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1 **Keywords: Rural health, Ageing, Older adults, Photo-elicitation, UK, Qualitative Research**

2 **Abstract**

3 An ageing society brings with it increased health costs due to the prevalence of long term conditions
4 increasing with age. It is therefore vital to support good health in older people, both to improve their
5 quality of life and to reduce the financial implications of an ageing society. Isolation and loneliness
6 can put people at risk of dying early, and increasing opportunities for social interaction and
7 engagement could mitigate some of the health effects of ageing. However, this requires society to
8 create the conditions that enable older people to participate fully. The World Health Organization's
9 Age-Friendly Cities programme has identified factors that make urban areas Age-Friendly, but
10 research shows that older rural dwellers have unique unmet needs preventing full engagement in
11 their communities. This article describes a pilot project which adapted photo-elicitation to explore
12 the age-friendliness of a rural area in Calderdale, Northern England. It shows that photo-elicitation
13 is a successful method for identifying what older people think is important in making their
14 community age-friendly and it reveals differences between ageing in a city and in a rural setting. This
15 rich data can be used to inform the development of policy in rural areas which is more closely
16 aligned to the needs, preferences and interests of the growing population of older residents. The
17 project also demonstrates the engagement potential of this methodology. Participants continued as
18 co-researchers, learning new skills and taking responsibility for a variety of dissemination activities
19 such as photographic exhibitions, a public report and presentations. This suggests that adapted
20 photo-elicitation is a useful tool for engaging older people in research.

21 **Introduction**

22 The global population is ageing. The UN estimates that the worldwide population of people over 65
23 will grow from 9% in 2019 to 12% in 2030 and by 2050 will have reached 16% (United Nations,
24 2019b). In the UK, the proportion of people over 60 is considerably higher, with estimates for 2020
25 reaching 24.4%, (United Nations, 2017) and projected to rise from 15.6 million to 23.3 million by
26 2050 (Office for National Statistics, 2017). This shift in population distribution has many
27 implications. The UN identifies the impact of an increasingly ageing population to include issues for
28 labour and financial markets, the demand for goods and services, family structures and
29 intergenerational ties (United Nations, 2019a) and as long ago as 1982, recognised the need for
30 specific action to support older people, producing the Vienna International Plan of Action on Ageing
31 (UNDESA, 1982).

32 In the UK and other OECD countries, a larger proportion of older people in the population leads to a
33 lower GDP growth, particularly in countries where the population growth is slower (Papapetrou &
34 Tsalaporta, 2020). In the UK the cost of NHS healthcare increases with age due to the greater
35 prevalence of long term health conditions (UK Parliament, 2015), with the average health spending
36 for an 85 year old being five times greater than that for a 30 year old (Stoye, 2017). The 2019 Health
37 Survey for England found that over the previous 12 months, 78% of females aged 16-24 and 87% of
38 females over 75 had visited their General Practice doctors. For men, the difference was even more
39 pronounced with 57% of males aged 16-24 and 85% of males over 75 visiting their doctor in the
40 previous 12 months (NHS Digital, 2020). It is therefore important to find ways to support good
41 health in older people to improve their quality of life and reduce health care costs.

42 Though it is difficult to show a causal link between health, wellbeing, social isolation and loneliness
43 (Courtin & Knapp, 2017), studies suggest that social isolation and loneliness are associated with
44 Coronary Heart Disease (CHD) and stroke (Valtorta et al., 2016), and an increased risk of early

45 mortality (Holt-Lunstad et al., 2015). A systematic review of loneliness and health care consumption
46 showed that among the frail older population, lonely respondents reported a higher number of
47 health complaints and used more outpatient services including more acute visits at the emergency
48 department, compared to “not lonely” respondents (Taube et al., 2015).

49 Encouraging social interaction and engagement could be one way of improving the health of older
50 people and reducing the health burden, however, in order for this to happen, communities need to
51 make appropriate infrastructure provisions to enable participation. Following the 1991 adoption by
52 the UN General Assembly of the United Nations Principles for Older Persons (United Nations, 1991),
53 in 2002 the World Health Organization (WHO) produced a Framework for Active Ageing which led in
54 2005 to the WHO Global Age-Friendly Cities (AFC) project (World Health Organization, 2005). The
55 project drew on research with older people in the US (World Health Organization, 2007), and set out
56 8 domains that are important in making cities age-friendly.

57 The AFC project explored these domains with older people in 35 cities around the world and
58 developed checklists to allow cities to assess their age-friendliness in each area (World Health
59 Organization, 2007) thus providing tools to support cities in becoming more age-friendly (World
60 Health Organization, 2005). This is a tacit acknowledgement that the active involvement of older
61 people in society is more than an individual choice but also depends on the way that society is
62 organised. It was anticipated that cities, having the resources to make age-friendly changes, would
63 model new ways of organising and lead the way for other communities within their countries to
64 become age-friendly (World Health Organization, 2005).

65 Findings from rural research show that while some needs of older people are similar to those in
66 cities, others are unique to rural areas (Lui et al., 2009) and their governance structures often have
67 difficulty accessing resources (Lin & Huang, 2016; Winterton, 2016). Rural areas therefore need
68 support to become age-friendly (Menec et al., 2015).

69 Surveys of a range of age-friendly domains with municipal officials and residents show that
70 municipal officials over-estimated the age-friendliness of the communities, so it is important to
71 involve older residents in research on the age-friendliness of rural areas (Menec et al., 2016). Other
72 projects have successfully involved older people as co-researchers to investigate the age-friendliness
73 of communities (Buffel, 2018). We therefore initiated the Age-Friendly Rural Areas project which
74 aimed to capture the views of older people about the age-friendliness of their rural communities.

75 Engaging the public in research is often difficult. Creative methods have been used previously to
76 enhance engagement with older people, for example, Photovoice has been used successfully in age-
77 friendliness research (Novek & Menec, 2014; Ronzi et al., 2016). Photovoice is an action research
78 methodology (Wang & Burris, 1997) involving participants taking photographs and working with
79 facilitators to identify community priorities. However, this methodology requires a long term
80 commitment to working with the community and has a focus on community empowerment leading
81 to social change (Glaw et al., 2017). Photo-elicitation refers to the use of photographs in research
82 interviews to generate discussion (Harper, 2002). Photographs can be provided by the researcher or
83 taken by the participant. It uncovers attitudes and experiences, and elicits more information than a
84 standard interview (Glaw, et al., 2017). The authors argue that by allowing participants to take the
85 photographs, photo-elicitation also gives the participants “the freedom to choose what they want to
86 talk about in the interview” (Glaw et al., 2017, p3). Rose (2016) goes further and suggests that this
87 allows participants to become the expert in the interview. Photo-elicitation has been used in healthy
88 lifestyle research, where it has been found to be an effective method for engaging a wide variety of
89 participants in different settings (Joy et al., 2014).

90 The aim of this pilot project was to assess the feasibility and acceptability of using adapted photo-
91 elicitation to encourage participation and involvement of rural-dwelling older people in research to
92 improve its quality and relevance (INVOLVE, 2012) and to investigate what people over 60 thought
93 made rural areas age-friendly. We mapped these findings to AFC domains and used the creative
94 outputs in the dissemination of the research findings.

95 **Methods**

96 **Ethics**

97 Following use of The University of Manchester online ethics decision tool, this project was not
98 deemed to require ethical approval as it was not asking upsetting, distressing or controversial
99 questions of the public and no identifiable data were collected from participants. Participants were
100 required to gain consent for photographs to be taken and used in the research project from any
101 individuals photographed during the project. Participants also gave consent for their photographs to
102 be used in the research project and dissemination activities.

103 **Research setting and participants**

104 The study was conducted in Calderdale, West Yorkshire, UK. Calderdale is classed as a urban local
105 authority with major conurbations, but has a large proportion of rural dwellers (24.98%) (Office for
106 National Statistics, 2011). The Upper Calder Valley (UCV) is located to the west of Halifax, which is
107 the main urban area in Calderdale. UCV is exclusively rural, consisting of three small towns in the
108 valley bottom and a large number of villages, hamlets and scattered individual dwellings (Calderdale
109 Council, 2018). Residents over 65 years old made up 16% of the population of Calderdale in 2011
110 (Calderdale Council, 2018), but projected growth for 2016-2026 in Calderdale estimates a 7.7%
111 increase in the 65-74 age group and a 47% increase in 75-84 age group compared to a 3.5% increase
112 in all ages (Calderdale Council, 2018). UCV was chosen because of its proximity to the research team
113 base, good public transport connections making it relatively easy for researchers and participants to
114 reach the sessions, and because of existing links between a research team member and arts and
115 community organisations in the area. Participants needed to be over 60 years old and resident in
116 the UCV to be eligible to take part.

117 **Recruitment**

118 The project aimed to recruit a minimum of 10 and maximum of 15 people over 60 years old, to
119 populate two participant groups of a manageable size. This was deemed to be an achievable target
120 in the 6-month time frame of the project from recruitment to completion of initial dissemination.

121 Partnerships with community and voluntary sector organisations can be effective in recruiting
122 people from hard to reach groups (Harrison et al., 2017). A scoping exercise was performed to find
123 local groups and organisations that could assist with recruitment. Organisations were targeted if
124 they were exclusively for older people, were likely to attract older people (such as historical
125 societies) or had members who might be interested in the methods used (such as photographic
126 groups and arts organisations). The organisations that agreed were invited to distribute a poster
127 and leaflet about the project. The advertising material included the lead researcher's mobile number
128 and email address and interested people were asked to contact the research team directly. The
129 recruitment material was sent to organisations one month before the date of the first meeting.

130 Organisations can also act as gatekeepers and block researcher access to potential participants
 131 (Williams, 2020). Therefore, posters and leaflets were also displayed throughout the area at local
 132 shops, cafés and community venues to ensure that it was publicised as widely as possible.

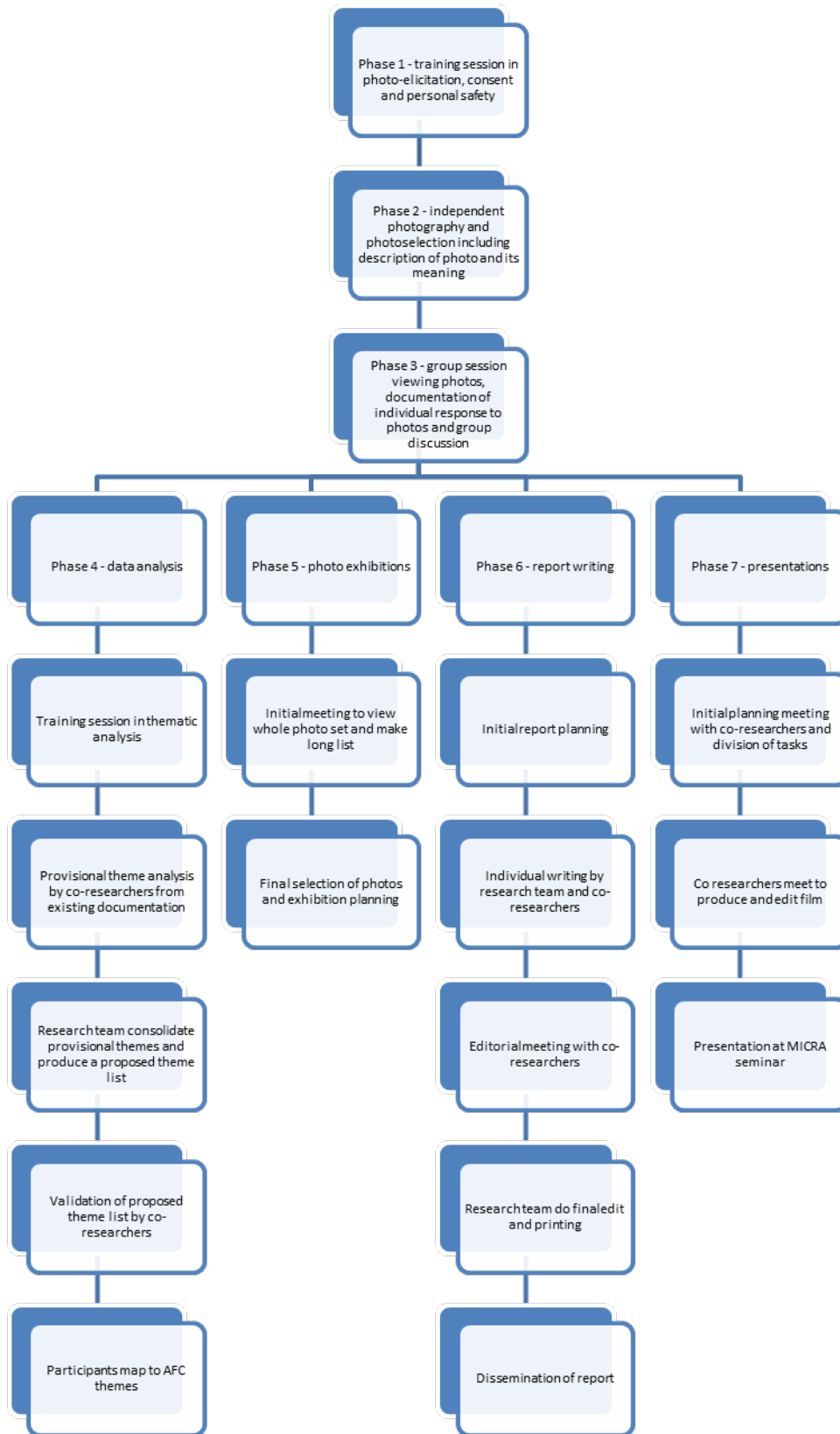
133 Seventeen organisations were identified to aid recruitment, 11 agreed to distribute information to
 134 their networks, one said no and five did not reply. Posters advertising the project were displayed in
 135 24 shops, cafes and community venues across the UCV. Twenty-four enquiries resulted in 13
 136 participants being recruited for the project. Six enquiries were received too late to participate, five
 137 received information about the project but either did not confirm that they intended to participate
 138 or did not attend the initial session. Three quarters of the participants were female with the
 139 majority of the participants being under 70 years old (Table 1) and the mode age group was 65-70.
 140 Over half the participants came from Mytholmroyd, which was the location of the local arts
 141 organisation who were a partner in the research project, and where one of the researchers was a
 142 resident. Some demographic information is missing for one participant.

143 *Table 1: Participant characteristics for Age Friendly Rural Areas project*

		N (%)
Sex	Male	3 (23.1)
	Female	10 (76.9)
Total		13 (100)
Age (years)	60-64	4 (30.8)
	65-69	5 (38.4)
	70-74	2 (15.4)
	75-79	1 (7.7)
	Data missing	1 (7.7)
Total		13 (100)
Where do you live?	Heptonstall	2 (15.4)
	Hebden Bridge	1 (7.7)
	Mytholmroyd	7 (53.8)
	Midgley surroundings	1 (7.7)
	Sowerby Bridge/Halifax	1 (7.7)
	Data missing	1 (7.7)
Total		13 (100)

144
 145 In order to maximise access for the participants, two participant groups were run in different
 146 locations and times and respondents were asked to select the most convenient group. Both groups
 147 followed the same process. Participants' travel expenses were paid. The study was conducted
 148 between February 2018 and July 2018. Figure 1 provides an overview of the different phases of the
 149 research. Appendix 1 shows how many participants were involved in the different phases.

150 *Figure 1: A flowchart representing project activity including participant co-researcher activity in Age-friendly Rural Areas*
 151 *project*



152

153

154 **Photo-elicitation as a research tool**

155 In her book 'Visual Methodologies', Rose (2016) defines some strengths of photo-elicitation which
156 have been exploited in this project. Accordingly, photographs uncover 'unknown unknowns' in the
157 researcher's knowledge, raising new issues and novel opinions. This allows participants to introduce
158 new ideas which may not have been anticipated. Rose says that photographs allow the articulation
159 of every-day activities, giving participants an opportunity to observe their experiences from a
160 distance. Participants are therefore able to reflect on their experience and to highlight routine
161 activities important in determining age-friendliness. Harper (2002) argues that photo-elicitation
162 generates different sorts of information, as it taps into areas of the brain that are "evolutionarily
163 older than the parts that process visual information" (p13). This might encourage deeper reflection
164 on the subject than a standard interview.

165 Photo-elicitation is normally conducted using interviews. However, in this project we adapted the
166 methodology and used focus groups, which creates the opportunity for interaction between
167 participants and can lead to them "generating their own questions and pursuing their own priorities"
168 (Kitzinger, 2000, p21). We felt this was a valuable change to the methodology, encouraging the
169 participants to explore the issues together and inform the researchers about our 'unknown
170 unknowns' on ageing in a rural area.

171 This study used photographs generated by participants. Participants attended two sessions. The
172 initial session was an information and training session during which participants were trained in
173 photo-elicitation as a method for collecting data about age-friendliness in rural areas. Following an
174 introduction to photo-elicitation methods and information about the project, participants generated
175 ideas through discussion and brainstorming about what 'age-friendliness' might mean in the UCV.
176 They then received information about consent and safety, and were given suggestions about how to
177 approach a photo-elicitation exploration of age-friendliness. These suggestions were intended to
178 give parameters to assist participants in recording their responses to the research question, and
179 included: recording all their activities on a specific day; picking a theme or area to photograph in
180 detail; comparing the activity of an older person with the activity of a different age group; and taking
181 photographs as information for an older person new to the area.

182 Participants were free to choose other parameters for their photos. Participants were asked in
183 advance if they had a smartphone or camera, as disposable cameras could be provided. After the
184 session, participants had 7-10 days to take their photographs responding to the question "What
185 makes the Upper Calder Valley age-friendly or not age-friendly?" Since digital photography allows
186 people to take an unlimited number of photos, we made the pragmatic decision to ask participants
187 to submit in advance of the next session 10 photographs accompanied by a description of their
188 intended meaning. They were told they could use any criteria to select their submissions, for
189 example, the photographs they liked best, those that best represented the theme, or the
190 photographs that had the best composition. They sent their selected photos to the research team
191 who produced a PowerPoint presentation for each participant group, which included all the
192 submitted photos from that group.

193 At the second session, the photographs from each of the group participants were viewed in the pre-
194 prepared PowerPoint presentation. Participants commented informally as they looked at the photos,
195 identifying familiar locations and discussing the subject matter. Participants were asked to choose 15
196 photographs from the presentation. This number was chosen as it gave the opportunity for a wide
197 range of additional comments but was not overly-burdensome for the participants. Using a form
198 with thumbnail photos, they wrote down their own response to the photograph based on the
199 following topic guide as prompts:

- 200 • What do you see in the photo?
- 201 • What is the meaning of the photo for you?
- 202 • What does it say about age-friendliness in this area?

203 The focus group structure, therefore, combined two photo-elicitation methodologies, allowing
204 participants to discuss the meaning in their own photographs, and using photographs taken by
205 someone else to elicit discussion (Harper, 2002). In this case, the photographs were provided by the
206 other participants rather than the research team. This facilitated further elicitation from
207 participants. Viewing other people's photos either affirmed or contradicted their own ideas or
208 triggered additional unexpressed or hitherto unconscious thoughts, about the experience of being
209 an older person in the Calder Valley. As Harper argues "photographs may lead an individual to a
210 new view of their social existence" (p21). In this way, the photographs appeared to prompt ideas
211 about age-friendliness from other group members which may not have been the original intention of
212 the photographer. For example, a participant took a photograph of a woman battling through a
213 blizzard to illustrate community spirit, [photo 1 'Blizzard'] but other participants interpreted it as
214 representing the isolation and difficulty of rural life for older people.

215
216 Participants then had the opportunity to ask questions about any other participants' photographs.
217 They were also asked whether there were additional aspects of age-friendliness not captured in the
218 photographs. Notes of the discussion were taken by a second research team member.

219

220 **Co-researcher participation**

221 At the end of the sessions, participants were invited to continue in the project as co-researchers to
222 work on data analysis and a range of dissemination tasks and 12 of the 13 original participants
223 accepted this invitation (Appendix 1). The tasks were described and participants could sign up on
224 sheets that were circulated in the group. An hourly fee was paid to co-researchers.

225 Participant co-researchers interested in data analysis were invited to four further sessions. The first
226 was a training session where they were introduced to quantitative and qualitative research. In the
227 second session they were introduced to inductive thematic analysis (Braun & Clarke, 2006), shown
228 an example and practiced the technique using a worksheet. During the third session, they identified
229 themes in the data collected from all sources: individual descriptions of photographs; comments on
230 other people's photographs; notes from the discussion; and recorded them individually on a form.

231 Two members of the research team examined the themes identified by the participant co-
232 researchers and using principles of grounded theory (Harry et al., 2005), categorised the themes in
233 an inductive, iterative process, and then mapped them to an a priori framework and identified gaps
234 leading to a set of high-level themes with subthemes nested within them.

235 These were presented to the participant co-researchers for validation at a fourth session. Finally, the
236 participant co-researchers were introduced to the AFC domains (World Health Organization, 2007),
237 which are as follows:

- 238 • Domain 1 - Outdoor spaces and buildings
- 239 • Domain 2 - Transportation
- 240 • Domain 3 - Social participation
- 241 • Domain 4 – Respect and social inclusion
- 242 • Domain 5 – Civic participation and employment
- 243 • Domain 6 – Communication and information
- 244 • Domain 7 – Community support and health services

245 • Domain 8 – Housing

246 It was immediately clear that there was little direct transfer from the Age Friendly Rural Area themes
247 to the AFC domains (World Health Organization, 2007). Therefore, the participant co-researchers
248 focused on identifying where their subthemes fitted AFC domains.

249 Participants were all invited back to a celebration at the end of the project and gave feedback on
250 their experience of participating in the project.

251 **Dissemination methods**

252 Dissemination activities were planned for different audiences including a report, a photographic
253 exhibition and a presentation. Participant co-researchers were invited to contribute to these
254 activities and details of the activities are shown in Appendix 1.

255 The photographs for the exhibition and the illustrated report were selected by the participant co-
256 researcher photography group (Figure 1). At an initial meeting, the participant co-researchers were
257 shown the complete set of photos from both groups. They agreed that individuals were initially free
258 to choose any photos they wanted without needing to represent the final themes identified in the
259 analysis. They made their individual choices from the full list and this became the long-list. The
260 research team put the long-list into a PowerPoint presentation which was viewed at a second
261 meeting where the participant co-researchers agreed that they would aim for a final selection of
262 around 30 photos, which was felt to be an appropriate number for an exhibition. They then made
263 the final photograph selection for the exhibitions.

264 An exhibition was planned as one of a series of public events and workshops to mark Dementia
265 Friendly Week. The participant co-researcher photography group brought additional ideas of places
266 to show the photos and decided by consensus on which additional venues to approach and took on
267 responsibility for contacting the venues.

268 Following data analysis, a report was produced, illustrated with photographs from the project, to be
269 sent to local policy-makers and politicians. The report outline was planned by the research team and
270 participant co-researchers, who then split the writing and editing tasks, with the research team
271 completing the editing, design and printing.

272 A seminar was arranged to engage academics and researchers. The seminar presentation was
273 planned by the research team and participant co-researchers, with the preparation tasks and
274 presentation divided between them.

275 **Results**

276 **Participants**

277 Of the 13 who attended the initial session, 12 completed the data collection and feedback phase. All
278 participants had equipment that they could use to take digital photographs with no-one requiring
279 disposable cameras. 11 people used smartphones and one used a digital camera. Two participants
280 submitted photos that they had manipulated to better represent their concept, one digitally, and
281 one who submitted photos of collages created from her photographs with images from magazines
282 added to them. [photo 2 'I can see but am I seen?'] Nine participants submitted the maximum of 10
283 photos. A total of 111 photos were received. One participant dropped out at the end of the photo-
284 elicitation sessions, and one who had dropped out after the initial session re-joined, giving a total of
285 12 participant co-researchers. Six participant co-researchers worked on data analysis, 10 worked on

286 photo exhibitions, two worked on the report and three were involved in presentations (Appendix 1).
 287 One participant co-researcher worked on all four work-streams, three participant co-researchers
 288 worked on three work-streams, three participant co-researchers worked on two work-streams and
 289 five participant co-researchers worked on one work-stream.

290 **Data analysis**

291 The research team identified 10 themes, which were presented to the participant co-researchers for
 292 validation. The participant co-researchers identified two further themes giving a total of 12 themes,
 293 and they re-allocated the subthemes where required (Appendix 2). The themes and subthemes were
 294 then compared with the domains from the AFC by the participant co-researchers.

295 This mapping process showed that the themes identified by this project did not map directly to the
 296 AFC domains, but that many of the subthemes could be mapped to AFC domains (Table 2). For
 297 example, the theme of ‘Mobility’ in our project, had subthemes which mapped to three AFC
 298 domains, those of ‘Transport’, ‘Social Participation’ and ‘Outdoor spaces and buildings’.

299 Within the themes, ‘Place and Identity’, ‘Local Services and Amenities – Businesses’ and the ‘Benefits
 300 of Ageing’, participant co-researchers found no equivalent in the AFC domains (Table 3). Four
 301 themes had all or nearly all the subthemes mapping to AFC domains: ‘Mobility’; ‘Local services and
 302 amenities – Council services’; ‘Local services and amenities – technology’ (though this only had one
 303 subtheme); and ‘Local Services – voluntary sector and charities’, (though this had only two
 304 subthemes). Other themes were more mixed (Table 2).

305 *Table 2: Themes and Subthemes of Age Friendly Rural Areas project and number of Subthemes that map to AFC domains.*

306

Theme number	Theme	Number of subthemes	Number of subthemes which map to AFC themes
1	Place and identity	6	0
2	Challenges of ageing	11	6
3	Mobility	11	10
4	Health and wellbeing	7	2
5	Activities	8	3
6	Geographical environment	5	2
7	Local services and amenities – Businesses	6	0
8	Local services and amenities – Council services	6	6
9	Local services and amenities – technology	1	1
10	Social interaction	12	4
11	Local Services – voluntary sector and charities	2	2
12	Benefits of Ageing	6	0

307

308 *Table 3: Themes and Subthemes of Age Friendly Rural Areas which had no equivalence to AFC domains.*

309

Theme number	Theme	Subthemes
1	Place and identity	Tension between preserving historical features and accessibility
		Tension between preserving the natural environment and accessibility
		Knowing and preserving the history of the local area
		Practicing and passing on skills, crafts and traditions
		Appreciating the importance of places and personal histories and connections to them
		Connection with the seasons
7	Local services and amenities - Businesses	Market, for social contact and buying small quantities
		Milk delivery
		Local shops
		The loss of local banks
		Cafés and restaurants
		Post office
12	Benefits of Ageing	Opportunities to slow down and reflect
		Growing confidence through age and experience
		Living in the present
		The freedom to be one's self
		The acceptance of change

310

311 **Dissemination results**

312 One photographic exhibition was included in the project plan. This took place at the Town Hall in
 313 Hebden Bridge during Dementia Friendly Week events (1-5 October 2018) and included a
 314 presentation by a member of the research team (2 October 2018). The enthusiasm of the
 315 participant co-researchers led to a further two local exhibitions. One was at the Mytholmroyd Gala
 316 (17 July 2018), a local summer fete. Participants invigilated at the exhibition and talked to local
 317 people about the project and its findings. The other was at the church at Heptonstall, a hilltop
 318 village with a small tourist industry, where some participants lived. A smaller selection of
 319 photographs were exhibited for three weeks in August and September 2018. A fourth exhibition was
 320 shown as part of the academic seminar presentation (19 December 2018). The seminar was
 321 advertised by the Manchester Institute for Collaborative Research on Ageing and attracted
 322 academics and members of the public. It included academic presentations and contributions by
 323 participant co-researchers including a film that they made independently about their experience of
 324 participating in the project. Reports were distributed to local organisations, local councillors, town
 325 councillors and Members of the UK Parliament. According to a Hebden Royd Town Councillor, the
 326 report “helped to persuade Hebden Royd Town Council to work towards becoming an Age Friendly
 327 Town Council.” (V.S. 2020 Personal communication. 19 October 2020)

328 Eight of the 13 participants attended the final celebration. They were asked to put sticky notes on a
 329 chart on which they had written what they had most enjoyed, and five referenced meeting people

330 with similar interests, four said taking and looking at the photos, and three noted being part of a
331 creative project.

332 **Discussion**

333 This pilot project explored the feasibility and acceptability of using adapted photo-elicitation to
334 engage older rural participants in research and generate data to explore what makes rural areas age-
335 friendly for people over 60. It also investigated whether AFC domains are directly transferable to
336 rural areas. The creative outputs were disseminated widely and reached a variety of audiences.

337 **Use of creative research methodology**

338 Photo-elicitation appeared to be a feasible research method for this population. Arrangements had
339 been made to provide disposable cameras for participants if required. These photographs would
340 then have been developed and digitised by the research team. However, all participants had access
341 to digital cameras or smartphones and appeared comfortable with use of these devices. Equally, the
342 task of emailing their images to the research team was something that all participants were able to
343 do without support. This suggests that digital photography is not a barrier to participation for older
344 people in projects such as this and supports other findings which show that older people are
345 increasingly familiar with smartphones, tablets and social media (OFCOM, 2017; Open Access
346 Government, 2018).

347 Photo-elicitation also appeared to be an acceptable research method to use with older people in
348 rural areas. Despite the short 6-month timeline for the project, it was possible through partnerships
349 with local organisations and advertising in the local area, to recruit more than the minimum goal of
350 10 participants. However, this may indicate a limitation: the project may have only attracted people
351 with an existing interest in photography or creative activities, which was highlighted in the feedback
352 with many participants describing photographs and participation in a creative project as what they
353 enjoyed about the project.

354 The involvement of a research team member who was a local resident may also have affected
355 participation. Though many participants were recruited via the project publicity, the conversion
356 from enquiry to participant may have been influenced by the researcher's local knowledge. The
357 researcher was also able to talk to local people about the project and encourage participation. Both
358 of these factors may have increased trust and confidence, leading some people to agree to
359 participate who may otherwise not have done so and resulting in familiarity bias. However, it could
360 also support the argument that researchers need to be sufficiently embedded with communities to
361 be able to overcome participants' fear of the unfamiliar and thus increase participation, as previous
362 studies have identified the psychosocial distance between researcher and subject as being a barrier
363 to engaging participants (Sixsmith et al., 2003).

364 However, this project generated a highly motivated group who remained involved with the project
365 after the photographic stage and completed four further work-streams. The ongoing engagement of
366 participants in projects using photo-elicitation methodology is confirmed by previous research (Joy,
367 et al., 2014).

368 Though the participants had initially been attracted by, and signed up to a two session photographic
369 project, six participant co-researchers worked on data analysis which involved a further four
370 sessions, twice as many sessions as they spent on the photography project (Appendix 1). Participant
371 co-researchers were paid for their time, but this was not disclosed until after they had volunteered
372 so was not a determining factor in deciding to continue as participant co-researchers. Their

373 commitment and interest in working with the data they produced led to the validation of 12 themes,
374 including identification of an additional two themes which were not initially identified by the
375 research team.

376 This suggests that photo-elicitation was not only a useful recruitment tool but could be used to
377 enhance patient and public involvement and engagement (PPI/E), which is crucial to ensure research
378 is relevant to the needs of the public (INVOLVE, 2012).

379 **The Age-Friendliness of rural areas**

380 This project provided insight into the views of older people about the age-friendliness of their local
381 environment. This project started from the participant experience rather than using the existing
382 WHO domains and hoped to capture aspects of age-friendliness that were specific to rural areas.
383 Photo-elicitation was chosen as a methodology which could achieve this as prior studies suggest that
384 photo-elicitation enables participants to be the expert in their lives and communities (Glover et al.,
385 2008; Rose, 2016). In this project, participants were asked to use photo-elicitation to respond to a
386 broad question – “What makes the Upper Calder Valley age-friendly or not age-friendly?” without
387 further intervention or prompts from the research team. The methodology, therefore, avoided
388 participants being overly influenced by any assumptions the research team may have had and
389 prevented them from being led to particular responses through exposure to questions, which may
390 have set the parameters within which participants could reflect. Other studies have used photo-
391 elicitation to help researchers understand other experiences or cultures (Samuels, 2004) and to
392 show the researcher what is important to participants (Stanczak, 2011). Stanczak describes the ‘a-ha’
393 moment when participants reveal something about their lives that the researcher does not know
394 (Stanczak, 2011).

395 Therefore, it was to be expected that the themes identified in this project would be wide ranging,
396 including aspects of the physical environment, local infrastructure, and aspects related to individual
397 circumstances and opportunities. Harper’s (2002) argument that “images evoke deeper elements of
398 human consciousness than do words,” (p13) leading to the collection of different kinds of
399 information, may have led to some of the more philosophical reflections in the themes of the
400 benefits of ageing and the relationship of place and identity that were not found in the WHO Age-
401 Friendly City domains.

402 The methodology allowed participants time to consider the question of age-friendliness in rural
403 areas, as they could spend between 7-10 days taking their photographs and also created distance
404 through the use of the lens, which allowed them to observe their experience. Backman and
405 colleagues (2012) describe a study on infection prevention where participants took part in photo-
406 walks around the medical units and through the use of photo-elicitation, seemed able to observe
407 and describe the systems in place and identify how they created barriers to effective infection
408 control. Among our participants, there were many photographs related to their choice to live in a
409 rural and sometimes, isolated, area as an older person, dealing with the environmental challenges
410 such as steep valleys and hard winters, as well as the diminishing abilities related to ageing. Some of
411 these photographs raised questions for participants about how this would affect them in the future.
412 The methodology was adapted to include focus groups rather than individual interviews. This was to
413 allow for interaction between participants in order to generate more data. However, it may have
414 also contributed to the engagement of the participants as it created a social group in which
415 participants made new friends and renewed old acquaintances.

416 This adapted methodology also included, in phase 3 of the project, the opportunity for participants
417 to view each other's photos and to share any additional ideas about age-friendliness. These ideas
418 may have been the same or different to the photographer's intention. Photo-elicitation usually
419 involves either the use of existing photographs provided by the research team or photos produced
420 by the participants. In this methodology both were utilised as participant photographs became
421 'existing photographs' for other participants.

422 **Mapping the themes to AFC**

423 In order to prevent participant bias towards existing AFC domains, a methodology was selected that
424 allowed participants to identify individual priorities without prior influence. However, this relied on
425 participants having no previous knowledge of AFC domains. In fact, the research team became
426 aware that one participant did know about them and was asked not to discuss them with other
427 participants. No other participant made any mention of them, however, this does not preclude
428 them having an existing knowledge. In future studies, this could be investigated through the use of a
429 pre-project survey.

430 The findings of the research showed similarities and differences to the AFC including gaps discussed
431 above. Once the co-researchers had validated the themes from their data analysis in Phase 4 (Figure
432 1), they were introduced to the AFC domains and mapped their themes and subthemes to them.
433 This method was also employed by Wang et al. when researchers mapped the age-friendly elements
434 in the China Health and Retirement Longitudinal study (CHARLS) to the AFC domains (2017).
435 However, in our study, the co-researchers identified the themes and subthemes with research team
436 support and did their own mapping.

437 Despite most participants apparently having no prior knowledge of the AFC themes, there were
438 several findings in common in the two sets of data suggesting commonalities between older people
439 living in cities and rural areas; a finding noted by Lui et al. (2009). As they reported, mapping the
440 themes to the AFC domains highlighted some significant differences between the two sets of data.
441 The most striking were the themes of 'Place and identity', and 'Local services and amenities –
442 businesses', and 'The benefits of ageing,' where the co-researchers did not find any equivalent in the
443 AFC domains or their subthemes (Table 3).

444 'Place and identity' was a theme which generated lively discussion during the project. The
445 participants appeared to have a strong sense of the value of their surroundings whether they had
446 been born in the area or had moved there subsequently. Other participants talked about the
447 importance of maintaining local traditions and photographed traditional crafts such as rag rug
448 making [Photo 3 'Rag rug'], and traditional foods such as the dock pudding (a traditional dish only
449 found the Calder Valley). It may be that, as Harper (2002) suggests, the methodology employed
450 allowed this deeper reflection on the relationship between age-friendliness and place and identity.

451 The subthemes appear to indicate that an awareness of the importance of the history and tradition
452 of their surroundings matters to older people, and therefore, an acknowledgement and appreciation
453 of this by the whole community is a crucial aspect of the age-friendliness of the community. If older
454 people witness the destruction of historical features or natural environments, or a lack of respect for
455 the history or traditions of the area, they may experience this as age-unfriendliness, even if local
456 infrastructure serves the needs of older people.

457 'Local services and amenities – businesses' was another subject of much discussion. Participants
458 took photographs of local shops and markets, suggesting their importance to older people. This may
459 be an indication that older people would prefer to shop locally rather than make journeys which may

460 be difficult, expensive or time consuming. Participants talked about the importance of local shopping
461 for regular social interaction. This contrasts with working age people, many of whom commute to
462 larger conurbations and can access shops and other businesses while they are there. Working age
463 people may also rely on internet shopping. The confidence with which the participants used their
464 smartphones and email suggests that they may have the technological means to shop online, as
465 reported elsewhere (OFCOM, 2017; Open Access Government, 2018), but still valued the
466 opportunity to use local shops. The valuing of local businesses may relate to the subthemes in 'Social
467 Interaction', which include such things as intergenerational contact, daily interaction with service
468 providers and daily interaction with neighbours and the wider community, all of which can be
469 achieved in a local shopping trip (Appendix 2).

470 The focus of participants on local businesses may reflect concern about the precariousness of rural
471 shops which are reported to be closing at a rate of 400 per year (The Plunkett Foundation, 2019).
472 Another possibility is that there is more intimacy in the relationship between customers and
473 businesses in rural areas, [Photo 4 'Heptonstall Post Office'] where the small population means that
474 there is less anonymity and the limited number of businesses mean that customers do not have a
475 choice of businesses to use.

476 Participants discussed many benefits of ageing which was not a theme that appeared in the AFC
477 domains. All participants were retired and appreciated having more time to themselves now that
478 they had finished their working life. They described feeling more confident due to the accumulation
479 of experience, and less concerned about other people's opinions. While they were aware of their
480 increasing physical limitations, they also expressed satisfaction with the ways they overcame these
481 challenges. [Photo 5 'Hairdressers'] These findings identify positive aspects of ageing which could be
482 the subject of further research. The reflections by participants may have been made possible by the
483 methodology, which allowed them to choose their own priorities, and take more time to think about
484 the issue. However, the self-selection of the group may also have been a contributing factor, in that
485 they were all active and mobile, and able and confident enough to participate in the project.
486 Nevertheless, these views reflect the views of a selection of people over 60 and should be taken into
487 account.

488 **Participant engagement in dissemination**

489 As part of the research project, a number of dissemination activities were planned to address
490 different audiences. The generation of photographs created dissemination opportunities such as the
491 photographic exhibition and illustrated report. The engagement and enthusiasm of the participants
492 meant that more dissemination activities took place than anticipated such as the additional
493 exhibitions.

494 The methodology employed the use of photographs and participant engagement, which led to the
495 research having a wider impact than would otherwise have been possible, as the photographs
496 created opportunities to create dissemination material which was attractive and visually interesting
497 to the general public as well as material of interest to the academic community. The photographic
498 exhibitions were accessible to local people at a community festival, tourists and parishioners visiting
499 a local church, visitors to local Dementia Friendly Week events, academics and members of the
500 public attending a University seminar. The exhibitions included an information board, which
501 described the project and the main findings. An additional impact of the project was the decision of
502 some of the participants to produce their own film about the project and show it at the academic
503 seminar.

504 Limitations include the lack of representativeness of the participant group. Though there was a
505 spread of ages, the group was self-selecting and not necessarily representative of people over 60
506 years of age. The participants were all active with few mobility problems, living independently and
507 confident enough to initiate participation. They were also interested in participating in a
508 photography project, which may not be representative of the population as a whole. Participants did
509 not represent the geographic spread of the project as the majority came from one community. Data
510 was not collected on social class. In a future project, it would be important to target a wider range of
511 participants, with age, ethnic and socio-economic representation.

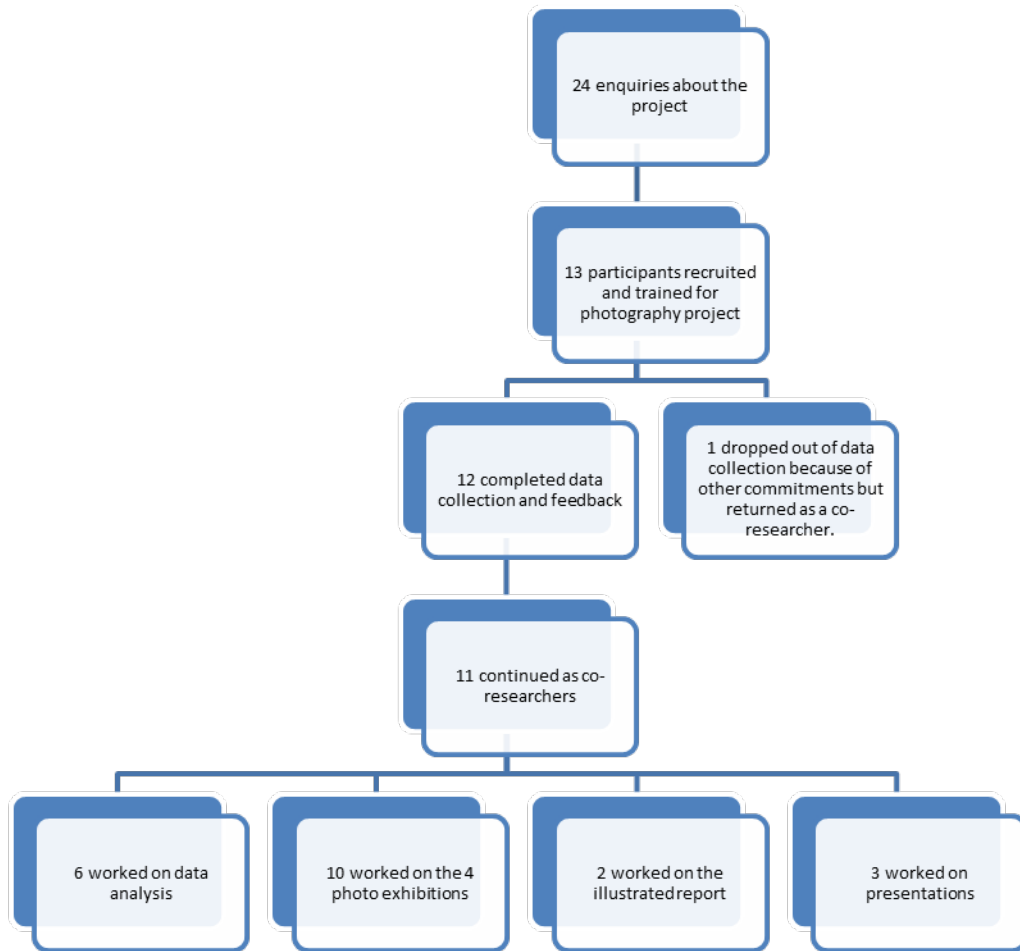
512 This research used a different methodology than the AFC so a direct comparison of the findings is
513 not possible. In addition, though the thematic analysis of the data was an important engagement
514 opportunity and an activity that the participants pursued with enthusiasm, their training in thematic
515 analysis was brief and rudimentary and this may have skewed the results, as well as there being the
516 risk of participants introducing bias by emphasising their own views.

517 However, this study showed that the adapted methodology was acceptable to this group and that it
518 engaged participants, the majority of whom continued to work as co-researchers. It generated data
519 that provided insight into the views of people over 60 about the age-friendliness of the Upper Calder
520 Valley, including differences and similarities to the AFC domains. This information can inform the
521 development of policy in rural areas to be more closely aligned to the needs, preferences and
522 interests of the growing population of older people. Further research is needed into the acceptability
523 of this methodology in a more representative sample, the use of creative methodology to promote
524 engagement in research and in older people's perspectives on the benefits of ageing.

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528

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533

535

Theme number	Theme	Subthemes	AFC equivalent
1	Place and identity	Tension between preserving historical features and accessibility	None
		Tension between preserving the natural environment and accessibility	None
		Knowing and preserving the history of the local area	None
		Practicing and passing on skills, crafts and traditions	None
		Appreciating the importance of places and personal histories and connections to them	None
		Connection with the seasons	None

Theme number	Theme	Subthemes	AFC equivalent
2	Challenges of ageing	Maintaining valued independence	Community Support & Health
		The desire to maintain attachment to home and belongings	Community Support & Health
		The importance of privacy	None
		Feeling included	Respect and Social isolation
		Awareness of mortality	Community Support & Health
		Fear about the future and planning for the future	Housing
		Need for courage and perseverance	None
		Feeling safe	Respect and Social isolation
		The fear of change	None
		Continuing pride in appearance	None
		The importance of questioning and maintaining critical faculties	None
3	Mobility	Bus routes	Transport
		Accessible buses, trains and taxis	Transport
		Wider public transport connections to beyond the local area	Transport
		The transition from driving to not driving	None
		Helpful bus drivers	Transport
		Accessible public buildings and social spaces	Social participation
		Road and pavement surfaces and steps	Outdoor spaces and buildings
		Pavement obstacles	Outdoor spaces and buildings
		Benches and resting places	Outdoor spaces and buildings
		Access to public toilets	Outdoor spaces and buildings
		Services for housebound people	Community Support & Health

Theme number	Theme	Subthemes	AFC equivalent
4	Health and wellbeing	Dementia	None
		Sensory loss – hearing and sight	None
		Access to health services	Community Support & Health
		Access to alternative therapies	None
		The burden of caring responsibilities	None
		The impact of disability	None
		Looking after your own health	Community Support & Health
5	Activities	Activities in the natural environment	None
		Opportunities for physical activity	None
		Social benefits of engaging in activities	Social participation
		Life-long learning	None
		The benefits of creativity and access to culture	None
		Accessibility and location of venues	Social participation
		Importance of relaxation	None
		Preconceptions about what older people will want to do or are capable of doing	Social participation
6	Geographical environment	Access to open space and nature	Outdoor spaces and buildings
		Climate and landscape	None
		Flooding	Community Support & Health
		Navigating the local environment	None

Theme number	Theme	Subthemes	AFC equivalent
		Benefits and disadvantages of being in a small community	None
7	Local services and amenities – Businesses	Market, for social contact and buying small quantities	None
		Milk delivery	None
		Local shops	None
		The loss of local banks	None
		Cafés and restaurants	None
		Post office	None
8	Local services and amenities – Council services	Refuse collection and litter bins	Outdoor spaces and buildings
		Highway maintenance and pavements	Transport
		Buses and trains	Transport
		Welfare support and benefits	Respect and Social isolation
		Social care services and being able to stay in one's home	Community Support & Health
		The impact of littering and poor maintenance of the area	Outdoor spaces and buildings
9	Local services and amenities – technology	Pace of change and innovation	Communication and information
10	Social interaction	Intergenerational contact including with children	Social participation
		Daily interaction with service providers (shops, post office, buses)	None
		Daily interaction with neighbours and the wider community	Housing
		The opportunity to opt out of social interaction	None

Theme number	Theme	Subthemes	AFC equivalent
		Opportunities to socialise over food	None
		Deeper friendships including family/spouse	None
		Embracing diversity in social interaction	Social participation
		Daily opportunities to socialise outside the home	None
		Feeling visible and welcomed	None
		Community hubs (post office, bus etc.) as location for informal interaction and information	Communication and information
		The importance of fun and laughter	None
		The importance of reciprocity	None
11	Local Services – voluntary sector and charities	Volunteering opportunities	Civic participation and employment
		Organised social activities	Social participation
12	Benefits of Ageing	Opportunities to slow down and reflect	None
		Growing confidence through age and experience	None
		Living in the present	None
		The freedom to be one's self	None
		The acceptance of change	None
		Overcoming physical limitations	None

536

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