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Perceptions and experiences of urban green spaces and their influence on health and well-being: protocol for a systematic review and thematic synthesis of qualitative evidence

Shkelzen Cekrezi
Universidad de Castilla-La Mancha
Antonio Miguel Caraballo-Betancort
antoniomiguel.caraballo@alu.uclm.es

Universidad de Castilla-La Mancha
Blanca Notario-Pacheco
Universidad de Castilla-La Mancha
Vicente Martínez-Vizcaíno
Universidad de Castilla-La Mancha
Eva Rodríguez-Gutiérrez
Universidad de Castilla-La Mancha
Irene Marcilla-Toribio
Universidad de Castilla-La Mancha
Ana Pérez-Moreno
Universidad de Castilla-La Mancha
María Martínez-Andrés
Universidad de Castilla-La Mancha
Bruno Bizzozero-Peroni
Universidad de Castilla-La Mancha

Study protocol

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Abstract

Background. Exposure to urban green spaces has been associated with benefits for physical and mental health and social well-being. However, most of this evidence comes from quantitative studies that rely on objective exposure indicators, which do not explain in depth how people interpret, use and experience these environments. This study will synthesize qualitative evidence on how people in urban settings perceive and experience the influence of accessible green spaces on their health and well-being.

Methods. This protocol follows the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P). MEDLINE (via PubMed), CINAHL Complete, APA PsycInfo, Scopus and Web of Science Core Collection will be searched from inception, without language or date restrictions, supplemented by a citation search and contact with experts.

Eligible studies will be published qualitative studies or mixed-methods studies with extractable qualitative findings that explore how members of the general urban population perceive the influence of green spaces on their health or well-being. Two reviewers independently screened the records and full texts. One reviewer will extract data using a piloted form, and a second will verify it. Two reviewers will independently assess the methodological limitations of each study using the Cochrane qualitative Methodological Limitations Tool (CAMELOT).

Findings will be synthesized using Thomas and Harden's three-stage thematic synthesis. Negative, neutral and ambivalent accounts are retained, and variations in population, context and green space characteristics are explored. Confidence in each review finding will be assessed using GRADE-CERQual. The completed review will be reported according to PRISMA 2020, PRISMA-S and ENTREQ.

Discussion. This review provides an integrated account of how people in urban settings perceive green spaces to influence their health and well-being, including adverse and ambivalent experiences and differences between groups and contexts. Its findings are intended to inform the equitable design, maintenance and use of urban green spaces.

Systematic review registration: PROSPERO CRD420261372673.

BACKGROUND

Green spaces have received increasing attention in public health, environmental health and urban planning because of their potential contribution to the health and well-being of the population. Although definitions of green space vary across disciplines and many studies do not define the term explicitly,[1] in urban settings, green spaces are usually defined as urban spaces covered by vegetation of any kind, such as parks, neighborhood green areas, greenways, community gardens, urban forests and tree-lined streets, as well as private gardens.[2] Moreover, the health benefits of green spaces depend on more than the presence of vegetation, as they are places where environmental, behavioral and social factors interact.[3, 4]

Several conceptual models have been proposed to explain how green environments may influence health. One influential framework groups these pathways into three domains.[4] First, green spaces may reduce harm by mitigating environmental stressors such as air pollution, noise and excessive heat. Second, they may restore capacity by supporting recovery from stress and mental fatigue. Third, they may build capacity by encouraging physical activity and facilitating social contact and cohesion.[3–5] These models specify expected mechanisms, but they say less about how people themselves experience and interpret these environments.

A substantial number of quantitative studies have examined the associations between green space and health. Systematic reviews have reported associations between greater green space exposure and lower all-cause mortality, better self-reported health, improved mood and attention, and more physical activity.[6–8] However, this evidence is heterogeneous and comes mainly from observational, often cross-sectional, studies, which limits causal inference.[4, 8]

Much epidemiological research has investigated this exposure through greenness, a measure of the presence or density of vegetation usually derived from satellite indices such as the normalized difference vegetation index (NDVI), or through the availability of, or proximity to, green spaces, measured with land cover data or the distance to the nearest park. As a result, exposure is defined and measured in different ways across studies.[4] Although these measures are valuable, they do not capture whether a place is perceived as welcoming or safe, how it is used, or whether residents consider it restorative, inclusive or relevant to their lives.[4, 9] The quality and characteristics of a green space may matter as much as its area or proximity,[9] and green space is unequally distributed, often favouring more affluent communities.[10] People with similar objective exposure may therefore experience different health implications because of differences in mobility, culture, age, sex, socioeconomic circumstances, disability, previous experience and local context. This has encouraged a conceptual shift from treating green space as a measurable exposure to understanding green spaces as experienced places, which people perceive, use and give meaning to. This review is concerned with green spaces in this latter sense. A 20-year scoping review, which argued for green place rather than green space as a health determinant, revealed that studies focused far more on material aspects, such as the abundance of green space and its proximity to home, than on its quality and characteristics. The same review concluded that sensory experiences and the activities and feelings attached to green spaces appear essential for health.[11] Research on perceptions of and preferences for urban green spaces has likewise sought to explain what shapes people's interactions with and use of these environments.[12]

Qualitative research is well suited for examining these issues because it captures people's own perspectives. It can explore how people interpret green environments; why they use or avoid particular spaces; which characteristics they regard as beneficial or problematic; and how these experiences intersect with everyday life, social relationships, identity and health. People's accounts may echo the pathways described above; for example, residents of three urban communities in Kumasi, Ghana, described how green spaces encouraged physical activity, reduced stress, improved attention and evoked positive emotions such as happiness.[13] Qualitative studies can also reveal experiences that

conventional pathway models do not readily include, such as fear, insecurity, exclusion, poor maintenance, unwanted social encounters and conflicts over the use of public space. These dimensions matter because health benefits should not be assumed to follow automatically from the provision of vegetation. The same environmental feature may support health for some groups while being irrelevant, inaccessible or unwelcome for others, which has implications for environmental justice.[10]

Several qualitative syntheses have addressed related questions. An earlier review of qualitative research examined the characteristics of urban parks associated with park use and physical activity.[14] A meta-ethnography synthesized the psychological and cognitive well-being benefits reported by people experiencing green space.[15] A recent qualitative metasynthesis examined adults' direct experiences of living nature and well-being and emphasized multisensory, relational and emotional dimensions.[16] Other qualitative syntheses have examined the experiences of nature-based rehabilitation and therapeutic recreation programs among people with mental disorders,[17, 18] the meaning of gardens for older people in nursing homes and residential care,[19] and the role of nature in early childhood education.[20]

These syntheses are valuable. However, their scope differs from the question addressed here. They focus on particular outcomes such as physical activity,[14] or psychological and cognitive well-being;[15] park characteristics;[14] clinical, institutional or educational settings;[17–20] or nature in general[16] rather than the everyday urban green spaces used by the general population. To our knowledge, no synthesis has integrated the perceived mental, emotional, physical and social health influences of everyday urban green spaces; the green space characteristics that participants associate with them; adverse or ambivalent experiences; and differences between population groups and contexts, with a formal assessment of confidence in each finding.

Finally, a qualitative synthesis can complement the epidemiological evidence. It can address not only whether green spaces are associated with health but also how, why and under what circumstances people perceive them to matter. This review will therefore systematically identify, appraise and synthesize qualitative evidence on how people in urban settings perceive and experience the influence of green spaces on their health and well-being. It pays explicit attention to unanticipated and disconfirming accounts rather than assuming that green space is uniformly beneficial.

Objectives

Review question

How do people in urban settings perceive and experience the influence of accessible green spaces on their health and well-being?

Primary objective

To systematically identify, appraise and synthesize qualitative evidence on how people perceive and experience the influence of green spaces on their health and well-being, with a focus on everyday interactions with accessible green spaces in urban settings.

Secondary objectives:

1. To identify the processes and mechanisms through which participants perceive green spaces to influence their mental, emotional, physical and social health and well-being.
2. To identify the characteristics of green spaces (e.g., type, quality, maintenance, amenities, and perceived safety) that participants associate with the health-related influences they experience.
3. To identify adverse, neutral or ambivalent experiences of green spaces, as well as perceived benefits.
4. How these perceptions and experiences vary by population characteristics, social position, urban context and the type or quality of green space should be explored.

METHODS

Design, registration and reporting

This is a protocol for a systematic review and thematic synthesis of qualitative evidence. The review methods were informed by the Cochrane-Campbell Handbook for Qualitative Evidence Synthesis.[21] The protocol was developed in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) statement.[22] A completed PRISMA-P checklist is provided in Additional file 1. The completed review will be reported in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) 2020 statement,[23] the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) statement[24] and the PRISMA extension for reporting literature searches (PRISMA-S), for the search methods.[25]

The review was registered in the International Prospective Register of Systematic Reviews (PROSPERO) on 29 June 2026 (CRD420261372673). Scoping searches were conducted in April 2026 to inform the development of the search strategy (recorded in PROSPERO as the start of formal searching). Registration took place before formal screening, data extraction, critical appraisal and synthesis began. At the time of protocol submission, the definitive searches had not yet been run, and formal screening had not started. According to the PROSPERO record, the review started on 26 April 2026 and is expected to be completed by 26 April 2027.

Eligibility criteria

Eligibility criteria were structured using the SPIDER framework (Sample, Phenomenon of Interest, Design, Evaluation and Research type), which was developed for qualitative evidence synthesis.[26] SPIDER was preferred to population, phenomenon of interest, and context (PICo)[27] because its evaluation element

specifies the influences of perceived health and well-being on which the review question focuses, and its design and research type elements define eligible qualitative and mixed-methods studies. Given that SPIDER has no context element and that the urban setting is also central to the question, context was added as a separate domain. Publations were also added as a domain because the PRISMA-P guidelines require protocols to specify report characteristics, such as publication status, date and language, as eligibility criteria.[22] The criteria are summarized in Table 1. The operational rules for the reviewers and a hierarchy of exclusion reasons are provided in Additional file 2.

Studies will not be required to report a standardized health outcome. Eligibility will depend on whether participants, or primary-study authors interpreting participants' accounts, describe the perceived influence of green space exposure, access, use or engagement on health, well-being or quality of life. Positive, negative, neutral and ambivalent perceptions will all be eligible.

In this review, a green space is an outdoor environment in which vegetation or other natural green elements are prominent characteristics. Accessible describes the type of space rather than its actual use or how easy participants perceive it to be to access: spaces within participants' urban living environments that are publicly accessible and privately accessible to the participant (such as a domestic garden) or routinely encountered in everyday life (for example, visible from home or passed on daily routes). Accounts of spaces perceived as inaccessible, unsafe or avoided therefore remain eligible when participants link them to their health or well-being because negative and ambivalent experiences are within the scope of the review. Private gardens are included because, for many urban residents, they form part of their everyday contact with green space. Everyday does not imply daily use; it refers to encounters that are part of ordinary urban life, such as routine, recreational or organized community activities within the urban area, as opposed to natural trips outside it or therapeutic programs. The urban settings are cities and towns, including their suburban, peri-urban and metropolitan areas, in any country; exclusively rural, remote or wilderness settings are not considered urban. Each setting will be classified primarily according to the description given in the primary study. When this description is absent or unclear, the named location will be classified using the degree of urbanization (DEGURBA),[28, 29] or an equivalent official national classification where DEGURBA cannot be applied: locations classified as cities or as towns and semidense areas will be eligible, and those classified as rural areas will be excluded. Unresolved cases were resolved by a third reviewer.

Table 1
Eligibility criteria

Domain	Included	Excluded
Sample	People of any age from the general population who live in, use or encounter green spaces in urban settings, including residents and community members. Studies of specific demographic or equity-relevant groups, including community-dwelling people living with health conditions or disabilities, are eligible when participants are recruited as community members.	Participants recruited as patients or service users of clinical, residential-care or other institutional settings. Professionals, planners or policymakers reporting only on population-level benefits rather than their own experience. Mixed samples in which findings from eligible and ineligible participants cannot be distinguished. Studies reporting only proxy accounts, in which parents or carers describe another person's experience rather than their own.
Phenomenon of interest	Perceptions, meanings and lived experiences of, and engagement with, everyday urban green spaces, and their perceived influence on health, well-being or quality of life. Eligible green spaces include public parks, neighborhood green areas, greenways, community gardens and allotments, urban forests and woodland, street trees, other publicly accessible vegetated environments and private domestic gardens. Organized community activities in these spaces are eligible when findings address the experience of the space.	Blue-space-only environments. Indoor plants. Virtual or image-based nature. Hospital or therapeutic gardens. Green space delivered as a clinical or therapeutic intervention, including referral through health services. Nature experiences outside the urban area.
Design	Recognized qualitative methods of data collection and analysis, e.g., individual, go-along or walking interviews, focus groups, ethnography, participant observation, qualitative diaries, photovoice and other participatory methods. Open-ended responses are eligible when they have undergone substantive qualitative analysis.	Qualitative data analysed only quantitatively. Open-ended comments presented only as isolated illustrations.
Evaluation	Participant-reported or qualitatively interpreted influences on health, well-being or quality of life, understood broadly, whether positive, negative, neutral or ambivalent.	Studies of green-space preferences, design, use or satisfaction with no link to perceived health, well-being or quality of life.
Research type	Qualitative studies. Mixed-methods studies with a qualitative component whose methods and findings can be extracted separately; only this qualitative component will be extracted, appraised and synthesized.	Purely quantitative studies.
Context	Urban, suburban, peri-urban or metropolitan settings, including towns, in any country. Studies conducted in both	Exclusively rural, remote or wilderness settings. Studies in both urban and

Domain	Included	Excluded
	urban and rural settings only when findings from urban participants or settings are reported separately; only these urban findings will be extracted.	rural settings in which urban findings cannot be distinguished.
Publication	Primary studies published in full in peer-reviewed journals or as chapters in published books. No restriction by date, country or language.	Theses and dissertations, preprints, conference abstracts and other gray literature. Reviews (reference lists will be checked). Protocols, editorials and commentaries.

Information sources

The following databases will be searched from inception to the date of the final search: MEDLINE (via PubMed), CINAHL Complete (EBSCOhost), APA PsycInfo (EBSCOhost), Scopus and the Web of Science Core Collection.

MEDLINE will be searched through PubMed, which contains all the MEDLINE records together with the in-process and other PubMed records. This selection covers public health, medicine, nursing, psychology, environmental health, geography, urban planning and the social sciences. Only published studies will be sought. The database searches will be supplemented by checking the reference lists of the included studies and relevant reviews, forward citation searching of the included studies in Scopus and Web of Science, and contacting corresponding authors and subject experts to identify further published studies, including book chapters.

The searches were updated before the final synthesis if more than 6 months had passed since they were run. The search dates, platforms, coverage and numbers of records are reported for every source.

Search strategy

The search combines controlled vocabulary and free-text terms for four concepts, joined with AND: (1) green spaces; (2) health and well-being; (3) qualitative methods; and (4) perceptions and experiences.

No terms describing effects or benefits are used to avoid preferentially retrieving studies that report positive findings. No urban-setting terms are used because qualitative abstracts often name only the city in which the study took place; the urban criterion will be applied at screening. No language, date or publication-type limits will be applied. The search is designed to be comprehensive, aiming to identify all eligible studies rather than to reach conceptual saturation.

The strategy was informed by scoping searches run in April 2026, which were revised to align with the eligibility criteria. When run on 27 September 2026, the MEDLINE strategy retrieved 2183 records. All Medical Subject Headings (MeSH) were checked against the MeSH database of the National Center for Biotechnology Information. The MEDLINE strategy was tested against a set of known eligible studies.

Because qualitative studies are inconsistently indexed and their titles and abstracts often do not describe their methods or the experiences studied, database searches alone are unlikely to identify every eligible study; reference list checking and forward citation searching are therefore an integral part of the search strategy rather than an optional supplement.[30] The strategy was then adapted to the syntax and controlled vocabulary of each database. Free-text terms will be searched in titles and abstracts; in Scopus and Web of Science, the standard topic fields (TITLE-ABS-KEY and TS) also include keywords. The full strategies for all the databases are provided in Additional file 3.

Records in languages other than English will be translated sufficiently for screening. Full texts judged potentially eligible will be translated by a proficient speaker or with institutionally approved translation support. Machine translation may assist, but key eligibility information and findings will be checked by a person who can verify meaning. Reports that cannot be reliably translated are listed as awaiting classification.

Records management and study selection

The search results will be exported to Mendeley and deduplicated using automated and manual checks, and screening will be conducted in Rayyan. Each record will receive a unique identifier so that there is an auditable link between the search results, eligibility decisions, extracted data and synthesis findings.

Before formal screening, reviewers pilot the eligibility criteria on at least 50 titles and abstracts and refine the operational guidance without changing the review question. Two reviewers will then independently screen all titles and abstracts, and records considered potentially eligible by either reviewer will proceed to full-text assessment. Two reviewers will independently assess all the full texts, and the reasons for exclusion will be recorded using a predefined hierarchy (Additional file 2). Disagreements will be resolved through discussion, and a third reviewer will adjudicate when consensus cannot be reached.

Multiple reports from the same study will be linked and treated as a single study, while all relevant qualitative data will be retained. The selection process is presented in a PRISMA 2020 flow diagram.[23]

Data extraction

A structured data-extraction form will be piloted on three to five included studies and revised before full extraction. One reviewer extracted the data, and a second reviewer verified all the fields against the source report. Discrepancies were resolved by consensus or, when needed, by a third reviewer. Table 2 lists the planned data items. For mixed-methods studies, only the qualitative methods and findings are extracted.

The review distinguishes first-order constructs, that is, participants' accounts and quotations, from second-order constructs, that is, the interpretations, themes and conclusions of primary-study authors.

The reviewers' own higher-order interpretations generated during synthesis constitute the analytical themes.

Proxy accounts provided by parents or carers on behalf of another person will not be considered equivalent to first-person experiences. Studies reporting only proxy accounts will be excluded; when both first-person and proxy accounts are reported, only first-person findings that can be clearly distinguished and extracted separately will be included in the synthesis.

Corresponding authors will be contacted when information essential to eligibility or interpretation is missing. Up to two contact attempts will be made. If no response is received, the study will be assessed using the available information; studies whose eligibility still cannot be determined will be listed as awaiting classification. Investigators will not be contacted solely to clarify appraisal items. Where appraisal-relevant information is not reported, this will be noted in the critical appraisal and taken into account when assessing confidence in the review findings.

Table 2
Planned data-extraction domains

Domain	Data items
Study identification	Author, year, title, journal or book, linked reports, funding and declared conflicts
Context	Country, city or region, urban form, neighborhood characteristics, climatic and cultural context
Participants	Recruitment route, sample size, age or life stage, gender, ethnicity or migration background, socioeconomic position, disability or mobility, other equity characteristics
Green-space characteristics	Type, scale, public or private status, accessibility, distance, quality, maintenance, amenities, safety, biodiversity, frequency, duration and form of engagement
Methods	Aim, methodology, theoretical or epistemological orientation, data-collection and analytical methods, researcher reflexivity
Qualitative evidence	Participant quotations (first-order constructs); author themes, interpretations and conclusions (second-order constructs); negative or disconfirming cases
Perceived health and well-being consequences	Effects that participants attribute to green spaces: mental, emotional, physical and social health; quality of life; harms
Perceived pathways and mechanisms	Explanations of how green spaces produce these effects: psychological restoration; physical activity and other health-related behaviors; social interaction; connection with nature; and other mechanisms identified inductively, including those linked to harms (e.g., fear, insecurity or conflict over use)
Appraisal and synthesis	CAMELOT assessments, data richness, codes, descriptive and analytical themes, contributing studies, GRADE-CERQual components

Critical appraisal

Two reviewers will independently assess the methodological limitations of each included study using the Cochrane qualitative Methodological Limitations Tool (CAMELOT), which was developed for qualitative evidence syntheses and to inform assessments of confidence using the Grading of Recommendations Assessment, Development and Evaluation-Confidence in the Evidence from Reviews of Qualitative Research (GRADE-CERQual) approach.[31] The CAMELOT considers the fit between four meta domains (research aim and question(s), researchers, stakeholders and context) and eight method domains, which concern how the study was designed, planned and conducted.

For each study, reviewers will document any concerns and reach an overall assessment of methodological limitations, expressed as no or minimal, minor, moderate or serious concerns, with a brief explanation. Assessments will first be piloted on a small number of studies to calibrate judgments between reviewers. Disagreements were resolved through discussion or consultation with a third reviewer. Because CAMELOT is still being refined, the version of the tool and guidance used will be reported.

No numerical quality score or threshold is used. Studies will not be excluded solely because of methodological limitations because conceptually rich data from weaker reports may remain relevant. Instead, appraisal findings inform interpretation, robustness checks and the methodological limitations component of GRADE-CERQual. For the robustness analysis, studies assessed as having serious concerns are considered to have substantial methodological limitations. During extraction, reviewers will also describe the richness of each study's data as thick (detailed participant accounts with contextual descriptions and interpretations) or thin (brief descriptive findings with few supporting data). Studies with thick data may contribute more to the development of analytical themes. However, data quantity alone does not determine importance.

Data synthesis

Study characteristics and contexts are first summarized descriptively. Qualitative findings will then be synthesized using the three-stage thematic synthesis described by Thomas and Harden.[32] This method provides a transparent procedure for integrating findings across heterogeneous studies while moving beyond description toward interpretation. All included studies will be synthesized. NVivo and/or ATLAS.ti will be used to manage coding, memos and links to source studies. The text reported in the results or findings sections of each study, including tables that summarize themes, will be treated as data. Discussion sections will be coded only when they report findings that do not appear elsewhere.

Stage 1: Line-by-line coding. The text from the results or findings sections of each included study, including participant quotations and author interpretations, will be imported into the software and coded line by line according to its meaning and content. Coding is inductive and close to the source text. Two reviewers will independently code an initial sample of studies representing variation in populations, contexts and types of green space. Differences will be discussed as opportunities to identify alternative

interpretations, and an initial codebook will be agreed upon. One reviewer then coded the remaining studies, and a second reviewer checked the coding of each study. Codes are added, revised, merged or separated as new studies are coded.

Stage 2: Descriptive themes. Related codes will be examined for similarities, differences and relationships and organized into descriptive themes that remain grounded in the primary studies. No predetermined health or well-being domains will be used to organize the codes. Descriptive and analytical themes will be developed jointly by both reviewers in analytical meetings, with a third reviewer available for unresolved disagreements.

Stage 3: analytical themes. Descriptive themes will be interpreted in relation to the review question to generate analytical themes that go beyond the content of individual studies. Guiding analytical questions will include what people perceive green spaces to provide that is relevant to their health; through which processes participants believe these influences occur; what makes a green space restorative, supportive, inaccessible, uncomfortable or harmful; under what circumstances apparently similar spaces generate different health-related experiences; and which groups appear to experience particular benefits or harms.

Existing conceptual models of pathways between green space and health will be used only as interpretive lenses after inductive coding, not as an a priori framework.[4] If the data are sufficiently rich, the synthesis may produce a conceptual model relating green space characteristics, individual and contextual factors, experiences and perceived health consequences.

Constant comparison and disconfirming cases. Codes and themes will be compared across studies rather than simply aggregated. Negative cases, experiences of harm, avoidance, fear or exclusion, and accounts of no perceived benefit will be retained and used to test and refine emerging themes.

Contextual variation. Where the data permit, thematic matrices will compare findings by participant characteristics (age or life stage; gender; socioeconomic position; ethnicity, migration background or minoritized status; and disability or mobility), by setting (country, climatic and cultural context; and urban density) and by green space characteristics (public or private status; type, accessibility, maintenance and perceived safety; and routine or organized engagement).

These comparisons will be interpretive rather than statistical and will be reported only where supported by adequate data. The absence of a theme in one subgroup is not interpreted as evidence that the phenomenon does not occur. No meta-analysis or effect measure is planned.

Reflexivity

Because qualitative evidence synthesis involves interpretation by the review team, reflexivity will be incorporated throughout the review. Before synthesis begins, reviewers involved in coding document their disciplinary perspectives, their prior assumptions about the relationships between green spaces and health, and, in particular, the common normative assumption that green spaces are intrinsically

beneficial. Reflexive memos and a decision log document interpretive decisions, uncertainties, alternative explanations and changes to codes and theme definitions. Regular analytical meetings will be held to challenge interpretations and to check that the themes are grounded in the primary data.

Assessment of confidence in the review findings

Two reviewers will independently assess confidence in each review finding using the GRADE-CERQual approach.[33, 34] The assessments consider four components: the methodological limitations of the contributing studies; the coherence of the findings with the underlying data; the adequacy of the data, including their richness and quantity; and the relevance of the contributing evidence to the population, phenomenon and urban context specified in the review question.

Confidence will be graded as high, moderate, low or very low, with an explanation for each judgment. Findings are presented in a summary of the qualitative findings table and in the GRADE-CERQual evidence profiles.

Robustness and dissemination bias

Robustness will be explored in three ways: re-examining analytical themes after setting aside studies with substantial methodological limitations, as defined above; assessing whether themes depend on a single study, population or setting; and comparing first-order quotations with second-order interpretations.

Findings will not be removed solely because few studies support them. Instead, adequacy will be reflected in the GRADE-CERQual assessment. Statistical tests of publication bias are not applicable. Because the search is restricted to published studies, dissemination bias is possible. The review will therefore consider whether evidence is concentrated in particular countries or populations and whether missing reports could plausibly alter a finding.

Protocol amendments

During protocol development and before screening began, the PROSPERO record was amended. The registered critical appraisal tool (the JBI Critical Appraisal Checklist for Qualitative Research) was replaced by CAMELOT, which is better aligned with GRADE-CERQual. Registered population exclusion, which read “nonclinical population” in error, was corrected to “clinical population.” The outcome fields were rewritten in general terms, without prespecified outcome domains, to reflect the inductive approach of the synthesis. The registered synthesis field also mentions meta-aggregation in error; only thematic synthesis is used. Any further substantive amendments to the eligibility criteria, search methods, critical appraisal or synthesis procedures will be dated and justified. The PROSPERO record will be updated accordingly, and amendments made after publication of this protocol will be reported in the completed review.

DISCUSSION

This review synthesizes qualitative evidence on how people in urban settings perceive and experience the influence of everyday green spaces on their health and well-being. By integrating perceived mental, emotional, physical and social influences; the green space characteristics that participants associate with them; adverse and ambivalent experiences; and differences between population groups and contexts, this study aims to complement the epidemiological evidence on whether green space is associated with health with an account of how, why and for whom green spaces are perceived to matter. The assessment of confidence in each review finding with GRADE-CERQual indicates how far each finding can be used to inform public health and urban planning decisions.

Several features of the planned methods are intended to limit bias toward positive findings. The search strategy avoids terms that assume that green space is beneficial to health, and negative, neutral and disconfirming accounts are retained and used to test emerging themes. Five databases covering health, psychology and the social sciences will be searched without language or date restrictions, and these searches will be supplemented by reference list checking, forward citation searching and contact with experts. Two reviewers will independently screen and appraise studies against explicit eligibility criteria, and the synthesis will distinguish participants' accounts from the interpretations of primary-study authors.

Several practical issues are anticipated. Green space, urban settings and health are defined and reported inconsistently across disciplines; the operational definitions, the reviewer guidance in Additional file 2 and the piloting of screening and data extraction are intended to make eligibility decisions consistent and transparent. Some studies report findings for mixed samples or for both urban and rural settings, and only findings that can be attributed to eligible participants and urban settings are extracted. CAMELOT has not yet been widely piloted or validated; assessments will therefore be piloted to calibrate judgments between reviewers, and the version of the tool and guidance used will be reported. Full texts in languages other than English will require translation, and key eligibility information and findings will be checked by a person who can verify meaning.

This review has several limitations. Because only published studies will be included, dissemination bias cannot be ruled out, although the review will consider whether missing reports could plausibly alter a finding. Studies published in other languages may be missed because the search terms are in English. Differences in how primary studies define green space and health may limit comparability, and the focus on urban settings may limit the transferability of the findings to rural and other contexts.

Patients and members of the public were not involved in developing this protocol. The completed review will be submitted to a peer-reviewed journal and presented at public health, environmental health, qualitative research and urban planning meetings. A plain-language summary and a stakeholder-oriented briefing will communicate implications for the equitable design, maintenance and use of urban green spaces to community, public health and urban planning stakeholders. Review data will be stored on secure institutional systems, and copyright restrictions will be respected when extracted quotations are stored and shared. Search strategies, extraction forms, codebooks and GRADE-CERQual evidence

profiles will be provided as additional files or deposited in an open repository, where copyright and institutional policy permit.

Abbreviations

CAMELOT
Cochrane qualitative Methodological Limitations Tool
DEGURBA
Degree of Urbanization
ENTREQ
Enhancing Transparency in Reporting the Synthesis of Qualitative Research
GRADE-CERQual
Grading of Recommendations Assessment, Development and Evaluation-Confidence in the Evidence from Reviews of Qualitative Research
JBI
JBI (formerly the Joanna Briggs Institute)
MeSH
Medical Subject Headings
NDVI
Normalized Difference Vegetation Index
PICo
Population, phenomenon of interest, context
PRISMA
Preferred Reporting Items for Systematic reviews and Meta-Analyses
PRISMA-P
Preferred Reporting Items for Systematic Review and Meta-Analysis
PRISMA-S
PRISMA extension for reporting literature searches in systematic reviews
PROSPERO
International Prospective Register of Systematic Reviews
SPIDER
Sample, Phenomenon of Interest, Design, Evaluation and Research type

Declarations

Ethics approval and consent to participate Not applicable. This is a systematic review of published studies, and no participants will be recruited.

Consent for publication Not applicable.

Availability of data and materials No datasets have been generated or analysed for this protocol. The operational eligibility rules and the search strategies are provided in Additional files 2 and 3.

Competing interests The authors declare that they have no competing interests.

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