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The importance of the daily living environment in feelings of happiness with vulnerable older adults

The quality of live, wellbeing and feelings of happiness are for a large part determined by health, family, friends and income. Studies in sociology and phycology have done much research to determine this. From a spatial viewpoint it is interesting to investigate whether or not the daily environment has an influence on these feelings of happiness. Does access or proximity to different functions and amenities have an effect on how happy vulnerable older adults feel? Older adults in the Netherlands need to age in place, even with increased levels of vulnerability. Vulnerable older adults often have decreased mobility and have a small(er) daily activity space. Therefore, there could be a relationship between closeness of amenities and functions (such as e.g. doctor's office, supermarket, places to socially interact, and cultural amenities) and how happy people feel. In a survey under 1500 vulnerable older adults we investigate whether the daily environment, next to health, family, friends and income, have an effect on happiness.

Introduction:

With rapidly ageing populations in most Western countries (Christensen et al., 2009), policies to decrease the burden on social security systems are implemented. Prolonged independent living through the postponement of costly institutionalizations of older people in need of care is one of them, allowing older people to live in their familiar environment (van Dijk et al., 2013; Wiles et al., 2012). Also older people themselves prefer to live independently as long as possible (Wiles et al., 2012).

Maintaining high levels of quality of life may contribute to postpone institutionalization/to contribute to independent living (van Dijk et al. 2013; Gale et al. 2013; Palgi et al. 2015). One of the mechanisms behind prolonged independent living through quality of life is that high quality of life can attenuate decline in functional status (Palgi et al., 2015). It should be noted, however, that the relationship between quality of life and independent living is mutual: living independently is also a determinant of quality of life (Fernandez-Ballesteros 2011). Informal care contributes to the quality of life of older care recipients (Dunér & Nordström, 2007; Litwin, 2001; Saito et al., 2005). It is an important source of support in case of deteriorating health, often bridging living at home and long-term stays in care institutions. Also the living environment itself can affect quality of life of care recipients and age-friendly living environments may support independent living when providing adequate support even when health declines (Annear et al. 2014).

Our objective is to assess determinants of quality of life of community-dwelling older adults that do and do not receive informal care. We particularly focus on the role of the broader living environment. Quality of life refers to an overall judgment of people's satisfaction with life and is strongly influenced by (poor) health (Fernandez-Ballesteros 2011).

Determinants of quality of life

Several studies revealed a prominent influence of health on quality of life, which is also influenced by socio-demographic characteristics, people's social network and living environment. In the lives of

older people, informal care plays an important role, and contributes to their quality of life (Dunér & Nordström, 2007; Litwin, 2001; Saito et al., 2005), and to a sense of belonging and safety (Dunér & Nordström, 2007). Research about quality of life of independently living older people who receive care at home is less extensive, but four determinants showed up repeatedly. First, poor health, conceptualized as having complaints and diseases, has a negative influence on quality of life (Hambleton et al., 2008; Hellstrom et al., 2004; Puts et al., 2007). Second, psychological well-being has a significant association with quality of life, especially having a depression, living with sorrow from family members that passed away and having worries are detrimental for the quality of life of elderly (Hambleton et al., 2008; Hellstrom et al., 2004; Puts et al., 2007). Third, the loss of independence and not being able anymore to live autonomously is detrimental for the quality of life of independent living elderly with care at home (Hambleton et al., 2008; Hellstrom et al., 2004). Fourth, social contacts are positively related with quality of life; loneliness is strongly associated with lower quality of life (Hambleton et al., 2008; Hellstrom et al., 2004; Puts et al., 2007).

Living environment

Research that focuses on the importance of the living environment for the quality of life of elderly people has grown remarkably (Annear et al., 2014). Environmental effects on quality of life, next to health are frequently categorized into two groups: the physical and the social part of the living environment. The crucial mechanism underlying the impact of physical aspects of the living environment on quality of life is the enabling of older people to remain independent, providing the opportunity to stay active and giving autonomy (van Dijk et al., 2013; Iwarsson & Isacsson, 1997; Yen et al., 2009). Social aspects of the living environment can exert influence on the quality of life, for example through better socioeconomic conditions (Annear et al., 2012; Fernandez & Kulik, 1981) and higher perceived safety (Annear et al., 2012; Van Dijk et al., 2013; De Kam et al., 2012; Puts et al., 2007; Yen et al., 2009).

Quality of life of older people can differ between rural and urban places of residence, but this is not necessarily the case. Urban dwellers have more facilities in closer reach and live in areas with more accessible public transport compared to rural dwellers (Vermeij et al. 2015; Wenger, 2001). The absence of important medical amenities in rural areas may have negative health consequences for older people (Vermeij et al. 2015; Wenger 2001). Older people are stronger integrated into local networks rural areas (Wenger 2001), but differences between urban and rural regions in informal caregiving are highly contested (Mair & Thivierge-Rikard 2010).

The health care situation in the Netherlands

In the Dutch care system, institutionalization of older people was rather generous in the past, but more recent developments promotes prolonged independent living and autonomy, also with support of the direct living environment (Rijksoverheid 2015a). The organization of social support, housing and the care for elderly has been partly shifted from the public to the private sphere with high expectations of the surrounding informal caregivers (VNG 2014; SCP 2013). Spouses usually take on the main burden of informal but the share of non-kin informal caregivers, including friends, neighbors and volunteers, is rising and likely to grow further as family size declines over time, intergenerational distance is becoming larger, and in light of the current policies strengthening independent living (van Dijk et al. 2013; Mulder & Kalmijn 2006; van Doorne-Huiskes et al. 2002(; Vermeij 2016).

In the Netherlands, the older population is expected to increase further in the coming decades, with higher shares of older people living in rural areas (van Dam et al., 2013; Ritsema van Eck et al., 2013). Currently, X% of the older adults live independently. X% of these community-dwelling older adults makes use of (in)formal care at age XX and X% at age XX. Among the population aged 65 years and older, X% are expected to be institutionalized within 10 years. (see SCP 2013 for figures)

Results from Dutch rural areas show that the most frail elderly do not receive the support they would like/need (Vermeij, 2016). Population decline in rural areas in the Netherlands endangers the endurance of amenities such as care facilities, shops and public transport, particularly affecting the elderly living there, because they are more dependent on services nearby (Vermeij et al., 2015).

Data & method

Data

Data were derived from 'The Older Persons and Informal Caregivers Survey Minimum DataSet' (TOPICS-MDS). This dataset is part of an initiative to create a minimum dataset with information on older persons' health and on their informal caregivers based on a core questionnaire but from a range of research projects (van den Brink et al. 2015). TOPICS-MDS uses well-known and validated measurement instruments. Older people were asked about their demographics, morbidity, quality of life, functional limitations, emotional wellbeing, social functioning and health services utilization. Informal caregivers received another questionnaire and were asked about their demographics, hours spent on informal caregiving in different domains of caregiving and quality of life. Questionnaires were filled in between 2010 and 2013 (Lutomski et al. 2013).

A subsample of the dataset with 3957 participants from 18 studies was initially selected where older people were selected for study participation from either the general population or from general practitioners' practices. We restricted the sample for our analyses to people aged 60 years and older with valid information on the dependent variable, quality of life, and on the municipality of residence and that were not living in an institution. The final dataset contains 1495 respondents from 16 studies and living in 156 Dutch municipalities.

Personal data

For the dependent variable 'quality of life', respondents were asked to rate their current quality of life on a scale between zero and ten (Lutomski et al. 2013). Our quality of life measure represents a judgement of life satisfaction or overall subjective wellbeing and is not health-related as such. Quality of life is a multidimensional and predominantly subjective measure of individuals' satisfaction with their life situation (Fernandez-Ballesteros 2011).

A validated frailty index has been calculated to summarize health-related deficits. It includes information on various aspects of health, such as multimorbidity, functional limitations, health, social functioning and psychological wellbeing. The frailty index is calculated by dividing the present deficits by the total number of deficits considered (Lutomski et al., 2013b). A cutoff point of 0.2 has been used, meaning that people who have 20% of the considered health deficits or more are considered as frail (Searle et al. 2008).

Several socio-demographic characteristics of the care recipient were included as categorical variables: age, sex, partnership status, highest obtained education, income, health and care-situations (Lutomski et al. 2013a).

Living environment

Municipalities as the place of residence of the care recipient were the most detailed geographical level available. Based on the municipality code, TOPICS-MDS data were matched with characteristics of the living environment derived from CBS Statline. We characterized the living environment by its rurality and its socioeconomic conditions, namely the share of low income households. Another variable indicates whether a municipality is designated as a region with population decline according to the Dutch government (Rijksoverheid, 2015b). The data of the respondents was completed with data from the central bureau of statistics (CBS) for information of average neighboorhood income, address density, bus stops and other residential information and with the employment Netherlands dataset (LISA) for information of amenities and functions within several distance circles around the residence's 4 digit postcode, to generate accessibility of these for the respondents.

Method

Quality of life is studied with linear multilevel regression models analysis with characteristics of the respondent the first level and characteristics of the living environment in the municipalities at the second level.
Several interactions were introduced to the full model, but none of them significantly improved the model fit and are therefore not shown.

Results

[Briefly describe Table 1.]

Table 1: Characteristics of the respondent and the living environment (N=2680)

		Frequency	Percentage
Quality of life (QoL)			
Respondent			
Age	60-69 years		
	70-79 years		
	80-89 years		
	90+ years		
	Missing/unknown		
Sex	Male		

	Female		
	Missing/unknown		
Origin	Dutch		
	Non-Dutch		
	Missing/unknown		
Education	Low		
	Medium		
	High		
	Missing/unknown		
Partnership status	Married or cohabiting		
	Widowed, divorced or single		
	Missing/unknown		
Frailty	Not frail		
	Frail		
	Missing/unknown		
Care situation			
Household assistance	Yes		
	No		
	Missing/unknown		
Personal assistance	Yes		
	No		
	Missing/unknown		
Mobility assistance	Yes		
	No		

	Missing/unknown		
Other caregivers	Yes		
	No		
	Missing/unknown		
Population decline	No		
	Yes		
Degree of urbanization	High		
	Low		
Average available income			
Address density			
# amenities 500 m circle			
# amenities 1k circle			
Distance nearest busstop			
Nearest gp			
# cultural amenities			
# green amenities			

Table 2: Hierarchical linear multilevel analysis of quality of life of the care recipients (N=2680)

Note: Model controls for study ID. * p<0.05, ** p<0.01, *** p<0.001

Quality of life is foremost determined by frailty. Quality of life of frail care recipients is 0.8 lower than for non-frail older adults. Next to frailty, only few characteristics of the care recipient, the care situation and the caregiver are significantly related to care recipients' quality of life. Quality of life is higher as the care recipient is older, it is higher for women (Table 2).

The care situation, reflecting whether the care recipient receives household, personal or mobility assistance or assistance from multiple caregivers, shows little associations with quality of life.

Receiving household assistance is related to lower quality of life. Among the characteristics of the caregiver, only the self-rated caregiver burden is significantly related to care recipients' quality of life. A higher burden is associated with lower quality of life.

Table 3: Hierarchical linear multilevel analysis of quality of life of the respondent (N=1495) with living environment

Note: Model controls for study ID and all variables in Table 2. * p<0.05, ** p<0.01, *** p<0.001

Discussion