




# BMJ Open Associations between contextual and compositional characteristics of early childcare facilities with health, health behaviours and well-being among young children aged 0 to 6 years: protocol for a scoping review

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## ABSTRACT

**Introduction** Early childhood is an important life stage which is crucial for determining health and health inequalities in later life. At the meso-level (institutional-level), early childcare facilities (eg, kindergartens, preschools) are the most important agent of socialisation next to families in young children aged 06 years. In recent years, an increasing amount of studies has focused on contextual and compositional characteristics of early childcare facilities and their association with health (eg, self-rated health), health behaviour (eg, physical activity) and well-being (eg, emotional well-being) in this age group. However, as currently no overview of the available literature on this topic exists, we will conduct a scoping review including various study designs (eg, cross-sectional studies, prospective studies, qualitative studies).

**Methods and analysis** We will follow the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews. A systematic search of the following scientific databases will be conducted: PubMed/Medline, PsycInfo, Sociological Abstracts, Education Resources Information Center and The Cochrane Library. During the selection process, we will follow a two-step process. First, two reviewers will independently screen titles/abstracts of all potentially eligible articles by applying a set of previously defined inclusion and exclusion criteria. After the completion of the title/abstract screening, full texts of the remaining articles will be screened following the same procedure. To determine inter-rater agreement between reviewers, we will calculate Cohen's Kappa after both steps. Key characteristics (eg, country of origin, sample size, study design) of included articles will be extracted. We will map the evidence available by providing a summary table on the key characteristics extracted and by presenting the associations using various types of illustrations.

**Ethics and dissemination** Since no primary data will be collected for this review, ethical approval is not required. Our findings will be published in an international peer-reviewed journal and presented at national and international conferences.

## Strengths and limitations of this study

- This is the first scoping review focusing on the association of contextual and compositional characteristics of early childcare facilities and health (eg, self-rated health, physical health, mental health), health behaviour (eg, physical activity) and well-being (eg, emotional well-being) of young children.
- Population of interest are children aged 06 years who are in a life stage which is crucial for health and health inequalities in later life.
- At the meso-level (institutional-level), early childcare facilities (eg, kindergartens, preschools) are the most important agent of socialisation in this age group next to families.
- As we excluded studies conducted in non-developed countries and those in transition, our findings will represent the current state of research in developed countries only.

## INTRODUCTION

Early childhood has been identified as an important life stage laying the foundation for health and well-being in later life.<sup>1 2</sup> The age range between 0 and 6 years is considered 'a critical window' for children's development.<sup>3</sup> For example, health behaviours, such as physical activity and nutrition behaviour, are learnt and established at this life stage and may be maintained in the long term.<sup>4 5</sup>

From a socioecological perspective, health and well-being are not only determined by individual factors (eg, gender, ethnicity) but also by the environment in which the individual lives.<sup>6 7</sup> A common sociological analysis scheme differentiates between micro-level, meso-level and



macro-level. While the micro-level describes individual and the macro-level societal characteristics, the meso-level represents the institutional-level in these socioecological models.<sup>6,7</sup> Throughout their life, individuals are involved in different institutional contexts, such as family homes, early childcare facilities, schools, universities and the workplace.<sup>8,9</sup> Therefore, in accordance with the socioecological perspective, it seems plausible that meso-level characteristics of these institutions affect health and well-being above and beyond the individual-level.<sup>9</sup> For young children (aged 0-6 years), early childcare facilities are the most important agent of socialisation, next to families<sup>10</sup> and their relevance to health and well-being of young children has long been recognised in various research disciplines (eg, social sciences, medicine and public health). As the definition of early childcare facilities varies across regions and countries, in this review we use this term for all institutions providing childcare for children in the age range between 0 and 6 years including childcare/daycare centres, family childcare homes, kindergartens, nurseries and preschools.

Previous research on this topic has especially focused on the individual-level, particularly on the association of early childcare attendance with health and well-being.<sup>11-14</sup> However, in recent years, research examining the role of contextual and compositional characteristics of early childcare facilities on health, health behaviour and well-being in young children has steadily increased. While contextual characteristics describe the structural conditions of an institution (eg, duration of childcare, teacher-child interactions, equipment for outdoor activities, availability of healthy meals), compositional characteristics (eg, sex-ratio, age-ratio, immigrant-ratio) include aggregated information of the individuals attending the institution.<sup>15</sup> For example, existing studies on contextual characteristics of early childcare facilities and associations with health, health behaviour and well-being examine spatial aspects, such as comparing early childcare facilities by location in either rural versus urban areas.<sup>16</sup> In terms of a contextual perspective, aspects, such as activity-friendly equipment,<sup>17-20</sup> space for playing<sup>21</sup> and playground surface<sup>20,22</sup> at the childcare-level were analysed in relation to children's physical activity behaviour. Regarding compositional aspects at the meso-level, existing studies focused, for example, on associations between socioeconomic position of the childcare facilities and physical activity behaviour,<sup>23-25</sup> nutrition behaviour<sup>24</sup> or mental health of the young children.<sup>26</sup>

It is well known from previous research that health inequalities already exist among young children. For instance, children whose parents have a lower socioeconomic position are more likely to be physically inactive,<sup>27</sup> consume unhealthy meals and snacks<sup>27-29</sup> and to show worse health outcomes<sup>30-32</sup> than those coming from families with a higher socioeconomic position. However, it still remains unclear whether compositional and contextual factors mediate or moderate emerging

health inequalities. If this is the case, changing context and composition at the early childcare-level could be one strategy to reduce childhood health inequalities.

Currently no comprehensive review that provides an overview of the literature available regarding associations between contextual and/or compositional characteristics at the childcare-level with health, well-being and health behaviours of young children exists. Such a review would be helpful to identify existing knowledge gaps and to guide future research. While classical systematic reviews are usually conducted to answer clearly defined research questions to inform the development of evidence-based guidelines, scoping reviews typically deal with broader research questions to examine the type and nature of evidence currently available on a given research topic.<sup>33,34</sup> Hence, we will conduct a scoping review to answer the following questions:

1. Which compositional and contextual characteristics of early childcare facilities are associated with health, health behaviours and well-being in young children aged 06 years?
2. In which way is the association between socioeconomic position and health mediated or moderated by compositional and contextual characteristics of the childcare context?

## METHODS AND ANALYSIS

This review will be based on the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).<sup>34</sup> As this work is a review of published work, ethical approval is not required.

### Eligibility criteria

Studies will be eligible for inclusion, if they meet the following criteria:

In line with the characteristics of a scoping review, not only quantitative study designs (eg, cross-sectional studies, prospective studies, cohort studies, case-control studies, baseline data of intervention studies) but also qualitative ones will be eligible for inclusion. The population of interest are children aged 0 to 6 years who attend an early childcare facility. Factors of interest will be various compositional (eg, gender, age, migration background, socioeconomic position) and/or contextual characteristics (eg, type of childcare, staff characteristics, norms, opportunities for physical activities, resources for healthy nutrition) of childcare facilities. Due to our aim to provide a broad overview on the literature available, we decided to follow the approach of Priest *et al*<sup>35</sup> who regarded health and well-being from a 'holistic' perspective, including various measures of negative, as well as positive health outcomes, across physical, mental and behavioural areas. Main outcomes will include health (eg, self-rated health status, respiratory tract infections, gastrointestinal illnesses), health behaviours (eg, nutrition, physical activity) and

additional health-related outcomes (eg, emotional and physical well-being, quality of life). The only condition that the outcomes will have to fulfil is that they have to be assessed at the child-level. However, no further restrictions on assessment methods (eg, questionnaire, interview, blood samples and urinary samples) and reporting formats (eg, self-reported, parent-reported, clinical examination) will be made. Only articles of studies conducted in developed countries (according to the country classification of the United Nations)<sup>36</sup> will be considered because various socioecological differences exist between developed countries, countries in transition and developing countries. Articles published in English or German between 1 January 2000 and the date of final database screen will be considered for inclusion. A detailed overview of all inclusion and exclusion criteria is provided in [table 1](#).

### Information sources and search strategy

The following scientific literature databases will be searched for potentially eligible articles: PubMed/Medline, PsycInfo, Sociological Abstracts, ERIC (Education Resources Information Center) and The Cochrane Library. Although we will not include reviews, The Cochrane Library will be searched for reviews which examined studies probably fitting the inclusion criteria, as we will screen the reference lists of these reviews for further relevant articles. The search strategy was first developed for Pubmed/Medline and afterwards adapted to the other scientific databases. For the search in Pubmed/Medline keywords were selected from the Medical Subject Headings (MeSH) Thesaurus and complemented with additional relevant free-text terms. For example, we included search terms such as: preschool\*[Title/Abstract], kindergarten\*[Title/Abstract], context[Title/Abstract], meso-level, caregivers(MeSH), Pre-School Teacher[Title/Abstract], child-teacher relationship[Title/Abstract], classroom size[Title/Abstract], quality of care[Title/Abstract], playground[Title/Abstract], health[MeSH], quality of life[MeSH], dietary intake[Title/Abstract], meal times[Title/Abstract], physical activity[Title/Abstract], wellbeing[Title/Abstract]. The full search strategy applied to Pubmed/Medline can be found in the online supplementary additional file 1. Search strategies for all other databases will be available from the corresponding author on request. Database searches will be conducted by an experienced medical librarian. Search results will be downloaded into the reference management tool EndNote V.X8 (Thomson Reuters), and all duplicates will be removed using this tool. Afterwards, the remaining articles will be uploaded to Rayyan,<sup>37</sup> an internet-based software for managing the study selection process.

### Study selection process

The selection process will consist of two steps of screening: in a first step, title and abstract will be reviewed; in a second step, a full-text review will be conducted for those

papers included during the first step. Both screening steps will be conducted independently by two reviewers (JH-K and KD) based on a set of previously defined inclusion and exclusion criteria ([table 1](#)).

To determine inter-rater agreement between reviewers, we will calculate Cohen's Kappa after both phases. Disagreements will be resolved via discussion between both reviewers. In case, agreement between both reviewers cannot not be achieved, a third author (RH) who is familiar with the scoping review will make the final decision.

Relevant studies will be included if they meet the above-mentioned eligibility criteria. The applicability of these criteria has been pretested in an exemplary test selection by three of the authors (n=100; by JH-K, RH and KD). We will provide an overview of number of studies included in each step of the study selection process using the PRISMA flow diagram.

### Data extraction process

Two authors will extract the data from the articles of all studies included in the scoping review. This procedure will be based on a standardised data extraction form. To ensure a high quality of data extracted, we plan a double extraction of 5%10% of all articles included.

The following data will be extracted: author names, year published, year of study execution, country of origin, study type, number of participants, basic characteristics of participants, compositional and contextual characteristics of early childcare facilities and outcome measures. Although quality assessment of studies included is not mandatory for scoping reviews, we will extract some general quality indicators (eg, sample size, selection of participants, occurrence of a selection bias and limitations stated by the authors). We will also identify multiple articles of the same study during the data extraction process. However, in case that these articles will report on different information of interest such as different compositional or contextual characteristics or different outcomes, we will label these articles as multiple articles of the same study but include all articles in the data mapping process.

### Analysis and presentation of results

In a first step, we will provide a summary table on the main characteristics of articles extracted including the following: years of publication, country of origin, sample size and study designs. In a second step, we plan to map the evidence found on associations between compositional/contextual factors at early childcare centres and health, health behaviours and well-being. In this mapping process, we will take the outcome measures as a starting point. Depending on the number of studies that will be available for each outcome, we will classify the outcomes into different main categories (eg, physical health/development, mental health/development, physical activity, nutrition behaviour). The final outcome categories will be determined after data

**Table 1** Overview of inclusion and exclusion criteria applied during the selection process

	Included	Excluded
Study designs	<ul style="list-style-type: none"> <li>▶ Cross-sectional studies</li> <li>▶ Cohort studies</li> <li>▶ Prospective studies</li> <li>▶ Case-control studies</li> <li>▶ Qualitative studies</li> <li>▶ Intervention studies (only baseline data)</li> </ul>	<ul style="list-style-type: none"> <li>▶ Case studies</li> <li>▶ Cell studies</li> <li>▶ Reviews</li> <li>▶ Author replies/comments</li> <li>▶ Animal studies</li> </ul>
Populations	<ul style="list-style-type: none"> <li>▶ Children aged 0-6 years attending an early childcare facility</li> </ul>	<ul style="list-style-type: none"> <li>▶ Children aged 0-6 years not attending an early childcare facility</li> <li>▶ Patient samples (children with specific conditions/diseases)</li> <li>▶ Older age groups (eg, school children, adolescents, adults, elderly people)</li> </ul>
Factors of interest	Compositional characteristics at the early childcare-level: <ul style="list-style-type: none"> <li>▶ Gender</li> <li>▶ Age</li> <li>▶ Immigrant background</li> <li>▶ Language skills</li> <li>▶ Socioeconomic position</li> <li>▶ Parental commitment</li> </ul>	Compositional characteristics outside the early childcare-level: <ul style="list-style-type: none"> <li>▶ At the family level</li> <li>▶ In the home environment</li> <li>▶ In other institutions (eg, in schools)</li> </ul>
	Contextual characteristics at the early childcare level: <ul style="list-style-type: none"> <li>▶ Location of childcare facility</li> <li>▶ Type of childcare facility (private, public)</li> <li>▶ Childcare facility size</li> <li>▶ Group size</li> <li>▶ Duration of childcare (full-time, half-time)</li> <li>▶ Teacher/child ratio</li> <li>▶ Staff characteristics (eg, number, age, sex, migration background, qualification)</li> <li>▶ Toys/playing equipment</li> <li>▶ Financial resources</li> <li>▶ Opportunities for PA (eg, sport rooms, outdoor area, playground)</li> <li>▶ Equipment for PA</li> <li>▶ Integration of PA in daily routines</li> <li>▶ Projects that promote PA</li> <li>▶ Resources for healthy eating</li> <li>▶ Cooking facilities</li> <li>▶ Lunch/other meals offered</li> <li>▶ Food quality</li> <li>▶ Free access to water/food</li> <li>▶ Nutrition rules (eg, lunch box content)</li> <li>▶ Projects that promote healthy eating</li> </ul>	Contextual characteristics outside the early childcare-level: <ul style="list-style-type: none"> <li>▶ At the family level</li> <li>▶ In the home environment</li> <li>▶ In other institutions (eg, in schools)</li> </ul>
Outcomes	<ul style="list-style-type: none"> <li>▶ Health outcomes (eg, self-rated health, physical health, mental health)</li> <li>▶ Health behaviour (eg, nutrition, PA sedentary behaviour, media consumption, passive smoke exposure)</li> <li>▶ Other health-related outcomes (eg, obesity, well-being, quality of life)</li> </ul>	
Regions/countries	<ul style="list-style-type: none"> <li>▶ Developed countries</li> </ul>	<ul style="list-style-type: none"> <li>▶ Developing countries</li> <li>▶ Countries in transition</li> </ul>
Languages	<ul style="list-style-type: none"> <li>▶ English</li> <li>▶ German</li> </ul>	<ul style="list-style-type: none"> <li>▶ All other languages</li> </ul>

PA, physical activity.

extraction will be completed. Based on the respective outcome category, we will provide a graphical illustration on the associations found (none, positive, negative) with the contextual/compositional characteristics at the early childcare facilities. As no statistical associations can be drawn from qualitative studies, we will not include them in the graphical illustrations. However, we will report their findings in the text of the results

section and will contrast their findings with those of the quantitative ones. Furthermore, the mapped evidence will be accompanied by a clear descriptive summary in the text part of the results section.

In conclusion, we will conduct the first scoping review that will summarise existing evidence on associations of contextual/compositional characteristics of early childcare facilities and health, health behaviour and

well-being of young children. A comprehensive overview on this topic will be helpful to identify existing knowledge gaps and to guide future research efforts. However, as we will not include articles from studies that have been conducted in developing countries or countries in transition, findings will represent the current state of research in developed countries only. Thus, future research efforts should summarise the available literature on this topic in less developed countries to extend our work and end up with a worldwide picture.

### Patient and public involvement

No patients involved.

### ETHICS AND DISSEMINATION

Ethical approval is not required because no primary data will be collected for this scoping review and all studies will be identified via literature searches in scientific databases. Our findings will be published in an international peer-review journal and presented at national and international conferences.

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**Contributors** JH-K and KD drafted the manuscript. JH-K, SS, RH and KD contributed to the development of the selection criteria. JH-K, SS, RH, NO and KD contributed to the development of the search strategy. SS, RH, NO, SH, MH, LS and CP critically revised the draft manuscript for important intellectual content. All authors read and approved the final version of the manuscript.

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**Patient consent for publication** Not required.

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Search Strategy Pubmed/Medline (Scoping review: Associations between contextual and compositional characteristics of kindergartens with health and health behaviour among pre-schoolers)

Aspect 1: Children\*

child[mesh] OR infant[mesh] OR Infan*[tiab] OR baby*[tiab] OR babies[tiab] OR toddler*[tiab] OR kid[tiab] OR kids[tiab] OR child*[tiab] OR pediatrics[mh] OR pediatric*[tiab] OR paediatric*[tiab]
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Aspect 2: Kindergarten\*

"Child Care"[Mesh] OR "Child Day Care"[tiab] OR "Child Daycare"[tiab] OR "Child care"[tiab] OR "Childcare"[tiab] OR "Infant care"[tiab] OR
"Nurseries"[Mesh:NoExp] OR "Schools, Nursery"[Mesh] OR „Nursery School"[tiab] OR „Nursery Schools"[tiab] OR
"Child Day Care Centers"[Mesh] OR "education center"[tiab] OR "education centre"[tiab] OR "head start"[tiab] OR day care center*[tiab] OR day care centre*[tiab] OR daycare centre*[tiab] OR
Kindergarten*[tiab] OR preschool*[tiab] OR pre school*[tiab] OR play school*[tiab] OR playschool*[tiab]

Aspect 3: compositional and contextual characteristics\*

"Social Environment"[Mesh] OR "meso level"[tiab] OR context[tiab] OR composition[tiab] OR setting[tiab] OR equipment[tiab] OR environment[tiab] OR
care routine*[tiab] OR "care time"[tiab] OR "quality of care"[tiab] OR "tuition fee"[tiab] OR
"School Teachers"[Mesh] OR Pre School Teacher*[tiab] OR Preschool Teacher*[tiab] OR "Caregivers"[Mesh] OR Caregiver[tiab] OR

Staff[tiab] OR Educator[tiab] OR "team age"[tiab] OR "caregiver age"[tiab] OR "teacher age"[tiab] OR "caretaker age"[tiab] OR "team size"[tiab] OR "team qualification"[tiab] OR "personnel qualification"[tiab] OR
Teacher child relationship*[tiab] OR child teacher relationship*[tiab] OR
"Group Structure"[Mesh] OR "group size"[tiab] OR "class size"[tiab] OR "classroom size"[tiab] OR "classroom climate"[tiab] OR
"Sex Ratio"[Mesh] OR "gender ratio"[tiab] OR "sex proportion"[tiab] OR "gender proportion"[tiab] OR "sex ratio"[tiab] OR
"age ratio"[tiab] OR
"immigrant"[tiab] OR "immigrants"[tiab] OR "migration background"[tiab] OR "migration status"[tiab] OR
"Play and Playthings"[Mesh] OR toy[tiab] OR play[tiab] OR plaything[tiab] OR game[tiab] OR
"Sports Equipment"[MeSH] OR playground[tiab] OR playfield[tiab] OR
"Meals"[Mesh] OR "meal plan"[tiab] OR "meal routines"[tiab] OR "meal quality"[tiab] OR "food policies"[tiab] OR "food restriction"[tiab] OR
neighbourhood[tiab] OR neighborhood[tiab] OR
"Built Environment"[Mesh] OR infrastructure[tiab] OR
"Health Promotion"[Mesh] OR "health education"[tiab] OR "health promotion"[tiab] OR "health campaign"[tiab] OR "physical activity promotion"[tiab] OR "sports promotion"[tiab] OR "healthy eating promotion"[tiab]

## Aspect 4: Health and wellbeing\*

"Health"[Mesh] OR Health[tiab] OR "Health Status"[Mesh] OR "Health Behavior"[Mesh] OR "health status"[tiab] OR "health behaviour"[tiab] OR "health behavior"[tiab] OR "Exercise"[Mesh:NoExp] OR
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physical exercise*[tiab] OR physical activit*[tiab] OR
"Sports"[Mesh] OR Sport[tiab] OR fitness[tiab] OR
"Motor Activity"[Mesh] OR motor activit*[tiab] OR motor skill*[tiab] OR
"Sedentary Behavior"[Mesh] OR "physical inactivity"[tiab] OR "sedentary behaviour"[tiab] OR "sedentary behavior"[tiab] OR sedentary lifestyle*[tiab] OR "screen time"[tiab] OR screentime[tiab] OR "TV time"[tiab] OR "television time"[tiab] OR video game*[tiab] OR computer time*[tiab] OR "smart phone"[tiab] OR "media time"[tiab] OR
"Diet"[Mesh] OR Diet[tiab] OR "dietary intake"[tiab] OR
"Nutritional Status"[Mesh] OR nutrition[tiab] OR
"Tobacco Smoke Pollution"[Mesh] OR "tobacco smoke pollution"[tiab] OR "involuntary inhalation"[tiab] OR "second hand smoke"[tiab] OR "secondhand smoke"[tiab] OR "passive smoking"[tiab] OR tobacco smoke exposure*[tiab] OR
"Eating"[Mesh] OR eating[tiab] OR food intake*[tiab] OR
"Quality of Life"[Mesh] OR "quality of life"[tiab] OR life quality*[tiab] OR HRQOL[tiab] OR life satisfaction*[tiab] OR
"Healthy Lifestyle"[Mesh] OR lifestyle[tiab] OR wellbeing[tiab]

\*All four aspects are connected via "AND"