BMJ Open

Scoping Review Protocol: Education Initiatives for Medical Psychiatry Collaborative Care

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-015886
Article Type:	Protocol
Date Submitted by the Author:	09-Jan-2017
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Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Mental health, Addiction
Keywords:	collaborative care, PRIMARY CARE, MENTAL HEALTH, Integrated Care, MEDICAL EDUCATION & TRAINING, PSYCHIATRY

TITLE:

Scoping Review Protocol: Education Initiatives for Medical Psychiatry Collaborative Care

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Word Count: 2752

ABSTRACT

Introduction:

The collaborative care model is an approach providing care to those with mental health and addictions disorders in the primary care setting. There is a robust evidence base demonstrating its clinical and cost effectiveness in comparison to usual care; however, the transitioning to this new paradigm of care has been difficult. While there are efforts to train and prepare healthcare professionals, not much is known about the current state of collaborative care training programs. The objective of this scoping review is to understand how widespread these collaborative education initiatives are, how they are implemented, and their impacts.

Methods and analysis:

The scoping review methodology uses the established review methodology by Arksey and O'Malley. The search strategy was developed by a medical librarian and will be applied eight different databases spanning multiple disciplines. A two-stage screening process consisting of a title and abstract scan and a full-text review will be used to determine the eligibility of articles. To be included, articles must report on an existing collaborative care education initiative for healthcare providers. All articles will be independently assessed for eligibility by pairs of reviewers and all eligible articles will be abstracted and charted in duplicate using a standardized form. The extracted data will undergo a 'narrative review' or a descriptive analysis of the contextual or process-oriented data and simple quantitative analysis using descriptive statistics.

Ethics and dissemination:

Research ethics is not required for this scoping review. The results of this scoping review will inform the development of a collaborative care training initiative emerging from the Medical Psychiatry Alliance, a four-institution philanthropic partnership in Ontario, Canada. The results

will also be presented at relevant national and international conferences and published in a peer-reviewed journal.

Keywords: Collaborative care; Primary care; Mental Health; Addictions; Psychiatry; Integrated care; Education; Training

Strengths and Limitations:

- Strengths of this study include: novelty, timeliness, and the importance of the topic to the delivery of mental health and addiction care; use of an established scoping review methodology; consultation with an experienced medical librarian in developing a multi-disciplinary search strategy; and a rigorous study selection and data extraction processes carried out in tandem with validation from content experts.
- A limitation of the review is the potential to miss relevant articles given that education is not always separated from the implementation of collaborative care; however, the reference lists of included articles, relevant literature reviews, and key reports will be hand-searched to identify articles missed by the search strategy.

BACKGROUND:

Mental health and addictions disorders are the fifth leading contributor to the global disease burden accounting for 7.4% of total disease burden. It is also the most disabling disorder accounting for 22.9% of the global non-fatal burden of disease (i.e., years lived with disability) [1]. Despite being non-fatal in most cases, approximately one-fifth of adults experienced a common mental health disorder within the past year and 29.2% across their lifetime [2]. In North America, there is a growing disparity of unmet needs for mental health services [3,4]. The current supply of psychiatrists do not meet the increasing demands and current practice patterns create substantial barriers hindering access to psychiatric assessment and treatment [5–8]. In recent years, primary care physicians have been increasingly involved in providing care for those seeking mental health as there has been significant increases in visits to primary care physicians and a corresponding decline in visits to psychiatrists [9].

In many health systems, primary care is most commonly the first contact point for those seeking mental health treatment [10,11]; however, the individuals seeking care in these settings are often receiving sub-optimal care as providers are not properly equipped or trained to manage complex physical and mental health conditions [12]. Other systemic issues such as a lack of resources, misaligned incentives, an ineffective referral process, and the separation of mental health services from other healthcare services also contribute to the treatment gap [12,13]. The disconnect between the two fields makes it difficult for individuals to receive the proper care especially for those with co-morbidity or multi-morbidity and may further exacerbate their condition or lead to premature death due to their physical health conditions [14,15]. A 2014 systematic review [16] reported that 91.2% (135/148) of studies found that mortality was

significantly higher among people with mental disorders than among the comparison population. The meta-analysis found that people with mental disorders have a 2.22 time higher mortality rate than those without and lose about a decade of their life.

For a greater part of the last two decades, a growing and robust evidence base has made the case for integrating mental healthcare into the primary care setting through a collaborative care model. Several meta-analyses [17–19] have demonstrated that collaborative care model can be more effective in treating mental health disorders than usual care. A 2013 Cochrane review [19] found a significantly greater improvement in depression and anxiety for adults when treated with the collaborative care model in the short, medium, and long terms in comparison to usual care. There was also evidence of benefit in medication use, mental health quality of life, and patient satisfaction. The collaborative care model has also demonstrated its value by improving quality of life for co-morbid patients for no or modest additional cost [20].

Collaborative care is often used interchangeably with other terms (e.g., mental health integration, integrated care, integrated mental health) to describe a range of models of care that consist of healthcare professionals working in partnership in a primary care setting to deliver mental healthcare; however, the degree of integration of the two vary depending on model [21]. Recognizing the lack of a standard evidence-based integrated care model, a working group from the American Psychiatric Association (APA) and the Academy of Psychosomatic Medicine (APM) developed a collaborative care model that contained four key principles and demonstrated how it could be adapted for a number of existing integrative care settings. Derived from the seminal research by Katon et al. [22] and Wagner's Chronic Care Model [23],

APA/APM Collaborative Care model [24] consists of four essential elements. The elements include provision of care that is 1) team-driven, 2) population-focused, 3) measurement-guided, and 4) evidence-based. The focal point is the collaborative care team which consists of the integration of a multidisciplinary group of professionals (e.g., office and support staff, nurses, care managers, primary care providers, and appropriate specialists), beyond the "physician as treatment team", in providing and supporting care and implementing and revising the treatment plan. This may include a psychiatric nurse practitioner, social worker, licensed counsellor or therapist, psychologist, or psychiatrist. The new definition was developed to support informed decision-making by policy-makers, healthcare providers, service delivery organizations, the general public, and to help standardize future training in this area.

Despite the increasing recognition and implementation of the collaborative care model, there remain difficulties in implementation as there is a lack of adequately prepared workforce [25]. The transition from a traditional care delivery model is a challenge as there are many new processes and systems-level differences between integrated behavioural health and traditional primary care settings that new team members must navigate. For instance, when using a collaborative care model, all team members may need to learn how to implement measurement based care, systematic use of outcome measures to track response to treatment, treatment to target, population-based care principles, and to apply all of these approaches in a team-based context [26]. Furthermore, transitioning to a collaborative care model will require healthcare providers (e.g., primary care physicians, psychiatric consultants, and behavioural health providers) to adapt their respective training, workflows, experiences, and philosophies to the group dynamics of a team-based environment [27]. Pre- and post-licensure training in

interprofessional collaboration is considered necessary for all team members to learn more about their respective roles, scopes of practice, strengths and skills, and team processes [26,28]. There is also a need to develop targeted clinical competencies and to acquire a broad enough medical knowledge base to address the wide range of mental health and general medical concerns in a primary care patient population [26].

Many integrated care settings have taken the initiative to provide workplace training for all team members [25]. A variety of training approaches have been implemented, including training by internal or external experts, onsite or offsite sessions, onboarding processes for new employees, training manuals, shadowing processes and peer mentoring [25,27]. However, there have been calls for increased pre-licensure training to take the burden off of such workplace training programs that can be expensive and resource-intensive [25]. Furthermore, a recent editorial [29] has identified the need to move beyond competency-based training in integrated care and called for integration of theoretical frameworks, namely adaptive expertise, to better prepare future health care professionals for managing complexity within integrated care settings.

While there have been tremendous efforts in the development of the collaborative care model and the training supports, not much is known about the current scope of integrated care education, how it is delivered, to whom, in what contexts, the content of the training, and whether it is effective. There is a need to collect all the knowledge and experiences from existing training programs, continually improve current process of these programs, and to support the development of new programs. The objective of this scoping review is to gain an understanding of the current landscape of integrated care education.

METHODS

The methodology for this review draws upon Arksey and O'Malley's seminal framework [30] for scoping reviews as the foundation and more recent advancements to the methodology [31,32]. While this is not a systematic review, this protocol follows the relevant aspects of the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) guidelines [33] to ensure rigour in reporting the methodology.

Stage 1: identifying the research question

This scoping review is being conducted to inform the development of a collaborative care training initiative emerging from the Medical Psychiatry Alliance, a four-institution, Ministry of Health and Long-Term Care, and philanthropic partnership in Ontario, Canada. The objective of this review is to understand the current state of collaborative care education initiatives by identifying existing initiatives (e.g., training programs, interventions) reported in both academic and grey literature. To meet this objective, this review asks the following questions:

- What educational interventions exist within integrated collaborative care programs in hospital, community, and primary care settings?
- What aspects of collaborative care are taught in the educational interventions?
- How well do the interventions incorporate the core collaborative care principles as outlined in the APA/APM document?
- How were the interventions delivered?
- What were the outcomes of the program (e.g., user perceptions, effectiveness, behaviour change, clinical impact)?

- What were the critical success factors and lessons learned?

Stage 2: identifying relevant studies

The search strategy was iteratively developed by the research team in collaboration with an experienced medical librarian (SB) and implemented in July 2016 in eight electronic databases: MEDLINE, MEDLINE In-Process, PsycINFO, CINAHL, EMBASE, ERIC, Scopus, and ISI Web of Science. These databases were selected to capture a comprehensive sample of literature from health sciences, psychiatry, education, and other disciplines. The search query was first developed for Medline, which consisted of the following MeSH keywords and related terms for the primary care, integrated care, education, and mental health services, personnel, and conditions (see Additional File 1 for full strategy). The searches were limited to articles in English and published after 1995 – when the collaborative care model was first introduced [22,24]. The search terms were then translated for use in the other databases. Applying the same search string to ISI Web of Science (interdisciplinary) required some modifications and a different approach to reduce the noise in the results. Specifically, the research categories and subject area limiters were used to reduce the yield to a manageable volume while maintaining the specificity required for this review. The first 100 search results from each database were reviewed by the research team to ensure validity of the search strategy.

The results from the search were imported into Mendeley desktop reference manager where the citations were collated and de-duplicated. The research team were granted access to the citations and articles using the Mendeley web-based collaboration function. The citations were then

copied and pasted into a spreadsheet for use in the subsequent eligibility screening and charting processes.

Stage 3: study selection

A two-stage screening process consisting of a title and abstract scan and a full-text review will be used to determine the eligibility of articles. Both stages will follow the same process, where every article will be independently reviewed in pairs and the results will be documented on the spreadsheet. At the end of each round, the ratings will be compared and resolved by the two reviewers or a third reviewer when consensus is not achieved. Any ambiguities regarding the eligibility of a citation (or article) will be flagged and also be discussed.

The citations will be assessed for relevance based on a title and abstract scan. To be relevant for full-text review, the title and abstract must: focus on providers from different specialities, disciplines, or sectors working together to offer complementary services or support in delivering care; be about delivering mental health and addictions care; and describe an existing education intervention. This review is inclusive of all types of papers and will include empirical studies, case studies, and commentary articles; however, articles that were viewpoints on how education programs should be implemented outside of the context of an existing program were excluded.

The criteria will be piloted by the reviewers to refine and establish a common understanding of the inclusion criteria. After a training session, 20% of the Medline citations will be independently reviewed by four reviewers to establish inter-rater reliability (IRR). The results of the review will be compared and the interrater reliability will be calculated. The threshold for

IRR is set at an average Cohen's K of 0.70 indicating substantial agreement [34]. The pilot will be run again if the threshold was not met. If met, the remaining articles will then be divided and assigned to two sets of pairs for independent review. These adjustments to the inclusion exclusion process are appropriate as they provide the team with opportunities to become familiar with the data and to reduce workload [31,32]. This protocol made an additional adjustment by adding the IRR in order to establish agreement between reviewers and provide more context to the study selection process. Regardless of the IRR outcome, a meeting about the process will be held to compare the results, resolve the disagreements, and troubleshoot the challenges that arose during the title-abstract review process.

Relevant articles identified in the title and abstract scan will undergo a full-text review to confirm the articles eligibility for the review. The full-text review follows the same process as the title and abstract scan. To be included, the article must be about a collaborative care education initiative for healthcare providers. The full-text review form asked reviewers to assess each article using the following questions:

1. Does the article describe/discuss the provision of care related to mental health in a primary care setting?
2. Does the article describe an education intervention/program?
3. Does the education intervention focus on delivering team-based care?

Step 4: charting the data

A standardized charting form will be developed by the research team to allow the investigators to categorize or 'chart' the data. The high-level domains for the charting form consist of article

details, study details (if applicable), initiative details, and implementation factors. The specifics of each domain are outlined in Table 1. There will be a training session to trial the charting form and ensure there is a common understanding of the categories and how to use the form. The full-text reviewers will be asked if there are any additional variables emerging from the full-text review to consider for charting. The form will be piloted on five to ten articles by the team. This will consist of independent charting by the reviewers and validation by the senior investigators. A final round of feedback on the form will be solicited prior to the charting process. The charting will also consist of independent charting by the reviewers and validation by the senior investigators. The charters will be encouraged to provide constant feedback on emerging themes not captured in the charting form. The form will be revised as required.

Table 1. Data charting domains and elaboration of sub-domains.

Domain/ Sub-Domains	Description
Article details	
Article type	Is the article an empirical study, case study, or commentary?
Year	Article Year
Country	Which country is this article from?
Study details (if applicable)	
Study design	If it is an empirical article, what was the study design? Report as described by authors.
Participants	Who were the study participants?
Intervention	What was the intervention? Report as described by the author.
Comparator	What was the comparator (if applicable)?
Study outcomes	What did the authors identify as the study outcomes?
Outcomes	What were the main results of the study?
Initiative details	
Name	What is the name of the program (if applicable)?
Setting	Where does the education program take place? (e.g., community, hospital, university)
Participants	Who were the participants of the program?
Program delivery	How is the program delivered? (e.g., seminar, lecture, course, in-service training).
Instructors	Who are the facilitators/instructors?

Program length	How long was the program/intervention?
APA/APM Principles [24]	
1. Team Driven	Does the program teach a team-based approach of multi-professionals to provide and support care and monitor treatment plans?
2. Specific population	Does the program focus on the provision of care and health outcomes of a defined population of patients?
3. Measurement	Does the program focus on systematic, disease-specific, patient-reported outcome measures (e.g., symptom rating scales) to drive clinical decision-making?
4. Evidence based	Does the program focus on the application of proven treatments within an individual clinical context to achieve MBC outcomes?
Implementation factors	
Success	How did the authors define program success?
Enablers	What factors that contributed to the success of the program?
Barriers	What factors may have detracted from the success of the program?
Recommendations	What were the author's recommendations based on their experiences?

Stage 5: collating, summarizing, and reporting the results

The data will undergo a 'narrative review' or a descriptive analysis of the contextual or process-oriented data. The extracted data will also undergo simple quantitative analysis using descriptive statistics (e.g., frequencies, central tendency measures) to provide numerical summaries of the education initiatives and article or study characteristics [30]. The articles will not be assessed for quality as it is outside the scope of this review; however, details of the included articles will be reported in a summary table to provide context of the maturity of the evidence. Details of the education initiatives will also be summarized in a table. Learner and clinical outcomes reported in the studies will be classified based on the Kirkpatrick-Barr framework [35] for interprofessional learner outcomes. This framework was selected because of its focus on interprofessional collaboration which can be applicable to the multi-disciplinary setting. Depending on the number of studies, a table summary of program evaluations will also be

reported. Lastly, the data for implementation factors sub-domains will undergo a thematic analysis to be examined for similarities, patterns, differences, and outliers.

DISCUSSION/CONCLUSION

The underlying purpose of this scoping review is to gain a broad-stroke understanding of the current state of collaborative care education initiatives. This protocol reports a comprehensive, rigorous, and transparent methodology. Many various systematic literature review approaches were considered; however, the scoping review methodology is most appropriate given the lack of knowledge synthesis on this subject. To the authors' knowledge, there has been no prior attempt to establish a baseline of knowledge regarding collaborative care education initiatives. This review makes a contribution of the advancement of research on this subject and comment on the maturity of the body of literature by identifying gaps in knowledge and research. Through the publication of the results and dissemination at relevant conferences, the results of this review could guide the direction of future research. While the main focus of this review is to take an inventory of existing programs and their processes, there may also be a potential for this review to provide a preliminary understanding on the effectiveness of current efforts in educating the health professions about collaborative care.

From an implementation perspective, this review will provide insights on how collaborative care education initiatives have been integrated and to what extent. By identifying the past and current education initiatives, this review will establish a foundational understanding of critical success factors and best practices in delivering these programs. The results from this review may inform the design of new initiatives and the policies which support them; moreover, future

implementations can learn from the experience of others to avoid potential barriers and focus on enablers to increase the chances of success of their programs – existing or new.

Acknowledgements: The authors' work is supported in part by the Medical Psychiatry Alliance, a collaborative health partnership of the University of Toronto, the Centre for Addiction and Mental Health, the Hospital for Sick Children, Trillium Health Partners, the Ontario Ministry of Health and Long-Term Care, and an anonymous donor.

Authors' contributions: NS led the design and conceptualization of this work and drafted the protocol. AA, TB, AH, EH, BW were involved in the conceptualization of the review design, specifically in establishing the inclusion and exclusion criteria. EH and BW drafted the background section of the protocol and provided feedback on the methodology and the manuscript. SB developed the search strategy, conducted the search, provided feedback on the manuscript, and copy-edited the manuscript. AF, SS, and DW provided guidance to the conceptualization and design of the study, data analyses, and have revised all drafts of this manuscript for important intellectual content and clarity. All authors give approval to the publishing of this protocol manuscript.

Competing interests: The authors declare that they have no competing interests.

Funding: Not applicable

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Appendix A – Scoping Review Search Strategy

Table 1. Search strategy for MEDLINE, MEDLINE In-Progress, PsycINFO, EMBASE, and CINAHL.
NB: Only MEDLINE search strategy included. The search strategies for the other databases were similar in structure with similar search terms and synonyms. Contact the corresponding author for the full search strategy for each database.

#	Search Term(s)
1	Family Practice/ or General Practice/ or Physicians, Family/ or Physicians, Primary Care/ or General Practitioners/ or Primary Health Care/
2	(((primary or "primary care" or family or general) adj2 (doctor* or physician* or practice* or practitioner* or medicine)) or "family health team*").mp.
3	((primary care or family practice or family health or family or general practice) adj2 nurs*).mp.
4	("general practice clinic*" or "family practice clinic*" or "primary care clinic*" or "family clinic*" or "medical home").mp.
5	Family Nurse Practitioners/ or "family nurse practitioner*".mp.
6	exp psychiatry/ or psychology/
7	medical psychiatry.mp.
8	mental health services/
9	exp mental disorders/ or exp substance-related disorders/
10	child guidance/
11	psychiatric nursing/
12	community mental health services/
13	social work, psychiatric/
14	emergency services, psychiatric/
15	"Delivery of Health Care, Integrated"/ or Comprehensive Health Care/ or "Continuity of Patient Care"/ or Interprofessional Relations/ or Interdisciplinary Communication/ or exp Patient Care Planning/ or exp Patient Care Team/ or Cooperative Behavior/ or Case Management/ or Patient-centered Care/ or Patient Navigation/
16	(co-located or patient-centered or patient centred or patient centered).mp.
17	((clinical or critical or care or integrat$ or collaborat* or comprehensive or stepped or psychosomatic or shared or "behavioral health" or interprofessional) adj4 (treat$ or team* or care* or path*)).mp.
18	((coordinated or clinical or critical or care or integrat$ or collaborat* or comprehensive or stepped or psychosomatic or shared or interprofessional) adj4 (treat* or team* or care or path* or managed or management or mental-health or mental health or psychosomatic or behavioural health or behavioral health or healthcare or health care)).mp.

#	Search Term(s)
19	education/ or curriculum/ or competency-based education/ or interdisciplinary studies/ or "mainstreaming (education)"/ or problem-based learning/ or education, distance/ or education, premedical/ or education, professional/ or education, continuing/ or education, medical, continuing/ or education, nursing, continuing/ or education, pharmacy, continuing/ or education, professional, retraining/ or education, graduate/ or education, medical, graduate/ or education, nursing, graduate/ or education, pharmacy, graduate/ or education, medical/ or education, medical, undergraduate/ or "internship and residency"/ or teaching rounds/ or education, nursing/ or education, nursing, associate/ or education, nursing, baccalaureate/ or education, nursing, diploma programs/ or nursing education research/ or inservice training/ or staff development/ or schools, health occupations/ or schools, medical/ or schools, nursing/ or schools, pharmacy/ or teaching/ or computer user training/ or models, educational/ or programmed instruction as topic/ or computer-assisted instruction/ or remedial teaching/ or simulation training/ or patient simulation/ or training support/ or academic medical centers/ or hospitals, teaching/ or hospitals, university/ or education department, hospital/
20	(curricul* or instruction or teach or "interprofessional education" or "continuing medical education" or "professional development").mp.
21	((course* or staff or program*) adj2 train*).mp.
22	(training adj3 (guide or guides or guideline* or material*)).mp.
23	("on the job training" or "on-the-job training").mp.
24	or/1-5
25	or/6-14
26	or/15-18
27	or/19-23
28	and/24-27
29	limit 28 to english language

TABLE 2. Search Strategy for ERIC

#	Search term(s)
1	primary health care/ or "family practice (medicine)"/
2	((primary or "primary care" or family or general) adj (doctor* or physician* or practice* or practitioner* or medicine or "family health team*")).mp.
3	((primary care or family practice or family health or family or general practice) adj nurs*).mp.
4	("general practice clinic*" or "family practice clinic*" or "primary care clinic*" or "family clinic*" or "medical home").mp.
5	"family nurse practitioner*".mp.
6	mental disorders/ or exp anxiety disorders/ or exp dementia/ or exp emotional disturbances/ or exp neurosis/ or exp pervasive developmental disorders/ or exp psychosis/
7	behavior disorders/
8	alcoholism/
9	substance abuse/ or exp alcohol abuse/ or exp drug abuse/
10	psychiatric services/
11	psychological services/
12	mental health programs/
13	psychiatry/
14	psychologists/
15	medical psychiatry.mp.
16	interdisciplinary approach/ or interprofessional relationship/ or interpersonal relationship/ or teamwork/ or institutional cooperation/ or cooperation/
17	(co-located or patient-centered patient-centred or patient centred or patient centered).mp.
18	((coordinated or clinical or critical or care or integrat* or collaborat* or comprehensive or stepped or psychosomatic or shared or interprofessional or behavioural health or behavioral health) adj (treat* or team* or care or path* or managed or management or mental-health or mental health or psychosomatic or behavioural health or behavioral health or healthcare or health care)).mp.
19	curriculum/
20	curriculum development/
21	"clinical teaching (health professions)"/
22	professional development/
23	staff development/
24	capacity building/
25	continuing education/ or professional continuing education/
26	simulation/ or computer simulation/ or role playing/
27	professional education/
28	medical education/ or graduate medical education/ or nursing education/ or pharmaceutical education/ or allied health occupations education/
29	educational strategies/
30	experiential learning/ or field experience programs/ or internship programs/
31	training methods/

#	Search term(s)
32	on the job training/
33	instructional materials/ or textbooks/ or workbooks/
34	graduate medical education/
35	medical schools/
36	(curricul* or instruction or teach or "interprofessional education" or "continuing medical education" or "professional development").mp.
37	((course* or staff or program*) adj train*).mp.
38	(training adj (guide or guides or guideline* or material*)).mp.
39	("on the job training" or "on-the-job training").mp.
40	or/1-5
41	or/6-15
42	or/16-18
43	or/19-39
44	and/40-43
45	limit to english language

TABLE 3. Search Strategy for Scopus

#	Search term(s)
1	TITLE-ABS-KEY ((("family service*" OR "family practice*" OR "family practitioner*" OR "family physician*" OR "family doctor*" OR "family nurse*" OR "family team" OR "family teams" OR "family health" OR "family health care" OR "family healthcare" OR "family clinic*" OR "family medicine")) OR (("general service*" OR "general practice*" OR "general practitioner*" OR "general physician*" OR "general doctor*" OR "general nurse*" OR "general team" OR "general teams" OR "general health" OR "general health care" OR "general healthcare" OR "general clinic*" OR "general medicine")) OR (("primary care service*" OR "primary care practice*" OR "primary care practitioner*" OR "primary care physician*" OR "primary care doctor*" OR "primary care nurse*" OR "primary care team" OR "primary care teams" OR "primary care health" OR "primary care clinic*" OR "primary care medicine")) OR (("primary service*" OR "primary practice*" OR "primary practitioner*" OR "primary physician*" OR "primary doctor*" OR "primary nurse*" OR "primary team" OR "primary teams" OR "primary health" OR "primary health care" OR "primary healthcare" OR "primary clinic*" OR "primary medicine")) OR (("general practice service*" OR " general practice physician*" OR " general practice doctor*" OR " general practice nurse*" OR " general practice team" OR " general practice teams" OR " general practice health" OR "general practice health care" OR "general practice healthcare" OR " general practice clinic*" OR " general practice medicine")) OR (("family practice service*" OR " family practice physician*" OR " family practice doctor*" OR " family practice nurse*" OR " family practice team" OR " family practice teams" OR " family practice health" OR "family practice health care" OR "family practice healthcare" OR " family practice clinic*" OR " family practice medicine")) OR (("family health service*" OR "family health physician*" OR " family health doctor*" OR " family health nurse*" OR " family health team" OR " family health teams" OR " family health clinic*" OR " family health medicine"))))
2	TITLE-ABS-KEY (((patient care OR patient-centered OR patient-centred OR patient centered OR patient centred OR coordinated OR clinical OR critical OR care OR integrat* OR collaborat* OR multidisciplinary OR comprehensive OR stepped OR psychosomatic OR shared OR behavioral health OR behavioural health OR interprofessional) AND (treat* OR team* OR care OR path* OR managed OR management OR mental-health OR mental health OR psychosomatic OR behavioural health OR behavioral health OR healthcare OR health care OR health-care)))
3	TITLE-ABS-KEY ((psychiatr* OR psycholog* OR mental health OR mental disorder* OR mental illness* OR addiction OR alcoholi* OR substance abuse* OR substance-related disorder*))
4	TITLE-ABS-KEY (((professional OR interprofessional OR continuing OR course* OR staff OR program* OR physician* OR nurs* OR simulation OR medical) AND (train* OR education* OR development)) OR (training AND (guide OR guides OR guideline* OR material*)) OR (curricul* OR instruction OR teach OR "continuing medical education" OR retrain* OR inservice OR "on the job training" OR "on-the-job training"))
5	#1 and #2 and #3 and #4

TABLE 3. Search Strategy for Web of Science. The following Indices were queried:

- Science Citation Index Expanded (SCI-EXPANDED) --1900-present
- Social Sciences Citation Index (SSCI) --1956-present
- Arts & Humanities Citation Index (A&HCI) --1975-present
- Conference Proceedings Citation Index- Science (CPCI-S) --1990-present
- Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1990-present
- Emerging Sources Citation Index (ESCI) --2015-present

#	Search term(s)
1	TS=((family or general or "primary care" or primary or "general practice" or "family practice" or "family health") NEAR/2 (service* or practice* or practitioner* or physician* or doctor* or nurs* or team or teams or health or "health care" or healthcare or clinic* or medicine))
2	TS=(psychiatr* or psycholog* or "mental health" or "mental disorder*" or "mental illness*" or addiction or alcoholi* or "substance abuse*" or "substance-related disorder*")
3	TOPIC: ((("patient care" or "patient-centered" or "patient-centred" or "patient centered" or "patient centred" or coordinated or clinical or critical or care or integrat$ or collaborat* or multidisciplinary or comprehensive or stepped or psychosomatic or shared or "behavioral health" or "behavioural health" or interprofessional) NEAR/4 (treat* or team* or care or path* or managed or management or mental-health or "mental health" or psychosomatic or "behavioural health" or "behavioral health" or healthcare or "health care" or "health-care")))
4	TOPIC: ((curricul* or instruction or teach or "continuing medical education" or retrain* or inservice))
5	TOPIC: (((professional or interprofessional or continuing or course* or staff or program* or physician* or nurs* or simulation or medical) NEAR/2 (train* or education* or development)))
6	TOPIC: (training NEAR/3 (guide or guides or guideline* or material*))
7	TOPIC: (("on the job training" or "on-the-job training"))
8	#7 OR #6 OR #5 OR #4
9	(#8 AND #3 AND #2 AND #1) AND LANGUAGE: (English)
10	(WC=(psychology* OR psychiatry OR primary health care OR emergency medicine)) OR (SU=(Life Sciences & Biomedicine OR Behavioral Sciences OR Critical Care Medicine OR Developmental Biology OR Emergency Medicine OR General & Internal Medicine OR Health Care Sciences & Services OR Social Work OR Integrative & Complementary Medicine OR Life Sciences Biomedicine Other Topics OR Neurosciences & Neurology OR Nursing OR Pharmacology & Pharmacy OR Psychiatry OR Research & Experimental Medicine OR Substance Abuse OR Psychology OR Social Work))
11	(WC=(Education & Educational Research or Education, Scientific Disciplines or Education, Special)) OR (SU=(Education & Educational Research))
12	#10 AND #9
13	#12 AND #11

BMJ Open

Scoping Review Protocol: Education Initiatives for Medical Psychiatry Collaborative Care

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-015886.R1
Article Type:	Protocol
Date Submitted by the Author:	07-Jun-2017
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Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Mental health, Addiction
Keywords:	collaborative care, PRIMARY CARE, MENTAL HEALTH, Integrated Care, MEDICAL EDUCATION & TRAINING, PSYCHIATRY

TITLE:

Scoping Review Protocol: Education Initiatives for Medical Psychiatry Collaborative Care

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ABSTRACT

Introduction:

The collaborative care model is an approach providing care to those with mental health and addictions disorders in the primary care setting. There is a robust evidence base demonstrating its clinical and cost effectiveness in comparison to usual care; however, the transitioning to this new paradigm of care has been difficult. While there are efforts to train and prepare healthcare professionals, not much is known about the current state of collaborative care training programs. The objective of this scoping review is to understand how widespread these collaborative education initiatives are, how they are implemented, and their impacts.

Methods and analysis:

The scoping review methodology uses the established review methodology by Arksey and O'Malley. The search strategy was developed by a medical librarian and will be applied eight different databases spanning multiple disciplines. A two-stage screening process consisting of a title and abstract scan and a full-text review will be used to determine the eligibility of articles. To be included, articles must report on an existing collaborative care education initiative for healthcare providers. All articles will be independently assessed for eligibility by pairs of reviewers and all eligible articles will be abstracted and charted in duplicate using a standardized form. The extracted data will undergo a 'narrative review' or a descriptive analysis of the contextual or process-oriented data and simple quantitative analysis using descriptive statistics.

Ethics and dissemination:

Research ethics approval is not required for this scoping review. The results of this scoping review will inform the development of a collaborative care training initiative emerging from the Medical Psychiatry Alliance, a four-institution philanthropic partnership in Ontario, Canada.

The results will also be presented at relevant national and international conferences and published in a peer-reviewed journal.

Keywords: Collaborative care; Primary care; Mental Health; Addictions; Psychiatry; Integrated care; Education; Training

Strengths and Limitations:

- Strengths of this study include: novelty, timeliness, and the importance of the topic to the delivery of mental health and addiction care; use of an established scoping review methodology; consultation with an experienced medical librarian in developing a multi-disciplinary search strategy; and a rigorous study selection and data extraction processes carried out in tandem with validation from content experts.
- A limitation of the review is the potential to miss relevant articles given that education is not always separated from the implementation of collaborative care; however, the reference lists of included articles, relevant literature reviews, and key reports will be hand-searched to identify articles missed by the search strategy. Another limitation of this review is that only materials written in English will be included and that programs from non-English speaking countries may not be represented. Lastly, studies will not be undergoing a formal quality assessment as this review aims to provide a snapshot of the landscape of collaborative care education initiatives by being inclusive of all types of information available.

BACKGROUND:

There is a growing disparity of unmet needs for mental health services[1,2] as the current supply of psychiatrists and current practice patterns create substantial barriers hindering access to psychiatric assessment and treatment[3–6]. In recent years, primary care has increasingly become the first contact point for those seeking mental health treatment[7,8]; however, individuals seeking care in these settings often receive sub-optimal care as providers are not properly equipped or trained to manage complex physical and mental health conditions[9]. The disconnect with mental health services contributes to the treatment gap, making it difficult for individuals to receive the proper care, especially for those with co-morbidity or multi-morbidity. This inattention may further exacerbate their condition or lead to premature death due to their physical health conditions[10–12]. Backed by a growing and robust evidence base, there is a case for integrating mental healthcare into the primary care setting through a collaborative care model. Several meta-analyses[13–17] have demonstrated that collaborative care models can be more effective in treating mental health disorders than usual care. The collaborative care model has also demonstrated its value by improving quality of life for co-morbid patients for no or modest additional cost[18].

Collaborative care is often used interchangeably with other terms (e.g., mental health integration, integrated care, integrated mental health) to describe a range of models of care that consist of healthcare professionals working in partnership in a primary care setting to deliver mental healthcare; however, the degree of integration of the two disciplines vary depending on model[19]. Recently, an American Psychiatric Association/American Psychosomatic Medicine (APA/APM) working group to provide clarity and a standardized evidence-based integrated care

model. Derived from the seminal research by Katon et al.[20] and Wagner's Chronic Care Model[21], the APA/APM Collaborative Care model[22] defines collaborative care as the provision of care that is: 1) team-driven, 2) population-focused, 3) measurement-guided, and 4) evidence-based. The collaborative care team extends beyond the "physician as treatment team" by including a multidisciplinary group of professionals (e.g., psychiatric nurse practitioner, social worker, licensed counsellor or therapist, psychologist, or psychiatrist, care managers, and office support staff) in providing and supporting care and implementing and revising the treatment plan. The new definition was developed to support informed decision-making by policy-makers, healthcare providers, service delivery organizations, the public, and to help standardize future training in this area.

Despite the increasing recognition and implementation of the collaborative care model, there remain difficulties in implementation as there is a lack of adequately prepared workforce [23]. The transition from a traditional care delivery model is a challenge as there are many new processes and systems-level differences between integrated behavioural health and traditional primary care settings that new team members must navigate [24,25]. Many programs have been developed and implemented to provide training to provide individuals with the necessary skills, knowledge, competencies, and attitudes to support the collaborative model of care [23–25]. A variety of training approaches have been implemented, including training by internal or external experts, onsite or offsite sessions, onboarding processes for new employees, training manuals, shadowing processes and peer mentoring[23,25]. However, there have been calls for increased pre-licensure training to take the burden off of such workplace training programs that can be expensive and resource-intensive[23]. Furthermore, a recent editorial[26] has identified the need

to move beyond competency-based training in integrated care and called for integration of theoretical frameworks, namely adaptive expertise, to better prepare future health care professionals for managing complexity within integrated care settings.

While there have been tremendous efforts in the development of the collaborative care model and the training supports, not much is known about the current scope of integrated care education, how it is delivered, to whom, in what contexts, the content of the training, and whether it is effective. There is a need to collect all the knowledge and experiences from existing training programs, to continually improve current process of these programs, and to support the development of new programs. The objective of this scoping review is to gain an understanding of the current landscape of integrated care education.

METHODS

This review is being conducted to inform the development of a collaborative care training initiative emerging from the Medical Psychiatry Alliance, a four-institution, Ministry of Health and Long-Term Care, and philanthropic partnership in Ontario, Canada. Various knowledge synthesis approaches were considered for this review; however, the scoping review methodology is most appropriate especially since the complex area of collaborative care education has not been reviewed comprehensively before [27,28]. To the authors' knowledge, there has been no prior attempt to establish a baseline of knowledge regarding collaborative care education initiatives. Given this knowledge gap and that literature may be diffuse due to the multidisciplinary nature of collaborative care, scoping reviews are ideal in taking stock of the volume and nature of the literature [28]. Utilizing this form of knowledge synthesis allows for

the broad exploration of collaborative care education to map key concepts, evidence types, and gaps in research in a defined field; furthermore, scoping review make use of a wide array of knowledge exhibited through empirical research and anecdotal accounts [29–31].

The methodology for this review draws upon Arksey and O'Malley's seminal framework [29] for scoping reviews as the foundation and more recent advancements to the methodology [30,32]. As recommended by Colquhoun et al.[33] , this protocol follows the relevant aspects of the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) guidelines[34] to ensure rigour in reporting the methodology in the interim while PRISMA guidelines are developed for scoping reviews[35] . Scoping reviews share a similar process as systematic reviews since they both are rigorous and transparent in identifying eligible literature but are divergent in purpose as scoping reviews aim to map the body of literature rather than sum up the best available research on a specific question [36]. Scoping reviews are often seen as a precursor to systematic reviews as it allows researchers to determine the value and probable scope of a full systematic review and meta-analysis [29,37,38].

Stage 1: identifying the research question

The objective of this review is to understand the current state of collaborative care education initiatives by identifying existing initiatives (e.g., training programs, interventions) reported in both academic and grey literature. By identifying the past and current education initiatives, this review seeks to establish a foundational understanding of how these programs were implemented and glean the critical success factors and recommendations of these experiences. To meet these objective, this review asks the following questions:

- What educational interventions exist within integrated collaborative care programs in hospital, community, and primary care settings?
- What aspects of collaborative care are taught in the educational interventions?
- How well do the interventions incorporate the core collaborative care principles as outlined in the APA/APM document?
- How were the interventions delivered?What were the critical success factors and lessons learned?

While the primary focus of this review is to take an inventory of existing programs and their processes, this review will also provide a narrative view on the extent to which these initiatives have been evaluated and provide a descriptive review of the effectiveness of current efforts in educating the health professions about collaborative care. The review will ask "What aspects of collaborative care programs have been evaluated" and "What were the outcomes of the evaluations (e.g., user perceptions, attitudinal changes, changes in knowledge and competency, behaviour change, organizational and clinical impact)?"

Stage 2: identifying relevant studies

The search strategy was iteratively developed by the research team in collaboration with an experienced medical librarian (SB) and implemented on July 2016 in eight electronic databases: Medline, Medline In-Process, PsycINFO, EMBASE, CINAHL, ERIC, Scopus, and ISI Web of Science. These databases were selected to capture a comprehensive sample of literature from health sciences, psychiatry, education, and other disciplines. The search query was first developed for Medline. Medline (Ovid) was selected as the first database to query because the

Ovid interface facilitates fine-tuning at a level that PubMed does not; moreover, an added advantage to using Medline is its use of the National Library of Medicine's controlled vocabulary, MeSH®, to index citations[39]. Any chance in missing articles from PubMed were reduced by searching Ovid Medline "In-Process & Other Non-Indexed Citation" database to capture the most recent literature possible. The Ovid interface is also a shared platform which allows for quicker translation and querying of other Ovid-based databases (Medline In-Process, PsycINFO, and EMBASE).

The search strategy consisted of subject headings, keywords and related terms for primary care, integrated care, education, and mental health services, personnel, and conditions. Depending on the database, some subject terms were "exploded" which allowed us to capture all relevant search topics under a given term (e.g., using "exp mental disorders/" in Medline will catch all possible mental health diagnoses and conditions). Terms and concepts were combined using Boolean logic and operators including adjacencies. The searches were limited to articles in English and published after 1995 – when the collaborative care model was first introduced [20,22]. The search terms were then translated for use in the other databases. Applying the same search string to ISI Web of Science (interdisciplinary) required some modifications and a different approach to reduce the noise in the results. Specifically, the research categories and subject area limiters were used to reduce the yield to a manageable volume while maintaining the specificity required for this review. The first 100 search results from each database were reviewed by the research team to ensure validity of the search strategy - see Additional File 1 for full strategy.

The results from the search were imported into Mendeley desktop reference manager where the citations were collated and de-duplicated. The research team was granted access to the citations and articles using the Mendeley web-based collaboration function. The citations were then copied and pasted into a spreadsheet for use in the subsequent eligibility screening and charting processes.

Stage 3: study selection

A two-stage screening process consisting of a title and abstract scan and a full-text review will be used to determine the eligibility of articles. Both stages will follow the same process, where every article will be independently reviewed in pairs and the results will be documented on the spreadsheet. At the end of each round, the ratings will be compared and resolved by the two reviewers or a third reviewer when consensus is not achieved. Any ambiguities regarding the eligibility of a citation (or article) will be flagged and discussed.

The citations will be assessed for relevance based on a title and abstract scan. To be relevant for full-text review, the title and abstract must: focus on providers from different specialities, disciplines, or sectors working together to offer complementary services or support in delivering care; be about delivering mental health and addictions care; and describe an existing education intervention. This review is inclusive of all types of papers, thus including empirical studies, case studies, and commentary articles; however, articles that were viewpoints on how education programs should be implemented outside of the context of an existing program were excluded.

The criteria will be piloted by the reviewers to refine and establish a common understanding of the inclusion criteria. After a training session, 20% of the Medline citations will be independently reviewed by four reviewers to establish inter-rater reliability (IRR). The results of the review will be compared and the interrater reliability will be calculated. The threshold for IRR is set at an average Cohen's K of 0.70 indicating substantial agreement[40]. The pilot will be run again if the threshold was not met. If met, the remaining articles will then be divided and assigned to two sets of pairs for independent review. These adjustments to the inclusion exclusion process are appropriate as they provide the team with opportunities to become familiar with the data and to reduce workload [30,32]. This protocol made an additional adjustment by adding the IRR to establish agreement between reviewers and provide more context to the study selection process. Regardless of the IRR outcome, a meeting about the process will be held to compare the results, resolve the disagreements, and troubleshoot the challenges that arose during the title-abstract review process.

Relevant articles identified in the title and abstract scan will undergo a full-text review to confirm the articles eligibility for the review. The full-text review follows the same process as the title and abstract scan. To be included, the article must be about a collaborative care education initiative for healthcare providers. The full-text review form asked reviewers to assess each article using the following questions:

1. Does the article describe/discuss the provision of care related to mental health in a primary care setting?
2. Does the article describe an education intervention/program?
3. Does the education intervention focus on delivering team-based care?

Step 4: charting the data

A standardized charting form will be developed by the research team to allow the investigators to categorize or 'chart' the data. The high-level domains for the charting form consist of article details, study details (if applicable), initiative details, and implementation factors. The specifics of each domain are outlined in Table 1. There will be a training session to trial the charting form and ensure there is a common understanding of the categories and how to use the form. The full-text reviewers will be asked if there are any additional variables emerging from the full-text review to consider for charting. The form will be piloted on five to ten articles by the team. This will consist of independent charting by the reviewers and validation by the senior investigators. A final round of feedback on the form will be solicited prior to the charting process. The charting will also consist of independent charting by the reviewers and validation by the senior investigators. The charters will be encouraged to provide constant feedback on emerging themes not captured in the charting form. The form will be revised as required.

Table 1. Data charting domains and elaboration of sub-domains.

Domain/ Sub-Domains	Description
Article details	
Article type	Is the article an empirical study, case study, or commentary?
Year	Article Year
Country	Which country is this article from?
Study details (if applicable)	
Study design	If it is an empirical article, what was the study design? Report as described by authors.
Participants	Who were the study participants?
Intervention	What was the intervention? Report as described by the author.
Comparator	What was the comparator (if applicable)?
Study outcomes	What did the authors identify as the study outcomes?
Outcomes	What were the main results of the study?
Initiative details	

Name	What is the name of the program (if applicable)?
Setting	Where does the education program take place? (e.g., community, hospital, university)
Participants	Who were the participants of the program?
Program delivery	How is the program delivered? (e.g., seminar, lecture, course, in-service training).
Instructors	Who are the facilitators/instructors?
Program length	How long was the program/intervention?
APA/APM Principles[22]	
1. Team Driven	Does the program teach a team-based approach of multi-professionals to provide and support care and monitor treatment plans?
2. Specific population	Does the program focus on the provision of care and health outcomes of a defined population of patients?
3. Measurement	Does the program focus on systematic, disease-specific, patient-reported outcome measures (e.g., symptom rating scales) to drive clinical decision-making?
4. Evidence based	Does the program focus on the application of proven treatments within an individual clinical context to achieve MBC outcomes?
Implementation factors	
Success	How did the authors define program success?
Enablers	What factors that contributed to the success of the program?
Barriers	What factors may have detracted from the success of the program?
Recommendations	What were the author's recommendations based on their experiences?

Stage 5: collating, summarizing, and reporting the results

The data will undergo a 'narrative review' or a descriptive analysis of the contextual or process-oriented data. The extracted data will also undergo simple quantitative analysis using descriptive statistics (e.g., frequencies, central tendency measures) to provide numerical summaries of the education initiatives and article or study characteristics[29]. The articles will not be assessed for quality as it is outside the scope of this review; however, details of the included articles will be reported in a summary table to provide context of the maturity of the evidence. Details of the education initiatives will also be summarized in a table. Learner and clinical outcomes reported in the studies will be classified based on the Kirkpatrick-Barr framework[41] for interprofessional learner outcomes. This framework was selected because of its focus on

interprofessional collaboration which can be applicable to the multi-disciplinary setting. The framework consists of the following outcome typology:

- Level 1: learners' reaction—participant views of the learning experience and satisfaction with the program;
- Level 2a: modification of attitudes/perceptions—changes in reciprocal attitudes or perceptions between participant groups, toward patients/clients and their condition, circumstances, care, and treatment;
- Level 2b: acquisition of knowledge/skills—changes in knowledge and skills;
- Level 3: change in behavior—changes in behavior transferred from the learning environment to the workplace;
- Level 4a: change in organizational practice—changes in the organization or delivery of care attributable to an education program;
- Level 4b: benefits to patients/clients—improvements in the health and well-being of patients/clients as a direct result of an education program.

Depending on the number of studies, a table summary of program evaluations will also be reported. Lastly, the data for implementation factors sub-domains will undergo a thematic analysis to be examined for similarities, patterns, differences, and outliers.

ETHICS/DISSEMINATION

This protocol reports a comprehensive, rigorous, and transparent methodology. This review contributes of the advancement of research on this subject and comment on the maturity of the body of literature by identifying gaps in knowledge and research. Through the publication of the

results and dissemination at relevant conferences, the results of this review could guide the direction of future research. The results from this review may inform the design of new initiatives and the policies which support them; moreover, future implementations can learn from the experience of others to avoid potential barriers and focus on enablers to increase the chances of success of their programs – existing or new.

Acknowledgements: The authors' work is supported in part by the Medical Psychiatry Alliance, a collaborative health partnership of the University of Toronto, the Centre for Addiction and Mental Health, the Hospital for Sick Children, Trillium Health Partners, the Ontario Ministry of Health and Long-Term Care, and an anonymous donor.

Authors' contributions: NS led the design and conceptualization of this work and drafted the protocol. AA, TB, AH, EH, BW were involved in the conceptualization of the review design, specifically in establishing the inclusion and exclusion criteria. EH and BW drafted the background section of the protocol and provided feedback on the methodology and the manuscript. SB developed the search strategy, conducted the search, provided feedback on the manuscript, and copy-edited the manuscript. AF, SS, and DW provided guidance to the conceptualization and design of the study, data analyses, and have revised all drafts of this manuscript for important intellectual content and clarity. All authors give approval to the publishing of this protocol manuscript.

Competing interests: The authors declare that they have no competing interests.

Funding: Not applicable

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Appendix A – Scoping Review Search Strategy

Table 1. Search strategy for MEDLINE, MEDLINE In-Progress, PsycINFO, EMBASE, and CINAHL.
NB: Only MEDLINE search strategy included. The search strategies for the other databases were similar in structure with similar search terms and synonyms. Contact the corresponding author for the full search strategy for each database.

#	Search Term(s)
1	Family Practice/ or General Practice/ or Physicians, Family/ or Physicians, Primary Care/ or General Practitioners/ or Primary Health Care/
2	(((primary or "primary care" or family or general) adj2 (doctor* or physician* or practice* or practitioner* or medicine)) or "family health team*").mp.
3	((primary care or family practice or family health or family or general practice) adj2 nurs*).mp.
4	("general practice clinic*" or "family practice clinic*" or "primary care clinic*" or "family clinic*" or "medical home").mp.
5	Family Nurse Practitioners/ or "family nurse practitioner*".mp.
6	exp psychiatry/ or psychology/
7	medical psychiatry.mp.
8	mental health services/
9	exp mental disorders/ or exp substance-related disorders/
10	child guidance/
11	psychiatric nursing/
12	community mental health services/
13	social work, psychiatric/
14	emergency services, psychiatric/
15	"Delivery of Health Care, Integrated"/ or Comprehensive Health Care/ or "Continuity of Patient Care"/ or Interprofessional Relations/ or Interdisciplinary Communication/ or exp Patient Care Planning/ or exp Patient Care Team/ or Cooperative Behavior/ or Case Management/ or Patient-centered Care/ or Patient Navigation/
16	(co-located or patient-centered or patient centred or patient centered).mp.
17	((clinical or critical or care or integrat$ or collaborat* or comprehensive or stepped or psychosomatic or shared or "behavioral health" or interprofessional) adj4 (treat$ or team* or care* or path*)).mp.
18	((coordinated or clinical or critical or care or integrat$ or collaborat* or comprehensive or stepped or psychosomatic or shared or interprofessional) adj4 (treat* or team* or care or path* or managed or management or mental-health or mental health or psychosomatic or behavioural health or behavioral health or healthcare or health care)).mp.

#	Search Term(s)
19	education/ or curriculum/ or competency-based education/ or interdisciplinary studies/ or "mainstreaming (education)"/ or problem-based learning/ or education, distance/ or education, premedical/ or education, professional/ or education, continuing/ or education, medical, continuing/ or education, nursing, continuing/ or education, pharmacy, continuing/ or education, professional, retraining/ or education, graduate/ or education, medical, graduate/ or education, nursing, graduate/ or education, pharmacy, graduate/ or education, medical/ or education, medical, undergraduate/ or "internship and residency"/ or teaching rounds/ or education, nursing/ or education, nursing, associate/ or education, nursing, baccalaureate/ or education, nursing, diploma programs/ or nursing education research/ or inservice training/ or staff development/ or schools, health occupations/ or schools, medical/ or schools, nursing/ or schools, pharmacy/ or teaching/ or computer user training/ or models, educational/ or programmed instruction as topic/ or computer-assisted instruction/ or remedial teaching/ or simulation training/ or patient simulation/ or training support/ or academic medical centers/ or hospitals, teaching/ or hospitals, university/ or education department, hospital/
20	(curricul* or instruction or teach or "interprofessional education" or "continuing medical education" or "professional development").mp.
21	((course* or staff or program*) adj2 train*).mp.
22	(training adj3 (guide or guides or guideline* or material*)).mp.
23	("on the job training" or "on-the-job training").mp.
24	or/1-5
25	or/6-14
26	or/15-18
27	or/19-23
28	and/24-27
29	limit 28 to english language

TABLE 2. Search Strategy for ERIC

#	Search term(s)
1	primary health care/ or "family practice (medicine)"/
2	((primary or "primary care" or family or general) adj (doctor* or physician* or practice* or practitioner* or medicine or "family health team*")).mp.
3	((primary care or family practice or family health or family or general practice) adj nurs*).mp.
4	("general practice clinic*" or "family practice clinic*" or "primary care clinic*" or "family clinic*" or "medical home").mp.
5	"family nurse practitioner*".mp.
6	mental disorders/ or exp anxiety disorders/ or exp dementia/ or exp emotional disturbances/ or exp neurosis/ or exp pervasive developmental disorders/ or exp psychosis/
7	behavior disorders/
8	alcoholism/
9	substance abuse/ or exp alcohol abuse/ or exp drug abuse/
10	psychiatric services/
11	psychological services/
12	mental health programs/
13	psychiatry/
14	psychologists/
15	medical psychiatry.mp.
16	interdisciplinary approach/ or interprofessional relationship/ or interpersonal relationship/ or teamwork/ or institutional cooperation/ or cooperation/
17	(co-located or patient-centered patient-centred or patient centred or patient centered).mp.
18	((coordinated or clinical or critical or care or integrat* or collaborat* or comprehensive or stepped or psychosomatic or shared or interprofessional or behavioural health or behavioral health) adj (treat* or team* or care or path* or managed or management or mental-health or mental health or psychosomatic or behavioural health or behavioral health or healthcare or health care)).mp.
19	curriculum/
20	curriculum development/
21	"clinical teaching (health professions)"/
22	professional development/
23	staff development/
24	capacity building/
25	continuing education/ or professional continuing education/
26	simulation/ or computer simulation/ or role playing/
27	professional education/
28	medical education/ or graduate medical education/ or nursing education/ or pharmaceutical education/ or allied health occupations education/
29	educational strategies/
30	experiential learning/ or field experience programs/ or internship programs/
31	training methods/

#	Search term(s)
32	on the job training/
33	instructional materials/ or textbooks/ or workbooks/
34	graduate medical education/
35	medical schools/
36	(curricul* or instruction or teach or "interprofessional education" or "continuing medical education" or "professional development").mp.
37	((course* or staff or program*) adj train*).mp.
38	(training adj (guide or guides or guideline* or material*)).mp.
39	("on the job training" or "on-the-job training").mp.
40	or/1-5
41	or/6-15
42	or/16-18
43	or/19-39
44	and/40-43
45	limit to english language

TABLE 3. Search Strategy for Scopus

#	Search term(s)
1	TITLE-ABS-KEY ((("family service*" OR "family practice*" OR "family practitioner*" OR "family physician*" OR "family doctor*" OR "family nurse*" OR "family team" OR "family teams" OR "family health" OR "family health care" OR "family healthcare" OR "family clinic*" OR "family medicine")) OR (("general service*" OR "general practice*" OR "general practitioner*" OR "general physician*" OR "general doctor*" OR "general nurse*" OR "general team" OR "general teams" OR "general health" OR "general health care" OR "general healthcare" OR "general clinic*" OR "general medicine")) OR (("primary care service*" OR "primary care practice*" OR "primary care practitioner*" OR "primary care physician*" OR "primary care doctor*" OR "primary care nurse*" OR "primary care team" OR "primary care teams" OR "primary care health" OR "primary care clinic*" OR "primary care medicine")) OR (("primary service*" OR "primary practice*" OR "primary practitioner*" OR "primary physician*" OR "primary doctor*" OR "primary nurse*" OR "primary team" OR "primary teams" OR "primary health" OR "primary health care" OR "primary healthcare" OR "primary clinic*" OR "primary medicine")) OR (("general practice service*" OR " general practice physician*" OR " general practice doctor*" OR " general practice nurse*" OR " general practice team" OR " general practice teams" OR " general practice health" OR "general practice health care" OR "general practice healthcare" OR " general practice clinic*" OR " general practice medicine")) OR (("family practice service*" OR " family practice physician*" OR " family practice doctor*" OR " family practice nurse*" OR " family practice team" OR " family practice teams" OR " family practice health" OR "family practice health care" OR "family practice healthcare" OR " family practice clinic*" OR " family practice medicine")) OR (("family health service*" OR "family health physician*" OR " family health doctor*" OR " family health nurse*" OR " family health team" OR " family health teams" OR " family health clinic*" OR " family health medicine"))))
2	TITLE-ABS-KEY (((patient care OR patient-centered OR patient-centred OR patient centered OR patient centred OR coordinated OR clinical OR critical OR care OR integrat* OR collaborat* OR multidisciplinary OR comprehensive OR stepped OR psychosomatic OR shared OR behavioral health OR behavioural health OR interprofessional) AND (treat* OR team* OR care OR path* OR managed OR management OR mental-health OR mental health OR psychosomatic OR behavioural health OR behavioral health OR healthcare OR health care OR health-care)))
3	TITLE-ABS-KEY ((psychiatr* OR psycholog* OR mental health OR mental disorder* OR mental illness* OR addiction OR alcoholi* OR substance abuse* OR substance-related disorder*))
4	TITLE-ABS-KEY (((professional OR interprofessional OR continuing OR course* OR staff OR program* OR physician* OR nurs* OR simulation OR medical) AND (train* OR education* OR development)) OR (training AND (guide OR guides OR guideline* OR material*)) OR (curricul* OR instruction OR teach OR "continuing medical education" OR retrain* OR inservice OR "on the job training" OR "on-the-job training"))
5	#1 and #2 and #3 and #4

TABLE 3. Search Strategy for Web of Science. The following Indices were queried:

- Science Citation Index Expanded (SCI-EXPANDED) --1900-present
- Social Sciences Citation Index (SSCI) --1956-present
- Arts & Humanities Citation Index (A&HCI) --1975-present
- Conference Proceedings Citation Index- Science (CPCI-S) --1990-present
- Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1990-present
- Emerging Sources Citation Index (ESCI) --2015-present

#	Search term(s)
1	TS=((family or general or "primary care" or primary or "general practice" or "family practice" or "family health") NEAR/2 (service* or practice* or practitioner* or physician* or doctor* or nurs* or team or teams or health or "health care" or healthcare or clinic* or medicine))
2	TS=(psychiatr* or psycholog* or "mental health" or "mental disorder*" or "mental illness*" or addiction or alcoholi* or "substance abuse*" or "substance-related disorder*")
3	TOPIC: ((("patient care" or "patient-centered" or "patient-centred" or "patient centered" or "patient centred" or coordinated or clinical or critical or care or integrat$ or collaborat* or multidisciplinary or comprehensive or stepped or psychosomatic or shared or "behavioral health" or "behavioural health" or interprofessional) NEAR/4 (treat* or team* or care or path* or managed or management or mental-health or "mental health" or psychosomatic or "behavioural health" or "behavioral health" or healthcare or "health care" or "health-care")))
4	TOPIC: ((curricul* or instruction or teach or "continuing medical education" or retrain* or inservice))
5	TOPIC: (((professional or interprofessional or continuing or course* or staff or program* or physician* or nurs* or simulation or medical) NEAR/2 (train* or education* or development)))
6	TOPIC: (training NEAR/3 (guide or guides or guideline* or material*))
7	TOPIC: (("on the job training" or "on-the-job training"))
8	#7 OR #6 OR #5 OR #4
9	(#8 AND #3 AND #2 AND #1) AND LANGUAGE: (English)
10	(WC=(psychology* OR psychiatry OR primary health care OR emergency medicine)) OR (SU=(Life Sciences & Biomedicine OR Behavioral Sciences OR Critical Care Medicine OR Developmental Biology OR Emergency Medicine OR General & Internal Medicine OR Health Care Sciences & Services OR Social Work OR Integrative & Complementary Medicine OR Life Sciences Biomedicine Other Topics OR Neurosciences & Neurology OR Nursing OR Pharmacology & Pharmacy OR Psychiatry OR Research & Experimental Medicine OR Substance Abuse OR Psychology OR Social Work))
11	(WC=(Education & Educational Research or Education, Scientific Disciplines or Education, Special)) OR (SU=(Education & Educational Research))
12	#10 AND #9
13	#12 AND #11

BMJ Open

Scoping Review Protocol: Education Initiatives for Medical Psychiatry Collaborative Care

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-015886.R2
Article Type:	Protocol
Date Submitted by the Author:	20-Jul-2017
Complete List of Authors:	Shen, Nelson; University of Toronto, Institute of Health Policy, Management and Evaluation; University Health Network Sockalingam, Sanjeev; University of Toronto, Department of Psychiatry; University Health Network Abi Jaoude, Alexxa; Centre for Addiction and Mental Health, Education Bailey, Sharon; Centre for Addiction and Mental Health Bernier, Thérèse; University of Toronto, Institute of Health Policy, Management and Evaluation Freeland, Alison; Trillium Health Partners; University of Toronto, Department of Psychiatry Hawa, Aceel; Centre for Addiction and Mental Health, Education Hollenberg, Elisa; Centre for Addiction and Mental Health, Education Woldemichael, Bethel; Centre for Addiction and Mental Health, Education Wiljer, David; University Health Network; University of Toronto, Department of Psychiatry
Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Mental health, Addiction, Medical education and training
Keywords:	collaborative care, PRIMARY CARE, MENTAL HEALTH, Integrated Care, MEDICAL EDUCATION & TRAINING, PSYCHIATRY

TITLE:

Scoping Review Protocol: Education Initiatives for Medical Psychiatry Collaborative Care

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ABSTRACT

Introduction:

The collaborative care model is an approach providing care to those with mental health and addictions disorders in the primary care setting. There is a robust evidence base demonstrating its clinical and cost effectiveness in comparison to usual care; however, the transitioning to this new paradigm of care has been difficult. While there are efforts to train and prepare healthcare professionals, not much is known about the current state of collaborative care training programs. The objective of this scoping review is to understand how widespread these collaborative education initiatives are, how they are implemented, and their impacts.

Methods and analysis:

The scoping review methodology uses the established review methodology by Arksey and O'Malley. The search strategy was developed by a medical librarian and will be applied eight different databases spanning multiple disciplines. A two-stage screening process consisting of a title and abstract scan and a full-text review will be used to determine the eligibility of articles. To be included, articles must report on an existing collaborative care education initiative for healthcare providers. All articles will be independently assessed for eligibility by pairs of reviewers and all eligible articles will be abstracted and charted in duplicate using a standardized form. The extracted data will undergo a 'narrative review' or a descriptive analysis of the contextual or process-oriented data and simple quantitative analysis using descriptive statistics.

Ethics and dissemination:

Research ethics approval is not required for this scoping review. The results of this scoping review will inform the development of a collaborative care training initiative emerging from the Medical Psychiatry Alliance, a four-institution philanthropic partnership in Ontario, Canada.

The results will also be presented at relevant national and international conferences and published in a peer-reviewed journal.

Keywords: Collaborative care; Primary care; Mental Health; Addictions; Psychiatry; Integrated care; Education; Training

Strengths and Limitations:

- The results of this review will establish a baseline understanding of the delivery of education initiatives for collaborative care – a timely and important topic required to support the transition to a more integrated delivery of mental health and addiction care.
- This protocol outlines a rigorous study design which includes the use of an established scoping review methodology, a multi-disciplinary search strategy developed iteratively in consultation with an experienced medical librarian, and a study selection and data extraction process that is carried out in tandem with validation from content experts.
- A limitation of the review is the potential to miss relevant articles given that education is not always separated from the implementation of collaborative care; however, the reference lists of included articles, relevant literature reviews, and key reports will be hand-searched to identify articles missed by the search strategy.
- No formal quality assessment will be conducted as this review aims to provide a snapshot of the landscape of collaborative care education initiatives by being inclusive of all types of information available.
- While the review will be non-discriminant towards article types and methodologies, the findings will be limited to articles written in English.

BACKGROUND:

There is a growing disparity of unmet needs for mental health services[1,2] as the current supply of psychiatrists and current practice patterns create substantial barriers hindering access to psychiatric assessment and treatment[3–6]. In recent years, primary care has increasingly become the first contact point for those seeking mental health treatment[7,8]; however, individuals seeking care in these settings often receive sub-optimal care as providers are not properly equipped or trained to manage complex physical and mental health conditions[9]. The disconnect with mental health services contributes to the treatment gap, making it difficult for individuals to receive the proper care, especially for those with co-morbidity or multi-morbidity. This inattention may further exacerbate their condition or lead to premature death due to their physical health conditions[10–12]. Backed by a growing and robust evidence base, there is a case for integrating mental healthcare into the primary care setting through a collaborative care model. Several meta-analyses[13–17] have demonstrated that collaborative care models can be more effective in treating mental health disorders than usual care. The collaborative care model has also demonstrated its value by improving quality of life for co-morbid patients for no or modest additional cost[18].

Collaborative care is often used interchangeably with other terms (e.g., mental health integration, integrated care, integrated mental health) to describe a range of models of care that consist of healthcare professionals working in partnership in a primary care setting to deliver mental healthcare; however, the degree of integration of the two disciplines vary depending on model[19]. Recently, an American Psychiatric Association/American Psychosomatic Medicine (APA/APM) working group to provide clarity and a standardized evidence-based integrated care

model. Derived from the seminal research by Katon et al.[20] and Wagner's Chronic Care Model[21], the APA/APM Collaborative Care model[22] defines collaborative care as the provision of care that is: 1) team-driven, 2) population-focused, 3) measurement-guided, and 4) evidence-based. The focal point is the collaborative care team who consist of a multidisciplinary group of professionals (e.g., psychiatric nurse practitioner, social worker, licensed counsellor or therapist, psychologist, or psychiatrist, care managers, and office support staff) thereby extending beyond the "physician as treatment team" in providing and supporting care and implementing and revising the treatment plan. The new definition was developed to support informed decision-making by policy-makers, healthcare providers, service delivery organizations, the public, and to help standardize future training in this area.

Despite the increasing recognition and implementation of the collaborative care model, there remain difficulties in implementation as there is a lack of adequately prepared workforce [23]. The transition from a traditional care delivery model is a challenge as there are many new processes and systems-level differences between integrated behavioural health and traditional primary care settings that new team members must navigate [24,25]. Many programs have been developed and implemented to provide training to provide individuals with the necessary skills, knowledge, competencies, and attitudes to support the collaborative model of care [23–25]. A variety of training approaches have been implemented, including training by internal or external experts, onsite or offsite sessions, onboarding processes for new employees, training manuals, shadowing processes and peer mentoring[23,25]. However, there have been calls for increased pre-licensure training to take the burden off of such workplace training programs that can be expensive and resource-intensive[23]. Furthermore, a recent editorial[26] has identified the need

to move beyond competency-based training in integrated care and called for integration of theoretical frameworks, namely adaptive expertise, to better prepare future health care professionals for managing complexity within integrated care settings.

While there have been tremendous efforts in the development of the collaborative care model and the training supports, not much is known about the current scope of integrated care education, how it is delivered, to whom, in what contexts, the content of the training, and whether it is effective. There is a need to collect all the knowledge and experiences from existing training programs, to continually improve current process of these programs, and to support the development of new programs. The objective of this scoping review is to gain an understanding of the current landscape of integrated care education.

METHODS

This review is being conducted to inform the development of a collaborative care training initiative emerging from the Medical Psychiatry Alliance, a four-institution, Ministry of Health and Long-Term Care, and philanthropic partnership in Ontario, Canada. Various knowledge synthesis approaches were considered for this review; however, the scoping review methodology is most appropriate especially since the complex area of collaborative care education has not been reviewed comprehensively before [27,28]. To the authors' knowledge, there has been no prior attempt to establish a baseline of knowledge regarding collaborative care education initiatives. Given this knowledge gap and that literature may be diffuse due to the multidisciplinary nature of collaborative care, scoping reviews are ideal in taking stock of the volume and nature of the literature [28]. Utilizing this form of knowledge synthesis allows for

the broad exploration of collaborative care education to map key concepts, evidence types, and gaps in research in a defined field; furthermore, scoping review make use of a wide array of knowledge exhibited through empirical research and anecdotal accounts [29–31].

The methodology for this review draws upon Arksey and O'Malley's seminal framework [29] for scoping reviews as the foundation and more recent advancements to the methodology [30,32]. As recommended by Colquhoun et al.[33] , this protocol follows the relevant aspects of the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) guidelines[34] to ensure rigour in reporting the methodology in the interim while PRISMA guidelines are developed for scoping reviews[35] . Scoping reviews share a similar process as systematic reviews since they both are rigorous and transparent in identifying eligible literature but are divergent in purpose as scoping reviews aim to map the body of literature rather than sum up the best available research on a specific question [36]. Scoping reviews are often seen as a precursor to systematic reviews as it allows researchers to determine the value and probable scope of a full systematic review and meta-analysis [29,37,38].

Stage 1: identifying the research question

The objective of this review is to understand the current state of collaborative care education initiatives by identifying existing initiatives (e.g., training programs, interventions) reported in both academic and grey literature. By identifying the past and current education initiatives, this review seeks to establish a foundational understanding of how these programs were implemented and glean the critical success factors and recommendations of these experiences. To meet these objective, this review asks the following questions:

- What educational interventions exist within integrated collaborative care programs in hospital, community, and primary care settings?
- What aspects of collaborative care are taught in the educational interventions?
- How well do the interventions incorporate the core collaborative care principles as outlined in the APA/APM document?
- How were the interventions delivered?What were the critical success factors and lessons learned?

While the primary focus of this review is to take an inventory of existing programs and their processes, this review will also provide a narrative view on the extent to which these initiatives have been evaluated and provide a descriptive review of the effectiveness of current efforts in educating the health professions about collaborative care. The review will ask "What aspects of collaborative care programs have been evaluated" and "What were the outcomes of the evaluations (e.g., user perceptions, attitudinal changes, changes in knowledge and competency, behaviour change, organizational and clinical impact)?"

Stage 2: identifying relevant studies

The search strategy was iteratively developed by the research team in collaboration with an experienced medical librarian (SB) and implemented on July 2016 in eight electronic databases: Medline, Medline In-Process, PsycINFO, EMBASE, CINAHL, ERIC, Scopus, and ISI Web of Science. These databases were selected to capture a comprehensive sample of literature from health sciences, psychiatry, education, and other disciplines. The search query was first developed for Medline. Medline (Ovid) was selected as the first database to query because the

Ovid interface facilitates fine-tuning at a level that PubMed does not; moreover, an added advantage to using Medline is its use of the National Library of Medicine's controlled vocabulary, MeSH®, to index citations[39]. Any chance in missing articles from PubMed were reduced by searching Ovid Medline "In-Process & Other Non-Indexed Citation" database to capture the most recent literature possible. The Ovid interface is also a shared platform which allows for quicker translation and querying of other Ovid-based databases (Medline In-Process, PsycINFO, and EMBASE).

The search strategy consisted of subject headings, keywords and related terms for primary care, integrated care, education, and mental health services, personnel, and conditions. Depending on the database, some subject terms were "exploded" which allowed us to capture all relevant search topics under a given term (e.g., using "exp mental disorders/" in Medline will catch all possible mental health diagnoses and conditions). Terms and concepts were combined using Boolean logic and operators including adjacencies. The searches were limited to articles in English and published after 1995 – when the collaborative care model was first introduced [20,22]. The search terms were then translated for use in the other databases. Applying the same search string to ISI Web of Science (interdisciplinary) required some modifications and a different approach to reduce the noise in the results. Specifically, the research categories and subject area limiters were used to reduce the yield to a manageable volume while maintaining the specificity required for this review. The first 100 search results from each database were reviewed by the research team to ensure validity of the search strategy - see Additional File 1 for full strategy.

The results from the search were imported into Mendeley desktop reference manager where the citations were collated and de-duplicated. The research team was granted access to the citations and articles using the Mendeley web-based collaboration function. The citations were then copied and pasted into a spreadsheet for use in the subsequent eligibility screening and charting processes.

Stage 3: study selection

A two-stage screening process consisting of a title and abstract scan and a full-text review will be used to determine the eligibility of articles. Both stages will follow the same process, where every article will be independently reviewed in pairs and the results will be documented on the spreadsheet. At the end of each round, the ratings will be compared and resolved by the two reviewers or a third reviewer when consensus is not achieved. Any ambiguities regarding the eligibility of a citation (or article) will be flagged and discussed.

The citations will be assessed for relevance based on a title and abstract scan. To be relevant for full-text review, the title and abstract must: focus on providers from different specialities, disciplines, or sectors working together to offer complementary services or support in delivering care; be about delivering mental health and addictions care; and describe an existing education intervention. This review is inclusive of all types of literature, thus including commentary articles, case studies, and empirical studies employing all types of methodologies (i.e., qualitative, quantitative, and mixed methods) and study designs. Viewpoint articles on how

education programs should be implemented outside of the context of an existing program are excluded.

The criteria will be piloted by the reviewers to refine and establish a common understanding of the inclusion criteria. After a training session, 20% of the Medline citations will be independently reviewed by four reviewers to establish inter-rater reliability (IRR). The results of the review will be compared and the interrater reliability will be calculated. The threshold for IRR is set at an average Cohen's K of 0.70 indicating substantial agreement[40]. The pilot will be run again if the threshold was not met. If met, the remaining articles will then be divided and assigned to two sets of pairs for independent review. These adjustments to the inclusion exclusion process are appropriate as they provide the team with opportunities to become familiar with the data and to reduce workload [30,32]. This protocol made an additional adjustment by adding the IRR to establish agreement between reviewers and provide more context to the study selection process. Regardless of the IRR outcome, a meeting about the process will be held to compare the results, resolve the disagreements, and troubleshoot the challenges that arose during the title-abstract review process.

Relevant articles identified in the title and abstract scan will undergo a full-text review to confirm the articles eligibility for the review. The full-text review follows the same process as the title and abstract scan. To be included, the article must be about a collaborative care education initiative for healthcare providers. The full-text review form asked reviewers to assess each article using the following questions:

1. Does the article describe/discuss the provision of care related to mental health in a primary care setting?
2. Does the article describe an education intervention/program?
3. Does the education intervention focus on delivering team-based care?

Step 4: charting the data

A standardized charting form will be developed by the research team to allow the investigators to categorize or 'chart' the data. The high-level domains for the charting form consist of article details, study details (if applicable), initiative details, and implementation factors. The specifics of each domain are outlined in Table 1. There will be a training session to trial the charting form and ensure there is a common understanding of the categories and how to use the form. The full-text reviewers will be asked if there are any additional variables emerging from the full-text review to consider for charting. The form will be piloted on five to ten articles by the team. This will consist of independent charting by the reviewers and validation by the senior investigators. A final round of feedback on the form will be solicited prior to the charting process. The charting will also consist of independent charting by the reviewers and validation by the senior investigators. The charters will be encouraged to provide constant feedback on emerging themes not captured in the charting form. The form will be revised as required.

Table 1. Data charting domains and elaboration of sub-domains.

Domain/ Sub-Domains	Description
Article details	
Article type	Is the article an empirical study, case study, or commentary?
Year	Article Year
Country	Which country is this article from?
Study details (if applicable)	
Study design	If it is an empirical article, what was the study design? Report as

	described by authors.
Participants	Who were the study participants?
Intervention	What was the intervention? Report as described by the author.
Comparator	What was the comparator (if applicable)?
Study outcomes	What did the authors identify as the study outcomes?
Outcomes	What were the main results of the study?
Initiative details	
Name	What is the name of the program (if applicable)?
Setting	Where does the education program take place? (e.g., community, hospital, university)
Participants	Who were the participants of the program?
Program delivery	How is the program delivered? (e.g., seminar, lecture, course, in-service training).
Instructors	Who are the facilitators/instructors?
Program length	How long was the program/intervention?
APA/APM Principles[22]	
1. Team Driven	Does the program teach a team-based approach of multi-professionals to provide and support care and monitor treatment plans?
2. Specific population	Does the program focus on the provision of care and health outcomes of a defined population of patients?
3. Measurement	Does the program focus on systematic, disease-specific, patient-reported outcome measures (e.g., symptom rating scales) to drive clinical decision-making?
4. Evidence based	Does the program focus on the application of proven treatments within an individual clinical context to achieve MBC outcomes?
Implementation factors	
Success	How did the authors define program success?
Enablers	What factors that contributed to the success of the program?
Barriers	What factors may have detracted from the success of the program?
Recommendations	What were the author's recommendations based on their experiences?

Stage 5: collating, summarizing, and reporting the results

The extracted data will first undergo a simple quantitative analysis using descriptive statistics (e.g., frequencies, central tendency measures) to provide numerical summaries of the education initiatives and article or study characteristics[29]. Multiple articles stemming from a single initiative will be grouped and treated as a unit of analysis. The data will also undergo a 'narrative review' or a descriptive analysis of the contextual or process-oriented data, where all

data will be thematically analysed independently by two reviewers to identify emerging themes found within each of the sub-domains outlined in Table 1. The results will be compared and consolidated by consensus between the two reviewers. The resulting themes will be reviewed by content experts to ensure validity and credibility. The themes will be reported to highlight the similarities, patterns, differences, and outliers found in the literature.

The results from empirical studies (i.e., qualitative, quantitative, and mixed methods) will be classified into learner and clinical outcomes based on the Kirkpatrick-Barr framework[41] for interprofessional learner outcomes. This framework was selected because of its focus on interprofessional collaboration which can be applicable to the multi-disciplinary setting. Thematic analysis will also be used to identify commonalities within each of the levels of the following outcome typology:

- Level 1: learners' reaction—participant views of the learning experience and satisfaction with the program;
- Level 2a: modification of attitudes/perceptions—changes in reciprocal attitudes or perceptions between participant groups, toward patients/clients and their condition, circumstances, care, and treatment;
- Level 2b: acquisition of knowledge/skills—changes in knowledge and skills;
- Level 3: change in behavior—changes in behavior transferred from the learning environment to the workplace;
- Level 4a: change in organizational practice—changes in the organization or delivery of care attributable to an education program;

- Level 4b: benefits to patients/clients—improvements in the health and well-being of patients/clients as a direct result of an education program.

Details of the education initiatives and study outcomes will be summarized in a table. The articles will not be assessed for quality as it is outside the scope of this review; however, details of the included articles (i.e., article type and methodology) will be reported in a summary table to provide context of the maturity of the evidence.

ETHICS/DISSEMINATION

This protocol reports a comprehensive, rigorous, and transparent methodology. This review contributes of the advancement of research on this subject and comment on the maturity of the body of literature by identifying gaps in knowledge and research. Through the publication of the results and dissemination at relevant conferences, the results of this review could guide the direction of future research. The results from this review may inform the design of new initiatives and the policies which support them; moreover, future implementations can learn from the experience of others to avoid potential barriers and focus on enablers to increase the chances of success of their programs – existing or new.

Acknowledgements: The authors' work is supported in part by the Medical Psychiatry Alliance, a collaborative health partnership of the University of Toronto, the Centre for Addiction and Mental Health, the Hospital for Sick Children, Trillium Health Partners, the Ontario Ministry of Health and Long-Term Care, and an anonymous donor. The authors would also like to thank Rebecca Charow for her fresh eyes in proofreading and editing the manuscript.

Authors' contributions: NS led the design and conceptualization of this work and drafted the protocol. AA, TB, AH, EH, BW were involved in the conceptualization of the review design, specifically in establishing the inclusion and exclusion criteria. EH and BW drafted the background section of the protocol and provided feedback on the methodology and the manuscript. SB developed the search strategy, conducted the search, provided feedback on the manuscript, and copy-edited the manuscript. AF, SS, and DW provided guidance to the conceptualization and design of the study, data analyses, and have revised all drafts of this manuscript for important intellectual content and clarity. All authors give approval to the publishing of this protocol manuscript.

Competing interests: The authors declare that they have no competing interests.

Funding: Not applicable

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Appendix A – Scoping Review Search Strategy

Table 1. Search strategy for MEDLINE, MEDLINE In-Progress, PsycINFO, EMBASE, and CINAHL.
NB: Only MEDLINE search strategy included. The search strategies for the other databases were similar in structure with similar search terms and synonyms. Contact the corresponding author for the full search strategy for each database.

#	Search Term(s)
1	Family Practice/ or General Practice/ or Physicians, Family/ or Physicians, Primary Care/ or General Practitioners/ or Primary Health Care/
2	(((primary or "primary care" or family or general) adj2 (doctor* or physician* or practice* or practitioner* or medicine)) or "family health team*").mp.
3	((primary care or family practice or family health or family or general practice) adj2 nurs*).mp.
4	("general practice clinic*" or "family practice clinic*" or "primary care clinic*" or "family clinic*" or "medical home").mp.
5	Family Nurse Practitioners/ or "family nurse practitioner*".mp.
6	exp psychiatry/ or psychology/
7	medical psychiatry.mp.
8	mental health services/
9	exp mental disorders/ or exp substance-related disorders/
10	child guidance/
11	psychiatric nursing/
12	community mental health services/
13	social work, psychiatric/
14	emergency services, psychiatric/
15	"Delivery of Health Care, Integrated"/ or Comprehensive Health Care/ or "Continuity of Patient Care"/ or Interprofessional Relations/ or Interdisciplinary Communication/ or exp Patient Care Planning/ or exp Patient Care Team/ or Cooperative Behavior/ or Case Management/ or Patient-centered Care/ or Patient Navigation/
16	(co-located or patient-centered or patient centred or patient centered).mp.
17	((clinical or critical or care or integrat$ or collaborat* or comprehensive or stepped or psychosomatic or shared or "behavioral health" or interprofessional) adj4 (treat$ or team* or care* or path*)).mp.
18	((coordinated or clinical or critical or care or integrat$ or collaborat* or comprehensive or stepped or psychosomatic or shared or interprofessional) adj4 (treat* or team* or care or path* or managed or management or mental-health or mental health or psychosomatic or behavioural health or behavioral health or healthcare or health care)).mp.

#	Search Term(s)
19	education/ or curriculum/ or competency-based education/ or interdisciplinary studies/ or "mainstreaming (education)"/ or problem-based learning/ or education, distance/ or education, premedical/ or education, professional/ or education, continuing/ or education, medical, continuing/ or education, nursing, continuing/ or education, pharmacy, continuing/ or education, professional, retraining/ or education, graduate/ or education, medical, graduate/ or education, nursing, graduate/ or education, pharmacy, graduate/ or education, medical/ or education, medical, undergraduate/ or "internship and residency"/ or teaching rounds/ or education, nursing/ or education, nursing, associate/ or education, nursing, baccalaureate/ or education, nursing, diploma programs/ or nursing education research/ or inservice training/ or staff development/ or schools, health occupations/ or schools, medical/ or schools, nursing/ or schools, pharmacy/ or teaching/ or computer user training/ or models, educational/ or programmed instruction as topic/ or computer-assisted instruction/ or remedial teaching/ or simulation training/ or patient simulation/ or training support/ or academic medical centers/ or hospitals, teaching/ or hospitals, university/ or education department, hospital/
20	(curricul* or instruction or teach or "interprofessional education" or "continuing medical education" or "professional development").mp.
21	((course* or staff or program*) adj2 train*).mp.
22	(training adj3 (guide or guides or guideline* or material*)).mp.
23	("on the job training" or "on-the-job training").mp.
24	or/1-5
25	or/6-14
26	or/15-18
27	or/19-23
28	and/24-27
29	limit 28 to english language

TABLE 2. Search Strategy for ERIC

#	Search term(s)
1	primary health care/ or "family practice (medicine)"/
2	((primary or "primary care" or family or general) adj (doctor* or physician* or practice* or practitioner* or medicine or "family health team*")).mp.
3	((primary care or family practice or family health or family or general practice) adj nurs*).mp.
4	("general practice clinic*" or "family practice clinic*" or "primary care clinic*" or "family clinic*" or "medical home").mp.
5	"family nurse practitioner*".mp.
6	mental disorders/ or exp anxiety disorders/ or exp dementia/ or exp emotional disturbances/ or exp neurosis/ or exp pervasive developmental disorders/ or exp psychosis/
7	behavior disorders/
8	alcoholism/
9	substance abuse/ or exp alcohol abuse/ or exp drug abuse/
10	psychiatric services/
11	psychological services/
12	mental health programs/
13	psychiatry/
14	psychologists/
15	medical psychiatry.mp.
16	interdisciplinary approach/ or interprofessional relationship/ or interpersonal relationship/ or teamwork/ or institutional cooperation/ or cooperation/
17	(co-located or patient-centered patient-centred or patient centred or patient centered).mp.
18	((coordinated or clinical or critical or care or integrat* or collaborat* or comprehensive or stepped or psychosomatic or shared or interprofessional or behavioural health or behavioral health) adj (treat* or team* or care or path* or managed or management or mental-health or mental health or psychosomatic or behavioural health or behavioral health or healthcare or health care)).mp.
19	curriculum/
20	curriculum development/
21	"clinical teaching (health professions)"/
22	professional development/
23	staff development/
24	capacity building/
25	continuing education/ or professional continuing education/
26	simulation/ or computer simulation/ or role playing/
27	professional education/
28	medical education/ or graduate medical education/ or nursing education/ or pharmaceutical education/ or allied health occupations education/
29	educational strategies/
30	experiential learning/ or field experience programs/ or internship programs/
31	training methods/

#	Search term(s)
32	on the job training/
33	instructional materials/ or textbooks/ or workbooks/
34	graduate medical education/
35	medical schools/
36	(curricul* or instruction or teach or "interprofessional education" or "continuing medical education" or "professional development").mp.
37	((course* or staff or program*) adj train*).mp.
38	(training adj (guide or guides or guideline* or material*)).mp.
39	("on the job training" or "on-the-job training").mp.
40	or/1-5
41	or/6-15
42	or/16-18
43	or/19-39
44	and/40-43
45	limit to english language

TABLE 3. Search Strategy for Scopus

#	Search term(s)
1	TITLE-ABS-KEY ((("family service*" OR "family practice*" OR "family practitioner*" OR "family physician*" OR "family doctor*" OR "family nurse*" OR "family team" OR "family teams" OR "family health" OR "family health care" OR "family healthcare" OR "family clinic*" OR "family medicine")) OR (("general service*" OR "general practice*" OR "general practitioner*" OR "general physician*" OR "general doctor*" OR "general nurse*" OR "general team" OR "general teams" OR "general health" OR "general health care" OR "general healthcare" OR "general clinic*" OR "general medicine")) OR (("primary care service*" OR "primary care practice*" OR "primary care practitioner*" OR "primary care physician*" OR "primary care doctor*" OR "primary care nurse*" OR "primary care team" OR "primary care teams" OR "primary care health" OR "primary care clinic*" OR "primary care medicine")) OR (("primary service*" OR "primary practice*" OR "primary practitioner*" OR "primary physician*" OR "primary doctor*" OR "primary nurse*" OR "primary team" OR "primary teams" OR "primary health" OR "primary health care" OR "primary healthcare" OR "primary clinic*" OR "primary medicine")) OR (("general practice service*" OR " general practice physician*" OR " general practice doctor*" OR " general practice nurse*" OR " general practice team" OR " general practice teams" OR " general practice health" OR "general practice health care" OR "general practice healthcare" OR " general practice clinic*" OR " general practice medicine")) OR (("family practice service*" OR " family practice physician*" OR " family practice doctor*" OR " family practice nurse*" OR " family practice team" OR " family practice teams" OR " family practice health" OR "family practice health care" OR "family practice healthcare" OR " family practice clinic*" OR " family practice medicine")) OR (("family health service*" OR "family health physician*" OR " family health doctor*" OR " family health nurse*" OR " family health team" OR " family health teams" OR " family health clinic*" OR " family health medicine"))))
2	TITLE-ABS-KEY (((patient care OR patient-centered OR patient-centred OR patient centered OR patient centred OR coordinated OR clinical OR critical OR care OR integrat* OR collaborat* OR multidisciplinary OR comprehensive OR stepped OR psychosomatic OR shared OR behavioral health OR behavioural health OR interprofessional) AND (treat* OR team* OR care OR path* OR managed OR management OR mental-health OR mental health OR psychosomatic OR behavioural health OR behavioral health OR healthcare OR health care OR health-care)))
3	TITLE-ABS-KEY ((psychiatr* OR psycholog* OR mental health OR mental disorder* OR mental illness* OR addiction OR alcoholi* OR substance abuse* OR substance-related disorder*))
4	TITLE-ABS-KEY (((professional OR interprofessional OR continuing OR course* OR staff OR program* OR physician* OR nurs* OR simulation OR medical) AND (train* OR education* OR development)) OR (training AND (guide OR guides OR guideline* OR material*)) OR (curricul* OR instruction OR teach OR "continuing medical education" OR retrain* OR inservice OR "on the job training" OR "on-the-job training"))
5	#1 and #2 and #3 and #4

TABLE 3. Search Strategy for Web of Science. The following Indices were queried:

- Science Citation Index Expanded (SCI-EXPANDED) --1900-present
- Social Sciences Citation Index (SSCI) --1956-present
- Arts & Humanities Citation Index (A&HCI) --1975-present
- Conference Proceedings Citation Index- Science (CPCI-S) --1990-present
- Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1990-present
- Emerging Sources Citation Index (ESCI) --2015-present

#	Search term(s)
1	TS=((family or general or "primary care" or primary or "general practice" or "family practice" or "family health") NEAR/2 (service* or practice* or practitioner* or physician* or doctor* or nurs* or team or teams or health or "health care" or healthcare or clinic* or medicine))
2	TS=(psychiatr* or psycholog* or "mental health" or "mental disorder*" or "mental illness*" or addiction or alcoholi* or "substance abuse*" or "substance-related disorder*")
3	TOPIC: ((("patient care" or "patient-centered" or "patient-centred" or "patient centered" or "patient centred" or coordinated or clinical or critical or care or integrat$ or collaborat* or multidisciplinary or comprehensive or stepped or psychosomatic or shared or "behavioral health" or "behavioural health" or interprofessional) NEAR/4 (treat* or team* or care or path* or managed or management or mental-health or "mental health" or psychosomatic or "behavioural health" or "behavioral health" or healthcare or "health care" or "health-care")))
4	TOPIC: ((curricul* or instruction or teach or "continuing medical education" or retrain* or inservice))
5	TOPIC: (((professional or interprofessional or continuing or course* or staff or program* or physician* or nurs* or simulation or medical) NEAR/2 (train* or education* or development)))
6	TOPIC: (training NEAR/3 (guide or guides or guideline* or material*))
7	TOPIC: (("on the job training" or "on-the-job training"))
8	#7 OR #6 OR #5 OR #4
9	(#8 AND #3 AND #2 AND #1) AND LANGUAGE: (English)
10	(WC=(psychology* OR psychiatry OR primary health care OR emergency medicine)) OR (SU=(Life Sciences & Biomedicine OR Behavioral Sciences OR Critical Care Medicine OR Developmental Biology OR Emergency Medicine OR General & Internal Medicine OR Health Care Sciences & Services OR Social Work OR Integrative & Complementary Medicine OR Life Sciences Biomedicine Other Topics OR Neurosciences & Neurology OR Nursing OR Pharmacology & Pharmacy OR Psychiatry OR Research & Experimental Medicine OR Substance Abuse OR Psychology OR Social Work))
11	(WC=(Education & Educational Research or Education, Scientific Disciplines or Education, Special)) OR (SU=(Education & Educational Research))
12	#10 AND #9
13	#12 AND #11