

1. COVER SHEET

Review title: A BEME scoping review of educational programmes on how to use play in paediatric clinical practice for healthcare professionals

Review group

Christine Louise Krebs, MD

House officer

Juliane Marie Centre and Mary Elizabeths Hospital – Rigshospitalet for Children, Teens and Expecting Families, University of Copenhagen, Denmark

Email: christine.louise.krebs@regionh.dk

Jane Hybschmann, MScPH

Research assistant

Juliane Marie Centre and Mary Elizabeths Hospital – Rigshospitalet for Children, Teens and Expecting Families, University of Copenhagen, Denmark

Email: jane.hybschmann-nielsen@regionh.dk

Kelsey Graber, MSc

PhD fellow

Centre for Research on Play in Education, Development and Learning (PEDAL), Faculty of Education, University of Cambridge, Cambridge, United Kingdom

Email: kg421@cam.ac.uk

Line Klingen Gjørde, MD, PhD

Paediatric registrar

Juliane Marie Centre and Mary Elizabeths Hospital – Rigshospitalet for Children, Teens and Expecting Families, University of Copenhagen, Denmark

Email: line.klingen.gjaerde.01@regionh.dk

Martha Krogh Topperzer, RN, MSc, PhD

Department of Paediatrics and Adolescent Medicine Juliane Marie Centre, Rigshospitalet, University of Copenhagen, Denmark

Email: martha.krogh.topperzer@regionh.dk

Jakob Thestrup Hansen, MSc

Research assistant

Juliane Marie Centre and Mary Elizabeths Hospital – Rigshospitalet for Children, Teens and Expecting Families, University of Copenhagen, Denmark

Email: jakob.thestrup.hansen@regionh.dk

Emilie Tange Nielsen, BScPH and Stud.cand.scient.san.publ.

Student assistant

Juliane Marie Centre and Mary Elizabeths Hospital – Rigshospitalet for Children, Teens and Expecting Families, University of Copenhagen, Denmark

Email: emilie.tange.nielsen@regionh.dk

Anders Larsen, MLIS
Information specialist/IT coordinator
University Hospitals Centre for Health Research, Rigshospitalet, Copenhagen University of
Copenhagen, Denmark
Email: anders.larsen@regionh.dk

Paul Ramchandani, MD, PhD, MSc, MRCPsych,
Professor
Centre for Research on Play in Education, Development and Learning (PEDAL), Faculty of
Education, University of Cambridge, Cambridge, United Kingdom
Email: pr441@cam.ac.uk

Jette Led Sørensen, MD, MMed, PhD
Professor of Interprofessional Learning
Juliane Marie Centre and Mary Elizabeths Hospital – Rigshospitalet for Children, Teens and
Expecting Families, University of Copenhagen, Denmark
Department of Clinical Medicine, Faculty of Health and Medical Sciences, University of
Copenhagen, Denmark
Email: jette.led.soerensen@regionh.dk

Team experience

Christine Louise Krebs is a medical doctor with experience in conducting scoping reviews and has an interest in paediatrics.

Jane Hybschmann is a research assistant who is experienced in review methodologies and in conducting systematic searches in the paediatric fields

Kelsey Graber is a PhD fellow with a particular focus on the role of play in affecting quality of life during paediatric care for children with chronic or severe illness.

Line Klingen Gjærde is a medical doctor and PhD with experience in paediatrics and qualified to use registry linkages, statistical programming, and big data. She is also part of a working group that is developing a national patient/parent education programme.

Martha Krogh Topperzer is clinical specialist in nursing, and holds a PhD. Has experiences in designing, conducting, and implementing mono- and interprofessional postgraduate education in childhood cancer with up to 14 groups of healthcare professionals. She also has extensive educational experience in pregraduate nursing education in the clinical setting.

Jakob Thestrup Hansen is a research assistant and holds a master's degree in global health and has experiences in research methodologies.

Emilie Tange Nielsen is a master student in Public Health Science at the University of Copenhagen and has experiences in review methodologies.

Anders Larsen is an information specialist experienced in designing and conducting systematic literature searches.

Paul Ramchandani works as a consultant Child and Adolescent Psychiatrist in the UK National Health Service and is a LEGO professor of Play in Education, Development and Learning (PEDAL) at Cambridge University, UK. He is Director of the PEDAL Research Centre investigating the role of play in children's early development. He has a particular interest in the prevention of emotional and behavioural difficulties and his work includes the development and testing of psychological interventions and detailed observational studies of parents and young children.

Jette Led Sørensen specialises in obstetrics and gynaecology and is a professor of Interprofessional Education. She is experienced in medical education, including research in curriculum development, implementation and evaluation of educational programmes for various healthcare professionals and specialities. She has conducted numerous research and development projects, including assessment and implementation of simulation-based training.

Supplemental material is attached including search strings in database and grey literature.

Abstract

Being admitted to the hospital as a child or adolescent can be an unpleasant experience. Children who have poor hospital experiences are at risk of decreased treatment adherence, increased risk of readmission and long-term psychological consequences. Play can be used as preparation before and during procedures and to communicate age appropriately. Recently the World Health Organization recommended that *all* healthcare professionals use play within therapeutic care. However, only few formal postgraduate education programmes for healthcare professionals using play exist. We wish to identify and describe the existing field of educational programmes for healthcare professionals on using play in clinical practice, including an exploration of their theoretical frameworks, design and evaluation of outcome using Kirkpatrick's goal-based training evaluation model. This BEME review will map and identify gaps in the existing literature using the updated scoping review methodology in the Joanna Briggs Institute Reviewer's Manual. Finally, we may be able to formulate some ideas for recommendations in curriculum development and future

practice for healthcare professionals using play in a clinical context to the benefit of hospitalized children and adolescents.

2. BACKGROUND TO THE TOPIC

Being admitted to the hospital as a child or adolescents can be an unpleasant experience (1-3). Besides being ill or having pain, children report that they do not understand the information they receive from nurses and doctors, and parents report that nurses and doctors do not always communicate well with children (4-7). Children who have poor hospital experiences are at risk of decreased treatment adherence, increased risk of readmission (8) and long-term psychological consequences (9). These children and adolescents are at substantially higher risk of poor physical and mental health compared to healthy peers. As some children and adolescents require medication and healthcare throughout their lives, it is crucial to optimise their hospital experiences and change what can be perceived as negative experiences for hospitalised children and adolescent's into positive ones.

In 2017 the World Health Organization (WHO) recommended that *all* healthcare professionals use play within therapeutic care and that hospitals promote research on using play in clinical practice (10). Despite these recommendations, there is currently no formal consensus on a definition of play in hospitals (11). Some healthcare professionals use play to collaborate and communicate age appropriately with children and adolescents (1, 2, 12). Safe and recognisable, play can be used as a communicative tool to explain both simple and complex information. Occasionally, healthcare professionals use playful activities before or during examinations or procedures. In a recently published review, we found that healthcare professionals use play interventions in four clinical contexts: 1) during procedures and diagnostic tests to prepare, support or distract children or adolescents, 2) in patient education to increase the children's or adolescents' knowledge, skills or attitudes, 3) as an adjunct to medical or surgical treatment or during rehabilitation and 4) helping children or adolescents to adapt to the hospital environment or to cope with hospitalisation or disease (13). These playful activities frequently happen unsystematically without formal training, but they are also often carried out by extraordinarily dedicated healthcare professionals such as play specialists or child life specialists. The latter implies that these activities are most often

restricted to specific situations or specific hours of the day, which means many hospitalised children are not exposed to them.

Few countries have postgraduate programmes offering graduate degrees to become a child life or hospital play specialist (e.g. Australia, Canada, United Kingdom and USA). Hospital play specialists possess a unique skill set that allows them to facilitate difficult procedures and examinations more positively, primarily during daytime. However, programmes to become child life specialists or hospital play specialists do not meet the WHO recommendations that doctors and nurses working with children should use play in treatment and care. As such, only few formal postgraduate education programmes in play exist (14).

2.1 Theoretical approach and conceptual framework

Kirkpatrick's goal-based training evaluation model (15), which has repeatedly served in medical education evaluation (16, 17), evaluates training on four levels: reaction, learning, behaviour and results(15). To capture more detailed outcomes relevant to interprofessional education, Barr and colleagues expanded the model to include six levels (Table 1) (18, 19). The additional two levels relate to the setting and additional complexity of interprofessional education. For example, level 2 comprises two sublevels to broaden the learning scope to differentiate between modification of attitudes/perceptions (2a) and acquisition of knowledge/skills (2b). Level 4 also has two sublevels and now addresses change to organisational practice (4a) and benefits to patients/clients (4b). The extended model is not hierarchical, which allows for a more nuanced evaluation (19).

Table 1. Barr et al. expanded goal-based training evaluation model

Level 1	Reaction	Learner's views on the learning experience and its interprofessional nature
Level 2a	Modification of attitudes/perceptions	Changes in reciprocal attitudes or perceptions between participants groups; changes in perception or attitude towards the value and/or use of team approaches to care for a specific client group
Level 2b	Acquisition of knowledge/skills	Including knowledge and skills linked to interprofessional collaboration
Level 3	Behavioural change	Identifies individual's transfer of interprofessional learning to their practice setting and their changed professional practice

Level 4a	Change to organisational practice	Wider changes in the organisation and delivery of care
Level 4b	Benefits to patients/clients	Improvements in health or wellbeing of patients/clients

3. OBJECTIVES, REVIEW QUESTION, TYPE OF REVIEW AND KEYWORDS

Aim: Our aim is to systematically identify and describe educational programmes for healthcare professionals on using play in clinical practice. This includes describing the theoretical frameworks, design, and evaluation of educational programmes as well as the current gaps in the research field.

3.1 Objectives:

1. To review the literature on theoretical frameworks, design, and evaluation of educational programmes for healthcare professionals using play in paediatric clinical practice
2. To suggest ideas for future educational programmes for healthcare professionals using play in a clinical context withing paediatrics

3.2 Review question:

What does the literature reveal about educational programmes for healthcare professionals using play in clinical practice regarding theoretical framework, design, and evaluation?

3.3 Type of review

When a research area is heterogeneous in study designs, interventions, and evaluation methods, the scoping review is a valid method to examine the field and the breadth of the research area (20). Arksey and O'Malley first developed their six-step scoping review methodology to identify main concepts and knowledge gaps in the literature (21).

This method has been further developed to include more explicit details and to provide an unambiguous, transparent framework and reporting. This was done first with the addition of the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist (20) and most recently the updated Joanna Briggs Institute Reviewer's Manual (23).

The scoping method makes it possible to explore different types of research material, such as grey literature, e.g. information on websites and in conference papers. Adams et al. identify three tiers of source expertise and outlet control to differentiate between where the information originates from, such as think tank publications, news articles or blogs (24).

The extension of PRISMA-ScR has the added benefit of acknowledging that there are other methods to map and explore literature stringently and systematically, in addition to the original systematic review. The extension provides more transparency and logic reporting than Arksey and O'Malley's original six steps. For example, Arksey and O'Malley's fifth step, which involves collating, summarising and reporting results, jeopardises achieving a concise presentation of findings (21).

The Joanna Briggs Institute's most recent update of Reviewer's Manual on the scoping review methodology includes three additional steps: analysis of evidence, presentation of results and summarising the evidence to ensure a more transparent presentation of findings (23).

3.4 Keywords

Educational programmes, play, communication, child-centred care, evidence-based, evaluation methods, healthcare professionals, paediatric care, knowledge, review.

4. STUDY SELECTION CRITERIA

We will consider both experimental and quasi-experimental study designs, including randomised controlled trials, non-randomised controlled trials, before and after studies, and interrupted time-series studies. In addition, analytical observational studies, including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion, as well as descriptive observational study designs, including case series, individual case reports and descriptive cross-sectional studies.

In collaboration with the information specialist (AL) we will search free-text words and MeSH terms (Table 2) based on Population Concept Context (PCC) framework.

- Population: Healthcare professionals defined as people with professional training in healthcare

- Concept: Any education programme, intervention or curriculum that features play as a means or factor to communicate, support, distract and in other ways interact age appropriately with children.
- Context: Somatic departments at hospitals.

Table 2. Free-text words and MeSH terms for search based on Population Concept Context

Population

Audiologist	Clinical	Dietician	Dietitian
Doctor	Health personnel	Health profession	Healthcare personnel
Healthcare professional	Hospital personnel	Medical laboratory personnel	Medical technician
Nurse	Nutritionist	Occupational therapist	Paramedic
Pharmacist	Pharmacologist	Pharmaconomist	Phlebotomist
Physician	Physiotherapist	Psychologist	Radiograph
Radiology personnel	Social worker	Specialist	Staff
Surgeon	Therapist		

AND

Concept

Activity	Course	Curricula	Curriculum
Education	Inservice training	Learning	Programme
Therapy	Training	Workshop	

AND

Communication method	Communication technique	Creative play	Distraction method
Distraction therapy	Play	Play activity	Play and playthings
Play skill	Play strategies	Play technique	Play therapy
Playful	Playing	Plaything	Puppet
	Therapeutic play	Therapeutic toy	Toolbox
Toolkit	Toy library		

AND

Context

Child, hospitalised	Clinical setting	Healthcare facility	Hospital
Infirmery	Inpatient	Somatic department	

4.1 Inclusion criteria

We will include health profession education at pregraduate and postgraduate level, such as continuous professional development and on-the-job training. To encompass educational programmes involving empirical data, the search string will not be limited by study design, publication date, language, or country of origin.

4.2 Exclusion criteria

We will exclude studies that focus on play interventions or programmes targeting children. We will exclude studies from the psychiatric hospital context since play has been used as a diagnostic tool on its own in this field (25, 26). Finally, we will exclude studies without an education or training intervention, and opinion papers focussing on experience or perceptions of play.

5. SEARCH SOURCES AND STRATEGIES (INCLUDING PILOT SEARCH)

A pilot search was undertaken in PubMed (MEDLINE) and the results informed the objectives and outcomes of this protocol. We identified 1173 records, screened 128 full-text articles and included eight studies (27-34). The studies were descriptive studies, quasi-experimental studies with no comparator group, and opinion papers conducted in Canada, England and USA from 1972 to 2020. The number of participants in the studies was low and included primarily nurses. The didactic methods included workshops, role play, training sessions in groups, online learning and supervised practice. The predominant method of measurement was questionnaires assessing outcomes, particularly on level 1 (reaction) and level 2 (learning), according to Kirkpatrick's model. The content of the programmes and the educational strategies was only mentioned in general terms, and the studies lacked theoretical frameworks for programme design and evaluation.

Based on our findings from the pilot search, we will modify and expand the search string iteratively in collaboration with our dedicated information specialist (AL). The pilot search was

limited to one database (MEDLINE) only. The more in-depth search is expected to lead to the identification of more than 20 studies.

In collaboration with our dedicated information specialist (AL) we will search seven databases: PubMed (MEDLINE), PsycInfo (EBSCOhost), CINAHL (EBSCOhost), ERIC, Scopus, PEDRO and Web of Science. We will also search ProQuest for dissertation and theses worldwide (35). An adjusted search strategy will be adapted to each database and/or information source to ensure an exhaustive and rigorous search strategy.

Additionally, we will include the first tier of grey literature, which Adams et al. defines as “significant retrievability/credibility typically [that] includes books, book chapters, broad range of journals, government reports, think tank publications”. (p. 435(24)).

To identify grey literature, CLK and JH developed a search strategy based on Stapleton’s Grey Literature Search Plan Template adapted by Fuller and Lenton (36). Step 1 involved identification of relevant organisations and hospitals. We used Newsweek’s World’s Best Hospitals ranking 2020 (37) to find the three to five most highly ranked paediatric hospitals in three English-speaking countries: 1) USA (Boston Children’s Hospital; Children’s Hospital of Philadelphia; Cincinnati Children’s Hospital Medical Center; Texas Children’s Hospital, Houston; and Children’s Hospital Los Angeles); 2) Australia (Sydney Children’s Hospital, Randwick; Queensland Children’s Hospital, Brisbane; and The Royal Children’s Hospital, Parkville); and 3) Canada (Alberta Children’s Hospital, Calgary; BC Children’s Hospital, Vancouver; and Children’s Hospital of Eastern Ontario, Ottawa). Furthermore, we used the European Children’s Hospitals Organisation (ECHO) to identify six European hospitals to include in the targeted website searches: 1) England (Great Ormond Street Hospital (GOSH)); 2) Ireland (The National Children’s Hospital at Tallaght); 3) Spain (Sant Joan De Déu Barcelona Children’s Hospital), 4) Germany (Dr. von Hauner Children’s Hospital, Munich); 5) Norway (Oslo University Hospital), and 6) The Netherlands (Erasmus MC Sophia Children’s Hospitals). Last, we also consider the child life specialist (USA) and hospital play specialist (UK) organisations of relevance. Step 2 will include targeted website searching on identified webpages using Google Advanced (37).

In the development of the grey literature search strategy, CLK and JH use a combination of search terms under Concepts in Table 2 in an iterative process. For the sake of systematism and for pragmatic reasons, we will apply the same search terms across all targeted webpage searches. In addition to the study selection criteria outlined in section 4, we will add the criterion that assessment of the programmes/curricula should not involve creating user profiles or paywalls. We will document the selection process and screen the first 50 hits from each website specified in the Google Advanced search. Data will be collected on total number of hits, number of hits checked for relevance (links accessed) and the number included (see Table S1 in the supplement). Any items that suggest similar articles will be further explored to include relevant literature, such as abstracts.

6. SCREENING ARTICLES AND EXTRACTING DATA

All identified citations will be collated and uploaded into EndNote X9 and duplicates removed. Two reviewers will independently screen titles and abstracts in Covidence (38) for assessment against the inclusion criteria for the review. This is done by four reviewers: CLK, JHN, KG, ETN. Potentially relevant sources will be retrieved in full, and two independent reviewers (CLK, JHN) will assess these in detail against the inclusion criteria to assure a rigorous, systematic process. Through continuous discussion during the screening process, we will discuss and potentially adjust the selection criteria and data extraction tables. The reference list of all included sources of evidence will be screened for additional studies. Any differences between reviewers will be resolved through discussion or with an additional reviewer(s) (JLS, LKG) to reach consensus. We will establish inter-rater reliability during screening by extracting data (Cohen's kappa) directly from the screening programme, Covidence.

The selection of articles will be presented as a PRISMA 2020 Flow Diagram (39), including quantitative data. Reasons for excluding full-text sources of evidence that do not meet the inclusion criteria will be recorded and reported in the review.

In Covidence, we will extract general information, such as country of origin, and in Excel we will extract data on the healthcare professionals involved, as well as the aims, strategies, and outcomes of the educational activities. Table S2 (study characteristics), table S3 (detailed summary

of the individual interventions), and table S4 (application of Kirkpatrick's model) in the supplement show which data items will be extracted. The extracted data will be presented in tables supplemented by narrative analysis.

QUALITY APPRAISAL OF STUDIES

In accordance with the scoping review methodology (20), we do not plan to critically appraise the quality of the included studies. However, we will use Kirkpatrick's goal-based training evaluation model (15) to assess the outcomes reported in the studies.

7. SYNTHESIS OF EVIDENCE AND TRANSFER TO RESEARCH AND PRACTICE

A descriptive, narrative method will be used to synthesise the evidence. This will include presenting descriptive data and applying a thematic narrative analysis to the content and evaluation of the educational interventions identified.

To further the field of medical education, educational interventions need to be evidence-based and developed based on a curriculum framework (40, 41). Play as a means to collaborate and communicate age appropriately with children is an emerging field, which means that the active components of educational interventions need increased attention to describe them accurately and fully (13). The review will serve to clarify the field of educational programme on how to use play in clinical practice by systematically identifying and describing the theoretical frameworks, design, and evaluation of educational programmes for healthcare professionals. This includes identifying research gaps in the current literature.

We hope that we may be able to suggest some ideas for recommendations for future practice for healthcare professionals using play in a clinical context to the benefit of hospitalized children and adolescents.

8. PROJECT TIMETABLE

Table 3. Expected time schedule

Activity	Time period
Protocol development	May – August 2021
Final and updated search	November 2021
Screening papers for inclusion/exclusion	February 2022 – March 2022
Review of full-text articles	March – April 2022
Synthesis of findings	April – May 2022
Review and dissemination	May 2022

9. CONFLICT OF INTEREST STATEMENT

The authors declare that they have no competing interests.

9.1 Funding

This work is partly supported by the LEGO Foundation, which did not play any role in the design of the study, nor in the collection, analysis, or interpretation of data. The foundation was not involved in writing the manuscript and did not peer review the study protocol.

10. PLANS FOR UPDATING THE REVIEW

We would be happy to update the review, if called for.

11. CHANGES TO THE PROTOCOL

At the time of submission, we do not anticipate subsequently implementing any major changes to the protocol. If any adjustments are made or unexpected issues arise, they will be described in detail and submitted to BEME for approval.

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SUPPLEMENTAL MATERIAL

Supplemental material is attached including search strings in database and grey literature.