MeaningfulMobility

Project Report 2019-21

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MeaningfulMobility is a novel project exploring the relationship between mobility and well-being in later life internationally and considering likely health impairments that occur as we age. The project, which started in 2019, has been affected by the COVID-19 pandemic and the subsequent preventative measures introduced by governments. The research team have shown resistance during this challenging time with adapted methods, new lines of inquiry, and important collaborations. This report describes the various research endeavours undertaken from the start of the project up until the end of 2021 and details the future research tracks for the team.

With this report we provide an update on our projects and sub-projects, including the core research, COVID-19 experiences, and caregiver mobilities including their outcomes and publications. This report also outlines our future research trajectories including analysis of biobank data, an ecological momentary analysis project, and data collection in India in the coming year.

Not only is this document a summary of the ongoing work within MeaningfulMobility, but also an invitation to work with us and push the knowledge further.

Prof. Louise Meijering

Principle Investigator of Meaningful Mobility

MeaningfulMobility

Many older adults experience physical and cognitive impairments that impact on their physical movement or mobility, which is closely linked to their health and well-being in later life. Yet, gerontological discourse on active and successful ageing emphasizes that older adults need to invest in being active and healthy rather than in balancing physical and cognitive impairments that are part of the ageing process. This focus on being active and healthy frames older adults who are less healthy implicitly as unsuccessful and tends to ignore the reality that many older adults are restricted in their mobility, both indoors and outdoors. In the context of these restrictions, older adults have to make choices, for instance vacuum cleaning the house may imply no energy to walk to the supermarket. Yet these often and unduly overlooked choices make mobility meaningful.

The MeaningfulMobility project emphasizes and celebrates the diversity in the mobility of older adults by investigating three gaps in research, namely mobility of impaired older adults, indoor mobility in later life (within places), and mobility of older adults in different socio-cultural settings. As opposed to many other studies, this study provides comprehensive and in-depth insights into the physical mobility in later life.

Research Aims

1. To compare objectively measured mobility patterns of older adults within and between places, and between impaired and healthy older adults in three socio-cultural contexts;

2. To conduct an in-depth study of the subjective mobility experiences within and between places of impaired and healthy older adults, in three socio-cultural contexts;

3. To use these insights to connect mobility research with the capability approach to gain a comprehensive understanding of the diversity in mobility practices in later life in relation to well-being.

Participants and Context

The participants for the project fall into three categories: 1) healthy older adults - with no impairments beyond those typical for old age; 2) older adults with early stage Alzheimer's; and 3) older stroke survivors. With data collection being undertaken in three socio-cultural contexts:

The Netherlands   United Kingdom   India

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COVID-19 & MeaningfulMobility

The pandemic has been, and still is, a big impact on MeaningfulMobility because:

1. we are working with vulnerable groups who are prone to developing a severe COVID-19 infection should they contract it;

2. for the project's objectives, we (initially) relied on the collection of data face-to-face, including the use of a variety of technological devices.

The pandemic has challenged us to consider the ethics of meeting vulnerable groups during the pandemic, potentially (although unintentionally) exposing them to the virus as well as to rethink our methodological approach.

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Report Purpose & Structure

The purpose of this report is twofold:
1) to provide an update on the academic and professional progress that has been made in the MeaningfulMobility project; and
2) to seek advice with regard to the future directions for the project as outlined in the report.

The structure of the report is as follows: we start with discussing our activities of a more general nature, around the epistemological issues we have encountered in the project. We then turn to the core fieldwork for the MeaningfulMobility project in the UK, the Netherlands and India respectively. Subsequently, we present the sub-project on COVID-19 and quality of life that was carried out during the lockdown of Spring 2020 and the Caring about carers sub-project. Finally, we discuss plans for using Biobank data of older adults in the Northern Netherlands through Lifelines, and a for a sub-project using Ecological Momentary Assessment to assess mobility in relation to well-being. We end the report with a brief conclusion which includes an invitation to further collaborate with us on research topics that are at the cross-section of our work in the project and your own interests. We hope this report gives you inspiration and ideas for this.

MeaningfulMobility - core project

To address the research objectives, the core methods that are employed in the MeaningfulMobility project are:

A survey collecting information on socio-demographic background, life satisfaction and mobility;

Global Positioning System (GPS) tracking and step counting (pedometer) for eight consecutive days to measure movement indoor and outside the home;

Activity diaries kept by the participant for the eight consecutive days to complement the GPS-tracks and step counters.

In-depth interviews: an approximately one-hour conversation where the participants' (recorded) movements and frequented places are discussed, based on the information from the trackers and diary.

The methods that we have decided to use are slightly different from those that were planned for originally. In part, this is related to technical challenges that we have faced. A major challenge was that the smart insoles with which we wanted to work were not available to use in research (yet) when we began collecting data. Therefore, we reverted to our contingency plan, which was to use pedometers to measure activity. We also explored the use of a biosensor to measure physiological responses to the environment. However, earlier research by Tess demonstrated that the reliability of the instruments could not be substantiated. Therefore, we decided against their use.

Through discussions with our lay and academic advisory groups, we also realized that our original plans for data collection were too ambitious and demanding for our target groups. Therefore, we decided to develop the Ecological Momentary Assessment (EMA) part of the data collection into a separate sub-project.

Lancaster, UK

The UK data collection took place in autumn 2019. This resulted in a data-set with 22 participants. Given the onset of the COVID-19 pandemic, participants were only able to take part once. We realise that now we may not be able to continue with our participants given the length of time since the last data collection phase. It may be the case that some participants, particularly those with memory issues, may no longer be able to take part. We also note that as the COVID-19 pandemic continues, we may not be able to conduct research in the UK at all for the foreseeable future. From this data-set a series of papers have been produced, each at various stages in the paper process:

Tom is currently working on revisions for a paper considering how life events play a role in the mobility of older adults over time. This paper's findings focus on the various adaptations older adults use, consciously or otherwise, in response to a life event they experience in order to reach a mobility they consider satisfactory.

Zeinab has submitted a paper focusing on physical activities and social interactions during everyday indoor activities in later life. The results suggest a possible trade-off relationship between social and physical activities. We also found that our participants spent the majority of their time within indoor place, specifically at home; the level of physical activity is higher at home than other indoor places; and the level of social interaction is higher within indoor places away from the home. Zeinab is now working on a methods paper using the UK data, in which she explores potentials of using GPS trackers, pedometers and activity diaries to understand micro-movements in later life.

Participant Demographic Details

		UK	NL	All
# Participants interviewed		22	17	39
Gender	Male	10	10	20
	Female	12	7	19
Age	55-64	2	5	7
	65-74	14	8	22
	75+	6	4	10
Health Category	Healthy	14	13	27
	Stroke	2	3	5
	Memory Problems	6	1	7
Marital Status	Married	14	13	27
	Cohabiting	1	0	1
	Single	3	1	4
	Widowed	2	3	5
	Divorced	2	0	2
No. of children (μ)		1.9	2.4	2.1
Perceived health (μ)	Autumn/Winter	8.7	7.8	8.3
	Spring/Summer		7.9	
Perceived QoL (μ)	Autumn/Winter	9	7.3	8.3
	Spring/Summer		8.1	
Perceived ability to move (μ)	Autumn/Winter	8.9	8.9	8.9
	Spring/Summer		8.2	
Home property	House	14	13	27
	Flat/apartment	2	4	6
	Bungalow	6	2	8
Household composition	Alone	5	5	10
	Partner/Spouse	15	12	27
	Child/ren	1	0	1
	Friend	1	0	1

Northern Netherlands

In the Netherlands, Louise, with assistance from research assistants, collected data using the core methods outlined above. This has resulted in a data-set with 18 participants. Unfortunately, we have not been able to recruit new participants since the start of the pandemic. The main reason for this is that we feel it is not ethically sound to engage in face-to-face research, where explaining the research and exchanging equipment are hardly possible to carry out at a safe distance. Then, the fact that we could transfer the virus inadvertently would pose serious health risks to our participants. As a result, our sample is slightly imbalanced towards healthy older adults, including more men than women, and relatively young older adults.

The research team is currently analysing the data, where a particular challenge that we face concerns the integration of GPS- and pedometer data. We are working on a paper on seasonal differences in mobility practices in the Netherlands, integrating mobility patterns and experiences. The aim of the paper is to explore the seasonal differences and similarities in mobility practices in later life in the Northern Netherlands. Using the concept of activity space, we will apply a grounded visualisation approach in which we combine and synthesise the collected data.

All but one participant have participated twice, once in Fall/Winter (November 2019-March 2020) and once in Summer (July-September 2020). This is in line with one of the sub-objectives of the project objective to explore the temporal dimension of mobility in later life.

A first analysis of the qualitative data has resulted in a book chapter on age-friendly environments, cities in particular. The findings show that older adults with memory issues experience more restrictions while moving in urban and digital space than healthy older adults. Crowded streets, spaces inaccessible because of ramps and stairs, stimuli such as noise, and trouble with ICT hinder older adults experiencing memory issues. Their social network often supported their mobility, for instance by driving them to places. (Electric) bicycles enabled our participants to move independently and engage in social interactions in urban space.

The research team is currently further analysing the data, where a particular challenge that we face concerns the integration of GPS- and pedometer data. We are working on a paper on seasonal differences in mobility practices in the Netherlands, integrating mobility patterns and experiences. The aim of the paper is to explore the seasonal differences and similarities in mobility practices in later life in the Northern Netherlands. Using the concept of activity space, we will apply a grounded visualisation approach in which we combine and synthesise the collected data.

Publications from core project

- Doorne, M. van & Meijering, L. (forthcoming) Moving towards an Age-Friendly City, in: Bailey, A. & Otsuki, K. (Eds.) Inclusive cities in times of global urban transformations.

- Lowe, T. & Sattari, Z. (forthcoming) Inclusive methods for inclusive cities: an exploration of older adults' mobility in the United Kingdom in: Bailey, A. & Otsuki, K. (Eds.) Inclusive cities in times of global urban transformations.

Manipal, India

In light of the ongoing COVID-19 pandemic, it seems increasingly unlikely that the research team will be able to travel to India to carry out fieldwork there. Therefore, we have decided to hire researchers via our existing collaborations with the Manipal Academy of Higher Education (MAHE) to collect data for us. This has required us to change the structure of the collaboration avenues in the project, specifically between the University of Groningen and MAHE. In the summer of 2021, agreements between the two institutions have been signed to facilitate the collaboration. Subsequently, there have been further administrative delays. We are currently aiming to finalise the procedure around getting ethics approval in January 2022 and start collecting data in February/March.

Epistemological considerations

We have worked on several sub-projects with an overarching, epistemological nature. At the outset, Louise has published a research agenda that aims to explore the gaps in the literature on mobility in later life, and identify required innovations in the field through laying out key areas for future research. The research agenda, published in Ageing & Society outlines the theoretical and methodological underpinnings of the project. A modified form has been published in Dutch in Tijdschrift voor Gerontologie & Geriatrie.

The challenges that we faced around data management and research ethics inspired us to write a paper that discusses how the General Data Protection Regulation (GDPR) impacts the planning and conduct of (international) geographical research and data protection practices for geography. This was a collaboration with our legal and data management experts.

Then, during the COVID-19 pandemic the research team decided that the unique situation of doing research in times of a pandemic provided its own set of ethical challenges which need to be shared with the scientific community at large. This has resulted in a paper in which we systematically discuss the ethical dilemmas encountered in the research project in relation to the vulnerabilities of the participants and the researchers. The paper is under review at an international peer-reviewed journal.

Publications on epistemological considerations:

- Meijering, L. (2021) Towards meaningful mobility: a research agenda for movement within and between places in later life. Forum Article. *Ageing & Society,* 41(4): 711-723.

- Meijering, L. (2020) Naar betekenisvolle beweging. Redactioneel [Towards meaningful mobility. Editorial]. *Tijdschrift voor Gerontologie en Geriatrie,* 51(3).

- Meijering, L., Osborne, T., Hoorn, E. & Montagner, C. (2020) How the GDPR can contribute to improving geographical research. *Geoforum,* 117: 291–295.

Older Adults' Everyday Experiences During the COVID-19 Lockdowns

Following the outbreak of the pandemic and the subsequent lockdowns, Meaningful Mobility was struck with challenges (as detailed previously) but also an opportunity. We had the participant bank all of whom had consented to being interviewed, and were living through a period that was having a profound effect on everyone's everyday life. This was especially the case for older adults who were deemed 'vulnerable' by government policy and possibly had more restrictions than their younger counterparts. Therefore we took the opportunity to interview older adults in England and the Netherlands about their experiences of the first lockdown.

The Netherlands and England represent two different approaches to containing the COVID-19 virus. The Netherlands, for example, developed the so-called 'intelligent lockdown', which was similar to the measures in neighbouring countries, including closing schools and bars and restaurants. The mantra used to summarize the measures was: 'stay home as much as possible'. In this context, people without health complaints were allowed to leave their homes to go for a walk or do grocery shopping. On the other hand, England waited longer to take measures, but when it did, it opted for a stricter approach by banning all 'non-essential' travel and contact outside the home and shutting almost all businesses.

Thirty-eight older adults from thirty-one individual households were recruited from the Meaningful Mobility participants and interviewed via the telephone or video conferencing on the changes in mobility, daily activities, socialisation, and wellbeing during the lockdown. The English interviews were conducted by Tess, with Arlinde Dul (a masters student for her thesis) conducting the Dutch interviews. These interviews were guided by two research foci on notions of stillness and adaptive strategies. From this research we were able to demonstrate the resilience and adaptability older adults practiced during the period; whether that is developing new hobbies, attending to tasks that have been long delayed, and enriching their social worlds through new means. The publications from this work shows the renewed significance of the home and the local neighbourhood, thus building upon literature on ageing in place and quality of life in later life.

Publications from the COVID-19 project:

- Osborne, T. & Meijering, L. (2021). 'We may be long in the tooth, but it makes us tough': exploring stillness for older adults during the COVID-19 lockdowns, *Social & Cultural Geography*, doi: 10.1080/14649365.2021.2000019

- Osborne, T., Dul, A. & Meijering, L. (2021) Exploring older adult's experiences of urban space in the COVID-19 lockdowns: Dutch and British perspectives. In: Doucet, B., Melik, R. van & Filion, P. (eds) *Global Reflections on COVID-19 Urban Inequalities. Vol. 3 Public Space.* Bristol: Policy Press.

- Meijering, L., Dul, A. & Osborne, T. (2021). Ouderen tijdens de eerste lockdown in Nederland en Engeland, *Demos: bulletin over bevolking en samenleving*, 37(4), 5-7.

- Dul, A. (2020) *"I am trying to avoid busy supermarkets. So, this morning, I was at the supermarket at 8 AM already.": A qualitative research about the adaptive behaviour and quality of life of independently living older adults in the Northern Netherlands during the COVID-19 outbreak.* University of Groningen: Unpublished Master's thesis.

- Dul, A. & Meijering, L. (2021) Veerkrachtig omgaan met verandering tijdens corona. *Geron* 23(1).

Caring About Carers

The caring about carers sub-project was developed in late 2020/early 2021 in response to our ongoing interest in older adult caregiving. Due to the COVID-19 pandemic, we decided to conduct data collection remotely. The data collection period was from March 2021 to September 2021, with 17 participants recruited from England. Two methods were used in this sub-project: graphic elicitation and telephone interviews. Graphic elicitation is an arts-based method, whereby participants are asked to create drawings based on instructions by the researcher. Participants were asked to create three drawings: one considering their life before caring, one considering their life as carers and one considering their imagined futures, with or without caring. The telephone interview followed this drawing activity. The topics discussed were: the drawings, carers mobility and social support. From this project three papers are currently being produced:

Carer's mobility, performativity and capabilities

In the first paper, Tom considers the relationship between the carer role and their mobility, using Butler's performativity and the capability approach. Preliminary findings for this paper suggest that caring responsibilities and the effect on carer mobility play a role in solidifying the caring role and create expectations of who should care and how they should care. In turn, the mobility expected and associated with the care role both reinforces and is reinforced by the responsibilities and expectations the carer feels. To diverge from such responsibilities and expectations, results in feelings of guilt, worry and uncertainty. However, the data does suggest that some carers do subvert the norms expected of them. Overall, it is clear that the relationship between the carer role and their mobility is significant. The preliminary findings support the notion that care is a disruptive role, both for mobility and an individuals' sense of self. However, with ageing populations and the corresponding increase in the number of people providing informal care, we must continue exploring whether care is still disruptive or simply another role or stage of life that we have come to expect.
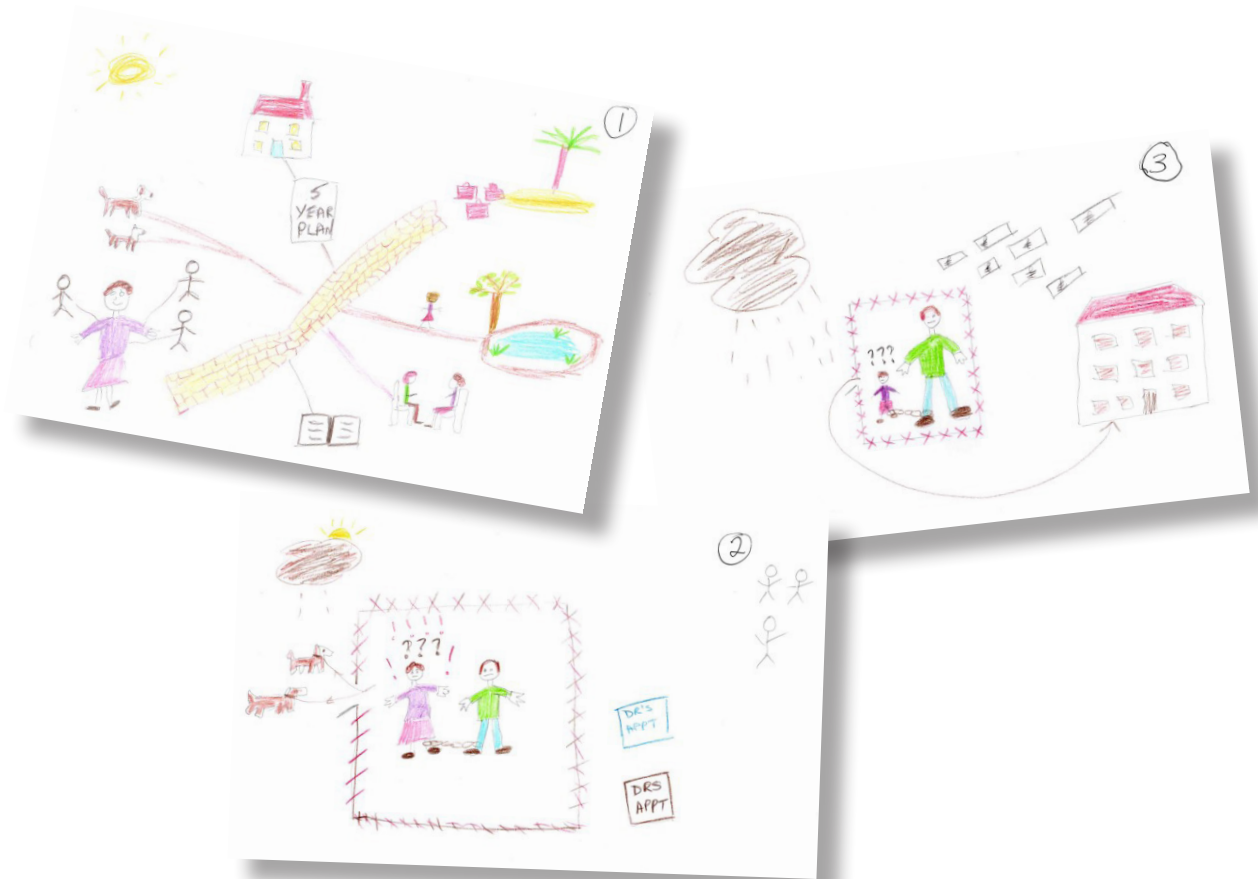
Graphic Elicitation

For the second paper, Tom, Tess and Sarah Bell are critically exploring the potentials of graphic elictation as a method. The paper will discuss emotional affordances, disruption management and use with older adults and in remote settings.

Caregiving, rhythmanalyis and metastable equalibriums

In the final paper from this project, Tess hopes to expand upon Lefebrvian Rhythmanalysis and explores the routines of caregiving with an emphasis on eurhythmia. As a "floating harmony", eurhythmia is often understood to be the optimum polyrhythmic assemblage precisely because of its congenial qualities, yet we develop the idea of eurhythmia further by considering it as metastable: eurhythmia may be an ideal polyrhythmia, but it is not perfect state. Lefebvre equates a eurythmia to a "metastable equilibrium" where the rhythms are not fixed, but a stable instability. This paper is high theoretical and therefore is still in the theorisation and data analysis stage of writing. At the moment the analysis is focusing on the carer's caring journey using the descriptions of the drawings to identify major and minor disruptions to metastable states.

Lifelines Biobank

Due to the COVID-19 restrictions on travelling abroad and meeting older adults for data collection purposes, the team has decided to proceed with the research on mobility patterns by obtaining secondary data. Doing so, Zeinab is preparing an application for the use of biobank data (LifeLines) to get insight into the mobility patterns and well-being of healthy and impaired older adults living. Lifelines is a large, multi-generational, prospective cohort study that includes over 167,000 participants (10%) from the northern population of the Netherlands. (see https://www.lifelines.nl/researcher/explore-lifelines/wiki). Zeinab is also working on the theoretical framework of two papers, on:

The associations between the living environment, physical activity, social functioning and cognitive functioning in later life
The first paper will be on the associations between the living environment, physical activity, social functioning and cognitive functioning in later life. On the one hand, living in rural areas can influence both cognitive functioning and social and physical activities and on the other hand, social and physical activities also influence cognitive functioning. Therefore, we aim to investigate the role of social functioning and physical activities as moderator in the relationship between the living environment and cognitive functioning in later life.

Direct and mediated relationships between the living environment, social and physical activities and cognitive functioning

A longitudinal analysis of physical activities and social functioning of informal caregiver older adults: a comparative study between caregivers and non-caregivers
The second paper will be a longitudinal analysis of physical activities and social functioning of informal caregiver older adults. The ideas for this paper build on the caring for caregivers sub-project. We aim to investigate the changes in social functioning and physical activities of caregiver older adults compared to other older adults in Northern Netherlands over a 5 year period. Apart from the caregiving tasks, these changes also depend on demographic and personal characteristics of the older adults, such as gender, ethnicity, income, education, and social support.

Ecological Momentary Assessment

For the past year, and in collaboration with CIT (the University's IT department), the team has been developing an Ecological Momentary Assessment (EMA) tool to explore the connection between lifespaces, wellbeing and mobility. EMA is a method commonly used in psychology which involves repeated sampling of participant's behaviours and experience in real time and in their natural environment. It is an interesting and interdisciplinary method that has been applied in geographical studies in the past two decades, where it is often complemented with the use of GIS. We intend to build upon this work, but are opting to incorporate the Life-Space Assessment; a measure for functional mobility that is often used in gerontological and palliative care studies.

The EMA will be carried out remotely, with the participants receiving an SMS prompt with a URL link to a short survey three times a day. This will be complemented with pre- and post-questionnaires. This project will begin in the UK in early 2022 before moving into the Netherlands and India.

Affiliated Works

Papers published by the research team that are related to the project but not a direct result:

- Briones, S.B. & Meijering, L. (2021) Using everyday technology independently when living with forgetfulness: experiences of older adults in Barcelona. *Gerontology and Geriatric Medicine*. doi: 10.1177/2333721421993754.

- Douma, L., Steverink, N.S. & Meijering, L. (2021) Geographical life-space and subjective wellbeing in later life. *Health & Place*, 70, doi: 10.1016/j.healthplace.2021.102608.

- Hoven, B. van & Meijering, L. (2019) Mundane mobilities in later life - Exploring experiences of everyday trip-making by older adults in a Dutch urban neighbourhood. *Journal of Research in Transportation Business & Management,* 30, doi: 10.1016/j.rtbm.2019.100375.

- Meijering, L. & Lettinga, A. (2019) Levens na hersenletsel in sociaal-ruimtelijk perspectief. Wat biedt het de neurorevalidatie? [Lives after acquired brain injury from a socio-spatial perspective. What's the use for neuro-rehabilitation?] Tijdschrift voor Revalidatiegeneeskunde. 41(5): 41-43.

- Osborne, T. (2021). Restorative and Afflicting Qualities of the Microspace Encounter: Psychophysiological Reactions to the Spaces of the City. *Annals of the American Association of Geographers*, doi: 10.1080/24694452.2021.1972791

- Wit, L.S. de, Karnaki, P., Dalma, A., Csizmadia, P., Salter, C., Winter, A. de & Meijering, L. (2020) Health literacy in the everyday lives of older adults in Greece, Hungary, and the Netherlands. *International Journal of Environmental Research and Public Health*. doi: 10.3390/ijerph17072411.

Conclusions

Since April 2019, we have made considerable progress on all three objectives formulated in the introduction. COVID-19 is the major challenge that we have encountered and the impact of the pandemic on the project has been significant. This has resulted in several adaptations to our research plans and has challenged us to come up with new ways to achieve the project's original objectives. The team has demonstrated resilience and creativity in doing so, which has resulted in a number of exciting new directions which we have discussed in this report:

1. Setting up fieldwork to be conducted by researchers at Manipal Institute of Higher Education (MAHE) in India;

2. Exploring the experiences of older adults during the first COVID-19 lockdowns in the Netherlands and the UK;

3. Studying the mobility experiences of caregivers in the UK using a combination of (remote) in-depth interviewing and graphic elicitation

4. Preparing an application for the use of biobank data (LifeLines) to get insight into the mobility patterns and well-being of (impaired) older adults

5. Setting up a (remote) Ecological Momentary Assessment (EMA) study to assess the relation between mobility and well-being in later life in the UK, Netherlands and India.

Finally, we have taken a step back and reflected on and written about epistemological considerations that we have encountered in the project. This has resulted in a research agenda, a paper on the impact of the GDPR on geographical research, and a paper on the vulnerabilities of researchers and participants during the COVID-19 pandemic.

Overall, through the MeaningfulMobility project so far, we have contributed towards improving insights into mobility and well-being in later life already. We would like to end this report with a question and an invitation. Given the current status of the project, what areas do you see as promising to pursue further in the remaining two years of the project? Would you be interested in exploring these areas with our team? Please feel free to share your ideas with us. In any case, we look forward to deepening our understanding and contributions in the final years of the project.

European Research Council

Established by the European Commission