Public Health England

Protecting and improving the nation's health

Improving Access to the Natural Environment

Angela Hands
Healthy Places Programme Manager
Public Health England

Angela.hands@phe.gov.uk

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25 Year Environment Plan

- Objectives
  - Role of natural environment on people's physical and mental health
  - Closer connections between people and their environment
  - Commitment to improving access and commitment to encouraging engagement

PHE Access to Green Spaces briefing

- Improving access for those groups who use green spaces least and might benefit most
- Briefing document for local authorities

Improving Access to Greenspace

- Update to 2014 evidence review and briefing
- Practical advice on improving access to greenspace
- Case study examples

- Evidence shows that greenspace:
  - Promotes healthy behaviours
  - Improves social contact
  - Supports the development of skills and capabilities
  - Mediates potential harm
    - Air pollution
    - Noise
    - Urban Heat Island Effect

BUT WHAT ABOUT HEALTH INEQUALITY?

Public Health, Health Inequality and Access to Green Space: A Scoping Review

Public Health England

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Angela Hands, Judith Eling, Carl Petrokofsky, Harmony Ridgley and Aimee Stimpson.

Healthy Places Team, Priority and Programmes Division, Health Improvement Directorate, Public Health England

INTRODUCTION

There is an increasing amount of evidence to support the positive health effects of green infrastructure and the potential of the natural environment to promote health (1). Evidence suggests that access to green infrastructure may support health improvement by increasing physical activity and improved mental health. Exposure to green spaces can also help to reduce stress, and increase physical activity, which in turn may lead to reduced mortality (2, 3).

However, there may be inequities in access to green infrastructure by different populations and social groups, and barriers to accessibility. Living in areas with a lack of access to green spaces impacts negatively on health outcomes and contributes to health inequalities (4). More socioeconomically deprived populations have less access to green spaces, compared to the rest of the population (5).

Conversely, people with a higher socio economic status have better health outcomes and those living in the greenest environments tend to have the lowest levels of deprivation (6). Therefore, to reduce health inequalities, access to green spaces needs to improve across the social gradient (4).

METHODS

This review followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines (7).

Key search terms were combinations of synonyms for green, health and wellbeing, inequality, population and place. Keywords were used to conduct searches in electronic databases (MEDLINE, SCOPUS, HMIC and PsychInfo), Reference lists were checked for locating other suitable studies.

The searches were undertaken of studies published between 1st January 2008 and 21st December 2018

The PICO format was used to define inclusion criteria.
To be included in the review:
(P) UK BAME populations, those living in areas with high deprivation, low socioeconomic groups, people aged 65 and over, people with disabilities and/ or long term conditions
(I) include at least one aspect of green infrastructure, i.e. greenspace, blue space, parks and gardens;
(C) Comparator studies were classed as any other study examining green infrastructure
(O) any measure of health inequality from access to green infrastructure.

Green* OR *env OR park OR natur* OR blue
AND
Health OR wellbeing OR well being
AND
Inequal* OR equal* OR depriv* OR SES OR socio*
AND
Spatial OR space OR place
AND
Population

Figure 1: Search Strategy

RESULTS

STUDY SELECTION

4412 references were identified through searching the databases. The results were summarised narratively.

After de-duplication (n=970), 3442 titles and abstracts were screened against the inclusion criteria and 3320 excluded. Full texts of 122 articles screened for inclusion, and 24 studies included in the review. Of these studies, 18 were cross sectional, two qualitative, and the remainder intervention, mixed methods and longitudinal. This process is shown in the PRISMA Flow Diagram in Figure 2

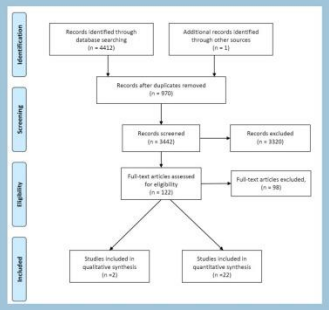

Figure. 2 Prisma Flow Diagram (7)

SUMMARY OF FINDINGS

Deprivation or socioeconomic status measures

- The most popular measure of deprivation or socioeconomic status was the English Indices of Multiple Deprivation (IMD) (n=10); followed by the Carstairs Index (n=3); Townsend Score (n=3) and National Statistics Socio-Economic Classification (NS-SEC) (n=2). The Welsh Indices of Multiple Deprivation (WIMD) (n=1), ONS household deprivation (n=1), Market Research Society Social Grade (ABC1)(n=1) and income as a proxy (n=1) were also measured.

Health Outcomes measures

- **Mental health** was measured using the Perceived Stress Scale and salivary cortisol (n=3) and Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) (n=2). Cognitive function, the five question mental health inventory (MHI-5), patient health questionnaire (n-1), UCLA loneliness scale (n=1), social wellbeing (n=1) and anxiety disorders (n=1) were also measured .
- **Physical activity** was measured using the British Heart Foundation methodology (n=2); International Physical Activity Questionnaire (IPAQ) (n=2) Scottish Physical Activity Questionnaire (SPAQ) (n=1); Active People Survey (n=1) and self reported number of days active (n=1)
- **Other health outcome** measures included self reported general health (n=3); Census self report data (n=2); mortality (n=1), morbidity and years of life lost(n=1) and illness and disability ratio (n=1)

Measures of Green Space type

- The most common measure of green infrastructure was the Generalised Land Use Database (GLUD), which classifies all land use in England into nine categories (n=4). Publicly accessible greenspace was used in other studies (n=4) and also the Normalised Difference Vegetation Index (NDVI) which is an indicator of greenness based on land surface reflectance (n=2). Local Authority greenspace databases were also used as measures (n=2) along with the residential environment assessment tool (n=1). Other studies used their own measures, and others included no definition.

Accessibility Measures

- Most studies measured accessibility by using a straight line (Euclidean) distance (n=8) ranging from 300m to 1km. Others used network distances (n=4) and Census Area Statistics were also used (n=3). Some used different calculations derived from LSOAs including percentage (n=1), total (n=1), and proportion (n=1).

INEQUALITIES IN ACCESS

Deprivation and socioeconomic status

- Better access to greenspace is associated with lower levels of deprivation and socioeconomic status
- Greenspace mediates the effect of deprivation and health
- Infrequent visitors to green space were more likely to be of lower socioeconomic status

Gender

- Women are more likely to visit green space
- Women's perceived stress, and major depressive disorder was associated with areas of less green space

Age

- Older adults were less likely to use green space which may be due to poor health
- Different types and uses of green space were more popular at different points across the life course
- Older adults exposed to more green space experienced lower objectively measured stress
- For younger and middle aged adults, those with greater accessibility to greenspace were less likely to experience a major depressive disorder

Ethnicity

- Those of white-British ethnicity were less likely to report time as a barrier to visiting green space
- Residents of more ethnically diverse areas had lower accessibility to green space
- People living in more ethnically diverse areas were less satisfied with green space quality, particularly those from a Bangladeshi origin

Education

- Accessibility to green space was associated with higher cognitive score and university education
- Lower educated residents benefit more from greenspace compared to higher educated residents
- There was no association between quality of greenspace and a lower educational level

DISCUSSION

- This scoping review aimed to examine and synthesise the current literature on public health, health inequalities and access to green space in the UK.
- Findings suggest that deprivation and socioeconomic status; gender; age; ethnicity and education may be associated with access to green space.
- However, most included studies were cross sectional in nature, therefore it was not possible to infer causation, and should be interpreted with caution. Some papers did not identify any associations between access to green space and inequality, whereas others found strong associations.
- The heterogeneity in green space measurement, and accessibility to green space suggests that individual studies may not be directly comparable. Furthermore, health outcomes and measures of deprivation and socioeconomic status identified across papers were dissimilar, which may lead to inconsistencies in findings.

CONCLUSIONS

- This scoping review has examined the current literature and identified that there may be some associations between access to green space and health inequality in the UK.
- Inequalities in access to green space may lead to poorer health outcomes for some population groups
- Findings will influence and inform UK policy makers and practitioners to promote equitable usage of green spaces
- Local authority planning departments may support improved access to green space by working more closely with public health practitioners to better understand the impact of access to green space on health inequality
- Findings from this study will help understand how to overcome barriers for target populations which may face difficulties in accessing or using the natural environment.
- Further research is needed on the impact of access to green space on health inequality.
- To improve the quality of evidence in this area, consistency in measurement is suggested, and further longitudinal studies are recommended.

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REFERENCES

1. Lovell, R., Depledge, M., Maxwell, S. (2018)Health and the natural environment: A review of evidence, policy, practice and opportunities for the future ECEHH, Exeter, UK
2. Hartig, T., Mitchell, R., deVries, S., Frumkin, H. (2014) Nature and Health. Annual Review of Public Health. Vol. 35:207-228https://doi.org/10.1146/annurev-publhealth-032013-182443
3. Lee, A., Maheswaran. R. (2011)The health benefits of urban green spaces: a review of the evidence *Journal of Public Health*, Volume 33, Issue 2, June 2011, Pages 212-222, https://doi.org/10.1093/pubmed/fdq068
4. Marmot M, Allen J, Goldblatt P *et al* (2010) Fair society, healthy lives: strategic review of health inequalities in England post 2010. London: Marmot Review Team
5. de Sousa Silva, C., Viegas, I, Panagopoulos, T,Bell, S (2018) Environmental Justice in Accessibility to Green Infrastructure in Two European Cities. Land 2018, 7, 134; doi:10.3390/land7040134
6. Mitchell, R. and Popham, F. (2008) Effect of exposure to natural environment on health inequalities: an observational population study. The Lancet 372(9650):pp. 1655-1660.
7. Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009): Preferred *Reporting Items* for *Systematic Reviews and Meta-Analyses*: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

What did we find?

- There may be some associations between access to green space and health inequality in the UK.
- Inequalities in access to green space may lead to poorer health outcomes for some population groups
- Deprivation and SES
- Gender
- Age
- Ethnicity
- Education
- Access and design
- Information
- Experience and culture
- Proximity, obstacles
- Perception
- Time or lack of interest

Recommendations

- Further research and dissemination is needed on the impact of access to green space on health inequality.
- Influence and inform local and national policy makers and practitioners to promote equitable use and access to green spaces
- Local planning departments to work with public health practitioners to better understand the impact of access to green space on health inequality
- Improve evaluation of health and greenspace interventions by examining health inequality outcomes
- Enhance the local evidence base by mapping health inequality alongside access to greenspace
- Overcome barriers for target populations which may face difficulties in accessing or using the natural environment – individual behaviour change.

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Thank you

- **Angela Hands**
  angela.hands@phe.gov.uk or
- **Healthy Places team**
- healthypeople.healthyplaces@phe.gov.uk

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  https://khub.net/group/healthypeoplehealthyplaces/forum

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