-professional teamwork in health care in the academic literature from 2004 to 2014. Through the use of a content strategy approach, three essential content questions were used to summarise, guide and interpret the current trends.

1. What are the underlying theoretical perspectives used for inter-professional teamwork?
2. What are the types of interventions to improve teamwork and quality of care?
3. What are the types of outcomes identified for inter-professional teamwork?

## METHODOLOGY

### Search method

Paper searches were conducted using CINAHL, Medline, Scholar's Portal and Web of Science Interdisciplinary Databases. The keywords searched included 'suggested subject terms', which were '*interprofessional education*', '*interprofessional collaboration*' and '*theory*'. The criteria for selection of papers were based on relevance on the topic in IPE or IPC and theory that provided further breadth or depth on the various perspectives. Papers that made reference to other papers containing historical or theoretical perspectives on IPE or IPC were hand-selected and included in the scoping review as they provided further meaning to the topic. This criterion excluded papers that focused exclusively on specific diseases, populations or programmes/services. Papers that focused exclusively on training and faculty development, IPE enablers for IPC or specialty professions were excluded.

### Content strategy method

Based on the inclusion criteria, relevant papers were classified using a content strategy approach, where the classification process was not mutually exclusive. The papers were synthesised through an iterative process into a table format and organised in chronological order based on year of publication, and author(s).

1. The underlying theoretical perspectives discussed in each of the papers were classified into four theories: learning, social or psychology, organisation and system.
  - Learning theories have been employed to underpin inter-professional teamwork. Examples are educational construct, cognitive learning, adult learning and education, reflective practitioner, experiential learning,

problem-based learning, situated learning and transformative learning.

- Social or psychology theories are used to understand relational perspectives of teamwork. Examples of theories are social construct, social-cultural learning, social learning, relational learning, contact theory, contact hypothesis, social capital, group development, networking, stereotype, professionalism and social identity theory.
  - Organisation theories, which postulate that institutional or local structures and environments influence teamwork, including process issues such as time, space and task complexity, were also included. Examples of organisation theories are institutional theory, learning organisation, organisation learning, behavioural theory of the firm, contingency theory, socio-technical theory, stakeholder theory, differentiation–integration theory, diffusion of innovation, unfreeze–change–refreeze, lean thinking, organisational change models and implementation theory.
  - System theories, which include broader factors such as cultural, political, social and economic impacting teamwork. Examples of system theories are biopsychosocial model, activity theory, communities of practice, complexity theory, presage–process–product, systems theory and complex adaptive theory.
2. The targeted inter-professional interventions were classified into three categories, as defined by Reeves, Goldman, Gilbert, Tepper, Silver, Suter & Zwarenstein, contributing to improvement in collaboration and quality of care:<sup>26</sup>
    - IPE interventions where two or more professionals are learning interactively.
    - IPP interventions where activities or procedures are incorporated into regular practice.

- Inter-professional organisational (IPO) interventions that include space or staffing policy.
3. The expected outcomes were classified into four types, as described by Reeves, Goldman, Gilbert, Tepper, Silver, Suter & Zwarenstein:<sup>27</sup>
- Learner outcomes (change in knowledge and behaviour);
  - System outcomes (sustainability and cost savings);
  - Provider outcomes (recruitment, retention, morale and satisfaction); and
  - Patient/client outcomes (access, quality, safety and disease-specific outcomes).

## RESULTS

### Content strategy

Fifty-six papers were selected for final review based on relevance on the topic of IPE or IPC and theory, particularly on the utilisation of theoretical framework and concepts. Figure 1 illustrates the paper screening process used. Based on the content

strategy, the results of the 56 papers have been summarised in Table 1. Support for the four theoretical perspectives (learning, social/psychology theories, organisation and system) was identified; three interventions (IPE, IPP and IPO) and four outcomes (learner, system, provider and patient/client) are shown in Figure 2.

### 1. Types of Theoretical Perspectives to Underpin Inter-professional Teamwork

There were 29 papers (51.8 per cent) that discussed learning theories, 40 papers (71.4 per cent) discussed social or psychological theories, 28 papers (50 per cent) that discussed organisation theories and 30 papers (53.6 per cent) discussed system theories. Although there were a number of papers that supported the four theoretical perspectives, there were also a number of papers that reported negative or insufficient support. Of the 56 papers reviewed, 25 papers (44.6 per cent) positively supported the use of learning

Database Search: CINAHL, Medline (OVID), Scholar's Portal and Web of Science	Selection Process	Number of Papers (n=?)
Papers identified through initial database search (Refinement on the term 'theory')	2106	611
Papers excluded based on title/abstract Excluded papers: Focused on specific diseases, populations or programmes/services Focused on training of faculty development and IPE involving students Enablers for IPC or specialty professions	– 479	132
Included papers after removal of duplicates	– 27	105
Papers added through hand search	+ 10	115
Papers excluded based on full review	– 59	56
Papers added from second database search	+ 0	56
Paper selected for final review Final selection based on: Relevance on the topic of IPE or IPC and theory Utilisation of theoretical framework and concepts Breadth or depth to clarify on the various perspectives		56

**Figure 1:** Paper screening process

**Table 1:** Review of theoretical perspectives, targeted interventions and expected outcomes on inter-professional teamwork in health care

Papers (Chronological by Publication Date)	Theoretical Perspective(s) ~ => Negative or Insufficient Support for Perspective + => Positive Support for Theoretical Perspective				Targeted Intervention(s) ~ => Negative or Insufficient Support for Intervention + => Positive Support for Intervention			Expected Outcome(s) ~ => Negative or Insufficient Support + => Positive Support for Outcome			
	Education	Social/ Psychology	Organisation	System	Inter- professional Education (IPE)	Inter- professional Practice (IPP)	Inter-professional Organisational (IPO)	Learner	System	Provider	Patient
Colyer, 2004		~			~	+		~			+
Cooper, Braye & Geyer, 2004	~	~		+	+	+	+	~			
D'Amour, Ferrada-Videla, Martin~Rodriguez & Beaulieu, 2005	~	~	+	+	+	+		~	+		~
D'Amour & Oandasan, 2005	+	+	+	+	+	~	~	~	~	~	~
Ginsberg & Tregunno, 2005		+	+				+	+	+	+	+
Hall, 2005	+	+			+			+	~	+	~
Hean & Dickinson, 2005		+			+			+	~	+	
Oandasan & Reeves, 2005a	+	+			+	+		~	~	~	+
Oandasan & Reeves, 2005b		+					+	~		~	~
Ross & Harris, 2005		~			+	+		~		+	+
Martin-Rodriguez, Beaulieu, D'Amour & Ferrada- Videla, 2005	+	+	+	+	~	+	+	+	~	+	~

Papers	Theoretical Perspective(s)				Targeted Intervention(s)			Expected Outcome(s)			
	Education	Social / Psychology	Organisation	System	Inter-professional Education (IPE)	Inter-professional Practice (IPP)	Inter-professional Organisational (IPO)	Learner	System	Provider	Patient
Walsh, Gordon, Marshall, Wilson & Hunt, 2005			+		+	+		+			~
Zwarenstein, Reeves & Perrier, 2005		~			~	+	~	~	+		~
Bhattacharyya, Reeves, Garfinkel & Zwarenstein, 2006			~		~			~			
Clark, 2006	+	+			+						+
Cradock, O'Halloran, Borthwick & McPherson, 2006	+	+	+	+	+			+		+	
Infante, 2006				+		~	+		+	+	+
Ladden, Bednash, Stevens & Moore, 2006		+	+	+	+	+	+	+	+	+	
Allison, 2007				~	+	+		+	+	+	+
Cooper & Geyer, 2008				+	+	+					+
Payler, Meyer & Humphris, 2008	+	~		+	~			+	+		+
Clark, 2009	+				+		+	+		+	
Goldman, Zwarenstein, Bhattacharyy & Reeves, 2009	~	+	+	+	+	+	+	~	~		~
Hean, Craddock & O'Halloran, 2009	+	+		+	+			+			+

(continued)

**Table 1:** Review of theoretical perspectives, targeted interventions and expected outcomes on inter-professional teamwork in health care (continued)

Papers	Theoretical Perspective(s)				Targeted Intervention(s)			Expected Outcome(s)			
	Education	Social / Psychology	Organisation	System	Inter-professional Education (IPE)	Inter-professional Practice (IPP)	Inter-professional Organisational (IPO)	Learner	System	Provider	Patient
Author(s), Publication Year											
Reeves, 2009	~	+	+	+	+			+			+
Sargeant, 2009	+	+		+	+			+			
Simmons & Wagner, 2009	+		+	+			~	~		~	~
Trojan, Suter, Arthur & Taylor, 2009				+	+	+	+	+		+	~
Wilcock, Janes & Chambers, 2009		+	+	+	+	+		+			~
Reeves, Zwarenstein, Goldman, Barr, Freeth, Koppel & Hammick, 2010	+				+			+			+
Sandberg, 2010		+	+		+	+	+			+	
Stacey, Legare, Pouliot, Kryworuchko & Dunn, 2010			+		+		+	+			+
Thannhauser, Russell-Mayhew & Scott, 2010		+	+	+	~			+			
Thistlewaite & Moran, 2010	+	+		+	+	+		~			+
Clark, 2011			+		+		+	+	+		+
Kislov, Harvey & Walshe, 2011		+	+	~	+	+	+	+			
Reeves, Goldman, Gilbert, Tepper, Silver, Suter & Zwarenstein , 2011	+	+	+	~	+	+	+	+			+



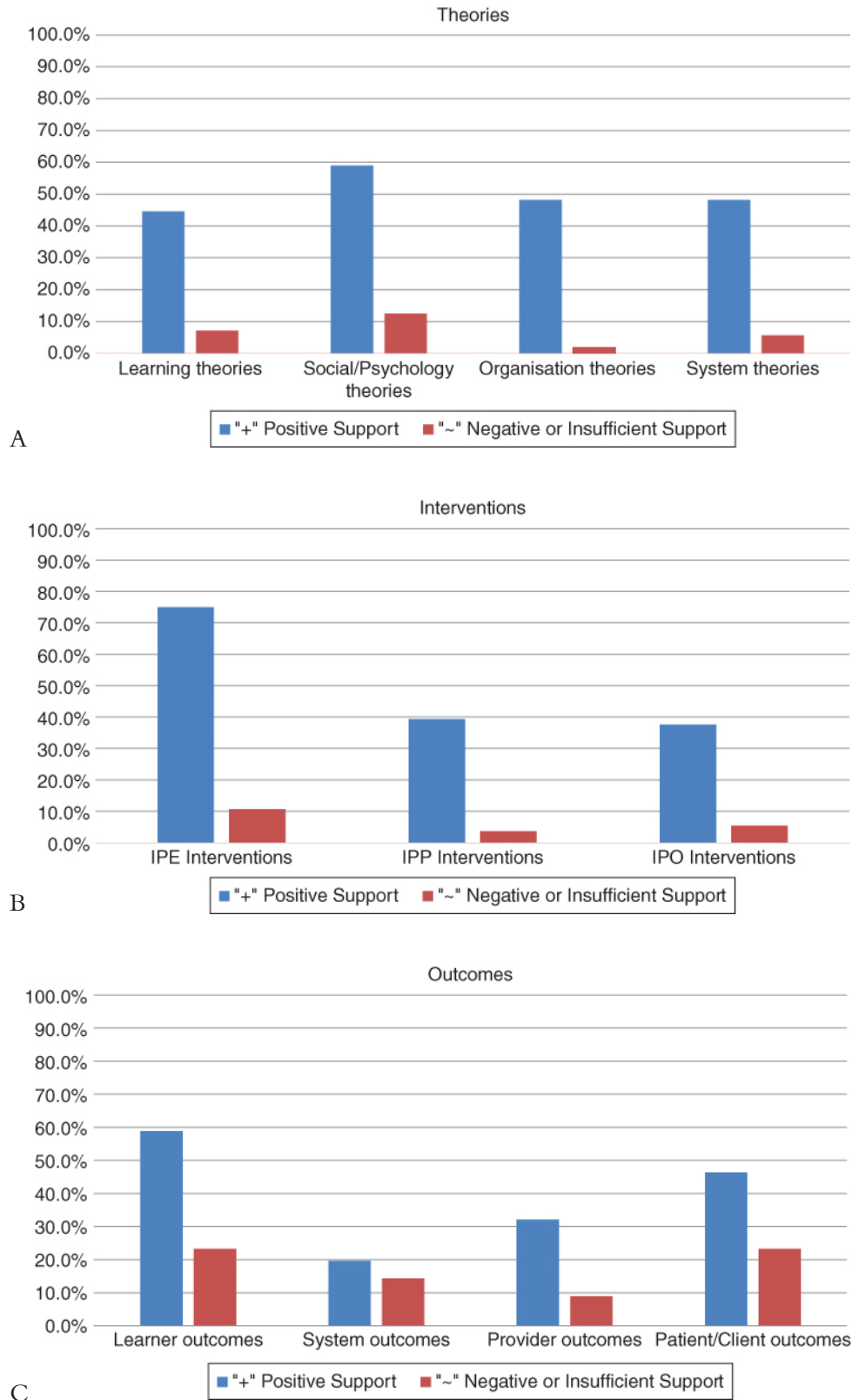
Papers	Theoretical Perspective(s)			Targeted Intervention(s)			Expected Outcome(s)				
	Education	Social / Psychology	Organisation	System	Inter-professional Education (IPE)	Inter-professional Practice (IPP)	Inter-professional Organisational (IPO)	Learner	System	Provider	Patient
Author(s), Publication Year											
Burford, 2012	+	+	+		+		+	+			
Cohen Konrad & Browning, 2012	+	+	+		+			~	~		+
Dow, Salas & Mazmanian, 2012	+		+	+	+			+			
Hean, Craddock, Hammick & Hammick, 2012	+	+	+	+	+			+			+
Reeves, Tassone, Parker, Wagner & Simmons, 2012	+	+	+	+	+	+		+	~	~	~
Thistlewaite, 2012	+	+			+			+			~
Barr, 2013	+	+	+	+	+			+			
Bleakley, 2013		~		+		+				+	+
Clark, 2013			+				+	+		+	
Dow, DiazGranados, Mazmanian & Retchin, 2013			+				+			+	+
Golec-Harper & Clifford, 2013		+				+				+	+
Paradis & Reeves, 2013		+			+				+		+

(continued)

**Table 1:** Review of theoretical perspectives, targeted interventions and expected outcomes on inter-professional teamwork in health care (continued)

Papers	Theoretical Perspective(s)			Targeted Intervention(s)			Expected Outcome(s)				
	Education	Social / Psychology	Organisation	System	Inter-professional Education (IPE)	Inter-professional Practice (IPP)	Inter-professional Organisational (IPO)	Learner	System	Provider	Patient
Author(s), Publication Year											
Hall, Weaver & Grassau, 2013	+	+		+	+					+	
Hean, Anderson, Bainbridge, Clark, Craddock, Doucet, Hammick, Mpofu, O'Halloran, Pitt & Oandasan, 2013				+	+			+			
Kitto, Nordquist, Peller, Grant & Reeves, 2013	+	+	+	+	+		+	+		+	
Owens & Schmitt, 2013	+	+			+	+	+	+	+		+
Suter, Goldman, Martimianakis, Chatalalsingh, DeMatteo & Reeves, 2013			+	+	+		+		+		+
Khalili, Hall & Deluca, 2014		+			+			+			+

**Blank space = > Not mentioned in the paper.**



**Figure 2:** Positive or negative (insufficient) support for theories, interventions and outcomes

theories and 4 papers (7.1 per cent) reported negative or insufficient support. Of the 56 papers reviewed, 33 papers (58.9 per cent) positively supported the use of social/psychology theories and 7 papers (12.5 per cent) reported negative or insufficient support. Twenty-seven papers (48.2 per cent) positively supported the use of organisation and the same for system theories. One paper (1.8 per cent) reported negative or insufficient support for organisation theories and three papers (5.4 per cent) reported negative or insufficient support for system theories.

## 2. Types of Interventions for Inter-professional Teamwork

There were 48 papers (85.7 per cent) that discussed IPE interventions, 24 papers (42.9 per cent) discussed IPP and 24 papers (42.9 per cent) discussed IPO. For IPE interventions, 42 papers (75 per cent) positively supported and 6 papers (10.7 per cent) reported negative (insufficient) support. For IPP interventions, 22 papers (39.3 per cent) positively supported and 2 papers (3.6 per cent) reported negative (insufficient) support. For IPO interventions, 21 papers (37.5 per cent) positively supported and 3 papers (5.4 per cent) reported negative (insufficient) support.

## 3. Types of Outcomes for Inter-professional Teamwork

There were 46 papers (82.1 per cent) that discussed learner outcomes, 19 papers (33.9 per cent) discussed system outcomes, 23 papers (41.1 per cent) that discussed provider outcomes and 39 papers (69.6 per cent) discussed patient outcomes. For learner outcomes, 33 papers (58.9 per cent) reported positive support and 13 papers (23.2 per cent) reported negative or insufficient support. For system outcomes, 11 papers (19.6 per cent) reported positive support and 8 papers (14.3 per cent) reported negative or insufficient support. For provider outcomes, 18 papers (32.1 per

cent) reported positive support and 5 papers (8.9 per cent) reported negative or insufficient support. For patient outcomes, 26 papers (46.4 per cent) reported positive support and 13 papers (23.2 per cent) reported negative or insufficient support.

## Movement towards multifaceted theories

Based on the theories discussed in the literature from 2004 to 2014, a significant number of papers focused on social or psychological theories (71.4 per cent) compared to the other theories. In addition, many papers focused on the utilisation of multifaceted theories. In earlier papers, Ginsberg & Tregunno<sup>28</sup> and Bleakley<sup>29</sup> reported that the application of individualistic models based on educational theories such as adult learning principles alone is insufficient. This view was supported by Craddock, O'Halloran, Borthwick & McPherson who reported that stand-alone social/psychological theories such as contact and social identity are not substantive.<sup>30</sup> Goldman, Zwarenstein, Bhattacharyya & Reeves<sup>31</sup> and Hean, Craddock & O'Halloran<sup>32</sup> suggested that health care education needs to move away from the use of individual models (ie adult learning theory, sociocultural) to more macro theories to illuminate how learning occurs in complex dynamic systems (ie communities of practice).

Wilcock, Janes & Chambers<sup>33</sup> and Reeves<sup>34</sup> focused on organisational and social learning theories to create a continuum between work-based inter-professional learning and service improvement. Sargeant reported that inter-professional teamwork is a dynamic process informed by both social/psychology and complexity theories, which explains the learning process [include the internal (cognitive) and external (environmental) factors].<sup>35</sup> As inter-professional teamwork does not take

place without social exchanges in complex environments, the utilisation of social/psychology and complexity theories provides the rationale, which involves individuals, team, health care system and environment.<sup>36</sup> Sargeant suggested that social and learning theories are needed, and there is a need to continually adapt, explore and test multifaceted theories for teamwork in health care.<sup>37</sup>

### Use of organisation and system theories

Organisational theorists reported that organisational factors impact collaboration and teamwork as there are interdependencies among health care professionals and organisational support.<sup>38–40</sup> Barr<sup>41</sup> and Kitto, Nordquist, Peller, Grant & Reeves<sup>42</sup> supported the use of organisation theories such as learning organisation and workplace learning. Dow, DiazGranados, Mazmanian & Retchin<sup>43</sup> and Suter, Goldman, Martimianakis, Chatalalsingh, DeMatteo & Reeves<sup>44</sup> advocated the use of organisation theories for individual behaviours, group dynamics and organisational issues.

For system theories, Barr,<sup>45</sup> Hall, Weaver & Grassau<sup>46</sup> and Kitto, Nordquist, Peller, Grant & Reeves<sup>47</sup> supported the biopsychosocial model, which relates the individual to the environment (ie activity theory). Many of the papers also supported the use of complexity theory<sup>48–52</sup> and the concept of communities of practice.<sup>53–55</sup>

In the literature, there were discussions of the utilisation of organisation and system theories. Although contribution of organisation and system theories have become more popular in recent years, there was insufficient evidence on the use of these theories in research findings.<sup>56</sup> With a lack of evidence for inter-professional teamwork effectiveness, Hall, Weaver & Grassau suggested the need for utilisation of a theoretical toolbox to guide theory development and implementation.<sup>57</sup>

### Targeted interventions (IPE, IPP and IPO)

In the literature, there were twice the number of papers focused on IPE interventions (48 papers) compared to IPP or IPO interventions (24 papers). Goldman, Zwarenstein, Bhattacharyya & Reeves recommended that future research should focus on the different types of interventions and at the levels that they are targeted (eg individual knowledge and attitudes, work processes, organisational) to support appropriate and relevant interventions.<sup>58</sup> More research was recommended in order to determine which interventions are effective in improving teamwork and health care outcomes, and the performance of organisations and health care systems.<sup>59</sup> Interestingly, Reeves, Goldman, Gilbert, Tepper, Silver, Suter & Zwarenstein commented that IPP and IPO studies were more likely than IPE studies to report patient and system outcomes.<sup>60</sup>

### Importance of demonstrating positive outcomes

In this scoping review, there were numerous papers that reported the importance of demonstrating positive outcomes to support inter-professional teamwork. There was positive support for learner outcomes (58.9 per cent), followed by patient outcomes (46.4 per cent), provider outcomes (32.1 per cent) and system outcomes (19.6 per cent). There was negative/insufficient support for learner outcomes (23.2 per cent) and patient outcomes (23.2 per cent), followed by system outcomes (14.3 per cent) and provider outcomes (8.9 per cent). From the perspective of health care providers, the idea of inter-professional teamwork made sense;<sup>61</sup> however, the methods used to evaluate learner and provider outcomes (ie self-report surveys) were not substantive enough to demonstrate actual change in practice.<sup>62–64</sup> Inter-professional

interventions should involve changes in the learners' performance and patient outcomes.<sup>65</sup>

Patients are recognised as the ultimate justification for collaborative health care;<sup>66</sup> however, there was a lack of evidence to demonstrate the effectiveness of teamwork on patient outcomes.<sup>67–68</sup> It was argued that more efforts are needed to demonstrate positive outcomes, as the premise of inter-professional teamwork claims to improve patient-centred care and outcomes.<sup>69</sup> Weaver, Rosen, Salas, Baum & King suggested that teamwork skills are vital for continuous quality improvement and positive patient outcomes (ie patient health and safety).<sup>70</sup> In recent years, there has been best practice models developed to evaluate patient safety and satisfaction.<sup>71</sup>

### **A call to evaluate the effectiveness of inter-professional teamwork**

Reeves, Goldman, Sawatsky-Girling & Burton have advocated for further research to improve collaborative initiatives to outcomes and the performance of organisations and health care systems.<sup>72</sup> As the existing evidence on inter-professional teamwork was limited and its link to outcomes was not systematically examined, further work is suggested to understand the types of activities, processes and relationships to IPE, and impact on outcomes.<sup>73</sup> The difficulty with evaluating teamwork is that the work is complex; involving individual and team performances, team processes, patient care and outcomes.<sup>74</sup>

A number of researchers have made calls for measurement and evaluation of outcomes to demonstrate the effectiveness of inter-professional teamwork.<sup>75,76</sup> Several authors have suggested use of randomised controlled trials with qualitative strands on teamwork process and practice changes, economic data on sustainability and cost–benefit analysis<sup>77,78</sup> and on the delivery

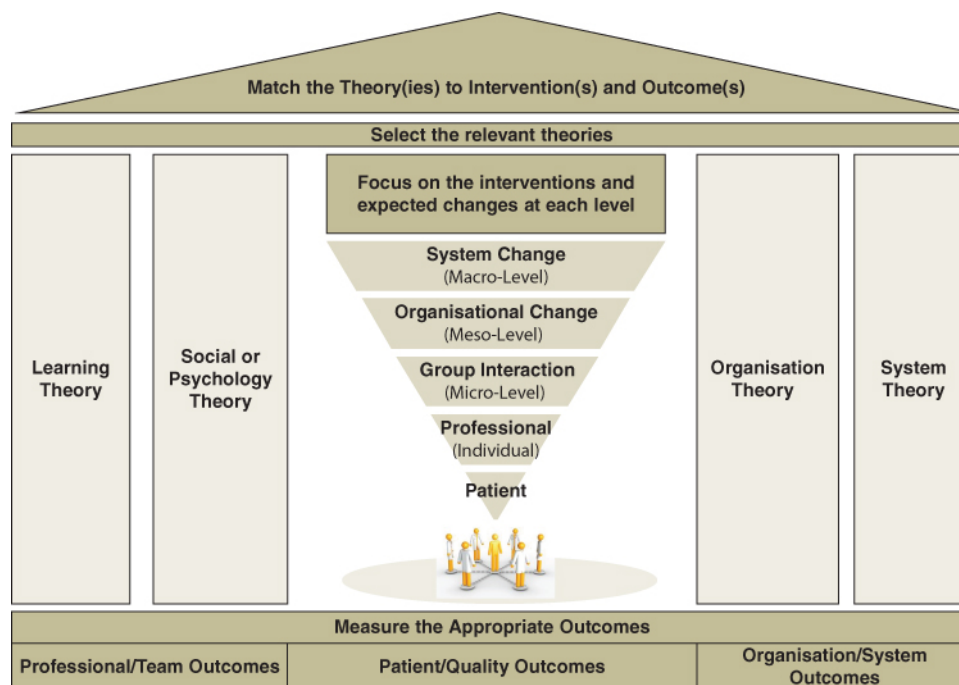
of patient care.<sup>79,80</sup> Better evaluative tools were suggested to link inter-professional performance changes to care outcomes in practice.<sup>81</sup>

## **DISCUSSION**

### **A conceptual model for inter-professional teamwork**

In this review, it was identified that theory must be employed in the design and development of inter-professional teamwork interventions. As a result, a conceptual model should be developed to align interventions with theory to outcomes. Since different theoretical perspectives at various levels can yield different insights and understanding of inter-professional teamwork, four broad theoretical perspectives were included in the development of a conceptual model to illustrate the importance and relevance of each of the theories (learning, social/psychology, organisation and system) at different levels and to provide a foundation or '*pillars*' to support inter-professional interventions and outcomes. A conceptual model for policy, practice and research: matching the right theory(ies) to the right intervention(s) and right outcome(s) is illustrated in Figure 3.

The importance of selecting the appropriate theory(ies) is to consider each of the four broad theories on the suitability and the particular context one is trying to understand. Learning theories are useful to underpin inter-professional teamwork to explore how learning occurs. Social science/psychology theories are needed to understand individual and group behaviours as they impact inter-professional teamwork. Relevant organisation theories should be employed in an effort to influence inter-professional teamwork. In addition, system theories should be considered, as they relate the individual, to the team, health system and environment, which in turn, impacts inter-professional teamwork.



**Figure 3:** A conceptual model for policy, practice and research

The conceptual framework should deliberately place the ‘*patient*’ at the centre to guide interventions and focus on the patient. The next level should focus on the professional (individual level), where learning and/or psychology theoretical issues may impact inter-professional teamwork and outcomes. Next, the conceptual framework should consider the group or team (micro-level) and organisation (meso-level), where the effectiveness of inter-professional teamwork depends on a number of social/psychology and/or organisation factors. Finally, the system (macro-level) needs to be considered, as system drivers influence inter-professional teamwork and outcomes.

As theoretical underpinning is a priority for inter-professional teamwork, this framework looks beyond the learning or social/psychology theories and focuses on organisation or system theories. This framework demonstrates the importance of patients/families and identifies the

various levels of interventions that occur in inter-professional teamwork, which are influenced by organisation and system factors. The framework emphasises that measurement and evaluation are necessary to demonstrate inter-professional teamwork effectiveness and successful outcomes. The outcomes can be professional/team outcomes, patient/quality outcomes and/or organisation/system outcomes.

The vision for inter-professional teamwork was illustrated by Allison with the statement, ‘When we finally all learn to *‘paddle the canoe’* together, we shall be able to steer toward a sustainable, efficient and effective health care system for the future that results in the best outcomes for all patients every time’.<sup>82</sup> Further, Khalili, Hall & Deluca have voiced the need for health care systems around the world to change their models of health care delivery to inter-professional collaborative care models to improve patient/client outcomes.<sup>83</sup>



## Use of the conceptual model for policy, practice and research

The following proposed conceptual model will facilitate policy, practice and future research by matching the right theory(ies) to the right intervention(s) and the right outcome(s).

### 1. Implications for Policy Direction

The use of theories as outlined would enhance the status and credibility of inter-professional teamwork models for health care professionals, managers, regulatory bodies, educationalists and policymakers.<sup>84</sup> The conceptual model should support the use of theories and provide supporting structures or 'pillars' to underpin inter-professional interventions. At the patient level, policymakers can look more broadly beyond the learning and social/psychology theories and consider the organisation and system issues that impact on inter-professional teamwork and patient outcomes.

### 2. Implications for Practice

The framework described by D'Amour & Oandasan, 'IPE Process and Outcomes Framework', captures micro, meso and macro levels, which are important drivers to health care system reform requiring health care professionals to work effectively in team-based collaborative practices.<sup>85</sup> Unfortunately, studies at the micro levels receive more attention, as opposed to the meso and macro levels in organisation or health care reform. Since change can occur at various levels; including the patient, health care provider team, organisation and system, a variety of outcomes could be included ranging from patient to system. Furthermore, work is needed on interventions at meso and macro levels to demonstrate positive patient and system outcomes.

### 3. Implications for Future Research

It was identified in the literature that research is needed on the utilisation of pedagogical constructs to evaluate the

impact of inter-professional teamwork.<sup>86</sup>

Reeves, Lewin, Espin & Zwarenstein recommended: (1) qualitative research to build a firmer theoretical basis for inter-professional teamwork, (2) quantitative methods particularly randomised approaches to assess the effects of teamwork interventions and (3) a mixed method approach to address sustainability of teamwork.<sup>87</sup> Further research is recommended on explicit use of theory, development and evaluation of interventions and methods for measurement of outcomes.<sup>88</sup>

## LIMITATIONS

The papers selected for review were searched using the CINAHL, Medline, Scholar's Portal and Web of Science databases utilising the terms 'theory', 'interprofessional education' and 'interprofessional collaboration', which perhaps may not have captured all the papers that included theoretical frameworks. As such, additional hand-selected papers were included that were relevant to the search. Despite the use of the content analysis approach, the review work was challenging due to the interpretive nature of reading the papers and categorising the perspectives. It was also challenging to determine 'positive' or 'negative or insufficient support' due to various theories, interventions and/or outcomes mentioned in some of the papers resulting in some subjectivity in the review.

## CONCLUSION

In this review, we identified that theory needs to be employed in the design and development of inter-professional teamwork interventions and outcomes. Single theoretical perspectives (ie learning or social/psychology) are not substantive in order to underpin inter-professional teamwork. As such, a multifaceted approach is recommended with the use of organisation



or system theoretical perspectives. A conceptual model should consider four broad theories to underpin inter-professional teamwork: (1) learning, (2) social/psychology, (3) organisation and (4) system. The theories provide the foundational support for inter-professional teamwork in health care and link relevant theoretical concepts, to interventions and outcomes.

In addition, the conceptual framework deliberately needs to place the patient at the centre to guide interventions and focus on the patient. Interventions should be considered at various levels including: (1) patient, (2) profession, (3) group or team (micro), (4) organisation (meso) or (5) system (macro). Further work is needed to demonstrate the effectiveness of inter-professional teamwork, including measurement and evaluation of patient and system outcomes.

In conclusion, future conceptual models should align interventions with theory to outcomes, and consider four broad theoretical perspectives (learning, social-psychological, organisation and system), interventions at various levels (patient, profession, micro, meso and macro) and measurement of outcomes. Such a conceptual model can help direct future research in matching theoretical perspectives to targeted intervention(s) and expected outcome(s). In the end, it is anticipated that such an approach can provide a clearer understanding as to the type of intervention(s) needed to demonstrate positive outcomes, directed at organisation/system, professional/team and patient/quality outcomes.

## References

- World Health Organization. (2010) 'Framework for action on interprofessional education and collaborative practice' Department of Human Resources for Health, Geneva, Switzerland, available at [http://www.who.int/hrh/resources/framework\\_action/en/](http://www.who.int/hrh/resources/framework_action/en/).
- Payler, J., Meyer, E., Humphris, D. (2008) 'Pedagogy for interprofessional education – what do we know and how can we evaluate it?', *Learning in Health and Social Care*, Vol. 7, No. 2, pp. 64–78.
- Goldman, J., Zwarenstein, M., Bhattacharyya, O., Reeves, S. (2009) 'Improving the clarity of the interprofessional field: Implications for research and continuing interprofessional education', *Journal of Continuing Education in the Health Professions*, Vol. 29, No. 3, pp. 151–156.
- Ibid., ref. 2 above.
- Cooper, H., Braye, S., Geyer, R. (2004) 'Complexity and interprofessional education', *Learning in Health and Social Care*, Vol. 3, No. 4, pp. 179–189.
- Cooper, H., Geyer, R. (2008) 'Using "complexity" for improving educational research in health care', *Social Science & Medicine*, Vol. 67, pp. 177–182.
- Clark, P. (2006) 'What would a theory of interprofessional education look like? Some suggestions for developing a theoretical framework for teamwork training', *Journal of Interprofessional Care*, Vol. 20, No. 6, pp. 577–589.
- Reeves, S. (2009) 'An overview of continuing interprofessional education', *Journal of Continuing Education in the Health Professions*, Vol. 29, No. 3, pp. 142–146.
- Reeves, S., Goldman, J., Gilbert, J., Tepper, J., Silver, I., Suter, E., Zwarenstein, M. (2011) 'A scoping review to improve conceptual clarity of interprofessional interventions', *Journal Interprofessional Care*, Vol. 25, pp. 167–174.
- Goldman, J., Zwarenstein, M., Bhattacharyya, O., Reeves, S. (2009) 'Improving the clarity of the interprofessional field: Implications for research and continuing interprofessional education', *Journal of Continuing Education in the Health Professions*, Vol. 29, No. 3, pp. 151–156.
- Ibid., ref. 9 above.
- Ibid., ref. 7 above.
- Ibid., ref. 5 above.
- Hean, S., Craddock, D., O'Halloran, C. (2009) 'Learning theory and interprofessional education: A user's guide', *Learning in Health and Social Care*, Vol. 8, No. 4, pp. 250–262.
- Ibid., ref. 7 above.
- Ibid., ref. 1 above.
- Reeves, S., Lewin, S., Espin, S., Zwarenstein, M. (2010) 'Interprofessional teamwork for health and social care', Wiley-Blackwell, Oxford, UK.
- Martin-Rodriguez, L., Beaulieu, M. D., D'Amour, D., Ferrada-Videla, M. (2005) 'The determinants of successful collaboration: A review of theoretical and empirical studies', *Journal of Interprofessional Care*, Suppl 1, pp. 132–147.
- Craddock, D., O'Halloran, C., Borthwick, A., McPherson, K. (2006) 'Interprofessional education in health and social care: Fashion or informed practice?', *Learning in Health and Social Care*, Vol. 5, No. 4, pp. 220–242.
- Ibid., ref. 2 above.
- Ibid., ref. 17 above.
- Ibid., ref. 9 above.
- Zwarenstein, M., Atkins, J., Hammick, M., Barr, H., Koppel, I., Reeves, S. (1999) 'Interprofessional education: Effects on professional practice and health care outcomes', *Cochrane Database of Systematic Reviews*.
- Reeves, S., Zwarenstein, M., Goldman, J., Barr, H., Freeth, D., Koppel, I., Hammick, M. (2010) 'The effectiveness of interprofessional education: Key findings from a new systematic review', *Journal of Interprofessional Care*, Vol. 24, No. 3, pp. 230–241.

25. Paradis, E., Reeves, S. (2013) 'Key trends in interprofessional research: A macrosociological analysis from 1970 to 2010', *Journal of Interprofessional Care*, Vol. 27, pp. 113–122.
26. Ibid., ref. 9 above.
27. Ibid.
28. Ginsberg, L., Tregunno, D. (2005) 'New approaches to interprofessional education and collaborative practice: Lessons from the organizational change literature', *Journal of Interprofessional Care*, Vol. 19(Suppl. 1), pp. 177–187.
29. Bleakley, A. (2006) 'Broadening conceptions of learning medical education: The message from team-working', *Medical Education*, Vol. 40, pp. 150–157.
30. Ibid., ref. 19 above.
31. Ibid., ref. 10 above.
32. Ibid., ref. 14 above.
33. Wilcock, P. M., Janes, G., Chambers, A. (2009) 'Health care improvement and continuing interprofessional education: Continuing interprofessional development to improve patient outcomes', *Journal of Continuing Education in the Health Professions*, Vol. 29, No. 2, pp. 84–90.
34. Ibid., ref. 8 above.
35. Sargeant, J. (2009) 'Theories to aid understanding and implementation of interprofessional education', *Journal of Continuing Education in the Health Professions*, Vol. 29, No. 3, pp. 178–184.
36. Ibid.
37. Ibid.
38. Sandberg, H. 'The concept of collaborative health', *Journal of Interprofessional Care*, Vol. 24, No. 6, pp. 644–652.
39. Stacey, D., Legare, F., Pouliot, S., Kryworuchko, J., Dunn, S. (2010) 'Shared decision making models to inform interprofessional perspective on decision making: A theory analysis', *Patient Education and Counselling*, Vol. 80, pp. 164–172.
40. Thannhauser, J., Russell-Mayhew, S. R., Scott, C. (2010) 'Measures of interprofessional education and collaboration', *Journal of Interprofessional Care*, Vol. 24, No. 4, pp. 336–349.
41. Barr, H. (2013) 'Toward a theoretical framework for interprofessional education', *Journal of Interprofessional Care*, Vol. 27, pp. 4–9.
42. Kitto, S., Norquist, J., Peller, J., Grant, R., Reeves, S. (2013) 'The disconnection between space, place and learning in interprofessional education', *Journal of Interprofessional Care*, Vol. 27(S2), pp. 5–8.
43. Dow, A. W., DiazGranados, D., Maxmanian, P. E., Retchin, S. M. (2013) 'Applying organizational science to health care: A framework for collaborative practice', *Academic Medicine*, Vol. 88, pp. 952–957.
44. Suter, E., Goldman, J., Martimianakis, T., Chatalal Singh, C., DeMatteo, D. J., Reeves, S. (2013) 'The use of systems and organizational theories in the interprofessional field: Findings from a scoping review', *Journal of Interprofessional Care*, Vol. 27, pp. 57–64.
45. Ibid., ref. 41 above.
46. Hall, P., Weaver, L., Grassau, P. A. (2013) 'Theories, relationships and interprofessionalism: Learning to weave', *Journal of Interprofessional Care*, Vol. 27, pp. 73–80.
47. Ibid., ref. 42 above.
48. Hean, S., Craddock, D., Hammick, M., Hammick, M. (2012) 'Theoretical insights into interprofessional education: AMEE Guide. No. 62', *Medical Teacher*, Vol. 34, pp. e78–e101.
49. Ibid., ref. 41 above.
50. Bleakley, A. (2013) 'Working in "teams" in an era of "liquid" health care: What is the use of theory?', *Journal of Interprofessional Care*, Vol. 27, pp. 18–26.
51. Ibid., ref. 46 above.
52. Ibid., ref. 44 above.
53. Hean, S., Anderson, E., Bainbridge, L., Clark, P., Craddock, D., Doucet, S., Hammick, M., Mpofu, R., O'Halloran, C., Pitt, R., Oandasan, I. (2013) 'In-2-Theroy – Interprofessional theory, scholarship and collaboration: A community of practice', *Journal of Interprofessional Care*, Vol. 27, pp. 88–90.
54. Ibid., ref. 42 above.
55. Ibid., ref. 41 above.
56. Ibid., ref. 44 above.
57. Ibid., ref. 46 above.
58. Ibid., ref. 10 above.
59. Ibid.
60. Ibid., ref. 9 above.
61. Ibid., ref. 17 above.
62. Oandasan, I., Reeves, S. (2005) 'Key elements for interprofessional education. Part 2: Factors, processes and outcomes', *Journal of Interprofessional Care*, Vol. 19(Suppl 1), pp. 39–48.
63. Ibid., ref. 8 above.
64. Ibid., ref. 9 above.
65. Headrick, L. A., Khaleel, N. I. (2008) 'Getting it right: Educating professionals to work together in improving health and health care', *Journal of Interprofessional Care*, Vol. 22, No. 4, pp. 364–374.
66. D'Amour, D., Ferrada-Videla, M., Martin-Rodriguez, L., Beaulieu, M. D. (2005) 'The conceptual basis for interprofessional collaboration: Core concepts and theoretical frameworks', *Journal of Interprofessional Care*, Vol. 19(Suppl 1), pp. 116–131.
67. Zwarenstein, M., Reeves, S., Barr, H., Hammick, M., Koppel, I., Atkins, J. (2005) 'Interprofessional education: Effects on professional practice and health care outcomes', *Cochrane Database of Systematic Reviews*.
68. Zwarenstein, M., Reeves, S., Perrier, L. (2005) 'Effectiveness of pre-licensure interprofessional education and post-licensure collaborative interventions', *Journal of Interprofessional Care*, Vol. 19(Suppl 1), pp. 148–165.
69. Ibid., ref. 62 above.
70. Weaver, S. J., Rosen, M. A., Salas, E., Baum, K. D., King, H. B. (2010) 'Integrating the science of team training: Guidelines for continuing education', *Journal of Continuing Education in the Health Professions*, Vol. 30, No. 4, pp. 208–220.
71. Thistlethwaite, J. (2012) 'Interprofessional education: A review of context, learning and the research agenda', *Medical Education*, Vol. 46, pp. 58–70.
72. Reeves, S., Goldman, J., Sawatzky-Girling, B., Burton, A. (2008) 'Knowledge transfer & exchange in interprofessional education: Synthesizing the evidence to foster evidence-based decision-making', Health Canada: Canadian Interprofessional Health Collective.

73. Ibid., ref. 10 above.
74. Ibid., ref. 17 above.
75. Zwarenstein, M., Goldman, J., Reeves, S. (2009) 'Interprofessional collaboration: Effects of practice-based interventions on professional practice on health care outcomes', *Cochrane Database of Systematic Reviews*.
76. Ibid., ref. 17 above.
77. Ibid.
78. Reeves, S., Perrier, L., Goldman, J., Freeth, D., Zwarenstein, M. (2013) 'Interprofessional education: Effects on professional practice and health care outcomes', (update), *Cochrane Database of Systematic Reviews*.
79. Ibid., ref. 24 above.
80. Reeves, S., Tassone, M., Parker, K., Wagner, S. J., Simmons, B. (2012) 'Interprofessional education: An overview of key developments in the past three decades', *Work*, Vol. 41, No. 3, pp. 233–245.
81. Owen, J. A., Schmitt, M. H. (2013) 'Integrating interprofessional education into continuing education: A planning process for continuing interprofessional education programs', *Journal of Continuing Education in the Health Profession*, Vol. 33, No. 2, pp. 109–117.
82. Allison, S. (2007) 'Up a river! Interprofessional education and the Canadian healthcare professional of the future', *Journal of Interprofessional Care*, Vol. 21, No. 5, pp. 565–568.
83. Khalili, H., Hall, J., DeLuca, S. (2014) 'Historical analysis of professionalism in western societies: Implications for interprofessional education and collaborative practice', *Journal of Interprofessional Care*, Vol. 28, No. 2, pp. 92–97.
84. Ibid., ref. 44 above.
85. D'Amour, D., Oandasan, I. (2005) 'Interprofessionality as the field of interprofessional practice and interprofessional education: An emerging concept', *Journal of Interprofessional Care*, Vol. 19(Suppl 1), pp. 8–20.
86. Ibid., ref. 68 above.
87. Ibid., ref. 17 above.
88. Ibid., ref. 9 above.