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Physical Environmental Factors Influencing Older Adults’ Park Use: A Qualitative Study

ABSTRACT:
Use of parks is important for the healthy ageing of older adults as it is associated with substantial physical, mental and social health benefits. However, parks are generally underused by older adults, and we know little about which physical environmental factors influence their use of parks. This study aimed to use interviews to qualitatively explore the physical environmental factors of parks that influence older adults’ use of parks. Purposeful convenience sampling was used to recruit 20 older adults (aged 60 years and over) in Belfast, the UK. 15 participated in walking interviews with a Go Pro camera mounted on their chest to record both visual and audio data, and the remaining participants were interviewed at their home with audio recorded only. All interviews were transcribed verbatim and analysed using an inductive thematic approach. Eight themes emerged as being important: park accessibility, natural elements, park amenities, sports facilities, maintenance and aesthetics, walking and cycling facilities, safety and slope. Policy wise, it is important to keep parks well-maintained and aesthetically pleasing with a variety of natural or semi-natural elements, such as landscaping, wooded areas. In addition, the presence of certain park amenities (i.e. toilets and benches) and sports facilities (i.e. children playgrounds) were found to play a critical role in supporting and encouraging older adults’ use of parks. Finally, the importance of providing good accessibility to different types of parks (i.e. neighbourhood parks and forest parks) across cities and towns was also highlighted, and the design guidelines for them should be developed contextually. It is vital that physical environmental features of parks are designed to maximize the physical and social health benefits for older adults with varied needs and functional ability for the purpose of promoting health and wellbeing.

KEYWORDS:
Go Pro Camera; Park features; Park use; Sedentary interviews; Walking interviews
HIGHLIGHTS:

- The diversity of natural elements in parks motivates older adults’ use of parks.
- Park amenities (i.e. benches and cafes) are important in supporting their park use.
- Playgrounds, sport pitches and courts are important for their social benefits.
- Car use facilitates older adults to visit a wide range of parks.
- Evidence on maintenance and aesthetic features and walking paths is mixed.
1. Introduction

The global population is rapidly ageing with projections highlighting that the percentage of older adults (≥ 65 years) will increase from 9% (2019) to 12% (2030), and could reach 23% by 2100 (United Nations, 2019). Increasing life expectancy can be viewed as a triumph in terms of public health policies and social and economic development (WHO, 2002). However, it should be noted that if these added years to life are not accompanied by good health, this may result in greater pressures on health and social care systems and services (Beard and Bloom, 2015). Therefore, it is essential that these potential pressures are alleviated by ensuring that the extended period of longevity is associated with good health (WHO, 2016, 2015).

Public parks have been reported to have the potential to play a critical role in healthy ageing, providing places for recreational and social activities and acting as important destinations for active travel trips (Bedimo-Rung et al., 2005; Evenson et al., 2013). Visiting parks has the potential to promote physical activity, reduce sedentary behaviour, improve mental health and stimulate social interactions among older adults (Finlay et al., 2015). However, despite the substantial health and social benefits associated with park use, most observational studies have reported that older adults account for only the minority of park users, with the median percentage reported to be 5% (Evenson et al., 2016; Joseph and Maddock, 2016). As suggested by the socioecological model of health behaviour, the underuse of parks by older adults could be explained by a combination of factors interacting across the individual, social and environmental levels of influences (Sallis et al., 2006).

In recent years, physical environmental factors (i.e. park accessibility and park quality) have been increasingly seen as being important in shaping individuals’ physical activity and park use (Bancroft et al., 2015; Kaczynski and Henderson, 2007; Zhang et al., 2019). However, mixed findings have emerged from the research on park accessibility and physical activity of older adults. For example, positive associations between park proximity and park use or physical activity were found among older adults (Mowen et al., 2007; Ribeiro et al., 2015; Van Cauwenberg et al., 2017). In contrast, null associations between them were reported in other studies (Kaczynski et al., 2009; Zandieh et al., 2019). Although research on older adults use of parks is limited, Aspinall et al. (2010) and Alves et al. (2008) have reported a preference for parks that have trees and plants, toilets and cafés, wildlife to watch, and where parks are well-maintained without signs of vandalism and nuisance. Another study reported that older adults prefer park paths that are soft or even paved, with benches, flowers and light fixtures (Zhai and...
Baran, 2017). However, a review of older adults’ preferences towards green spaces highlighted that most studies on park features, park use have overlooked the detailed features that influence older adults use of parks, and this is still a barrier to more age-sensitive park design (Wen et al., 2018).

Consequently, more research is required to better understand which specific physical environmental factors could encourage park use to facilitate the development of evidenced-based policies for healthy ageing through improved and active use of parks. While, the current evidence on parks and physical activity is predominantly drawn from quantitative research (Bancroft et al., 2015; Kaczynski and Henderson, 2007; Zhang et al., 2019), there is a need to conduct more qualitative research to provide a greater level of personal and contextual detail, and to explore the interactions between the levels of the socioecological model, that can be used to ensure parks are more supportive and inclusive for older adults (Koohsari et al., 2015; Sallis et al., 2006).

The limited qualitative studies that have been undertaken have mostly implemented indoor sedentary interviews, either individually or through focus groups (Van Cauwenberg et al., 2018). However, the benefits of walking interviews (i.e. researchers accompany participants to walk around in their familiar environments) have been increasingly recognised in other research areas (Evans and Jones, 2011). Walking interviews are promising strategies for understanding how people perceive their surroundings and to elicit context sensitive information and new themes that would not be generated from traditional interviews (Evans and Jones, 2011). In walking interviews, both the participant and interviewer are exposed to the physical environments of interest, prompting participants to recall information at the time of exposure to the surrounding environments (Leon and Cohen, 2005). However, this methodology is limited by the mobility of participants and weather conditions on the day arranged for interviews (Finlay and Bowman, 2017). In the circumstances that walking interviews could not be undertaken for these reasons, sedentary interviews are considered to be a suitable alternative (Carpiano, 2009).

Therefore, this study aimed to explore qualitatively, using both walking and sedentary interviews, how older adults perceive physical environmental factors of parks and the impacts they have on their use of parks.
2. Methods

The study protocol was approved by the research ethics committee of School of Medicine, Dentistry and Biomedical Sciences, Queen’s University, Belfast. The manuscript follows the COREQ guidelines of reporting qualitative research (Tong et al., 2007).

2.1 Participants eligibility and recruitment

This study is a sub-study of the mixed methods Healthy Urban Living and Ageing in Place (HULAP) Project, a larger study exploring the associations between the built environment and physical activity with samples of older adults (≥ 60 years) from Curitiba (Brazil) and Belfast (United Kingdom (UK)) (Author et al., 2018). The recruitment of the HULAP study aimed to maximize the variations of older adults in terms of neighbourhood walkability and socio-economic status. Purposeful convenience sampling was used to recruit a sub-sample of participants of the wider HULAP study, amongst those who had consented to be involved in follow up studies in Belfast (N = 74). To be included, older adults had to live within a 500m radial buffer of a park to facilitate walking trips from their homes. Recruitment continued until data saturation was reached (n = 20).

2.2 Study protocol

A Participant Information Sheet (see supplementary Appendix A) was mailed to each participant and followed up by a phone call at least 4 days after posting. Once the participants agreed to be interviewed, they were visited at their home, followed by the semi-structured interview (interview schedule, see supplementary Appendix B), either in the form of a walking interview with a chest-mounted video camera (Hero 6 Go Pro Camera) or a sedentary interview (if unable to independently walk for a period of approximately 45 minutes). All interviews were carried out during September to October 2018 by a trained interviewer (female), who had no existing relationships with any of the participants and no reported bias or conflicts of interest.

Additional information on socio-demographic characteristics (i.e. gender, age), self-reported park use and the advanced lower extremity functioning were obtained from the HULAP dataset (Author et al., 2018). Self-reported park use was measured by asking participants “whether you have used parks to perform physical activity (yes/no)”. The advanced lower extremity functioning, a component of the Late Life Function and Disability Instrument (LLFDI), was used here to indicate participants’ functional ability in carrying out a number of
activities tasks (i.e. walking several blocks) (Haley et al., 2002). The scoring process followed
the guidelines proposed by Jette et al. (2002), with higher scores indicating better functional
ability.

Three pilot walking interviews were conducted prior to commencing the study only for the
purpose of testing the interview protocol and the quality of audio and visual recording, and
they were not included in further data analysis.

2.3 Walking interviews and sedentary interviews

Written informed consent (consent form, see supplementary Appendix C) was obtained
prior to commencing the interviews. 15 participants took part in semi-structured walking
interviews, two of them were a couple and were interviewed together. The additional interviews
(n = 5) took the form of a semi-structured sedentary interview (in the participants’ home), four
due to the self-reported health limitations that prevented the older adults from participating in
a walking interview and one due to inclement weather.

For the walking interviews, each participant wore the camera (i.e. visual and audio) on their
chest (see supplementary Appendix D). The researcher instructed each participant to walk to
their local park (defined as parks intersected with the 500m residential radial buffers), using
their ‘usual’ route and to walk around the park. The purpose of this was to share their
experiences of their local area and to provide information regarding environmental barriers
and/or facilitators of park use. Participants were encouraged to freely share their experiences
and thoughts, with additional prompting questions from the researcher when appropriate.

In cases that walking interview participants were unwilling to visit their local parks, they
were provided with the option of driving to a park that they preferred. In the latter situation,
interviews began during the car journey and terminated at the end of the walking trip around
the park. Sedentary interviews were undertaken within the participants’ home, and they were
audio-recorded only.

2.4 Data analyses

Data obtained from the structured questionnaire of the HULAP project were analysed using
SPSS 23 (IBM Corp, 2015) to compute descriptive characteristics (i.e. gender, educational
level and advanced lower extremity functioning). Visual data were not analysed for the findings
reported here, other than providing screenshots of examples of the issues raised by participants
Screenshots of video recordings were given according to the moments in the walking interviews of the given quotes. The audio data from interviews were transcribed verbatim and were imported into Atlas.ti 8 (ATLAS.TI, 2018). Interview transcripts were not returned to participants prior to analysis, to reduce participant burden. Analysis of the data was guided by an inductive thematic approach (Braun and Clarke, 2006). The first stage involved the researcher reading and re-reading the transcripts to ensure data familiarization. An iterative process was then applied to extract related segments from the transcripts identifying physical environmental factors. Finally, through constant comparisons, themes and subthemes were derived. Quality assurance was provided on the themes through audits by researchers (PhD, male and PhD, female), who both have experience in qualitative research. A numeric count was undertaken of each sub-theme (Sandelowski, 2001); if at least one sub-theme of a theme was mentioned by: < 25% participants, “a few” was used; 25%-50%, “some” was used; 51%-75%, “a lot” was used; and for >75%, “almost all” was used. The study report was not returned to participants for comments and/or feedback in order to reduce participant burden.

3. Results

3.1 Descriptive statistics

Table 1 summarises the descriptive characteristics of the interview participants. The mean age of the sample (n = 20) was 73.9 years (SD = 8.23); with a mean value of the advanced lower extremity functioning among walking interview participants of 86.5 (SD = 11.9) and 21.0 (SD = 24.3) for sedentary interview participants. The majority of participants self-reported to be male (n = 12, 60%), retired (n = 15, 75%), having a car (n = 14, 70%), having an education level higher than primary (n = 18, 90%), living in their current house for more than 20 years (n = 15, 75%) and living alone (n = 12, 60%). All participants were whites (n = 20, 100%), which aligns with the ethnic background of the case where 98% of population were whites (NISRA, 2013).

Table 2 provides a profile of the interviews. It is noted that approximately half of the walking interview participants (n = 6, 40%) proposed to visit parks that were not the closest park to their home, with the distances travelled ranged from 1.45 to 3.70 km (data not shown). The mean length of all interviews was 51 minutes (SD = 14), 56 minutes (SD = 10) for walking interviews and 35 minutes (SD = 13) for sedentary interviews.
3.2 Qualitative analyses

Inductive data analyses highlighted eight overarching themes. Findings generally indicated consistent perceptions and opinions on: variation of natural elements; park amenities; park safety concerns; slopes; and sports facilities. With mixed and varied opinions on: park accessibility; maintenance and aesthetics; and walking and cycling facilities (Table 3). For example, some participants emphasised the influence of distance to parks, while it was not significant to others.

3.2.1 Park accessibility

Park accessibility is an important factor that influences park use. Almost all participants mentioned that factors, including: 1) distance to parks; 2) access to parks by different transport modes (i.e. walking and motor vehicles); and 3) the availability of different types of parks have a critical role in shaping their use of parks. Although opinions in relation to these factors were not always consistent across the sample.

Firstly, participants’ opinions about the influences of distance to parks was found to be mixed. Many participants stated that having a park near their home encouraged them to visit parks. However, having access to a private car meant that distance to a park was not an issue as they were able to drive wherever they liked. For older adults who were unable to drive or did not have a car, having friends or families that could drive them to parks was reported to be helpful. Varied opinions on the issue of distance to parks were illustrated in the quotes below:

The fact that it is near is incredibly important. (Wilson, aged 69 years, male, non-car owner, walking interview, neighbourhood park)

It doesn’t really matter that much, because we’re fortunate enough to have a car, so we can, if we wanted to go to a park which was 20 minutes away by car it’s not a problem. (Oscar, aged 72 years, male, car owner, walking interview, neighbourhood park)

That's the thing, if you were a driver you would go to other parks, the only reasons that park is because it's near me and I can walk easily to it, whereas I'm not going to take a couple of buses to get to a park to have a walk round it. I would go if I had friends staying and they had a car, I would happily go with them but no, not on my own, I wouldn't be going (to other parks). (Olivia, aged 80 years, female, non-car owner, sedentary interview)
Secondly, access to parks by different transport modes, including access by walking, private cars and public transportation, was highlighted by some of the participants. For example, Elsa mentioned that access to a park by walking was not good:

*I didn't like the entrance. It was sort of a tunnel and it was nearly always wet and puddly.*

(Elsa, aged 93 years, female, non-car owner, sedentary interview)

David mentioned a park with problems of accessing by cars:

*[My local] park, the car entrance is not the greatest, you've to go way up around the hospital to get in, and that's not great. Access by vehicle is not great, foot access is brilliant because you're right on the road.* (David, aged 92 years, male, car owner, sedentary interview)

Finally, some participants highlighted the importance of having different types of parks. Overall, walking interview participants visited three key parks, including a: 1) neighbourhood park; 2) forest park; and 3) coastal path. Neighbourhood parks are open spaces that mainly serve the local community and are usually accessible by walking. They generally contain sport pitches and courts, a children’s playground, sitting areas and nature reservation areas (Belfast City Council, 2019). Forest parks have been described as being “of significant size of open space, with large areas of natural or semi natural landscapes supporting a range of wildlife. They are publicly accessible by public transport and attract large numbers of visitors and tourists. They provide a range of facilities and heritage features offering recreational, ecological, landscape, cultural or green infrastructure benefits” (Belfast City Council, 2019; Page 17). Finally, a coastal path is a trail along the seashore which can be used by both pedestrians and cyclists, and which usually has sitting areas and often has facilities such as a children’s playground and sport pitches/courts.

Park variation was found to provide greater opportunities for older adults to get out and use parks. It was also reported to be beneficial as it meant that parks contained different features and characteristics that serve different needs and purposes. This is illustrated by the quotes from Oscar and Mandy:

*We are well provided, you know, in a radius of a few miles with all sorts of different kinds of parks.... ... So, there's plenty of choice around here and if you don't need to be in a park, you just walk along the seashore if you want. So, we're not short of opportunities to get out.* (Oscar, aged 72 years, male, car owner, walking interview, neighbourhood park)
I mean [my local] park has a swing park for children, which [another park] doesn’t have.
And various parks have different things, offer different things. (Mandy, aged 75 years, female, car owner, walking interview, forest park)

3.2.2 Variations of natural elements
The presence of natural elements (i.e. trees, flowers, water features), and the variations of such elements were acknowledged and enjoyed by almost all of participants. Parks with a greater combination of features were generally considered more interesting and attractive; parks with limited features were viewed as “plain”, “boring” and “nothing special”. A few participants further specified that they thought bigger parks sometimes meant a wider variety of elements. For example, Olivia mentioned:

It's a very plain park, when I say plain it's just there's a nice walk round it, that's all. You would need to be going to a much bigger park for it to be interesting. (Olivia, aged 80 years, female, non-car owner, sedentary interview)

3.2.3 Park amenities
A range of park amenities, including benches, toilets, cafes, gardens, signage and other features of interests (i.e. sculptures) were mentioned by a lot of participants, stating that they were important in encouraging and supporting their use of parks.

Benches and toilets were the two most frequently mentioned amenities. For example:

And there's one thing this place needs, there's no public toilets, you know, and there's quite a number of elderly people use this, they should have some public toilets. (Wilson, aged 69 years, male, non-car owner, walking interview, neighbourhood park)

I think seats every so often are very nice. (Martin, aged 78, male, car owner, walking interview, coastal path)

Cafés were also discussed by some participants and they were generally being considered as a strong incentive for the older adults to go out for a walk. For example: Calvin mentioned:

If there was a wee [colloquial = small] coffee shop, that would be good. A lot of the people who are old aren’t very fit or active. They can only walk a certain distance. So, it would encourage them to go out if they saw it at the end. They could have a wee rest and a coffee. It would encourage them to go out, rather than just to go walking. (Calvin, aged 63 years, male, car owner, walking interview, neighbourhood park)
In addition, some participants discussed the need to display clear signs to introduce the wild animals, plants and historical sites in parks, and the amenities available (i.e. toilets). By installing signs this could help older adults to navigate parks more easily and to become more confident using the park, especially for new visitors.

Other features such as sculptures and the transformations of some historical sites were also discussed by a few participants. In terms of historical sites, they generally thought they should be kept instead of demolishing, to increase the “feel of the place”. For example, Mandy mentioned:

You see they are trying to improve the place, they put this barge here. This barge I suppose it is atmosphere rather than a functional barge now, just to enhance the general feel of the place for tourists and for walkers. (Mandy, aged 75 years, female, car owner, walking interview, forest park) (Fig. 1)

Sports facilities

Sports facilities, such as 1) playgrounds, 2) bowling greens, 3) sport pitches and courts and 4) outdoor gym stations were discussed by a lot of participants.

Firstly, the important role of playgrounds was recognised. Even though they were not used directly by the older adults, they acknowledged the critical role they play to encourage inter-generational use of parks.

I do go to parks where there's playgrounds for children and I bring my grandson to the park sometimes, but I wouldn't do that unless he wanted to go there. (Martin, aged 78, male, car owner, walking interview, coastal path)

Secondly, bowling is usually considered as an appropriate activity for older adults, encouraging light to moderate intensity physical activity. However, participants in this study rarely engaged with this activity in parks, either because of a lack of interest or they considered it to be a light activity which did not contribute to health benefits.

No, I don’t (play bowling green). There's a friend of mine who’s a lot younger than me and he plays bowls, but to me it’s an old people’s game. Well, I suppose I'm an old person. But when you see them, it doesn’t give them much exercise because they’re just standing throwing balls and then they walk from one end to the other and then throw them back again. It’s maybe good fun but wouldn’t (do it) (Calvin, aged 63 years, male, car owner,
Finally, facilities such as sport pitches and courts and outdoor gym stations were not frequently used by the older adults, as they were considered to support more vigorous physical activities (i.e. football) for different age groups. Almost all participants mentioned that the activity they performed in parks was walking, which is reflected in the quote below. A few participants clearly specified that “I am too old for all that sort of thing (sport pitches and courts)”. 

However, it is important to note that participants appreciated the provision of these facilities from a whole community point of view and for the benefits of other age groups. The use of parks by other age groups (i.e. children, younger adults) in a variety of ways (i.e. running, playing) also encourages older adults’ use of parks. For example:

> I am talking about tennis courts. I don’t play tennis. Buy it could be a nice option for other people. From a community point of view, I think park needs more added to it. There are plenty of spaces for boys kick their balls, do whatever they want, run. (Amelie, aged 72 years, female, car owner, walking interview, neighbourhood park)

> I like to see all these energetic people running or cycling along here, but don’t have to join in. (Mandy, aged 75 years, female, car owner, walking interview, forest park)

> It's [a park] not far from the children's schools, so they would be there playing. I think it would be interesting. I do like to see children playing. (Elsa, aged 93 years, female, non-car owner, sedentary interview)

### 3.2.5 Park maintenance and aesthetics

The issue of park maintenance and aesthetics was discussed a lot of the participants. It represents a continuum of quality, indicating the aspects of park tidiness, cleanliness, landscaping, graffiti and vandalism. However, mixed opinions transpired regarding this issue, which was possibly due to the different types of parks visited (i.e. neighbourhood parks, forest parks). For example, Amelie preferred parks to be “pretty”:

> I think they could try and get some landscape gardeners, and pretty it up a bit. (Amelie, aged 72 years, female, car owner, walking interview, neighbourhood park) (Fig. 2)
With other participants expressing that they didn’t always want to keep the parks “tidy”, “attractive” and “pretty”. For example, Mandy said she was happy with the “untidy park”, as illustrated here:

*There is a lot of benefit in having it untidy because wildlife would be happier with that sort of ground than say mown grass or cut back scrubland. So, I quite like it, I’m quite happy with it, you know, it’s pleasant to walk beside it, there’s no bother and I’m sure, you know, it supports a lot of the life.* (Mandy, aged 75 years, female, car owner walking interview, forest park) (Fig. 3)

### 3.2.6 Walking and cycling facilities in parks

Some participants raised issues relating to walking and cycling facilities in parks. This was further divided into two sub-themes: footpath quality and cycle lanes.

Similar to the contrasting opinions around maintenance and aesthetics, there were a variety of views on footpaths in parks. Generally, participants preferred even, flat and well-paved paths, although a few participants also mentioned that they wanted to keep footpaths “rough” and “natural” (especially in coastal areas) as well as to have a variety of footpaths to choose from for individuals with varying health status or personal interests. These opinions are illustrated in the following quotes:

*But I suppose I like the fact that the trail is flat, you know, it is level. It is a good footpath. I like nice and clearly defined footpath.* (Amelie, aged 72 years, female, car owner, walking interview, neighbourhood park) (Fig. 4 (a))

*I think it’s nice to have the path rough like this, I don’t want it to be all paved and pretty, and I want it to be natural.* (Martin, aged 78 years, male, car owner, walking interview, coastal path) (Fig. 4 (b))

*I think the fact that you get a variety of trails is good, if you’re feeling too hard then you don’t need to do the hill walk. I like the forest trail, if you can do it fast, you’re fit, it’s a good test of your fitness.* (Julie, aged 72 years, female, car owner, walking interview, forest park) (Fig. 5)

Furthermore, concerns were raised around the potential for collisions between pedestrians and cyclists on park paths. This is illustrated by the quotes from Martin and Calvin:
I don't like cyclists. Well, I know that people have to enjoy their cycling but if there are places where walkers should be able to walk without having to stand aside every so often to let bicycles pass by. But, as long as there's not too many, it's fine. (Martin, aged 78 years, male, car owner, walking interview, coastal path)

The only thing that I don't like are the cyclists. Some don't even ring the bell when they're coming up behind you. That is sometimes difficult. There have been a few accidents, especially with people with dogs. Other than that, it's lovely; very quiet and nice and peaceful. (Calvin, aged 63, male, car owner, walking interview, neighbourhood park)

3.2.7 Park safety concerns

The theme of park safety consisted of three sub-themes: 1) park wardens; 2) the behaviour of young people; and 3) safety-related facilities (i.e. fences along the river, sufficient lighting).

Some participants considered safety as a very important issue in parks, and they generally thought that the existence of park wardens and ‘eyes in parks’ would make them feel safer and more secure. For example, Julie mentioned that she wouldn’t like to be alone in a forest trail where she cannot be seen by other people:

I would go here sometimes, but I wouldn't do this walk now on my own, it's a bit lonely, I would just stay in the main part of it. You feel safe if there's other people about, in the forest part it is quite secluded. I wouldn't like to be totally isolated, just in case something happened to me. (Julie, aged 72 years, female, car owner, walking interview, forest park) (Fig. 6)

A few participants also mentioned that the behaviour of some young people, especially “young drinkers”, lead to safety concerns. According to participants, young drinkers were likely to congregate around benches, shelter under big trees at night and leave litter (i.e. cans and bottles).

A few participants also mentioned the need to have safety facilities present (i.e. fences along the river, lifeguard facilities along the coastal areas and lighting in parks at night). This is reflected in the quote from Calvin:

They have recently put all this fencing up along the river, which has been a good idea. The wee river just runs right along there. (Calvin, aged 63 years, male, car owner, walking interview, neighbourhood park) (Fig. 7)
3.2.8 Slopes

Slopes were mentioned by a few participants. It was a theme without any physical environmental-related subthemes, but participants expressed divergent personal feelings about it. Three participants mentioned having difficulties when walking up hills and steep slopes in parks. For example, Mandy mentioned:

\[
\text{And I'm fine on the flat but I find going back up the hill is a bit too much sometimes.} \quad (\text{Mandy, aged 75 years, female, car owner, walking interview, forest park})
\]

Conversely, Julie preferred the relatively steep forest trail, because she thought of it as “a test of fitness.” (Julie, aged 72 years, female, car owner, walking interview, forest park)

4. Discussion

This study provided the opportunity to obtain rich and context-specific information indicating the physical environmental factors that may influence older adults’ park use. The data presented has a range of important implications for policy, practice and research.

4.1 Park proximity and car use

Park proximity is a widely researched topic for those exploring the impacts of environmental factors on park use and physical activity behaviour of older adults. However, mixed findings have been reported, and it is unclear why this is so (Kaczynski et al., 2009; Mowen et al., 2007; Ribeiro et al., 2015; Van Cauwenberg et al., 2017; Zandieh et al., 2019). Taking these ambiguous findings into consideration, the current study may provide a plausible explanation for why shorter distances to parks does not always encourage park use. That is, if older adults wanted to visit a park that was out of walking distance from their home, having access to a car and less time constraints due to being retired provided them with the opportunity to do so with relative ease. Car use can largely improve older adults’ mobility levels and therefore provide them with wider opportunities of visiting parks (Prins et al., 2014; Smith et al., 2010). This may indeed promote their use of parks and recreational physical activity. Thus, it is implied that the provision of reserved parking for older adults at parks appears to be a promising strategy in order to encourage their use of a wide range of parks, especially in the context of highly car dependent cities, like Belfast, where the majority of trips were made by cars (Cooper et al., 2001). Car use in recreational activities should be protected and facilitated for older adults while pursuing overall reductions in it. In contrast, for non-car owners, those
who are more dependent on their local environment and suffer from reduced levels of access to parks (Hirsch et al., 2015). Access to parks for them could be improved through good public transport service and good quality of routes to their neighbourhood parks (i.e. safe crossings, pavement), and these strategies are also applicable to car-owners.

4.2 The role of park amenities and sports facilities

This study confirms previous studies regarding the important role of park amenities (i.e. benches and cafes) in supporting and encouraging older adults’ use of parks (Alves et al., 2008; Aspinall et al., 2010; Veitch et al., 2020). In particular, the presence of toilets and benches were highlighted as being important, as they may support older adults walking for longer periods of time (Lockett et al., 2005).

In addition, cafes were reported to act as a strong incentive encouraging older adults to go to a park for a walk in the first place. For parks that are not of significant size (i.e. neighbourhood park), it is unlikely for them to have a café within them, but there is an opportunity to have a café in the surrounding area outside of the park. It is therefore implied that the land use of the environments that immediately surrounding parks may also influence their use of parks. However, among the limited studies that have investigated this issue, mixed findings were reported and there is a lack of older-adults specific evidence (Kaczynski et al., 2010; Park, 2018). Further research is required in order to draw firm conclusions with respect to how other recreational and commercial destinations that surrounding parks are correlated with park use of older adults.

In terms of sports facilities. Outdoor gym stations, sport pitches and courts that support vigorous sports and exercise appeared to have little importance in supporting older adults’ physical activity in parks, which is consistent to previous studies (Kaczynski et al., 2014; Veitch et al., 2020). Other sports facilities, such as bowling greens which were assumed to be more appropriate for older adults, were found to not appeal to the older adults interviewed within this study. This was also found in a previous study that indicated bowling was infrequently performed by older adults (Vance et al., 2007). Whereas, playgrounds were highlighted as being important in supporting intergenerational use of parks in this study, with the potential to produce physical health benefits for grandparents (Zhou et al., 2017).

However, these findings do not necessarily suggest that such facilities (i.e. sport pitches and courts) are of little importance for older adults’ use of parks. Their role in fostering sense
of community, promoting social interactions and intergenerational relationships through attracting a wider range of park users doing different kinds of activities (i.e. exercising and playing) was acknowledged by participants in this study, with similar findings reported by others (Gómez et al., 2015; Kaźmierczak, 2013; Groshong et al., 2014). In addition, if parks attract more park users through better provision of different kinds of facilities, there will be more ‘eyes in parks’. As noted in this study, it makes older adults feel safer and potentially results in improved use of parks.

It is implied that although such facilities may not contribute much to the physical activity levels of older adults, they could still generate substantial social benefits for the community, including older adults. However, this study did not specifically explore how social activities and social interactions could be facilitated through park design, and there is a lack of relevant evidence in the existing literature (Veitch et al., 2020), which clearly points the need for future investigation to inform policy making for healthy ageing.

### 4.3 Provide a variety of paths in parks

Walking appears to be the most popular form of daily physical activity and park-based activity among older adults (Brookfield et al., 2017; Reed et al., 2012). This suggests that a promising way of improving older adults’ physical activity levels is through increased opportunities for walking. Therefore, park paths where walking takes place have a key role to play in shaping older adults’ use of parks. Findings from this study are similar to those presented by Wen et al. (2018), who indicated that older adults prefer park paths that are flat, well-paved and barrier free. However, it should be noted that this study also highlighted that it is important for parks to provide a variety of paths (i.e. flat paths with open views vs. secluded and steep paths), in order to make the park physical environments of parks suitable for older adults with varying preferences, needs and functional capacity. Therefore, the design of parks should try to maximize the diversity of paths, for the purpose of offering opportunities for different walking experiences for older adults who visit parks and encourage activities which require varying intensity levels.

### 4.4 Different types of parks

This study found that parks that are well-maintained and with a wide variety of aesthetic features and natural elements, such as landscaping, wooded area, trees, water features and meadows are attractive for older adults to visit and use, which are consistent with those reported
by Wen et al. (2018). Park design should consider the importance of such aesthetic features in order to make parks more attractive for older adults, as well as other generational groups. Furthermore, this study found that older adults visited a varied range of parks (i.e. neighbourhood parks, forest parks) and had varied opinions on park features (i.e. park accessibility, footpath quality), which might be partially explained by the variations of functional capacity among the participants and the different types of parks visited. In particular, it was found that neighbourhood parks, which are usually located within urban areas, should be kept aesthetically pleasing with a range of amenities and facilities, as presumably they provide the most convenient opportunities for daily physical and social activities without relying on cars. While for other types of parks, such as forest parks, coastal paths, which are often located within suburban or more rural areas, were preferred as wild and natural areas with a minimal level of ‘artificial’ elements, as they offer valuable opportunities for contacting more natural environments rather than semi-natural environments being provided by neighbourhood parks. Therefore, it could be suggested that there is no universal design applicable to parks, as different parks serve different purposes and have different features. It is important to ensure that relevant policies and interventions for parks are developed contextually based upon evidence-based knowledge and in consultation with the local community to determine what the users deem is appropriate and wanted by their community.

4.5 Reflections on research design

A primary strength of this study was the use of walking interviews which generated rich and context-specific data on ‘what’ and ‘how’ physical environmental factors of parks influence older adults’ park use. Secondly, most active living research has focused on functionally fit older adults, however this study not only interviewed older adults who reported they had a good level of functional ability (n = 16), but functionally impaired older adults were also interviewed. Thirdly, some studies involved pre-determined places of relevance (Jones et al., 2008; Veitch et al., 2020), which may generate less authentic data as participants could possibly engage in activities beyond these places or relevance (Finlay and Bowman, 2017). The parks included in this study were selected through a combination of how the participants were sampled (see Section 2.1) combined with the choice each participant had to the park they wanted to visit with the researcher. This facilitated the exploration of a wide variety of parks and provided insights on the different roles of parks among older adults.
In terms of limitations, data were not analysed separately for each type of park and interview, and for older adults with varying levels of functional capacity. Thus, we cannot ascertain the reasons leading to the mixed opinions observed. Future research could examine issues of intersectionality and the themes that emerged on different types of parks, such as exploring consequences of gender, functional ability, ethnicity and socio-economic status, on park use and increasing sample sizes accordingly. Secondly, participants in this study were all drawn from the dominant ethnicity of the case (white) and lived within a 500m buffer of park, which may limit generalizability of our findings. However, it is clear that further research is needed to explore issues of intersectionality within the older adult cohort, particularly issues relating to gender and ethnicity. Thirdly, although this study collected a large amount of visual data, but they were not analysed for the purposes for this paper due to technical challenges associated with it (Keim et al., 2006). More advanced methods are needed to extract information from heterogenous visual data. Finally, the interviews were undertaken in Autumn/Winter, this might have generated different findings in comparison to the implementation of a study during Spring/Summer.

This methodology is subject to a number of limitations, such as health status of participants and weather conditions (Finlay and Bowman, 2017), although in this case this did not hamper the research. However, the research process has identified opportunities to improve future use of walking interviews as the analysis of the recorded interviews did suggest that some comments (or lack of comments) at certain locations could have been subject to further probing, which only became apparent on review of the recorded interview. In this context, it is suggested that even more insights could be generated through a further reflective interview with participants, following an initial analysis of the recorded interview to further explore the intend and reason behind particular comments. Besides, this study involved with conducting a walking interview with a couple (i.e. two of the identified participants were a couple), although it was not planned in advance. This provided an interesting dynamic that could be used as a specific tactic in future research; for example, the conversations, interactions and familiarity between the couple appeared to prompt more reflections on features of the routes and linked to shared memories that generated more detailed information. Such insights could be even better captured if both individuals were given a camera.
5. Conclusion

This study obtained rich and context-specific information on the environmental factors of parks that are perceived to influence park use among older adults. Overall, variation of natural elements (i.e. trees and bushes), park amenities (i.e. toilets and benches), safety and slopes were considered influential in shaping older adults’ use of parks. More importantly, this study suggested that it is important to have sports facilities (i.e. sport pitches and playgrounds) and a variety of paths and meet the varied needs and preferences of older adults and to encourage their use of parks, either actively (i.e. walking) or inactively (i.e. watching other people). Finally, this study highlighted the importance of providing good accessibility to different types of parks (i.e. neighbourhood parks and forest parks) across towns and cities, as older adults’ activity are not always constrained to their local neighbourhoods. The provision a variety of parks could offer greater opportunities for them to increase physical activity and experience contact with natural, semi-natural and green environments, which are of great importance for healthy and active ageing.

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CRediT authorship contribution statement

Ruibing Kou: Conceptualisation, Methodology, Formal analysis, Investigation, Data curation, Writing - Original Draft, Writing - review & editing, Funding acquisition. Ruth Hunter: Conceptualisation, Methodology, Writing - review & editing, Supervision, Funding acquisition. Claire Cleland: Resources, Writing - review & editing. Geraint Ellis: Conceptualisation, Methodology, Writing - review & editing, Supervision, Funding acquisition.

Declaration of competing interest

The authors declare that they have no competing interests.
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References


Author et al., 2018 [details removed for peer review]


IBM Corp, 2015. IBM SPSS Statistics for Windows.


Zhang, R., Wulff, H., Duan, Y., Wagner, P., 2019. Associations between the physical environment and park-based...

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Table 1

Summary of the descriptive characteristics of the interview participants.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>M ± SD</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (male)</td>
<td>12 (60%)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>73.89 ± 8.23</td>
<td></td>
</tr>
<tr>
<td>Ethnicity (white)</td>
<td>20 (100%)</td>
<td></td>
</tr>
<tr>
<td>Car ownership (yes)</td>
<td>14 (70%)</td>
<td></td>
</tr>
<tr>
<td>Primary level of education¹</td>
<td>2 (10%)</td>
<td></td>
</tr>
<tr>
<td>Sedentary level of education²</td>
<td>9 (45%)</td>
<td></td>
</tr>
<tr>
<td>Tertiary level of education³</td>
<td>9 (45%)</td>
<td></td>
</tr>
<tr>
<td>Retirement status (retired)</td>
<td>15 (75%)</td>
<td></td>
</tr>
<tr>
<td>Living with some else (yes)</td>
<td>8 (40.0%)</td>
<td></td>
</tr>
<tr>
<td>How long have you lived in your current house?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 20 years</td>
<td>5 (25%)</td>
<td></td>
</tr>
<tr>
<td>&gt;20 years (75.0%)</td>
<td>15 (75%)</td>
<td></td>
</tr>
<tr>
<td>Advanced lower extremity functioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking Interview Participants</td>
<td>86.5 ± 11.9</td>
<td></td>
</tr>
<tr>
<td>Sedentary Interview Participants</td>
<td>21.0 ± 24.3</td>
<td></td>
</tr>
<tr>
<td>Self-reported park use (yes)</td>
<td>10 (50%)</td>
<td></td>
</tr>
</tbody>
</table>

M = mean, SD = standard deviation.

¹ “None or primary” included primary not complete, primary or equal, none, don’t know and refuse.

² “Secondary” included GCSE, A level and diploma.

³ “Tertiary” included undergraduate and postgraduate and higher.
Table 2

Summary of the descriptive characteristics of the interviews.

<table>
<thead>
<tr>
<th>Characteristics of interviews</th>
<th>Length in minutes (M ± SD)</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All interviews conducted</td>
<td>51 ± 14</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Walking interviews conducted</td>
<td>56 ± 10</td>
<td>15 (75%)</td>
</tr>
<tr>
<td>Sedentary interviews conducted</td>
<td>35 ± 13</td>
<td>5 (25%)</td>
</tr>
</tbody>
</table>

M = Mean, SD = Standard Deviation.

Table 1 and 2: P8, between lines 188 and 189.
Table 3

Summary of the key findings from the interviews.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Themes</th>
<th>Sub-themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost all</td>
<td>Variation of natural elements</td>
<td>n/a</td>
</tr>
<tr>
<td>(&gt;75%)</td>
<td>Park accessibility</td>
<td>Park proximity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Availability of parks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access by different transport modes</td>
</tr>
<tr>
<td></td>
<td>Park amenities</td>
<td>Benches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toilets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cafés</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gardens</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Signages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other features of interests</td>
</tr>
<tr>
<td>A lot</td>
<td>(51-75%)</td>
<td>Sports facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Playgrounds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bowling green</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outdoor gym stations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sports pitches and courts</td>
</tr>
<tr>
<td></td>
<td>Maintenance and aesthetics</td>
<td>Tidiness and cleanliness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Landscaping and aesthetics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Graffiti and vandalism</td>
</tr>
<tr>
<td>Some</td>
<td>Walking and cycling facilities in parks</td>
<td>Footpath quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cycle lanes</td>
</tr>
<tr>
<td>(25-50%)</td>
<td>Park safety</td>
<td>Park wardens</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The behaviour of young people</td>
</tr>
<tr>
<td>A few (&lt;25%)</td>
<td>Slopes</td>
<td>Safety-related facilities</td>
</tr>
</tbody>
</table>