



Quality of Park and Playground with Park Use and Physical Activity in Children: A Scoping Review

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Authors' contributions

This work was carried out in collaboration between both authors. Author HAQ designed the study, performed the search strategy and analysis and wrote the first draft of the manuscript. Author JMP provide suggestions on search strategy and analysis and edited the final draft. Both authors read and approved the final manuscript.

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ABSTRACT

Research on the quality of parks and playgrounds is limited, particularly regarding how conditions and cleanliness of parks and playgrounds influence park-based physical activity in children. This study explored the relationship between the quality of parks and playgrounds and physical activity in children, through a scoping review.

The scoping review used a systematic search to synthesize research findings on the topic and to identify gaps in the literature. Health Science databases were searched using a three-component search strategy, combining “park and playground”, “quality”, and “physical activity”, revealed 301 titles. Out of which a total of 10 articles was selected in accordance with the selection criteria. The review showed that the quality of parks and playgrounds is a broad concept: it includes a combination of features and amenities, condition, cleanliness, and safety. Features, amenities, and safety of parks and playgrounds are associated with use and, to a limited extent, with park-based physical activity in children in the case of features only. However, few studies were found exploring

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other aspects of quality, such as the cleanliness and condition of parks and playgrounds, leading to inconclusive findings on this aspect of the relationship. Future original studies should explore the quality attributes of parks and playgrounds that can affect physical activity in children, so intervention strategies on the quality components of parks and playgrounds can be planned.

Keywords: Park and playground quality; park use and physical activity; children; built environment.

1. INTRODUCTION

Factors associated with decreased physical activity levels in children include aspects of the built environment [1]. The built environment is defined as man-made structures and surroundings, recreational facilities, such as parks and playgrounds, that are either deliberately constructed or modified (altered) by human activity [2].

Characteristics such as the presence and availability of features, amenities and incivilities, and safety have been used in several studies as the primary components in the quality of parks and playgrounds that are related with physical activity and promotes individual physical activity levels [3-5,6,7-8]. Separate analyses of children's physical activity, inclusion of other quality characteristics, such as conditions, cleanliness, and safety, or a focus on park-based physical activity of children are evident in only a limited number of studies [3,5,7,9]. To address this gap a scoping review was performed with the aim of exploring the literature on the relationship between quality characteristics of parks and playgrounds, including their condition and cleanliness, and physical activity in children.

2. METHODS

Scoping reviews of the literature are conducted to identify issues and gaps and to identify areas in which research has been limited [6]. Assessment of the quality of the literature is generally not a part of scoping reviews, unlike systematic reviews [6]. The scoping review typically is structured as follows [6]:

1. Identify the research question;
2. Search for relevant studies;
3. Select the studies, based on pre-defined selection criteria;
4. Chart the data, and;
5. Collate, summarize, and report the results.

2.1 Identifying the Research Question

The research question for this review was: does the quality of parks and playground, as defined

by the presence of features and amenities, their condition and cleanliness, and park safety influence park and playground use and related physical activity in children?

2.2 Searching for Relevant Studies

A three-component search strategy, combining "park and playground", "quality", and "physical activity", was used in the review. Addition of the fourth-component "child" to the above strategy only showed 12 articles on Medline Ovid, thus a three-component search strategy (stated above) was used, according to the advice of an experienced librarian in Health Sciences at Western University, Canada. The details of the search strategy are provided in Fig. 1.

2.3 Selection of Studies Based on Pre-Defined Selection Criteria

The details of the selection criteria are provided in Fig. 2. The selected studies were assessed by a single researcher after discussion with at least two experts in the field. Of the 301 articles identified by the search strategy, only 10 met the selection criteria, as described in Fig. 2.

2.4 Data Charting and Collating, Summarizing, and Reporting the Results

A charting approach, based on a descriptive-analytical method [6], was used to synthesize and interpret the key results described in the selected studies [6]. It includes a description of the numerical data and other data and results obtained from each of the quantitative and qualitative studies, such as the authors' names, study design, setting, publication year, sample characteristics, results and conclusions [6].

To articulate the study results from the reviewed studies, the full text of the articles was read several times to extract statements related to the features, amenities, incivilities, conditions, cleanliness, and safety of parks and playgrounds, to their use and related physical

activity from the results section of each article. Emerging thematic analysis was performed on the extracted statements identified from the results section of each of the full-text articles.

3. RESULTS

The descriptive and thematic analysis results are provided in Table 1.

4. DISCUSSION

4.1 Overall Quality of Parks and Playgrounds Influence Their Use and to a Limited Extent Physical Activity in Children

Cumulative study results showed that higher-quality parks and playgrounds, with good-quality courts and fields were associated with increased use of parks and playgrounds in children, compared to lower-quality parks and playgrounds [3,10]. However, a few authors reported insignificant findings on the quality of parks and playgrounds and park use in children [4,5,7]. This difference in findings among the studies might be related to different methods of measuring park quality, for example, direct observation by the researcher [7] and quality of parks measured by Geographic Information Systems (GIS) [4]. Further, overall quality of parks and playgrounds is a broad category encompassing many characteristics and components of parks and playgrounds. The authors used different characteristics of parks and playgrounds to

assess the overall quality of parks and playgrounds, leading to differences in findings [5,7,8,9].

4.2 Presence of Features and Amenities of Parks and Playgrounds Influence Their Use and Physical Activity in Children Only For Features

The review showed that the presence of features in parks and playgrounds was associated with increased park use and physical activity levels in children. Children were mostly found in and around park features and amenities such as fields, open space areas, coverage/shade, and picnic areas [8,11]. Several authors reported that park features, such as soccer fields, basketball courts, and skateboarding facilities, were associated with increased park use and physical activity [3,10,12,13].

Park amenities, such as benches and tables, were associated with increased park use but not with physical activity [9,12] as they are resting places promoting sedentary activities. Authors have shown that both features and amenities of parks and playgrounds can attract visitors to visit these places but that features are more influential than amenities in promoting physical activity [9,14]. The amenities and aesthetics of parks and playgrounds, while a greater source of attraction and possibly associated with increased visits and greater park use, tend to promote sedentary activities [10,12].

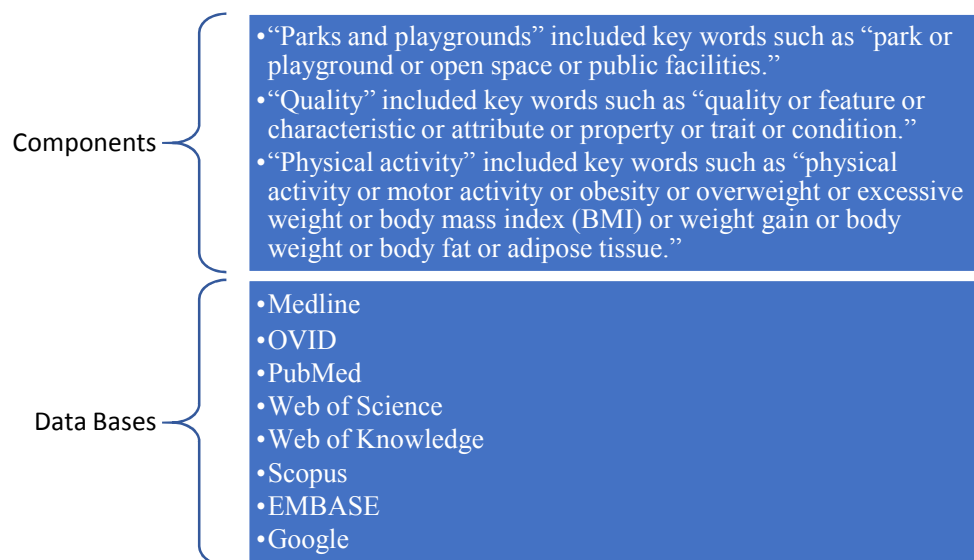


Fig. 1. Detailed search strategy

- 1) Measure quality characteristics, such as the features, amenities, incivilities, crime, or safety of parks and playgrounds.
- 2) Measure child physical activity or obesity or park and/or playground use.
- 3) Report separate results for children (aged 0-18 years old).
- 4) Written in English.
- 5) Available or found before May 2012.

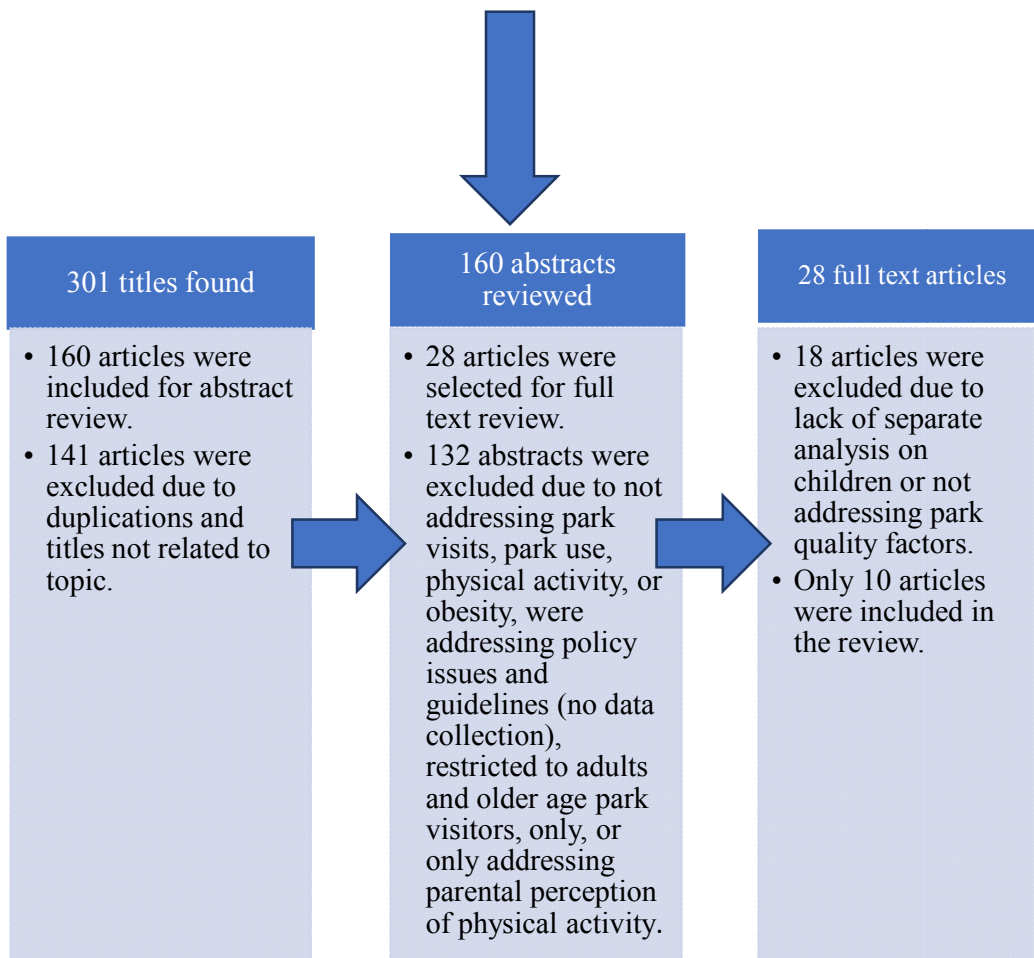


Fig. 2. Selection criteria and systematic selection of relevant articles for data collection

Table 1. Descriptive and thematic analysis results

Descriptive results	
Type of Studies	Cross-sectional (n = 3) Surveys (n = 2) Observational (n = 1) Mixed methods (n = 1) No study design (n = 3)
Study setting	US (n = 7) Brazil (n = 1) Australia (n = 1) Canada (n = 1)
Year of publication	2002 - 2011.
Number Parks visited	4-100
Number Children Included	163-2712
Age of Children	Children of all ages (n = 4) Middle-age children/adolescents (n = 3) Individuals of all ages (n = 3)
Thematic Results	
Theme 1	Overall quality of parks and playgrounds influence their use and to a limited extent physical activity in children (n = 5).
Theme 2	Presence of features and amenities of parks and playgrounds influence their use. Presence of features only influences physical activity in children (n = 4).
Theme 3	Inconclusive influence of condition and cleanliness of features and amenities of parks and playgrounds on their use and physical activity in children (n = 2).
Theme 4	Safety and crime rates of parks and playgrounds influence their use and to a limited extent physical activity in children (n = 4).

4.3 Inconclusive Influence of Condition and Cleanliness of Features and Amenities of Parks and Playgrounds on Their Use and Physical Activity in Children

The review identified a scarcity of literature regarding the relationship among the condition and cleanliness of parks and playgrounds, their use and physical activity in children. Loukaitou-Sideris and Stieglitz [10] found that clean benches and tables, in good condition, were associated with increased usage of picnic areas in the parks. Colabianchi et al. [11] found that overall cleanliness was negatively associated with the use of renovated school playgrounds in girls and boys. This seeming contradiction might have arisen because playgrounds in heavy use will be less clean than those that are used very little [9,11].

4.4 Safety and Crime Rates of Parks and Playgrounds Influence Their Use and to a Limited Extent Physical Activity in Children

The review showed that safety issues could hamper park use; however, evidence remains lacking as to safety's relationship with physical activity. Authors have shown that unsafe or poorly maintained parks, with complaints such as gangs and persons under the influence of alcohol, are associated with decreased park use among park visitors, including children [10,15]. However, crime rates are not associated with physical activity [4]. This difference among studies might be related to how the safety of parks and playgrounds was measured [4,15]. This contradiction might also be gender related, as safety issues (safety, dangerous traffic, lighting, and crowded parks) inhibit physical

activity among girls but less so among boys [15]. These findings highlight the roles of park safety and gender in terms of park use and physical activity, which are considerations that future studies should explore.

4.5 Implications for Future Research

The review revealed a scarcity of research on the relationship between the quality of parks and playgrounds and physical activity in children. The reviewed studies focused predominantly on the presence of features and amenities of parks and playgrounds. Studies explored the cleanliness and condition of parks and playgrounds had conflicting results. This gap in the literature warrants future studies on the conditions and cleanliness of features and amenities, in addition to the relationship between the quality of parks and playgrounds and physical activity in children, as park and playground quality factors are modifiable in comparison to other factors influencing child physical activity.

The review also showed that the measurement of park quality differed among studies (e.g., objective (GIS data) and subjective (perception of participants via survey) means of measurement) which thus created conflicting findings. Measurements, such as GIS, can be used to assess the presence of features but do not assess all aspects of park quality, while perceived park quality evaluates the condition and cleanliness of features and amenities, in addition to their presence. Future studies should include both objective and subjective measurements to explore the possible reasons for these differences.

Moreover, studies have used different characteristics of parks and playgrounds while evaluating their quality. To evaluate the role of the quality of parks and playgrounds, a study should include all of the quality characteristics of parks and playgrounds that can influence their use and physical activity in children.

This scoping review identified those quality attributes of parks and playgrounds, such as park conditions, cleanliness, and safety, in which research is lacking. The identification of these quality characteristics provides future researchers with a list of essential quality components of parks and playgrounds to include when conducting original and interventional research on the topic.

The review also provided limited information regarding the influences of gender on the relationship between the quality of parks and playgrounds and physical activity patterns in children. But this body of literature is very limited, both in scope and in number of studies. Future studies should identify the quality characteristics of parks and playgrounds that influence their use and physical activity, in particular gender, so intervention studies can be planned for children of both genders.

5. CONCLUSION

The quality of parks and playgrounds is a broad concept, and it includes a combination of features and amenities, condition, cleanliness, and safety. The features, amenities, and safety of parks and playgrounds are associated with their use and, to a limited extent, with park-based physical activity in children, in the case of features only. However, few studies were found exploring other aspects of quality, such as the cleanliness and conditions of parks and playgrounds, leading to inconclusive findings on this aspect of the relationship. Since quality is a modifiable aspect of the park and playground environment, future research explicating this relationship is useful for identifying changes that can be made that will promote physical activity in children.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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