Making child-friendly cities: A socio-spatial literature review

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ARTICLE INFO

Keywords:
Child friendly cities
Spatial planning
Physical environment
Governance
Rights
Literature review

ABSTRACT

With more than one-third of children worldwide living in urban areas, the call for child-friendly cities (CFC) has increased in urgency; however, many cities are still largely unfriendly to children. This paper uses a systematic literature review and bibliometric tool to identify papers from Scopus between 2001 and 2020. It reviews the existing knowledge and gaps about child-friendliness within the sphere of socio-spatial urban planning. The findings reveal a three-dimensional perspective of the concept of child-friendly cities: rights, physical environment, and governance. Moreover, it shows that existing knowledge appears rather limited in its explanation of the governance processes that lead to translating children’s rights into suitable physical environments. In the conclusions, a research avenue is proposed to close the existing gaps that can contribute to achieving CFC.

1. Introduction

By 2050, 70% of children are projected to be living in cities (UNICEF, 2012). In response, research is increasing on how urban environments affect their physical, cognitive, and social development (van Vliet et al., 2015), demonstrating that urban planning not only shapes cities but also the lives and well-being of the children that live in them (Freeman, 2006). The approach to children’s health has moved from health and education silos to urban planning as a major influencer of healthy environments (Gill, 2008). The UN Convention on the Rights of the Child (CRC) includes several rights that refer to life in the city, nonetheless in the context of rapid urbanization, children’s rights are at high risk of not being fulfilled (Malone, 2015). Already more than six million children live in slums, vulnerable to the lack of services and impacted by the social and health inequalities from these urban environments and this number is only expected to rise (Malone, 2015; Ortigoza et al., 2023).

Considering that kids need healthy, green, walkable, smart environments for their development (Riggio, 2002; Krishnamurthy et al., 2018), several child-friendly cities’ frameworks and guidelines have been recently developed in academia and practice (Brown et al., 2019; UNICEF, 2018) However, this growing library has not been enough for child-responsive approaches to have a strong influence on the urban built environment (Bishop & Corkery, 2017). Despite the importance and benefits of child-friendly cities (CFC) being widely acknowledged, children’s rights in urban policy are not mainstream or adopted (Brown et al., 2019).

The aim of this paper is to increase the understanding of why CFC are not yet achieved. We do so by taking stock of the existing knowledge of child-friendly cities overlapping the urban planning field and identifying current knowledge gaps. The findings are relevant and novel as they show the main dimensions of child-friendly cities, as well as the lack of studies on one specific dimension. Thus, we propose a clear research avenue to fill in the knowledge gaps identified and strengthen the pillars that would lead to the achievement of child-friendly cities.

Section 2 presents how we performed a systematic socio-spatial literature review using a bibliometric analysis to identify literature from 2001 to 2020. The selected papers were individually analyzed following these questions: (1) How do the selected papers define the term CFC? (2) What is the geographical coverage of the current literature? (3) What is the empirical basis of current literature on CFC? And finally (4) What are gaps in the knowledge that may explain why CFC cities are not yet realized? The questions were selected because they help us take stock of the current knowledge by providing information on the definition of the term CFC and the geographical coverage of the topic -which allows us to know whether contextual gaps are present. Moreover, revealing the current knowledge and the existing gaps adds value to the field, as it can lead to explaining why CFC has not yet been...
achieved. Section 3 reveals the answer to the posted questions and summarizes the scientific findings categorized into three main dimensions vital for achieving CFC (rights, governance, and physical environment). In Section 4, the gaps that can serve to understand what is missing to achieve child-friendly cities are discussed. Section 5 draws conclusions on missing knowledge and proposes a research avenue to fill the gaps.

2. Methodology

We used a systematic literature review to identify all the evidence and research findings that fit pre-specified inclusion criteria (Snyder, 2019) and critically appraise the most relevant research that can lead to advance theory (Post et al., 2020). The review process follows a protocol with the following steps. First, a range and combination of keywords were selected to find literature from between 2001 and 2020. The period was selected after performing an initial search of the keyword “CFC” which shows the trend per year (Fig. 1).

The main keywords were selected based on the aim of this research. Since the term “child-friendly cities” is interdisciplinary, we limited the search by combining it with the keywords “spatial planning” and “urban planning”. We focused on the “local government”, “governance” and “decision-making” and included the words “implementation” and “public policy” as they can reflect if a CFC has been achieved (Table 1).

Scopus was selected as the search database, as it is compatible with the bibliometric mapping software selected for the visualization of the results, VOSviewer. We used the field code TITLE-ABS-KEY and the Logical-AND function. We limited the scope to journal articles written in English. The following keyword combinations were used to perform queries:

A total of 272 papers were found. Duplicated papers were deleted from the list, providing a final inventory of 89 documents. The obtained results were analyzed using a bibliometric mapping software tool (VOSviewer) as it allows visualizing the frequently mentioned citations and existing patterns between authors (Medina-Mijangos & Seguí-Amórgui, 2020). This process results in literature density maps that provide a representation of the literature in a two-dimensional space in which the distance between publications indicates their relatedness (Rodrigues et al., 2014) (see Fig. 2). Individual maps per combination were also analyzed.

The VOSviewer analysis provided papers with a higher number of citations, these papers were selected first. However, this can decrease the focus of newer literature. To mitigate the risk of excluding relevant literature, the abstracts of each paper were reviewed providing special attention to the most recent literature to decide whether it should be considered for the review. As a result, some relevant papers were selected manually from the maps. The papers were categorized by publication date and scale. The review of abstracts dismissed papers that were not relevant. A final list of 42 papers was analyzed in-depth to answer the posted questions (1) How is the term CFC defined in the paper? (2) What is the geographical coverage of the current literature? (3) What is the empirical basis of current literature on CFC? And finally (4) What are gaps in the knowledge that may explain why CFC cities are not yet realized? (Fig. 3)

By analyzing how the term CFC is defined, we could recognize three dimensions of the concept: children’s rights, governance, and physical environment. With these dimensions in mind, a new review of each paper was performed to identify if the paper focuses on one or more of these dimensions and to what extent. In the findings, we also categorized the papers according to these criteria.

Although the selected systematic literature review provides effective evidence and synthesizes a wide range of existing studies, a fully systematic review can be strict in its requirements and has limitations. To be strict, we limited the search to Scopus compatible with VOSViewer which provided an initial map of the existing literature. However, to extend beyond the limitations of this study it is suggested that in the future more academic search engines and languages are used.

3. Findings

Firstly, we introduce how the concept of CFC is interpreted in the selected papers (3.1). Next, (3.2) we indicate the geographical coverage of the current literature and (3.3) the applied data collection methods. Finally, we summarize the current available scientific findings on three main dimensions vital for achieving CFC: (3.4) children’s rights (3.5) governance, and (3.6) physical environment. This overview of the existing literature allows us to identify and present what are the current gaps that may explain why CFC have not yet been achieved and propose an avenue to address them.

3.1. How do the selected papers define the term CFC?

Most authors mention CFC, yet only eleven papers provide CFC concepts. Other papers postulate concepts of different terms, such as child-friendly environments, communities, governments, and planning.

Nearly all 42 papers we analyzed refer to the term “child-friendly cities” as found in the Convention on the Rights of the Child (CRC). UNICEF is widely recognized as the entity leading the initiatives that promote CFC (Mekonen, 2010). UNICEF (2017) conceptualizes a CFC as “a city, town, community or any system of local governance committed to improving the lives of children within their jurisdiction by realizing their rights as articulated in the UN Convention on the Rights of the Child.”

Most authors mention the CRC as the origin of the term CFC, illustrating the prominent notion of a CFC as the place where children’s rights are fully respected. According to Biggs and Carr (2015, 102) “the [CFC] programme is firmly grounded in a rights-based approach” and “has worked to enhance features of the built and natural environment that can advance children’s rights, including parks and play spaces and

Table 1

<table>
<thead>
<tr>
<th>Keyword combination</th>
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<td>“child-friendly cities”</td>
<td>105</td>
</tr>
<tr>
<td>“child-friendly cities’ AND “spatial planning”</td>
<td>0</td>
</tr>
<tr>
<td>“child-friendly cities’ AND “urban planning”</td>
<td>30</td>
</tr>
<tr>
<td>“child-friendly cities’ AND “governance”</td>
<td>10</td>
</tr>
<tr>
<td>“child-friendly cities’ AND “public policy”</td>
<td>0</td>
</tr>
<tr>
<td>“child-friendly cities’ AND “decision-making”</td>
<td>8</td>
</tr>
<tr>
<td>“child-friendly cities’ AND “local government”</td>
<td>8</td>
</tr>
<tr>
<td>“child-friendly cities’ AND “planning”</td>
<td>51</td>
</tr>
<tr>
<td>“child-friendly’ AND “urban planning”</td>
<td>48</td>
</tr>
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<td>“child-friendly’ AND “implementation”</td>
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<tr>
<td>“child-friendly’ AND “implementation” AND “policy”</td>
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</tr>
<tr>
<td>Total</td>
<td>272</td>
</tr>
</tbody>
</table>

Fig. 1. CFC articles per year.
children services” (Ibid, 101). For van der Graaf (2020, 7) “putting a rights-based approach forward meant directing the policy focus away from ‘problems and deficits’ and see children—individually and collectively—as competent and meaningful participants in shaping the urban environment, so subscribing to the rights ‘in’ and ‘to’ the city perspective.”

Inspecting the literature revealed multiple topics included in the conceptualization of CFC, such as healthy environments, well-being,

<table>
<thead>
<tr>
<th>Identification</th>
<th>Records identified through searching on Scopus and VOSViewer analysis (n=272)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Records after duplicates removed (n=89)</td>
</tr>
<tr>
<td>Screening</td>
<td>Visualization map by number of citations. → Studies identified with higher citations (n=6)</td>
</tr>
<tr>
<td></td>
<td>Visualization map by citation per year ratio. → Studies identified with higher citations (n=6)</td>
</tr>
<tr>
<td></td>
<td>Visualization map of networks by author. → Studies manually selected according to networks (n=13)</td>
</tr>
<tr>
<td></td>
<td>Studies which abstracts were reviewed (n=69)</td>
</tr>
<tr>
<td></td>
<td>Records included for full-text assessment (n=43)</td>
</tr>
<tr>
<td></td>
<td>Studies excluded for full-text assessment (n=53)</td>
</tr>
<tr>
<td></td>
<td>Reasons for exclusion: Unrelated to urban planning, outdated or irrelevant information to answer the research questions.</td>
</tr>
<tr>
<td>Eligibility</td>
<td>Records included after full-text assessment (n=42)</td>
</tr>
<tr>
<td></td>
<td>Full-text articles assessed for eligibility (n=43)</td>
</tr>
<tr>
<td>Included</td>
<td>Records excluded after full-text assessment (n=1)</td>
</tr>
</tbody>
</table>

Fig. 2. Bibliometrical Map by number of citations and relatedness across authors.

Fig. 3. Representation of the review process.
sustainable development, and good governance. Nordstrom (2010) and Horelli (2007, 283) define “child-friendly environments” as “settings and environmental structures that provide support [...] so that children can construct and implement their goals and projects.” Similarly, Horelli proposes a normative framework for child-friendly environments that include rights, governance, and physical qualities. Whitzman & Dana (2012), present “a hypothetical model of four different types of local environments, to measure progress towards CFC through affordances. Positive affordances are objects that allow play, surfaces for physical activity, objects that activate the senses, and social gatherings for conversation and play. Considering that children are already vulnerable to the detrimental impacts of climate change and other consequences of unsustainable behavior, the concept of healthy child-friendly environments is linked to sustainable development (Malone, 2015).

Attempts to include children’s perceptions have also been performed. Notably, Woolcock & Steele (2008) surveyed Australian children about their definitions of well-being. They include three key concepts: (1) agency, as the ability to perform activities individually, (2) safety and feeling secure, and (3) a positive sense of self, meaning a sense of recognition and belonging. Therefore, scholars urge including children’s participation as a right and an active indicator of good governance (Derr, 2015).

Riggio (2002, 45) states that the concept of child-friendly cities was developed to “ensure that city governments consistently make decisions in the best interests of children. It falls on city governments to translate the commitments made at the national level by states ratifying the [CRC] into action at the city level”. However, there is a lack of studies reporting on the competencies and interactions of different governance actors. Warner & Rukus (2013) present an integral definition of CFC, as the product of the nexus formed by proper planning, design, and participation. Similarly, Mekonen (2010) proposes a “3-P scheme” of provision, protection, and participation. According to it, cities should: (1) provide basic services to children, which include those that respond to the spatial planning sphere (schools, mobility, hospitals, housing, green spaces); (2) protect children’s fundamental rights; and (3) ensure children’s participation in the decision-making tables concerning immediate decisions and long-term plans, considering that both will directly impact their future lives.

In general, we identify that children’s rights represent the initial call for action, then a system of governance needs to exist to start those actions, and finally, the physical environment is the area where the action occurs and presents results. These three dimensions (rights, physical environment, and governance) are generally expected to be in place when CFC are analyzed.

3.2. Geographical scope of empirical basis

Although the CFC movement is global, evidence is geographically limited. Most of the papers analyzed come from the Western world, and around 25 % originate from Australia and New Zealand.

High-income countries tend to be indicative of CFC programs that promote children’s freedoms and the quality of physical areas available. In contrast, in low-income countries, the focus remains on addressing immediate issues, such as risk exposure, mortality, and health (Malone, 2015). The geographical distribution of the analyzed papers reveals a difference in topics addressed; studies from Australia and New Zealand focused on children’s development and health (Egli et al., 2020). Several studies that have been categorized at the city scale (according to Table 2) analyze city-level policies or plans, however, they still emphasize the impact of city-level policies on the neighborhoods. Similarly, at the national level, studies such as Warner and Rukus (2013) have been categorized as national because the data collected and analyzed come from national surveys even though the content of the national survey focuses on the typology of neighborhoods. Hence, this scale appears as the most relevant unit in the CFC literature.

3.3. Methods used and the empirical basis of current literature on CFC

The literature analysis revealed that research has been conducted predominantly at a micro-level; for instance, most studies are in one or a few neighborhoods or schools. From the 42 papers, 27 are empirical studies that mainly used qualitative methods, such as interviews or ethnographic research. Several include children’s participation with participatory methods such as walking interviews, gamification strategies, or drawings. Although observation is widely used, the evidence is commonly self-reported; consequently, stated preference is often present over revealed preference.

Although CFC have been conceptualized as a system of governance, papers that touch upon governance are primarily normative and anecdotal. Indicators and frameworks for good governance are presented, but their methodologies are lacking, and there is limited analysis of the institutional dynamics on the ground. While some papers conduct policy analysis, they focus on the content of the policy itself and not on the process of policymaking.

3.3.1. Attention for the three main dimensions over time

Table 2 shows the timeline of years and the title of the studies, along with the main authors. The colored circles show to what extent the dimensions (rights, physical environment, and governance) are addressed in the paper. Finally, it shows the scale on which the study is conducted or applied.

Children’s rights were mentioned in almost all the papers; those authors whose main narrative was about one or more rights were categorized under this dimension. Participation, although widely discussed as a right, is also recognized as a key factor of governance. Papers that studied the role of planners and the role of children and those that referred to institutions, networks, and public policy were categorized under governance. Papers on urban design principles, public space, mobility, green spaces, spatial distribution, and neighborhood development were categorized under the physical environment dimension. For most of the papers, the central dimension studied is evident in the narrative or explicitly mentioned in its list of keywords.

The number of publications per year has increased over the period of this analysis. From the literature it can be observed that children’s rights stay constant over time and are hardly contested. There is no question that children’s rights should be fulfilled, and scholars largely agree about what are considered children’s rights. It is worth noting that more than half of the literature focuses its narrative on the physical environment (28/42) mainly because authors recognize that children’s rights are satisfied when a spatial solution is provided.

Another observation found is the strong attention paid to the neighborhood level, indicating that for cities to be child-friendly, localized community actions at that scale are needed. In accordance with this, we can observe that the physical dimension is widely used at the neighborhood scale while the governance dimension is more recurrent at the city level.

While governance studies have increased in recent years, they are still weak in reporting processes, practices, and institutional arrangements; they are limited to listing normative characteristics of good governance or mentioning governance as an essential element towards achieving suitable physical environments without assessing the how.

3.4. The literature on rights

From the 42 articles studied, only four do not mention children’s rights, demonstrating that the notion of CFC begins from recognizing children’s rights -as determined in the CRC- and the goal of fulfilling...
them.

The literature shows that CRC serves as a basis for CFC as many authors refer to its principles and the specific rights recognized in this document. The CRC states two basic principles: no discrimination and best interest of the child. All children have the right to live in a healthy environment and have a quality standard of living, where they have equal access to nutrition, clothing, clean water, education, and play. Children have the right to belong to a community, participate in decision-making, and be protected from actions that could harm them (CRC 1989 in Riggio, 2002). Article 31 recognizes the right of the child to rest and leisure, to engage in play and recreational activities, culture, and arts, all of which happen in the city. While Article 12 recognizes the children’s right to express their views freely and assures their participation in all matters affecting them.

But how do the rights of certain groups become a part of the planning theory? Sandercock (1998 in Gillespie, 2013) started exploring approaches that differentiate gender, class, race, or sexual orientation by recovering stories of marginalized groups in planning. The paper depicts how distinct groups historically shaped urban space and how they were impacted by forces and actions outside of their control, including urban planners. Gillespie (2013) uses the same approach to outline how children have been written or excluded from the planning theory.

<table>
<thead>
<tr>
<th>Year</th>
<th>Author(s)</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>Elseay</td>
<td>Children’s experience of public space.</td>
</tr>
<tr>
<td>2006</td>
<td>Freeman</td>
<td>Connecting worlds: Planning with children and young people for better cities.</td>
</tr>
<tr>
<td>2007</td>
<td>Morelli</td>
<td>Constructing a Theoretical Framework for Environmental Child-friendliness</td>
</tr>
<tr>
<td>2010</td>
<td>Woolcock &amp; Steele</td>
<td>Child-friendly Community Indicators: A Literature Review.</td>
</tr>
<tr>
<td>2012</td>
<td>Mekonen</td>
<td>Measuring government performance in realizing child rights and child well-being: The Approach and Indicators.</td>
</tr>
<tr>
<td>2013</td>
<td>Bequele</td>
<td>Monitoring the commitment and child-friendliness of governments: A new approach from Africa.</td>
</tr>
<tr>
<td>2017</td>
<td>Nordström</td>
<td>Children’s Views on Child-friendly Environments in Different Geographical, Cultural and Social Neighbourhoods.</td>
</tr>
<tr>
<td>2018</td>
<td>Gillespie, J.</td>
<td>Being and becoming: Writing children into planning theory.</td>
</tr>
<tr>
<td>2022</td>
<td>Malone</td>
<td>“The future lies in our hands” children as researchers and environmental change agents in designing a child-friendly neighborhood</td>
</tr>
<tr>
<td>2025</td>
<td>Biggs &amp; Carr</td>
<td>Age- and Child-Friendly Cities and the Promise of Intergenerational Space.</td>
</tr>
</tbody>
</table>
historically. The article, although anecdotal, adds to the theory by providing a different notion of the role of children in city planning. Children and their relation to space have been viewed differently over time and geography. Therefore, childhood norms influence urban planning and vice versa. Planning reformers in the 19th-century argued that the streets were no fit place for children—either for work or for play. Children came to be viewed as dependent upon adults, needing special supervision and protection due to their vulnerability; so “removal of the children from city streets became a primary goal” (Gillespie, 2013, 73) while segregation and adult supervision of children became the intended norms.

This conceptualization of children has resulted in negative implications in urban planning and design to the present day. The perception that children do not belong on the streets has led to cars taking predominantly public spaces; hence families tend to look for houses with enough space for children to play inside or in a garden (Gillespie, 2013).
When the preference for a single-family house overcomes the high-rise developments—which are seen as unsuitable for children urban sprawling is promoted, and the result is “a tragedy of the commons in which the well-being of all children is reduced by the efforts of each family to maximize their own children’s well-being” (Ibid, 2013, 75). On the other hand, children are even seen by certain governments as a cost (Warner and Rukus 2013). In the context of the United States, municipalities prioritize services and amenities that appeal to the needs of young professionals and the “creative class” as they are seen as the engine for economic growth, pay taxes, and demand fewer amenities than families (Ibid). This leads to governments choosing not to be child-friendly not because they do not recognize children’s rights but because they seek to avoid the costs of guaranteeing them.

While Riggio (2002) and Gillespie (2013) take stock of historical events, other authors focus on the present, critically examining children’s rights in the current global context. Malone (2015) emphasizes the impact of urbanization on children’s rights and how fulfilling them can contribute to achieving Sustainable Development Goals. Van der Graaf (2020) focuses on the overlap between smart and CFC, developing a critical analysis of the increasing role of digitalization in cities and governance discourses. Technological innovation cannot be separated from its impact on children’s development and right to the city, and emerging rights-based agendas should include children’s best interests in the use of smart technologies.

Authors often reflect on what the “right to the city” means for children, considering their limited participation in decision-making. A vast proportion of the research is dedicated to children’s participation in urban planning. We describe this topic further in the governance section.

3.4.1. Reflection

Children’s rights are interrelated, universal, and indivisible, and the complex interrelationships between rights and responsibilities require a multi-dimensional approach to measurement (Thukral, 2020). The spatial dimension where children’s rights are embedded can provide a good ground for measuring the extent to which children’s rights are fulfilled by the local systems of governance. To do so, permanent reflection on how childhood is conceptualized in different contexts is vital for the development and implementation of planning strategies that include children.

3.5. The literature on governance

Conceptualizing CFC as a system of governance implies that the institutionalization of these systems are crucial to achieve the final goal of fulfilling children’s rights. Riggio (2002), Carroll et al. (2018, 2019a, b) and van der Graaf (2020) present governance as the institutional, legal, and budgetary structure that allows for the implementation of children’s rights in the city.

Riggio (2002, 48) defines good governance of CFC as one that “entails giving visibility to the child in the city development agenda and granting children an opportunity to participate in the decision-making process.” The presented framework provides lessons learned from the work and experiences of the CFC Secretariat in the field using case studies. However, the methodology to explain how the case studies were selected or hint at what factors promote or hinder the formulation of CFC policies. Handy et al. (2008) argue that despite the evidence on the benefits of building more traditionally designed communities—with mixed land-use and pedestrianized compact neighborhoods—the policies are not formulated unless there is enough public support. However, why this public support does not translate into policy implementation, and adequate supply on the ground is yet unknown. Warner and Rukus (2013) measure the extent to which planners promote the interest in creating family-friendly neighborhoods. The findings indicate that mid-size suburbs are more likely to be family-friendly, while cities tend to prioritize land policies that would attract tax-payers. They also report that communities that engage in the planning process are less likely to create resistance to changes in zoning, highlighting the need for inclusion and participation in policymaking. Although the findings are relevant, they are not generalized to other contexts outside the United States.

3.5.2. Inclusive and participatory policy-making

CFC call for the recognition of children as individual human beings, rights-holders, and equal, active citizens. Elley (2004) argues that considering children as future instead of current citizens limits their intervention in decision-making today (Tranter & Pawson, 2001). However, van Vliet et al. (2015), argue that the children’s role in urban planning processes needs to be contextualized considering the market-based globalization approaches that influence the urban environment, hence children can be seen as consumers, users, entrepreneurs, or producers.

Children themselves recognize agency and participation as pillars of
their well-being (Woolcock, et al., 2010). Involving children is not only a matter of respecting their rights but an opportunity for practitioners to be more reflective, understand diverse partnerships, and include more voices in urban planning and policymaking (Derr & Kovács, 2015). Children’s local knowledge provides a greater understanding of the home, school, and neighborhood geographies from a non-adult-dominated perspective (de Andrade et al., 2016). Their opinions should thus be valued and solicited in community-level planning interventions (Writd, 2010; Nordstrom, 2010). Nevertheless, protectionism can create a cultural barrier between planners and children, if adults do not see children as active citizens and consequently diminish their voice. According to Freeman (2006), the planning profession continues to be actively engaged in structuring and regulating children’s lives; a task for which planners should be better prepared.

Carroll et al. (2019a, b) investigated the potential of children as contributors to urban planning, both as urban researchers and design consultants. They reported that, just like adults, children have different capacities to provide opinions about policy. Therefore, research for evidence should be distinguished between “scientific,” “practical,” and “situated research.” Child-led research is positioned in the last category as children can provide practical local knowledge. The main challenge for children to perform their role as urban researchers was not their lack of skills and knowledge but their lack of confidence and motivation to perform these tasks individually, despite this limiting factor, the results were found relevant to feed policy. Furthermore, when children acted as design consultants, the process and outcomes were reported as effective. Children felt heard, their ideas were valued and they provided positive feedback on the variety of methods used for participation, for example, taking pictures, drawing, or walking through the neighborhood while giving opinions. Designers, planners, and project managers felt that the inputs were insightful and shared their interest in advocating for these participatory practices again.

Similarly, Malone (2013) investigated the role of children as urban researchers and environmental change agents in neighborhood design reporting ten valuable lessons: children’s remarkable ability to design for others’ needs and the reality that innately, children design with sustainability in mind. The main challenge was for planners and developers to ensure that the final construction represented children’s ideas.

From a two-year visioning design process Derr and Tarantini (2016) reported the planners’ failure to understand children’s contributions immediately. However, the length of the project and the regularity of the meetings and iterations allowed translating children’s ideas into plans. Children’s participation provides a wide range of imaginative solutions for urban problems, but their ideas should be shared and taken seriously at multiple levels of local government (Hart, 1992).

There is an urgent need to find effective ways to increase children’s agency in the planning process (van Vliet, 2011). Thus, several scholars research different methodologies and tools that can improve children’s participation. For instance, gamification strategies have been explored for different methodologies and tools that can improve children’s agency in the planning process (van Vliet, 2011). Thus, several scholars recognize the potential of children to perform their role as urban researchers was not their lack of skills and knowledge but their lack of confidence and motivation to perform these tasks individually, despite this limiting factor, the results were found relevant to feed policy. Furthermore, when children acted as design consultants, the process and outcomes were reported as effective.

3.5.3. Multi-level coordination

While local governments are the main subject called to action in CFC, children’s rights cannot be achieved if not addressed by the convergent efforts of diverse actors. According to UNICEF, the responsibility for ensuring that children’s rights are realized lies with governments. Nevertheless, a wider network of stakeholders that includes children themselves have a crucial role in achieving CFC.

Acknowledging the emerging, dynamic and diverse concepts of governance, a generic definition is used to frame this analysis. Governance is constituted by the norms and rules governing the interaction of interdependent public, private, and social actors in complex and dynamic environments. Governance is associated with greater involvement of non-governmental actors in the design and implementation of public policies and, ultimately, in the definition of the general interest (Martínez, 2006).

Rahmaningtyas and Rahayu’s (2019) is one of the few studies from the analyzed literature that looked into a more comprehensive network of stakeholders in the governance spectrum. It aims at understanding how the national and local governments collaborate with the private sector to comply with the Child-friendly City Development Policy in Indonesia. Although the paper uses Emerson & Nabatchi (2015) collaborative governance regime framework, which includes drivers, actions, and outcomes of the governance process, the drivers are not explicitly mentioned in this study. They note, however, interaction and influence from the different levels of the government in providing child-friendly facilities in the public space.

Malone (2015, 422) emphasizes the role of UNICEF “as a maker and a marker of the progress of a city or country to meet the challenge of sustainable development.” The proposed interrelationship between sustainable development and children’s rights suggests that the goals of CFC are global and that a multi-level governance approach is needed to develop localized plans and strategies.

This multi-level integration is lacking in Mekonen (2010) study, which is more successful at measuring national governments’ performance in providing for children’s basic needs. This conceptual framework was applied to 52 African countries by Bequele (2010) but was not adapted to local governments and the city level.

Studies in Australia and New Zealand reveal that the main barrier to achieving CFC is that planning policies are still dominated by the “central and local government’s desire to manage land use to ensure efficient economic production” (Tranter & Pawson, 2001, 29). They add that “there is little point in making a small number of streets safer for local residents (including children) if other policies simply increase the total level of motor vehicle use in the city” (Ibid. 45) Similarly, Freeman (2006, 80) reports finding “a lack of connectivity between central government participation initiatives, local government activities and action by planning practitioners.”

Contradictory and non-coordinated agendas can lead to poor results for child-friendly environments. Child-friendly plans that aim to positively transform the neighborhood scale can fail because the problem depends on other policies, such as land use, gentrification, and rising prices that lead to sprawl, causing mobility and access problems (Warner and Rukus 2013).

The importance of analyzing the topic from a multi-level and multi-sector policy perspective is two-fold. First, UNICEF and scholars have constantly been stressing the need for vertical and horizontal integration at the different governmental levels in designing CFC. Second, spatial planning, economy, health policy, and development policy cannot be seen as separate sectors since they respond to complex city dynamics.

Whitzman et al. (2010) performed a policy analysis of several cities in Australia, where a multi-sector approach reflects integration between health and land-use plans. However, there is no analysis of the governments’ stakeholders or their interactions towards the creation of public policy. They argue that multi-level and multi-sector integration is crucial for the institutionalization of child-friendly policies.

Finally, Derr (2015) is the only author who mentions other potential
actors to be involved in the governance process, such as academia. The study highlights the benefits of children’s participation in planning education by including children and university students in the same design and planning processes.

3.5.4. Reflection
For CFC to emerge, governments must respect and comply with children’s rights by creating policies, laws, budgets, and participatory spaces targeted especially at this population (Freeman, 2006). However, governments’ process to achieve these objectives has seldom been studied. There is a knowledge gap in the policy cycle and the interaction between different levels of governance. Therefore, there is a need for inductive research on agenda setting and other policy cycle stages for CFC.

3.6. The literature on physical environment

Extensive studies determine the effects of the natural and built environments on child development, both directly and via adult caregivers (Adams et al., 2018; Elshater, 2018). As urbanization has become an urgent phenomenon to study, how children’s rights are included in the spatial dimension of the cities has become a pattern of increasing interest in the planning field (Woolcock & Steele, 2008). However, the literature comes from a wide range of disciplines. For example, papers on pediatrics highlight the importance of healthy, built environments for children to grow up in, as well as the importance of play for physical and cognitive development, emphasizing the need to provide play opportunities in every space and not only in restricted areas such as playgrounds or parks. Authors from the planning area built on this argument, coining the term “childhood ghettoisation” (Tranter & Pawson, 2001: 29) which raises concern about how children are being excluded from the city as a whole (Tranter and Pawson, 2001).

3.6.1. Health and well-being: risks of exposure

Literature on child development has mainly focused on socio-demographic aspects and only recently has paid attention to the built environment, presenting multi-domain frameworks that consider urban design as a factor that impacts children’s well-being.

Some of the spatial aspects that directly affect children’s development are traffic and access to nature and local environments. Factors such as toxins are significant child mortality causes, and air pollution increases lung disease rates in urban populations. Chronic noise exposure is linked to children’s capabilities to read and speak, it limits their social interactions, as caregivers in noisier environments tend to be less responsive to children than those in quiet environments (Ferguson et al., 2013), and it disrupts children’s opportunities for play (Chawla, 2015).

In general, physical environments impact children’s physical activity levels, ultimately affecting their health (Wridt, 2010). Children from neighborhoods with less play and green infrastructure are affected in their social and physical development (Jansson et al., 2016; Łaszkiwicz & Sikorska, 2020). Children themselves consider nature as a crucial element of CFC, and they usually point to natural places as their favorite in their communities (Adams et al., 2018).

Villanueva et al. (2016) suggest that cost-effective place-based interventions such as temporary parks, playgrounds and street closures, traffic calming infrastructure, and green and aesthetic changes to the environment are popular approaches that can bring positive impact on children’s well-being. This is supported by McGlone (2016), whose study on children’s experiences in pop-up interventions concluded that these temporary urban spaces are an opportunity for children’s engagement in urban design and the construction of more permanent urban services.

3.6.2. Possibilities for play

Providing adequate physical spaces that allow recreation and increasing time and opportunity to play are tangible ways for cities to achieve child-friendliness. However, building playgrounds is not a straightforward solution to providing play opportunities for children. For instance, children do not always consider playgrounds their favorite play space (Egli et al., 2020), but they prefer naturally managed and unmanaged environments for free play that provide an attractive and healthy level of risk (Jansson et al., 2016). Private commercial developments such as shopping malls lead to the privatization of play opportunities, excluding children who cannot afford those services (Carroll et al., 2019a, b). Another social factor for children’s exclusion is the fear of being marginalized or persecuted due to their status. For instance, in the USA, children with an immigrant background fear accessing close facilities, even if they are free, due to fear of being asked for documentation (Wridt, 2010).

Transportation planning indirectly affects children’s play opportunities. Increasing levels of traffic have affected the quantity and quality of time spent between children and caregivers. While commute times increase for adults from their workplaces to home, stress also increases, which impedes families’ social relations. Moreover, if children cannot move independently due to the lack of proper safe transit infrastructure, they depend on their caregivers to access play spaces, hindering children’s development (Clement & Waitt, 2018; Grant-Smith et al., 2017).

Cities that can assure independent mobility for children to access learning and play facilities are deemed more child-friendly (Gill, 2021). Age is crucial in determining how children experience and explore their local environment as there is a “negotiated geography” (Tranter & Pawson, 2001, 3) between children and parents about the areas allowed for play or other activities. Over the years, however, with increasing traffic and decreasing social interaction in neighborhoods, these children’s geographies have been renegotiated and further restricted (Egli et al., 2020; Tranter & Malone, 2008).

The exclusion of children from public spaces justified in safety discourses, along with the prioritization of motor vehicles in the built environment, is detrimental to their rights. Play is a positive activity for children’s development and reclamation of their democratic right to the city. It challenges adults’ hegemony of the public domain towards constructing a more inclusive city (Carroll et al., 2019a, b).

3.6.3. Role of mobility

There is a growing debate about the welfare, well-being, and health of children associated with the quality of their surroundings (Gleeson & Woolcock, 2007; Villanueva et al., 2016). Wridt (2010, for example), reports that a lack of transport opportunities to community spaces is one of the main reasons for children sedentarism. Independent mobility and transportation modes available for children are considered to affect their physical health and their abilities to recognize local environments and socialize with other members of the community (Elsey, 2004).

Grant-Smith et al. (2017) study the challenges of mobility in combination with care responsibilities. Caregivers mostly accompany children in their commuting due to their age, condition, or parenting style. Clement and Waitt’s (2018) ethnographic study evidences the difficulties of pram mobilities in cities that have not considered the needs of this population in transport planning. It provides a clear overview of how mothers in disadvantaged communities are most vulnerable and affected. They encourage policymakers to think about the right to the city from a more inclusive perspective, including children, parents, and others in loco parentis.

Mobility planning entails the consideration of means of transport and children’s preferred destinations. These can be places that provide play activities, food, or green areas but also places where the physical infrastructure is not the most valued characteristic. Children report that their favorite places are where social encounters happen; for example, where they can meet their friends or family (Egli et al., 2020) and have a sense of belonging and community.

Mobility planning needs to consider the spatial features of its routes, such as aesthetic and green infrastructure (Horelli, 2007), but studies
reveal significant disparities in the distribution of these urban and environmental qualities according to the socio-economic status of the neighborhood (Laskiewicz & Sikorska, 2020).

Transport justice and accessibility are pivotal for children’s development and city’s sustainable development (Whitzman and Mizrachi, 2012). Situating children in the sustainable mobility discourse recognizes the inseparable connection between urbanization and childhood. Despite the definition of sustainable development as a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987 in Gilbert et al., 2018), children are still excluded from the construction of sustainability policies and transport planning (Gilbert et al., 2018).

3.6.4. Neighborhood social diversity
Authors such as Biggs and Carr (2015) and van Vliet (2011) zoom into social mechanisms at play in children’s active mobility and accessibility to their local environments. They advocate for intergenerational cities and add to the cities for all ages discourse, where the needs of the elderly are also taken into account by drawing similarities with children’s needs. There is a solid reflection on the social repercussions of car-oriented planning versus pedestrian-friendly spaces, considering how children and the elderly in the public space enhance social cohesion and more resilient communities (Biggs & Carr, 2015).

The public space is the stage for social encounters of diverse actors, which do not always have the same needs. For instance, Witten et al. (2017) report on children’s perceptions of encounters with groups that are usually marginalized such as homeless people, addicts, or sex workers. The findings show that despite the discomfort of children in certain situations, they valued the ability to be out on their own, and they liked learning about the city, identifying ‘places that are worth going to and places that aren’t’ (Ibid., 6).

To some extent, tailoring the physical environment to the needs of a specific group holds a danger. On the one hand, van den Berg (2013) argues that urban regeneration strategies for planned gentrification prioritize the space for people who meet particular class, gender, and economic standards, primarily affecting women and children instead of focusing on socially mixed neighborhoods (genderfication). And on the other hand, the paper explains how families can also become the new producers of gentrification when the goal of attracting families to the city results in the exclusion of others such as single working person households who cannot afford to live alone.

Warner and Rukus (2013) also analyze the cross paths between childriendliness and gentrification in the USA. They argue that built environments planned for families lead to more sustainable communities but recognize a challenge in changing the image of child-friendliness from big houses with gardens—that cause sprawl—to mix-used, compact neighborhoods that provide more benefits for children’s development. In a similar context, Randolph (2006), in Whitzman and Mizrachi 2012, 5) raises the concern that “contemporary strategic planning has almost become child-blind, with the new higher density centers being built essentially for the childless in mind.” The authors explore the difference in children’s experiences from high-rise environments from private and public housing. The results indicate that children living in public housing had high levels of independent mobility but low satisfaction levels with local play spaces. In contrast, the private housing children had low levels of independent mobility but enjoyed a much greater range of attractions to which they were driven by adults. This contributes to the idea that mobility and accessibility play a significant role in children’s development and rights despite their housing conditions.

3.6.5. Reflection
From the papers selected in this study, two main streams can be recognized. First, papers address how children are directly affected by the quality of the environment surrounding them, and second, how children are accommodated (or not) by possibilities to navigate the cities they live in with a focus on mobility and accessibility. Physical infrastructure is pivotal in fulfilling children’s rights to health, services, housing, and safe environments, but the built environment is also a tool for nurturing deep social relationships that are vital for children’s development. Compact cities that allow parents and caregivers to spend more time with their children, promote neighborhood encounters, and respect diversity and inclusion are environments that ultimately benefit children and build resilience.

4. Discussion
In this section, we discuss how the main findings shed light on potential knowledge gaps in the field of CFC.

The review shows that there are three key dimensions for achieving child-friendly cities: rights, governance, and physical environment. Children’s rights are generally not contested in the existing literature; instead, they act as a basis to promote the improvement of the physical environment as a platform for fulfilling those rights. The importance of suitable urban environments for the development of children is also widely agreed upon in the literature. Finally, scholars concur that good governance is a key factor to achieve child-friendly cities.

Despite the agreements on these dimensions, the available studies mainly focus on the rights and the physical environment. Thus, confirming that the main gap to be addressed is on the governance dimension. Scholars widely recognize the need for intra-governmental integration of policies and actions to successfully achieve the goals of CFC (Malone, 2015; Riggio, 2002). However, not much attention has been paid to the existence or lack thereof of this coordination and its effects of it on policy formulation and implementation.

Despite the emphasis on conceptualizing CFC as a system of governance, there is relatively limited research on this dimension. Future research analyzing policy-making and governance processes can be the leading clues to understanding why child-friendly city approaches do not significantly influence the urban environment.

Since CFC has goals that must be covered by different sectors, the assumption is that spatial policies should be integrated instead of categorized in silos. This integrated nature is the reason why scholars insist on the need for stakeholders to work towards vertical and horizontal coordination to achieve CFC. Most studies mention the role of governments but do not cover the importance of the involvement of other governmental levels and wider stakeholders in the pursuit of child-friendly goals. Many studies focus on children’s participation as a part of the governance dimension; however, participation is seldom studied within a multi-level policy ecosystem. Understanding how children’s consultation affects policy must be done with a multi-level approach (Sullivan et al., 2021). This would also increase their agency involving children not only in the role of users but as a greater contributor to decision-making (van Vliet et al., 2015). Despite the evidence that calls for an urgent understanding of multi-actor and multi-level coordination, this gap is yet to be filled.

Within the explored literature, the contradictory and clashing agendas related to CFC are mentioned, but there is no study about the process of influencing the agenda, or about the drivers for policymakers and their interactions with other stakeholders in the policy formulation process of CFC. Analyzing the agenda-setting process of successful CFC could become a guide for planners and local governments to adopt policies that respond to children’s rights in their urban planning processes.

In terms of scale, the review shows that most of the research happens at the neighborhood level; similar findings are reported by other scholars (Loebach and Gilliland 2016b in Hasanzadeh et al., 2022); however, child-friendly neighborhoods are more likely to be attained when city-wide strategies are in place, as efforts in smaller scales cannot succeed if city and national agendas have contradictory goals (Tranter & Pawson, 2001). Moreover, while local governments are the main actors called to action for the achievement of child-friendly cities, the few studies that touch upon child-friendly governance are focused on the
national level and are yet to be adapted to the local scale. Strategies that envision child-friendly communities, at the neighborhood or city level, should have an integrated approach with national policies and international commitments. A study on the connections between the different scales is yet to be conducted.

Some studies, such as Bequele’s (2010), Aarts et al.’s (2011), Malone’s (2015), and Rahamangtyas and Rahayu (2019) serve as the foundation for further research since their methodology and frameworks can be replicated and extrapolated to increase knowledge in the field. The policy cycle of a city’s urban planning processes could be analyzed, including (1) how the topic of child-friendliness can be included in urban agendas, (2) how CFC plans are formulated, and (3) to what extent these plans are implemented. Further research is suggested to study the enablers and barriers that local governments face when working towards CFC.

Furthermore, the CFC field can benefit from the work of scholars in other fields like the climate policy field, who claim that vertical and horizontal integration is a mechanism to accelerate climate-friendly policies towards global diffusion. The same can happen for child-friendly spatial planning policies. First, multi-level governance facilitates knowledge sharing and reinforces policy creation cycles, leading to better quality policy. Second, it allows different levels to align their actions to facilitate proper implementation. Third, the wide variety of interactions makes it possible for innovation to occur in the governance system (Hickmann, 2021; Jänicke, 2015). However, there are no studies yet on CFC using a multi-level governance perspective and how local, national, and international agendas and policies match, cooperate, or coordinate with each other. An extrapolation of the multi-governance frameworks used for climate policies in the context of CFC can be used to understand how the field can move forward.

Different approaches to studying policy-making and governance dynamics could serve to fill in the knowledge gap in the field; consequently answering the question of why child-friendly cities are not mainstream yet by recognizing the barriers that local governments face in the process.

5. Conclusion

The main question of this paper is why child-friendly cities are not yet achieved in urban planning, despite their relevance. We conducted a systematic literature review to understand first how the concept of child-friendly cities is placed within urban planning. And second, by taking stock of the current knowledge, we were able to identify the empirical basis of current literature, as well as its geographical coverage and scale. Moreover, we raised relevant knowledge gaps that mark a research avenue for the future.

We concluded that the concept of CFC has three main dimensions: rights, governance, and physical environment. Authors agree that cities must fulfill children’s rights, and research has successfully proved the importance of the physical environment in children’s development and evidencing the importance of children’s well-being for sustainable development. Moreover, it is widely recognized that good governance is a necessary condition to translate children’s rights into the physical environment.

However, the question of why child-friendly city approaches are not yet influencing urban environments can not straightforwardly be answered by the literature review, mainly because the governance dimension has been scarcely researched. Despite the agreement on having governance systems, these systems have not been the object of more profound research. We do not yet understand the institutional and governance processes of translating children’s rights into the physical environment. Therefore, the findings of this study are relevant for future research, as it provides a clear knowledge gap that needs to be filled: the governance systems of child-friendly cities.

Although every article in the selected literature mentions diverse stakeholders, and many authors do study children’s participation in governance, less is said about the dynamics and interactions between all actors. Moreover, the barriers to implementing child-friendly cities’ are seldom mentioned, so there is no extensive list of challenges that could explain why CFC are not realized yet.

The current review provides a map of the status of the concept of CFC. By identifying the three main dimensions of the concept, this study highlights the knowledge gap on the governance dimension that needs to be filled to bridge the knowledge on the recognition of children’s rights and its application in the physical environment. The results shed light on the research avenue that could be followed as an action plan to fill in the gap: focusing on the urgency of expanding on the governance dimension, more specifically on the multi-level coordination and dynamics across stakeholders in the planning process. This would provide relevant scientific knowledge to ensure the fulfillment of children’s rights in the context of urbanization. Future research would also benefit from an analysis of the policy cycle to trace the process of implementing CFC and identify specific enablers and barriers.

CRediT authorship contribution statement

Viviana A. Cordero Vinuesa: Conceptualization, Methodology, Software, Formal Analysis, Investigation, Writing - Original draft, Visualization Femke Nierkerk.: Conceptualization, Methodology, Formal Analysis, Writing - Original draft, review, and editing. Terry van Dijk: Conceptualization, Methodology, Writing - Original draft, review, and editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

References


