

# Perspectives of pharmacy students, pharmacy academics and practicing pharmacists on interprofessional education and collaborative practice: a comprehensive systematic review protocol

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## Review question/objective

The objective of this systematic review is to examine the perspectives, attitudes, views and experiences of pharmacy students, pharmacy academics and practicing pharmacists towards interprofessional education and collaborative practice through quantitative and qualitative evidence.

## Background

Interprofessional education (IPE) has been defined by the Centre for the Advancement of Interprofessional Education (CAIPE) as “two or more professions learn with, from and about each other to improve collaboration and the quality of care”.<sup>1(para1)</sup> Globally, interprofessional education has gained momentum in the last twenty years. However, this has been more pronounced in developed countries such as Canada, United States, Australia and the United Kingdom. In an IPE environment, students are provided with a structured opportunity that enables them to interact with other healthcare professionals where they acquire the knowledge, skills and professional attitudes as part of their undergraduate learning experience.<sup>2</sup> Once they graduate, they are able to translate this into practice. The practice environment is often complex and intense, and requires a high level of interpersonal skills for the health care professional to be able to work in an adaptable, flexible and collaborative environment and to appreciate the roles of the different health care professionals.<sup>2</sup> Health professionals learning together and understanding each other better is the way forward and has been proven by international research evidence.<sup>3,4,5,6</sup>

As healthcare systems advance, the demand for collaborative work between healthcare professionals from different backgrounds increases; therefore, healthcare professionals need to develop the knowledge and skills required to work together effectively in order to positively impact on patient care. As a result, the World Health Organization (WHO) published a ground-breaking document titled, "Framework for Action on Interprofessional Education and Collaborative Practice" in 2010.<sup>6</sup> In this framework, WHO strongly advocated the development and integration of IPE into healthcare curricula. They emphasized the importance of adapting team based collaborative models in all the different areas of healthcare to enhance the delivery of healthcare services. Collaborative practice occurs "when multiple health workers from different professional backgrounds work together with patients, families, carers, and communities to deliver the highest quality of care".<sup>6(p13)</sup> Therefore, collaboration involves solving challenging problems together, interacting, negotiating and jointly working with health workers from any background. This is where two or more healthcare professionals work cohesively to address patient needs. Benefits of collaborative practice include strengthening health care systems and improving patient care in terms of quality and safety provided, reducing the cost of care, shortening patients' duration of hospital stay, and improving health outcomes.<sup>6,7</sup>

In terms of pharmacy and the expanding and evolving role of the pharmacist seen in the early nineties with the emergence of the concept of pharmaceutical care concept by Hepler and Strand,<sup>8</sup> it is important that this role is recognized and understood by other healthcare providers and healthcare students so that there is effective collaboration and team work. With this in mind, pharmacists also need to recognize and understand other professionals' roles. Pharmacists need to be able to assume new innovative roles centered on patient care rather than being product centered. These roles include medication reviews, chronic disease management, immunization services, well-being programs, prescribing and becoming an integral part healthcare decision making team based on evidence based practice.

A number of systematic reviews on IPE exist with the first one dating back to 1999. These found no rigorous quantitative evidence on the effects of IPE.<sup>9</sup> Table 1 summarizes the main systematic reviews to date focusing on IPE.

**Table 1: Existing systematic reviews on IPE**

Date	Authors	Title	Objectives	Databases used	Number of articles	Authors' conclusion
1999	Zwarenstein M, Atkins J, Barr H, Hammick M, Koppel I, and Reeves S. <sup>9</sup>	A systematic review of interprofessional education	To assess the effects of IPE interventions on collaborative working between different professionals, and on the quality and outcomes of care provided to patients/clients.	Medline (from 1966) and CINAHL (from 1082).	The search strategy identified 510 from Medline and 552 articles from CINAHL. Of these, 39 articles from Medline and 44 from CINAHL were selected.	No rigorous quantitative evidence exists on the effects of interprofessional education.  No published evidence that IPE promotes interprofessional collaboration or improves client relevant outcomes.

Date	Authors	Title	Objectives	Databases used	Number of articles	Authors' conclusion
2001	Zwarenstein M, Reeves S, Barr H, Hammick M, Koppel I, and Atkins J. <sup>10</sup>	Interprofessional education: effects on profession practice and health care outcomes	To assess the usefulness of IPE interventions compared to education in which the same professions were learning separately from one another.	Cochrane register, MEDLINE (1968 - 1998) and CINAHL (1982 - 1998). Journal of Interprofessional Care was hand searched (1992 - 1998), the Centre for the Advancement of Interprofessional Education Bulletin (1987 - 1998), conference proceedings, the 'grey literature' held by relevant organizations, and reference lists of articles.	The search strategy initially identified 1042 articles, of which 89 were selected. However, none of these studies met the inclusion criteria.	Studies lacked the methodological rigor needed to understand the impact of IPE on professional practice and/or health care outcomes.

Date	Authors	Title	Objectives	Databases used	Number of articles	Authors' conclusion
2001	Cooper, H, Carlisle, C, Gibbs, T, and Watkins, C <sup>11</sup>	Developing an evidence base for interdisciplinary learning: a systematic review	To explore the feasibility of introducing interdisciplinary education within undergraduate health professional programs.	Various online databases.  Dates not mentioned.	The search strategy identified  141 articles but only 30 were included in the analysis because of lack of methodological rigor in the research and poorly developed outcome measures.	Student health professionals were found to benefit from interdisciplinary education with outcome effects primarily relating to changes in knowledge, skills, attitudes and beliefs. Effects upon professional practice were not discernible and educational and psychological theories were rarely used to guide the development of the educational interventions.

Date	Authors	Title	Objectives	Databases used	Number of articles	Authors' conclusion
2006	Clifton M, Dale C, and Bradshaw C. <sup>12</sup>	The impact and effectiveness of inter-professional education in primary care: an RCN literature review	<p>To describe the range and extent of IPE in primary care.</p> <p>To identify literature that reports on the impact and effectiveness of IPE in primary care.</p> <p>To evaluate the literature in terms of methodologies.</p> <p>To analyze the literature to identify common themes.</p> <p>To identify the best practice in primary care IPE.</p> <p>To identify gaps in the evidence</p> <p>Make recommendations about future developments in primary care IPE.</p>	The review focused on Medline, CIHNAL and Social Care Online for the period 2000-2006	The search strategy identified 583 research articles, 67 were considered and 20 were included.	No high quality evidence on the effectiveness of IPE in primary care.

Date	Authors	Title	Objectives	Databases used	Number of articles	Authors' conclusion
2007	Hammick M, Freeth D, Koppel I, Reeves S, and Barr H. <sup>3</sup>	A best evidence systematic review of interprofessional education: BEME Guide no. 9	<p>To identify and review the strongest evaluations of IPE.</p> <p>To classify the outcomes of IPE and note the influence of context on particular outcomes.</p> <p>To identify and discuss the mechanisms that underpin and inform positive and negative outcomes of IPE.</p>	Medline 1966–2003, CINAHL 1982–2001, BEI 1964–2001, ASSIA 1990–2003	The search strategy identified 10,495 abstracts. 884 full articles were selected. 21 article were included.	<p>Importance for government to call for enhanced collaboration.</p> <p>Staff development is crucial.</p> <p>Authenticity and customization of IPE are important mechanisms for positive outcomes of IPE.</p> <p>IPE is well received, enabling knowledge and skills necessary for collaborative work.</p>

Date	Authors	Title	Objectives	Databases used	Number of articles	Authors' conclusion
2008	Reeves S, Zwarenstein M, Goldman J, Barr H, Freeth D, Hammick M, and Koppel I. <sup>5</sup>	Interprofessional education: effects on professional practice and health care outcomes	<p>To assess the effectiveness of IPE interventions as compared to education interventions in which the same health and social care professionals learn separately from one another.</p> <p>To assess the effectiveness of IPE interventions as compared to no education intervention.</p>	<p>Cochrane register, MEDLINE and CINAHL (1999 – 2006).</p> <p>Hand searched the journal of interprofessional care (1999-2006), relevant conferences, textbooks and IPE organizations websites.</p>	<p>The search strategy retrieved 1801 abstracts, 56 identified, and then six studies (four randomized controlled trials and two controlled before and after studies) were included.</p>	<p>It is not possible to draw generalizable inferences about the key elements of IPE and its effectiveness.</p> <p>More rigorous IPE studies are needed to provide better evidence of the impact of IPE on professional practice and healthcare outcomes.</p>



Date	Authors	Title	Objectives	Databases used	Number of articles	Authors' conclusion
2013	Lapkin S, Levett-Jones T, and Gilligan C <sup>13</sup>	A systematic review of the effectiveness of interprofessional education in health professional programs	Identify the best available evidence for the effectiveness of university-based interprofessional education for health students.	1. AMED 2. CINAHL 3. Cochrane Central Register of Controlled Trials (CENTRAL) 4. Dissertation and Theses 5. EMBASE 6. ERIC 7. Journals@Ovid 8. MEDLINE 9. ProQuest 10. PsycINFO (2000–2011)  Also, hand searched to find any additional literature and unpublished studies:  1. Journal of Interprofessional Care  2. Conference Proceedings  3. Directory of open access journals  4. Mednar	The search strategy identified 4217 articles, of which 75 articles were deemed potentially relevant based on the assessment of title and abstracts. Nine published studies consisting of three randomized controlled trials, five controlled before and after studies and one controlled longitudinal study were included in the review.	Student's attitudes and perceptions towards interprofessional collaboration and clinical decision making can be potentially enhanced through interprofessional education. However, the evidence for using interprofessional education to teach communication skills and clinical skills is inconclusive and requires further investigation.  Little evidence exists in regards to whether the gains attributed to IPE can be sustained over time.

Date	Authors	Title	Objectives	Databases used	Number of articles	Authors' conclusion
2013	Reeves S, Perrier L, Goldman J, Freeth D, and Zwarenstein M. <sup>14</sup>	Interprofessional education: effects on professional practice and healthcare outcomes (update) (Review)	<p>To assess the effectiveness of IPE interventions as compared to separate, profession-specific education interventions.</p> <p>To assess the effectiveness of IPE interventions as compared to no education intervention.</p>	<p>Cochrane register, MEDLINE and CINAHL (2006 - 2011). Hand searched the Journal of Interprofessional Care (2006 - 2011), reference lists of all included studies, the proceedings of leading IPE conferences, and websites of IPE organizations.</p>	<p>The search strategy identified 2733 abstracts. 28 studies were selected and 9 were included: 8 randomized controlled trials (RCTs), 5 controlled before and after (CBA) studies and 2 interrupted time series (ITS) studies.</p>	<p>This updated review reports on 15 studies that met the inclusion criteria (nine studies from this update and six studies from the 2008 update). Although these studies reported some positive outcomes, due to the small number of studies and the heterogeneity of interventions and outcome measures, it is not possible to draw generalizable inferences about the key elements of IPE and their effectiveness.</p>

In the above best evidence systematic review of IPE published in 2007, most of the studies evaluated IPE that was delivered to healthcare students during their undergraduate studies. The majority of participants were from medicine, nursing and physiotherapy, with pharmacy students being less prevalent.<sup>3</sup> This finding was echoed in another review which found that medical students were included in all the studies with high representation by nursing students, and less by students from other health care fields, including pharmacy.<sup>4</sup> The pharmacy profession was represented in the primary literature reviewed but its perspective and inclusion was not explicit. Hence there is a need to conduct a systematic review to investigate literature that specifically explores the pharmacy perspective on IPE. It would be useful to investigate the interprofessional learning within pharmacy courses, as providing this information can potentially lead to the development of new and innovative teaching strategies which will potentially benefit health professionals. It is interesting to note that after searching the Cochrane Collaboration's database, JBI Database of Systematic Reviews and Implementation Reports and general literature, the authors believe that no systematic review with a uni-professional healthcare perspective has been undertaken previously; therefore, this review will be unique in that it will be the first to investigate a single healthcare profession's perspective about IPE and collaborative practice.

This is the first systematic review investigating pharmacy perspectives of IPE worldwide. It is anticipated that this review will consolidate and synthesize existing findings regarding pharmacy perspectives on IPE and provide a better understanding of what shapes this perspective. It will also provide us with the platform needed to develop and implement IPE activities that are meaningful, comprehensive and unique. The outcomes of this research will provide a set of recommendations to be used by pharmacy and other healthcare educators to plan and implement innovative IPE activities that are relevant and meaningful to students.

## **Keywords**

interprofessional education; collaborative practice; pharmacy; perspective; pharmacy students  
pharmacy academics; practicing pharmacists; systematic review

## **Inclusion criteria**

### ***Types of participants***

The quantitative and qualitative components of this comprehensive systematic review will consider studies that include pharmacy students (undergraduate and postgraduate), practicing pharmacists (community, hospital and primary healthcare) or pharmacy academics (teaching in academic institutions) as participants.

### ***Types of Intervention(s)/phenomena of interest***

The quantitative component of the review will consider studies that investigate interprofessional education and collaborative practice. More specifically, studies that investigate the perspective of pharmacy students, pharmacy academics and practicing pharmacists towards interprofessional education and collaborative practice will be considered.

The qualitative component of this review will consider studies that investigate the phenomena of interest of the perspectives, attitudes, views and experiences of pharmacy students, pharmacy academics and practicing pharmacists toward interprofessional education and collaborative practice.

Any quantitative or qualitative methods of capturing any of the following will be considered:

- Perspectives
- Experiences
- Attitudes
- Views

of pharmacy students, pharmacy academics and practicing pharmacists towards IPE and collaborative practice.

### ***Types of outcomes***

This review will consider studies that include the following outcomes:

Quantitative outcomes will include participant perspectives including experiences, attitudes or views on IPE as captured by surveys, questionnaires or any other instruments capturing quantitative data.

### ***Context***

The context will be university academic settings and pharmacy practice settings, i.e. community, hospital and primary healthcare worldwide.

### ***Types of studies***

The quantitative component of the review will consider both experimental and epidemiological study designs including prospective and retrospective cohort studies, case control studies and analytical cross sectional studies for inclusion.

The qualitative component of the review will consider studies that focus on qualitative data including, but not limited to, designs such as phenomenology, grounded theory, ethnography, action research and feminist research.

### **Search strategy**

The search strategy aims to find both types of published studies. A three-step search strategy will be utilized in this review as follows:

1. An initial limited search of MEDLINE and CINAHL will be undertaken followed by an analysis of the text words contained in the title and abstract, and of the index terms used to describe articles.
2. A second search using all identified keywords and index terms will then be undertaken across all included databases.
3. Thirdly, all the reference lists of all identified articles will be searched for any additional relevant studies.

Only studies published in English will be considered for inclusion in this review. Studies published from 1999 will be considered for inclusion in this review. The reason for focusing only on this period is to capture the most recent trends in IPE.

The databases to be searched include:

- MEDLINE
- EBSCO host
- EMBASE
- CINAHL
- Web of Science
- ScienceDirect
- International Pharmaceutical Abstracts (IPA).

The following will be hand searched to find additional articles:

- Journal of Interprofessional Care (1999-2014), relevant conferences and websites such as:
- All Together Better Health Website
- CAIPE – Centre for the Advancement of Interprofessional Education
- AHIC – The American Interprofessional Health Collaborative
- AIPPEN – The Australasian Interprofessional Practice and Education Network
- CIHC – The Canadian Interprofessional Health Collaborative
- EIPEN – The European Interprofessional Practice and Education Network
- JAIFE – The Japan Association for Interprofessional Education
- JIPWEN – The Japan Interprofessional Working and Education Network
- NIPNET - The Nordic Interprofessional Network

The following keywords will be used:

Interprofession\* or Inter-profession\*, Multidisciplin\* or Multi-disciplin\*, Perspectives, Attitudes, Experiences; Views; Pharmac\*

Studies not involving pharmacy will be excluded to focus on the objectives of the research.

### **Assessment of methodological quality**

Quantitative studies selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MASARI) (Appendix I). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer. All reviewers have undertaken the JBI comprehensive systematic review training program.

Qualitative studies selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI-QARI) (Appendix I). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.

## Data extraction

Data extraction will be conducted independently by two reviewers. Where possible, authors will be contacted for missing or incomplete data.

Quantitative data will be extracted from articles included in the review using the standardized data extraction tool from JBI-MAStARI (Appendix II). The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

Qualitative data will be extracted from articles included in the review using the standardized data extraction tool from JBI-QARI (Appendix II). The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

## Data synthesis

For quantitative data and due to the nature of the review objectives and the data to be extracted, it will not be possible to conduct statistical pooling on the data; rather narrative synthesis will be conducted and the findings will be presented in narrative form with tables, figures and text to aid in data presentation where appropriate.

Qualitative research findings will, where possible, be pooled using JBI-QARI. This will involve the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, JBI Database of Systematic Reviews and Implementation Reports through assembling the findings (Level 1 findings) rated according to their quality, and categorizing these findings on the basis of similarity in meaning (Level 2 findings). These categories will be subjected to a meta-synthesis to produce a single comprehensive set of synthesized findings (Level 3 findings) that can be used as a basis for evidence-based practice. Where textual pooling is not possible, the findings will be presented in narrative form.

## Conflicts of interest

There is no potential conflict of interest anticipated for this systematic review.

## Acknowledgements

This protocol has been peer reviewed by Dr Kay Cooper, Deputy Director of the Scottish Centre for Evidence-based Multi-professional Practice: an Affiliate Center of the Joanna Briggs Institute.

## References

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## Appendix I: Appraisal instruments

### QARI appraisal instrument

#### JBI QARI Critical Appraisal Checklist for Interpretive & Critical Research

Reviewer ..... Date .....

Author ..... Year ..... Record Number .....

	Yes	No	Unclear	Not Applicable
1. Is there congruity between the stated philosophical perspective and the research methodology?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there congruity between the research methodology and the research question or objectives?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there congruity between the research methodology and the methods used to collect data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is there congruity between the research methodology and the representation and analysis of data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is there congruity between the research methodology and the interpretation of results?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is there a statement locating the researcher culturally or theoretically?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the influence of the researcher on the research, and vice-versa, addressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are participants, and their voices, adequately represented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal:  Include  Exclude  Seek further info.

Comments (Including reason for exclusion)

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**MAStARI appraisal instrument**

**JBI Critical Appraisal Checklist for Randomised Control / Pseudo-randomised Trial**

Reviewer ..... Date .....

Author ..... Year ..... Record Number .....

	Yes	No	Unclear	Not Applicable
1. Was the assignment to treatment groups truly random?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were participants blinded to treatment allocation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Was allocation to treatment groups concealed from the allocator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Were those assessing outcomes blind to the treatment allocation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Were the control and treatment groups comparable at entry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were groups treated identically other than for the named interventions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in the same way for all groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal:    Include                   Exclude                   Seek further info.

Comments (Including reason for exclusion)

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**JBI Critical Appraisal Checklist for Descriptive / Case Series**

Reviewer ..... Date .....

Author ..... Year ..... Record Number .....

	Yes	No	Unclear	Not Applicable
1. Was study based on a random or pseudo-random sample?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were the criteria for inclusion in the sample clearly defined?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Were confounding factors identified and strategies to deal with them stated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were outcomes assessed using objective criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If comparisons are being made, was there sufficient descriptions of the groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Was follow up carried out over a sufficient time period?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal:      Include                   Exclude                   Seek further info

Comments (Including reason for exclusion)

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**JBI Critical Appraisal Checklist for Comparable Cohort/ Case Control**

Reviewer ..... Date .....

Author ..... Year ..... Record Number .....

	Yes	No	Unclear	Not Applicable
1. Is sample representative of patients in the population as a whole?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the patients at a similar point in the course of their condition/illness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has bias been minimised in relation to selection of cases and of controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are confounding factors identified and strategies to deal with them stated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are outcomes assessed using objective criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Was follow up carried out over a sufficient time period?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal:    Include             Exclude             Seek further info.

Comments (Including reason for exclusion)

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## Appendix II: Data extraction instruments

### QARI data extraction instrument

#### **JBI QARI Data Extraction Form for Interpretive & Critical Research**

Reviewer ..... Date .....

Author ..... Year .....

Journal ..... Record Number .....

#### **Study Description**

Methodology

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Method

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Phenomena of interest

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Setting

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Geographical

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Cultural

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Participants

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Data analysis

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Authors Conclusions

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Comments

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Complete

Yes

No

Findings	Illustration from Publication (page number)	Evidence		
		Unequivocal	Credible	Unsupported

Extraction of findings complete              Yes               No

# JBI Data Extraction Form for Experimental / Observational Studies

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

Author \_\_\_\_\_ Year \_\_\_\_\_

Journal \_\_\_\_\_ Record Number \_\_\_\_\_

## Study Method

RCT  Quasi-RCT  Longitudinal

Retrospective  Observational  Other

## Participants

Setting \_\_\_\_\_

Population \_\_\_\_\_

## Sample size

Group A \_\_\_\_\_ Group B \_\_\_\_\_

## Interventions

Intervention A \_\_\_\_\_

Intervention B \_\_\_\_\_

Authors Conclusions:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewers Conclusions:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Study results**

**Dichotomous data**

Outcome	Intervention ( ) number / total number	Intervention ( ) number / total number

**Continuous data**

Outcome	Intervention ( ) number / total number	Intervention ( ) number / total number