


BMJ Open Play interventions for paediatric patients in hospital: a scoping review

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ABSTRACT

Objective Play is a non-invasive, safe and inexpensive intervention that can help paediatric patients and their families manage difficult aspects of being ill or hospitalised. Although play has existed in hospitals for decades, research on hospital play interventions is scarce. This review aimed to categorise and synthesise the last 20 years of research on hospital play interventions.

Design Scoping review.

Data sources PubMed, CINAHL, CENTRAL, ERIC and PsycINFO (1 January 2000–9 September 2020).

Study selection and data extraction We systematically searched for original peer-reviewed articles, written in English, on hospital play interventions in paediatric patients (0–18 years) in non-psychiatric settings. Two reviewers independently screened titles and abstracts, reviewed full text of relevant articles and extracted data. We thematically synthesised the data from the included studies, and a descriptive analysis, based on a developed framework, is presented.

Results Of the 297 included articles, 78% came from high-income countries and 56% were published within the last 5 years. Play interventions were carried out across all ages by various healthcare professionals. Play interventions served different roles within four clinical contexts: A) procedures and diagnostic tests, B) patient education, C) treatment and recovery and D) adaptation. Across these contexts, play interventions were generally facilitated and purpose-oriented and had positive reported effects on pain, stress, and anxiety.

Conclusions Play in hospitals is an emerging interdisciplinary research area with a significant potential benefit for child and family health. Future research should further describe principles for play in hospitals. High-quality studies investigating short-term and long-term effects are needed to guide when and how to best integrate play in hospitals.

INTRODUCTION

Play, long viewed as a means for children to cope with the challenges of hospitalisation,¹ is a way to reduce and prevent stress and anxiety in children.^{2–4} Play is recognisable, safe and can be used to communicate complex information in an age-appropriate manner.² Furthermore, play is essential for healthy development, and adopting play

Strengths and limitations of this study

- This review provides a comprehensive overview of 297 systematically collected original articles on play interventions in hospitals.
- The scoping review methodology allowed for assessing a wide variety of articles and identifying significant gaps in the literature.
- Drawing conclusions about implementation of play interventions remains difficult, as the existing literature is heterogenous with great variation in participants, comparator groups, study designs and outcomes.
- Grey literature, articles not written in English and unpublished studies were excluded.

interventions into the treatment and care of paediatric patients may reduce developmental regression.²

The WHO's standards of children's rights in hospital include the right to play. Recently, the WHO recommended that *all* doctors and nurses utilise play within treatment and care and that hospitals promote research on using play.⁵

Rapid turnover of hospitalised children, with few staying for longer periods, limits opportunities for playful relationships and comfortable familiarity with hospital playrooms.⁶ Consequently, hospital play interventions are often individualised and treatment-oriented. In some countries play facilitated by specially trained staff for selected patients, rather than a normal, everyday activity.^{6,7} Moreover, hospital resources, children's health status and treatment needs, expectations about illness and health behaviour influence the implementation of play interventions.^{2,6,8} Attitudes towards children's integrity and adult participation in the child's play and the acceptance of playing with particular toys also affect the practices of play in hospitals.⁹

While many different traditions and practices exist in hospitals, most countries lack

formalised programmes on the use of play interventions. This might stem from a lack of knowledge on when, where and how to best practice play in the treatment and care of paediatric patients. Uniform implementation may be further challenged by continually changing conditions in healthcare.

Previous meta-analyses^{10 11} and systematic reviews^{12–21} have examined specific areas of play in hospitals, or specific play solutions for paediatric patients, but reviews on the general use of play in hospitals are limited. Existing reviews are further impaired by non-systematic literature searches and few included studies.^{22 23} Therefore, this scoping review aims to categorise and synthesise the scientific literature on the use of hospital play interventions in the last 20 years to potentially inform, guide and encourage future efforts in using and evaluating play interventions in the care of paediatric patients.

METHODS

Search strategy and selection criteria

We conducted a scoping review, in accordance with Joanna Briggs Institute guidelines²⁴ and the underlying framework by Arksey and O'Malley.²⁵ This method is particularly relevant for presenting a broad overview of existing literature within an emerging scientific field, enabling rapid identification and mapping of key concepts and knowledge gaps.²⁵ We searched PubMed, CINAHL, CENTRAL, ERIC and PsycINFO for entries from 1 January 2000 to 7 June 2019 and updated it on 9 September 2020. Our search strategy followed the Peer Review of Electronic Search Strategies Statement²⁶ and was developed in collaboration with two information specialists. The full search terms are listed in online supplemental table 1. Our review protocol can be accessed on request.

We searched for peer-reviewed original studies available in English on play interventions within a hospital context in relation to various health-related and treatment-related outcomes among children and adolescents aged 0–18 years. Because formal consensus on the definition of play is lacking,²⁸ we included any intervention using a playful approach actively involving patients, but we excluded creative arts therapies such as music therapy. Play interventions may depend on age and developmental status. However, evidence-based age-specific subdivisions of play interventions are lacking in the existing literature. Therefore, we chose to search the broad paediatric population and subsequently describe the influence of age on choice and effect of the play interventions.

Hospital context was defined as somatic inpatient and outpatient settings and included rehabilitation centres and home treatment preceded by and/or followed up in an inpatient or outpatient setting. We excluded reviews, case reports, case series, studies with <5 participants and studies with a mean participant age >18 years or if <50% of participants were 0–18 years.

We imported search results into EndNote (V.X8, Clarivate Analytics, Philadelphia, Pennsylvania, USA)

removing duplicates. Two independent reviewers (LKG, DD or JH) screened titles and abstracts using Rayyan systematic review software.²⁷ Final eligibility was assessed by reviewing the full text.

Data extraction

We developed a coding framework using a thematic synthesis approach inspired by Thomas and Harden.²⁸ Two reviewers (LKG, JH) extracted data on key study characteristics (publication year, country of origin, design, title, aim, number of participants, age, intervention, outcomes, tools for assessment, profession involved, disease category, procedure and type of play). To get an overview of which kind of resource settings the play intervention research originated from, we grouped the countries according to income using the World Bank's definition.²⁹ Uncertainties in data extraction were discussed with MS, MKT and JLS.

Based on extracted data, LKG and JH identified roles of the play interventions in included studies which led to the development of a broad coding framework. These thematic categories were discussed with the multidisciplinary coauthor group, comprising medical doctors with various specialties and competencies in medical education and management, an academic nurse and sociologist, a psychologist and researchers within public health and cultural studies. LKG and JH conducted a final coding based on the clinical contexts in which play interventions served different roles. Disagreements were solved in consultation with MKT and/or JLS. Descriptive statistics were analysed using Excel (V.2016, Microsoft, Redmond, Washington, DC, USA) and R (V.4.0.1, R Foundation for Statistical Computing, Vienna, Austria). Our report follows the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews checklist.^{30 31} As critical appraisal, which is optional in the scoping methodology, we summarised key characteristics such as study design, randomisation approach, number of centres involved, population size and comparator group to give an overall impression of the risks of bias. Within each of the thematic categories of the framework, we describe the reported general effects of the play interventions.

Patient and public involvement

No patients were involved in carrying out this scoping review.

RESULTS

Of 3711 articles, 297 were included in the final review (figure 1). Detailed information on the included studies can be found in online supplemental tables 2 and 3. Articles originated from high-income countries (78%), particularly the USA, or middle-income countries (22%) (figure 2A). Since 2000, the number of articles published annually has increased steadily (figure 2B).

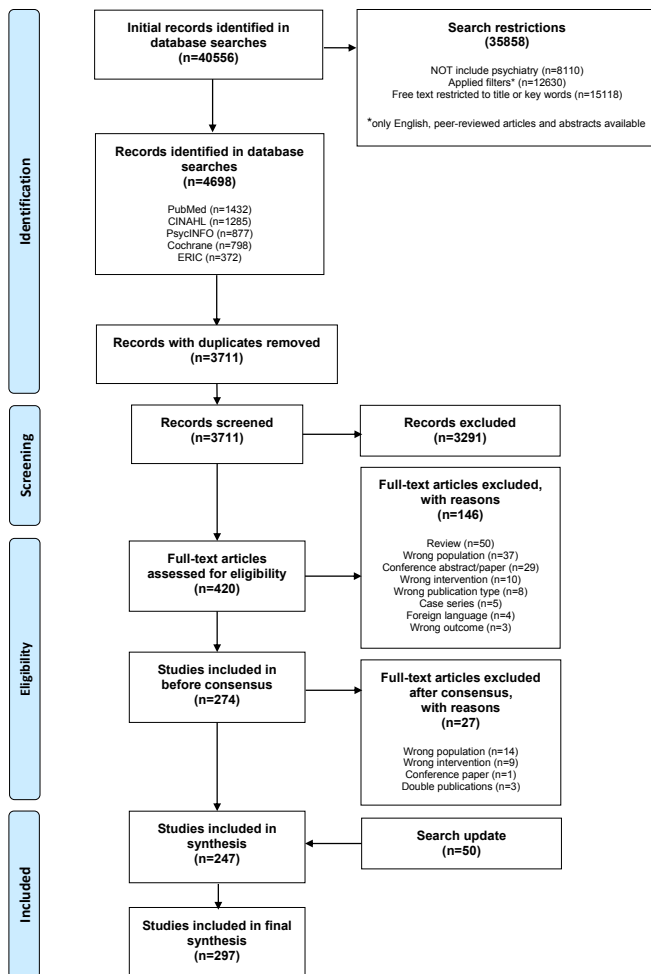


Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram of the study selection process.

The studies were generally small, with less than 25 participants in nearly one-third of them (figure 2C). Play interventions were used for all patients aged 0–18 years (figure 2D). We were unable to report age and developmental status-specific findings, because stratification based on these factors was limited. The interventions were mostly directed towards individual patients (94%) as opposed to groups (6%). Used within 13 disease categories (table 1), hospital play interventions were carried out by various professions (table 2).

Role of play within clinical contexts

Play interventions served different roles within four clinical contexts: (A) procedures and diagnostic tests, (B) patient education, (C) treatment and recovery and (D) adaptation (figure 3). Each context is summarised later, including context-specific study characteristics and examples (final coding agreement was 95%, 281/297 articles).

A) Play in procedures and diagnostic tests

In this context, play was used to either (1) distract the patient during a procedure (74 articles) or (2) prepare or support the patient before or during a procedure (55

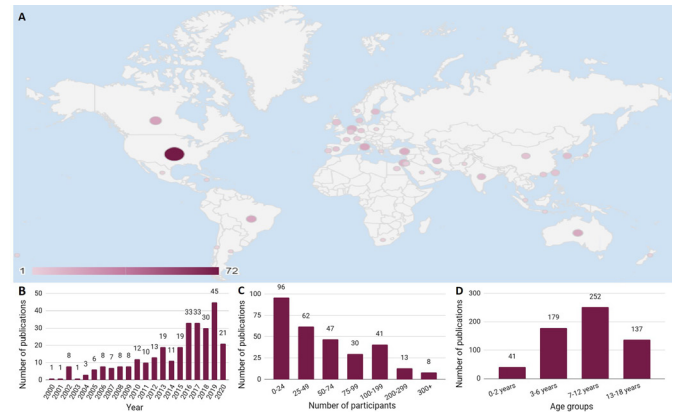


Figure 2 Summary characteristics of included studies. (A) Number of publications by county. (B) Number of publications per year.^a (C) Number of participants. (D) Age range of participants. Studies that include one or more age groups are counted accordingly.^a2020 publications included up to 9 September 2020.

articles). The primary purpose was to reduce anxiety, pain or distress (figure 4).

Distraction

Play as a distraction was used for needle-related or other distressing procedures (table 3). Self-directed distractors (eg, handheld digital games, virtual reality (VR) games or toys such as kaleidoscopes) were more frequently used than facilitated distractions (where a parent, healthcare professional, or hospital clown blew soap bubbles or played with toys).

Playful distraction generally had positive effects, but when compared with non-play distractions, the effect was often similar.^{32–34} Despite the frequent use of digital play distractors, their superiority over non-digital distractors was not evident, which a recent meta-analysis also concluded.¹⁰ Furthermore, the comparator group and the definition of standard care varied greatly between the studies (table 3). Only one study examined whether the effect of distraction persisted in recurring procedures.³⁵

Preparation and support

Playful preparation and support were used for surgeries or complex diagnostic tests, for example, imaging (table 3). This included digital media as part of structured preparational play (eg, VR tours in the operating room or online games) and creating a pretend journey with the child. Support before or during a procedure was used with younger patients, often by a hospital clown, through various playful approaches to help and encourage them by mirroring feelings or cheering them up.

Mostly positive effects were found. Three studies reported no effect of playful preparation on preoperative anxiety.^{36–38} Despite generally large sample sizes, the heterogeneity of the studies limited comparisons (table 3), which is consistent with findings from prior reviews.^{12–17}

Table 1 Participant characteristics in 297 included articles

Disease groups*	N (%)
Cardiological diseases	4 (1.3)
Congenital	3 (75.0)
Unspecified	1 (25.0)
Emergency medicine/care	14 (4.7)
Musculo-skeletal trauma	1 (7.1)
Laceration repair	2 (14.3)
Unspecified	11 (78.6)
Endocrinological diseases	16 (5.4)
Type 1 diabetes	6 (37.5)
Type 1 and 2 diabetes	1 (6.3)
Overweight/obesity†	9 (56.3)
Gastroenterological diseases	2 (0.7)
Inflammatory bowel	1 (50.0)
Unspecified	1 (50.0)
Intensive care	1 (0.3)
Unspecified	1 (100.0)
Nephrological diseases	2 (0.7)
Daytime urinary incontinence	1 (50.0)
Unspecified	1 (50.0)
Neonatology	8 (2.7)
Prematurity	8 (100)
Neurological diseases	67 (22.6)
Acquired brain injury	2 (3.0)
Cerebral palsy	47 (70.1)
Other neuromotor and neuromuscular deficits‡	12 (17.9)
Chronic headache	1 (1.5)
Muscular dystrophy	4 (6.0)
Epilepsy	1 (1.5)
Oncological/haematological diseases	41 (13.8)
Central nervous system tumour	6 (14.6)
Leukaemia	2 (4.9)
Osteosarcoma	1 (2.4)
Sickle cell disease	2 (4.9)
Various specified diseases§	14 (34.1)
Unspecified cancers	16 (39.0)
Ophthalmological diseases	14 (4.7)
Amblyopia/strabismus	14 (100)
Allergic and respiratory diseases	11 (3.7)
Allergy	1 (9.1)
Asthma	4 (36.4)
Cystic fibrosis	4 (36.4)

Continued

Table 1 Continued

Disease groups*	N (%)
Unspecified respiratory diseases	2 (18.2)
Rheumatological diseases	2 (0.7)
Juvenile idiopathic arthritis	2 (100)
Surgical diseases	69 (23.2)
Appendicitis	1 (1.4)
Burns	18 (26.1)
Umbilical or inguinal hernia	1 (1.4)
Chronic wounds	1 (1.4)
Lower limb amputation	1 (1.4)
Meatal stenosis	1 (1.4)
Tooth extraction	2 (2.9)
Transplant receivers	1 (1.4)
Various specified surgical diseases	16 (23.2)
Unspecified surgical diseases	27 (39.1)
Other	6 (2.1)
Down's syndrome	1 (16.7)
Immunisation	5 (83.3)
Various specified medical or surgical diseases	10 (3.4)
Unspecified	30 (10.1)
Total	297 (100)

*Psychiatry literature was excluded during the selection process.

†Two studies also included obesity in Prader Willi syndrome.

‡Includes Erb's palsy, central gait disorders, congenital haemiplegia, degenerative ataxia, spina bifida, and other neuromotor and neuromuscular deficits that are unspecified in included studies.

§Mixed haematological and oncological diseases.

B) Play in patient education

In this context, play was used to teach patients about their disease and treatment (11 articles) to manage symptoms and promote medication adherence (figure 4).

Knowledge, skills and attitudes on disease and treatment

Play interventions were used to educate children as young as 5 years suffering from severe or chronic diseases eg, cancer, asthma or diabetes (table 3). Digital games were used in self-directed patient education. In one study,³⁹ a robot was used to quiz the patients.³⁹ Puppets were used to improvise real or fictitious situations to educate patients and facilitate a dialogue about disease management.^{40 41}

All but one intervention⁴² increased knowledge but affected symptoms to a lower degree. Two studies found that self-management awareness and the allure of being quizzed by a robot declined over time.^{39 43} Despite the low number of studies using play in patient education, almost

Table 2 Professions* involved in the planning, execution and/or evaluation of the play intervention

Profession	N (%)
Clinical staff	226 (57.7)
Nurses (from various specialties, eg, oncology, anaesthetics (including students))	102 (26.0)
Medical doctors (including paediatricians, anaesthesiologists, ophthalmologists, allergists, rheumatologists, radiologists)	55 (14.0)
Psychologists	17 (4.3)
Paediatric dentists	2 (0.5)
Unspecified health professionals (including research teams)	50 (12.8)
Creative or play professions	42 (12.5)
Hospital clowns	21 (5.3)
Child life specialists	17 (4.3)
Play specialists (including play therapists, play coordinators)	6 (1.5)
Music therapists	3 (0.8)
Game designers	2 (0.5)
Pet teams	2 (0.5)
Dance artists	1 (0.3)
Rehabilitation or training professions	85 (21.5)
Physiotherapists (including students and physical education teachers)	68 (17.2)
Occupational therapists (including students)	13 (3.3)
Sport instructors	4 (1.1)
Other professions	24 (6.1)
Other health professionals (including dieticians, porters, hospital teachers, speech therapists)	9 (2.3)
Teachers	3 (0.8)
Social workers	4 (1.0)
Not reported	8 (2.2)
Total	395 (100)

*More than one profession can be involved in an intervention.

half of the included articles reported findings from large multicentre studies (table 3).

There was generally a lack of studies that conducted a long follow-up on interventions that both increase knowledge and improve symptoms, which prior reviews also noted.^{11 18 19}

C) Play as treatment and recovery

In this context, play interventions were used either (1) to replace or supplement medical or surgical treatment (24 articles) or (2) as rehabilitation or exercise (95 articles). The purpose of the studies varied substantially, reflecting the heterogeneity of studies within and between the two categories (figure 4).

Medical or surgical treatment

More than half of the studies used digital media, for example, video or tablet games, as a replacement for conventional patch treatment in children with amblyopia (table 3). Otherwise, VR, similar to that used to facilitate procedures, was used as a distraction to reduce acute pain or as a complementary treatment to inadequate pain

management (eg, during sickle cell crisis). One study used a more advanced VR system employing biofeedback and positive images to treat chronic headache.⁴⁴

The treatment interventions mainly had positive effects and could serve as an adjunct to standard treatment but were not necessarily better than conventional treatments.

Rehabilitation or exercise training

Play was used for rehabilitation in patients with chronic conditions such as cerebral palsy or in preterm children (table 3). Play was also used as an exercise for patients with, for example, obesity, cystic fibrosis or asthma. Digital games, the dominant types of play, were mainly investigated in small feasibility studies with no comparator groups.

The play interventions using digital media were generally feasible and safe, including complex VR games and robots. Play had the potential to increase adherence to programmes^{45 46} and could serve as efficient supplemental in-home training.^{47–49} Especially VR and video games showed promising results on strength and mobility,

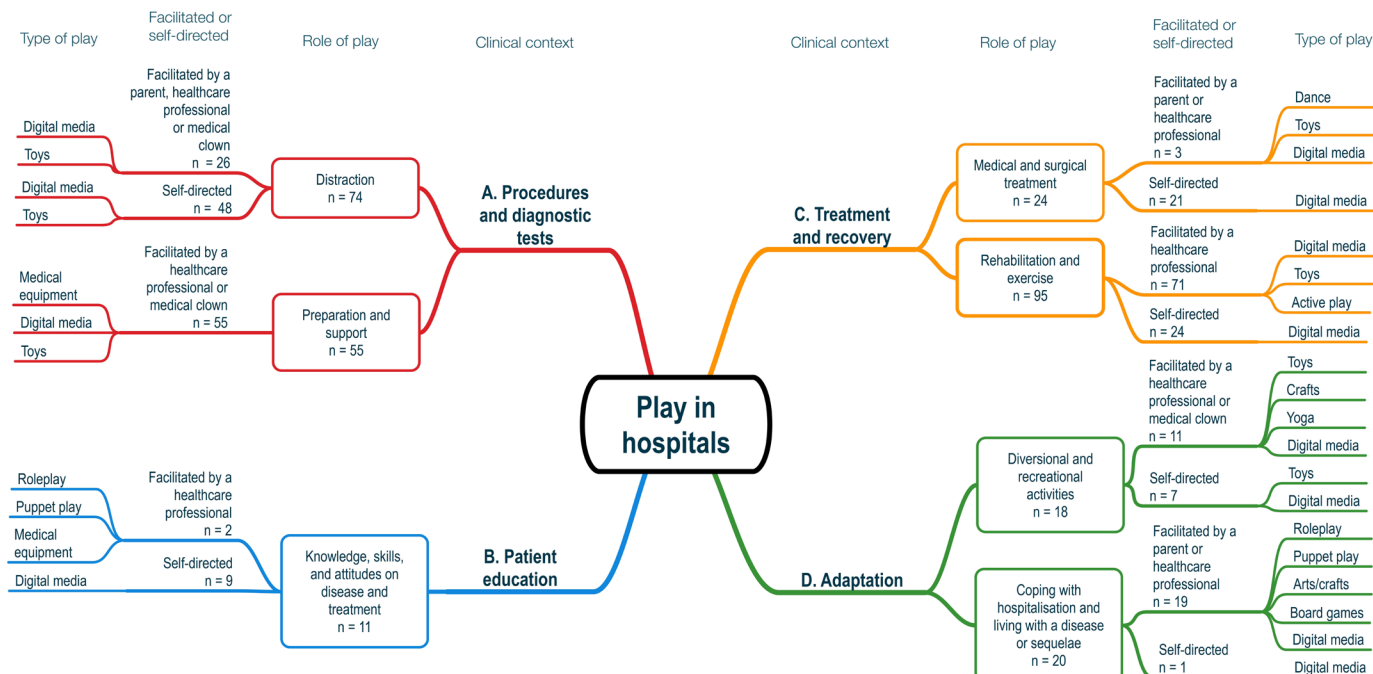


Figure 3 Conceptual model developed with a thematic approach mapping ‘play in hospitals’ by context, role of play, facilitated/self-directed and type of play.

which prior reviews also support.^{20 21} When compared with conventional therapy, digital solutions were often, but not always,⁵⁰ better. Some studies also reported the risk of patients experiencing intervention fatigue.^{39 46 51}

Study periods were mostly short (2–8 weeks), limiting the investigation of long-term effects, with only one study reporting effects of an intervention after 12 months.⁴⁷ Few disease groups were represented, potentially limiting applicability of the interventions to other disease groups.⁵²

D) Play as adaptation

In this context, play interventions were characterised as (1) diversional or recreational activities (18 articles) or as (2) activities designed to help the child or adolescent cope with being hospitalised or ill (20 articles), often to reduce anxiety and stress or improve mood (figure 4).

Diversional and recreational activities

Most diversional or recreational play activities during hospitalisation occurred in patient rooms, playrooms, or waiting areas (table 3). There was predominantly unstructured play with toys and crafts, and play specialists, social robots, or hospital clowns visiting patient rooms.

Recreational or diversional play generally demonstrated positive effects. However, one study showed that stress was

only reduced in patients >7 years,⁵³ while other studies reported that the effect of, for example, clown or social robot visits, waned over time.^{54 55} Moreover, play was less efficient in reducing anxiety than other therapies, such as music and pet therapy.^{56 57}

No studies investigated the long-term effects of unstructured play during hospitalisation on, for example, quality of life or general childhood development.

Coping with hospitalisation and living with a disease or sequelae

Play was used to help patients to better cope with hospitalisation, disease or sequelae, especially in relation to cancer (table 3). Activities such as creative play, digital social media platforms, and board games allowed expression of feelings about being ill and hospitalised. Play involving physical activity followed by an evaluation by a healthcare professional was also seen as improving coping. Primarily carried out in groups, interventions were facilitated by a healthcare professional, whose importance was also highlighted when digital social media was involved.

One-third of the studies were qualitative but generally lacked a theoretical framework. Quality of life and improved social skills were sparsely studied, just as long-term follow-up on diversional or recreational play was absent.

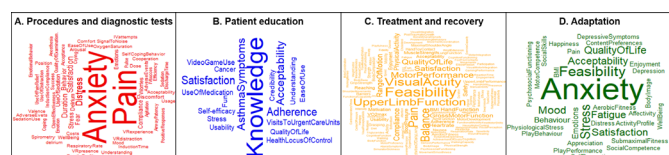


Figure 4 Word clouds on outcomes according to context of play.

DISCUSSION

We identified four clinical contexts where play had distinct roles: A) procedures and diagnostic tests, where play as distraction, preparation and support was used to alleviate pain, stress and anxiety; B) patient education, where play was used as age-appropriate communication

Table 3 Characteristics of study designs and comparator groups according to clinical context

Play in hospitals	A. Procedures and diagnostic tests		B. Patient education		C. Treatment and recovery			D. Adaptation	
	Distraction	Preparation and support	Knowledge, skills and attitudes on disease and treatment	Medical and surgical treatment	Rehabilitation and exercise*	Rehabilitation and recreational activities	Diversional and recreational activities	Diversional and recreational activities	Coping with hospitalisation and living with a disease or sequelae
Study characteristics									
Median population size, (IQR)	58 (62.0)	80 (59.0)	70 (103.5)	59 (68.8)	20 (21.0)	60 (84.0)	28 (16.3)		
Number of studies, N (%)	74 (100%)	55 (100%)	11 (100%)	24 (100%)	95 (100%)	18 (100%)	20 (100%)		
Of these:									
Multicentre studies, n (%)	3 (4.1%)	2 (3.6%)	5† (45.5%)	5 (20.8%)	7 (7.4%)	0 (0.0%)	3 (15.0%)		
Pilot studies, n (%)	12 (16.2)	3 (5.5%)	4 (36.4%)	5 (20.8%)	41 (44.2%)	3 (16.7%)	7 (35.0%)		
Study design									
Clinical studies using randomisation, n (%)	52 (70.3%)	36 (65.5%)	6 (54.5%)	14 (58.3%)	44 (46.3%)	5 (27.8%)	5 (25.0%)		
Intervention studies with no comparator group, n (%)	8 (10.8%)	3 (5.5%)	3 (27.3%)	4 (16.7%)	30 (31.6%)	2 (11.1%)	5 (25.0%)		
Non-randomised clinical studies, n (%)	2 (2.7%)	5 (9.1%)	0 (0.0)	4 (16.7%)	12 (12.6%)	5 (27.8%)	3 (15.0%)		
Quasi-randomised clinical studies, n (%)	8 (10.8%)	6 (10.9%)	0 (0.0%)	2 (8.3%)	7 (7.4%)	3 (16.7%)	1 (5.0%)		
Qualitative studies, n (%)	4 (5.4%)	0 (0.0%)	2 (18.2%)	0 (0.0%)	2 (2.1%)	3 (16.7%)	6 (30.0%)		
Other study designs, n (%)‡	0 (0.0%)	5 (9.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)		
Comparator group									
Standard care, n (%)	41 (55.4%)	38 (69.1%)	5 (45.5%)	14 (58.3%)	39 (41.1%)	8 (44.4%)	5 (25.0%)		
Multiple interventions, n (%)§	18 (24.3%)	9 (16.4%)	0 (0.0%)	4 (16.7%)	4 (4.2%)	2 (11.1%)	1 (5.0%)		
Other play intervention, n (%)	3 (4.1%)	1 (1.8%)	1 (9.1%)	1 (4.2%)	1 (1.1%)	0 (0.0%)	1 (5.0%)		

Continued

Table 3 Continued

Play in hospitals	A. Procedures and diagnostic tests		B. Patient education		C. Treatment and recovery			D. Adaptation	
	Distraction	Preparation and support	Knowledge, skills and attitudes on disease and treatment	Medical and surgical treatment	Rehabilitation and exercise*	Diversional and recreational activities	Coping with hospitalisation and living with a disease or sequelae		
<i>Non-play intervention, n (%)</i>	0 (0.0%)	1 (1.8%)	0 (0.0%)	0 (0.0%)	10 (10.5%)	3 (16.7%)	2 (10.0%)		
<i>No comparator, n (%)</i>	12 (16.2%)	6 (10.9%)	5 (45.5%)	4 (16.7%)	32 (33.7%)	5 (27.8%)	11 (55.0%)		
<i>Healthy controls, n (%)</i>	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (4.2%)	9 (9.5%)	0 (0.0%)	0 (0.0%)		
Key characteristics within clinical context and role of play	Type of procedure (%)	Disease category (%)	Symptom (%)	Disease category (%)	Intervention setting (%)	Target for coping strategies (%)			
Needle related (61%)	Surgery (62%)	Diabetes type 1+2 (55%)	Amblyopia (54%)	Cerebral palsy (47%)	Playroom (67%)	Hospitalisation (40%)			
Wound care (14%)	Needle related (11%)	Cancer, various (27%)	Acute pain (29%)	Other neurological diseases (17%)	Patient room (33%)	Living with disease or sequelae (60%)			
Surgery (12%)	Radiotherapy (9%)	Asthma (18%)	Chronic pain (4%)	Obesity (8%)					
Physical examination (4%)	MRI (5%)		Incontinence (4%)	Prematurity (8%)					
Chemotherapy (3%)	Burn wound dressing (5%)		Burn wound healing (4%)	Respiratory diseases (6%)					
Mixed painful procedures (3%)	Cast removal (2%)		Obesogenic behaviour (4%)	Surgical diseases (6%)					
Infusion (1%)	Spirometry (2%)			Cancer (4%)					
Laceration repair (1%)	Ward rounds (2%)			Others (3%)					
	Laceration repair (2%)								

*Rehabilitation versus exercise interventions: 83% rehabilitation versus 17% exercise.

†Five publications, four studies.

‡Audits and retrospective clinical studies.

§Multiple intervention groups compared with standard (and differences in standard care) and/or other play or non-play interventions.

and to increase understanding and motivation; C) treatment and recovery, where play could supplement and occasionally replace conventional treatment and D) adaptation, where play provided space to express difficulties about being hospitalised and supported healthy childhood development.

Prior opinion papers and non-systematic reviews have suggested various subdivisions and definitions of play in hospitals, but not in a rigorous manner.^{2 23 58 59} It is generally recognised that play interventions can be used in the preparatory phase and as a distraction during medical procedures, and that play has a normalising effect.^{23 58} The term therapeutic play is used inconsistently to describe play with medical equipment, play in preparation programmes,¹⁷ and play therapy, similar to that used in child and adolescent psychiatry.²² Other subcategories, for example, directed play, non-directed play and supporting play have also been used unevenly.⁵⁹ Our framework captures all of these subdivisions and contains a category for play as part of treatment and recovery, including rehabilitation. Previous reviews do not address this category, perhaps because rehabilitation and exercise are often outpatient activities and have only become a focus area more recently.⁶⁰

Our framework may provide healthcare professionals and researchers with a tangible overview of the literature, while allowing play to retain its indefinable and ambiguous qualities. By summarising main characteristics, outcomes, general effects and potential pitfalls within the four clinical contexts, healthcare professionals and researchers are informed about play interventions similar to their own practices and research. Furthermore, this also informs about the breadth of possibilities and other approaches, which may encourage implementation of play interventions and inspire new ideas.

Our review primarily informs about facilitated and purpose-oriented play interventions in a clinical context. However, it is unknown whether this form of play positively impacts general health and development, which is a known benefit of unstructured play.⁸ Identifying solutions that allow play to serve as a preventative and general-purpose activity in hospitals is crucial. Whether or not play interventions that support healthy childhood development in non-hospital environments are transferable directly to a hospital context is uncertain. Structural and cultural factors in hospitals challenge the opportunity for unstructured and free play, just as personal factors related to patients' illnesses and external factors such as an unfamiliar environment have an effect.⁶

Based on the current evidence, with very heterogeneous and small studies, we were unable to draw conclusions on general aspects that could guide the implementation of future play interventions. Thus, additional high-quality research is needed to guide when, where, and what play to integrate into hospitals. Elaborating our proposed framework in a consensus-based study to further clarify principles for play interventions in hospitals, for example, the influence of age and development status on choice

of play intervention, could serve to guide future research and play practices.² Studies are warranted to assess short-term and long-term effects of play integrated before, during and after procedures or treatments, and should address whether hospital play interventions can create an environment for children conducive to normal development. Importantly, input from paediatric patients will be central in informing concepts and future research in this regard.⁶¹

Furthermore, previous literature emphasised the significance of paediatric healthcare professionals who promote play,^{3 62} but there is a lack of formal inter-professional training programmes available.^{63 64} Our review shows that treatment and care by various healthcare professionals may benefit from the incorporation of play interventions. This necessitates high-quality research evaluating the short, sustained and long-term effects of play interventions in hospitals to help overcome current barriers, such as lack of training among clinical staff.⁶³

Limitations

Despite our broad definition of play, our literature search may have introduced selection bias and missed relevant articles. Moreover, we did not include grey literature or review references in included articles to find additional articles, and we only searched for published studies, which may have introduced publication bias. By restricting our inclusion to studies in English, we may have introduced additional selection bias, which may undermine the global generalisability of our findings, especially in terms of the lack of studies from low-income countries. Finally, we excluded literature from child and adolescent psychiatry, thus limiting the application of results to somatic aspects of the hospital system.

CONCLUSIONS

Hospital play interventions have a significant potential benefit for patient and family health, and both treatment-oriented and unstructured play activities need to be prioritised. Our developed four-part operational categorisation of hospital play interventions can serve as the first step in enabling stringency in the field as well as inspire further exploration, and thereby support for the needed professionalisation and academisation of the growing research interest in play in hospitals.

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Contributors LKG conceptualised and designed the study, designed the data collection instruments, collected data, carried out the initial analyses and interpreted data, drafted the initial manuscript, and reviewed and revised the manuscript. JH and DD designed the data collection instruments, collected data, carried out the initial analyses and interpreted the data, and critically reviewed the manuscript for important intellectual content. MKT supervised data collection, analysed and interpreted the data, and critically reviewed the manuscript for important intellectual content. MAS conceptualised and designed the study,

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