

- 26 REACH, Access to Health Care and Tensions in Jordanian Communities Hosting Syrian Refugees; 2014. [Online] Available at: [https://reliefweb.int/sites/reliefweb.int/files/resources/REACH\\_JOR\\_Report\\_HealthandTensionsinJordanianCommunitiesHostingSyrianRefugees.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/REACH_JOR_Report_HealthandTensionsinJordanianCommunitiesHostingSyrianRefugees.pdf) (30 November 2017, date last accessed).
- 27 Murshidi MM, Hijjawi MQ, Jeriesat S, Eltom A. Syrian refugees and Jordan's health sector. *Lancet* 2013;382:206–7.
- 28 Bäärnhielm S. Refugees' mental health—a call for a public health approach with focus on resilience and cultural sensitivity. *Eur J Public Health* 2016;26:375–6.
- 29 Farmer P. Pathologies of power: rethinking health and human rights. *Am J Public Health* 1999;89:1486–96.
- 30 The UNHCR. The UN Convention on Statelessness. Available at: <http://www.unhcr.org/un-conventions-on-statelessness.html?query=statelessdefinition> (30 March 2018, date last accessed).

.....  
*The European Journal of Public Health*, Vol. 28, No. 6, 1087–1092

© The Author(s) 2018. Published by Oxford University Press on behalf of the European Public Health Association.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs licence (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial reproduction and distribution of the work, in any medium, provided the original work is not altered or transformed in any way, and that the work is properly cited. For commercial re-use, please contact [journals.permissions@oup.com](mailto:journals.permissions@oup.com)

doi:10.1093/eurpub/cky174 Advance Access published on 3 September 2018  
 .....

## The importance of health behaviours and especially broader self-management abilities for older Turkish immigrants

Jane M. Cramm, Anna P. Nieboer

Department of Social Medical Sciences, Erasmus School of Health Policy and Management, Erasmus University Rotterdam, Rotterdam, The Netherlands

**Correspondence:** Jane M. Cramm, Department of Social Medical Sciences, Erasmus School of Health Policy and Management, Erasmus University Rotterdam, P.O. Box 1738, 3000 DR Rotterdam, The Netherlands, Tel: +31 10 408 8555, e-mail: [cramm@eshpm.eur.nl](mailto:cramm@eshpm.eur.nl)

**Background:** This study aims to identify the relationships between health behaviours, self-management abilities, physical health, depressive symptoms and well-being among Turkish older immigrants. **Methods:** A total of 2350 older Turkish migrants aged > 65 years residing in Rotterdam, the Netherlands were identified using the municipal register of which 680 respondents completed the questionnaires (response rate of 32%). **Results:** Average age of the respondents was 72.90 (standard deviation 5.02) (range 66–95) years and about half of them were women (47.6%). The majority of respondents reported having a low education (80.3%), low income level (83.4%), is chronically ill (90.6%), overweight (86.5%) and about half obese (46.0%). More than half of the respondents eat enough fruit (58.2%) and vegetables per week (55.3%). About a third of the respondents smoke (33.5%) and 43.0% can be considered to be physically active. Looking at the health behaviours a weak positive relationship was found between eating enough vegetables and well-being ( $\beta = 0.14$ ;  $P = 0.017$ ). In addition, weak relationships were found between physical activity and depressive symptoms ( $\beta = -0.16$ ;  $P = 0.007$ ), smoking and depressive symptoms ( $\beta = 0.16$ ;  $P = 0.009$ ) and self-management abilities and physical health ( $\beta = 0.17$ ;  $P = 0.015$ ). Strongest relationships were found between self-management abilities and depressive symptoms ( $\beta = -0.39$ ;  $P < 0.001$ ) and self-management abilities with overall well-being ( $\beta = 0.49$ ;  $P < 0.001$ ). **Conclusions:** From this study, we can conclude that next to health behaviours broader self-management abilities to maintain overall well-being are important for Turkish older people. Interventions to improve self-management abilities may help Turkish older people better deal with function losses and chronic diseases as they age further.  
 .....

### Introduction

Europe witnessed a post-war mass migration at the end of the 1950s and the early 1960s, mostly from non-western origin with a predominance of young adults. Even though a number of the early migrants have returned to their birth-country, considerable numbers remain in their migratory destinations who recently approached retirement age.<sup>1</sup> In general, poor physical and mental health, worse health-related quality of life and well-being, functional limitations, depressive symptoms and chronic conditions are much more prevalent among these immigrant populations compared with those of natives throughout Europe.<sup>2–4</sup> As a consequence, older immigrants use 13–20% more health services than native-borns.<sup>5</sup> The rapid increase in the prevalence of chronic illness among

older (immigrant) populations is an important factor underlying the increased demand for health care services and constraints on the organization and delivery of care in Europe.<sup>5,6</sup>

Unhealthy behaviours, such as poor diet, smoking and physical inactivity, are important and adjustable risk factors for many chronic diseases and leading causes of death and disability.<sup>7</sup> Thus, the improvement of health behaviours among older (immigrant) populations to prevent the onset of chronic diseases is becoming a critical issue. Health behaviours, such as smoking, eating habits and physical activity, are known to differ between immigrants and natives, which may explain the greater prevalence of chronic diseases, physical limitations and poor health outcomes among the former. For example, in the Netherlands, overweight is much more prevalent among immigrants,<sup>8</sup> and smoking is especially prevalent among Turks.<sup>9</sup> Although health-related

behaviours have been investigated among immigrant groups aged 35–60 years,<sup>9</sup> and those aged  $\geq 18$  years,<sup>8</sup> no such research has been conducted among older immigrants.

Not only health behaviours but also older people's abilities to deal with the process of ageing and the ways in which they cope with certain life events are of interest. As people grow older, they often begin to experience losses in various life domains. People are known to differ in their ability to self-regulate or self-manage their lives and ageing processes, which requires the proactive management of resources in an environment of increasing losses and declining gains.<sup>10</sup> These self-regulation or self-management abilities often target only the physical health aspects of ageing, such as physical exercise and healthy diet.<sup>11,12</sup> The social and psychological life domains, however, have been proven to be equally important for the health and well-being of older people.<sup>13</sup>

Thus, in addition to health behaviours and health outcomes, examination of broader self-management abilities related to the maintenance of overall well-being may be of interest.<sup>14</sup> As these abilities are critical predictors of physical health, depressive symptoms and overall well-being,<sup>14–17</sup> a shift in focus to include not only traditionally addressed health- and disease-specific aspects (e.g. smoking, physical activity, healthy diet) but also abilities such as investment behaviour (e.g. pursuing interests, keeping busy, maintaining contact with loved ones), initiative taking and self-efficacy (e.g. belief in one's ability to achieve goals and express care for others) is urgently needed.<sup>14</sup>

Research investigating health behaviours and self-management abilities related to the maintenance of overall well-being among older Turkish immigrants is lacking. Thus, this study aimed to identify relationships of background characteristics, health behaviours and self-management abilities with physical health, depressive symptoms and well-being among older Turkish immigrants residing in Rotterdam, the Netherlands.

## Methods

### Data collection

Community-dwelling Turkish people aged  $> 65$  years in Rotterdam, the Netherlands, were identified using the municipal register and asked to participate between March 2015 and February 2016 (with a summer break, given that most of this population spends the summer in Turkey). We asked respondents to fill in a questionnaire containing 153 questions in total (provided in the Dutch as well as Turkish language). These questionnaires were first distributed via post, followed by a postal reminder and finally a minimum of two home visit attempts (by interviewers speaking Dutch as well as the Turkish language). The personal interviews lasted about 60–90 min. An information leaflet was provided to respondents explaining the aim of the study with contact details (of Dutch as well as Turkish speaking research assistants) in case they had additional questions. No (financial) incentives were provided.

### Ethical approval

According to the Central Committee on Research Involving Human Subjects (CCMO), the current study did not fall within the scope of the Medical Research Involving Human Subjects Act and thus did not require prior review by an accredited medical research and ethics committee or the CCMO. All respondents were informed about the aims of the study, and assured that participation was anonymous and voluntary, prior to providing consent.

### Measures

Well-being was measured with the 14-item Turkish version of the Social Production Function Instrument for the Level of Well-being (SPF-IL).<sup>18</sup> The stimulation item 'are your activities challenging to you?' of the original 15-item Dutch version<sup>19</sup> proved to be

problematic during validation and thus was omitted from the Turkish version. The SPF-IL measures levels of physical (comfort, stimulation) and social (behavioural confirmation, affection, status) well-being. Examples of questions are 'do people really love you?' (affection), 'do you feel useful to others?' (behavioural confirmation), 'are you known for the things you have accomplished?' (status), 'in the past few months, have you felt physically comfortable?' (comfort) and 'do you really enjoy your activities?' (stimulation). Responses are given on a 4-point scale ranging from never (1) to always (4), with higher mean scores indicating greater well-being. Total scores were calculated based on the mean scores for the five subscales. Cronbach's alpha of the SPF-IL based on the five subscales was 0.76, indicating good reliability.

Patients' physical quality of life was assessed using the physical component of the Short Form 12 Health Survey.<sup>20</sup> The summary physical component score for physical health was constructed using standard scoring procedures.

We used the 7-item depression section of the Hospital Anxiety and Depression Scale to assess symptoms of depression.<sup>21</sup> All items were rated on a 4-point scale (0–3), with higher scores indicating greater depressive symptomatology.

Self-management abilities related to the maintenance of overall well-being were measured using an adjusted version of the short (18-item) version of the Self-Management Ability Scale (SMAS-S).<sup>22</sup> This instrument assesses a broad repertoire of self-management abilities: (i) initiative taking (being instrumental or self-motivating in realizing aspects of well-being), (ii) investment in resources for long-term benefits, (iii) maintenance of variety in resources (gaining and maintaining various resources for each dimension of well-being), (iv) ensuring resource multifunctionality (gaining and maintaining resources or activities that serve multiple dimensions of well-being simultaneously and in a mutually reinforcing way), (v) self-efficacy in resource management (gaining and maintaining a belief in personal competence to achieve well-being) and (vi) maintenance of a positive frame of mind. The initiative taking, investment, self-efficacy, variety and multifunctionality subscales are related to the physical and social dimensions of well-being, and the subscale measuring the ability to have a positive frame of mind is considered to be a more general cognitive frame. Following earlier research, we reduced the number of response categories for 5 subscales from 6 to 4 to make completion of the instrument less complex. Higher scores indicate better self-management abilities. The item 'when things go against you, how often do you think that it could always be worse?' proved to be problematic during validation and thus was omitted from the Turkish version. Cronbach's alpha of the SMAS-S based on the six subscales was 0.92, indicating excellent reliability.

Physical activity was assessed by asking respondents how many days per week they were physically active (e.g. sport activities, exercise, housecleaning, work in the garden) for at least 30 min. Government agencies use this measure to monitor physical activity in the Dutch population. We used mean physical activity, measured in number of days per week, in our analyses. In addition, we dichotomized the physical activity scale according to the Dutch Standard for Healthy Physical Activity into 1 (at least 30 min of physical activity at least five times per week) and 0 (at least 30 min of physical activity less than five times per week),<sup>23</sup> to compare the proportion of physically active patients with the Dutch average. This threshold is also in line with the international recommendation for the minimum physical activity level of at least 150 min of moderate or vigorous physical activity per week.<sup>24</sup>

Self-reported current smoking was assessed with a yes/no question. Consumption of fruits and consumption of vegetables were assessed separately as indicators of healthy dietary behaviours, measured in servings per day. The World Health Organization and the Dutch guidelines use a minimum of 200 g of vegetables and two servings of fruit per day to distinguish healthy from unhealthy eating.<sup>25</sup> Fruit consumption was determined by

summing the servings per day and was dichotomized as 1 (healthy diet, consumption of at least two pieces of fruit per day) and 0 (unhealthy diet, consumption of less than two pieces of fruit per day). Vegetable consumption was determined by summing the servings per day and was dichotomized as 1 (healthy diet, consumption of  $\geq 200$  g of vegetables per day) and 0 (unhealthy diet, consumption of  $< 200$  g of vegetables per day).<sup>25</sup>

Respondents were asked to report the highest educational level completed in the Netherlands or abroad, with the option to select 'no schooling' or to write in another response for unlisted forms of schooling. This variable was dichotomized into low (completion of elementary school or less) and high (more than elementary school).

Income level was determined based on respondents' reported monthly household income, including social benefits, pensions and alimony. Responses ranged from 1 (less than €1000 a month) to 4 (€3050 or more a month). 'Do not know/do not want to tell' was included as a fifth category. Income level was dichotomized into low (less than €1350) and high (€1350 or more).

Respondents were asked to indicate whether they were married, divorced, widowed, single, or cohabitating. A dichotomous variable was created: divorced, single and widowed; and married.

The questionnaire also solicited information on respondents' age, gender and number of chronic conditions experienced in the past 12 months. Respondents were provided with a list of 14 chronic conditions (e.g. lung diseases, cardiovascular diseases, diabetes) and space to write in other conditions. Only conditions that were classified as chronic by O'Halloran *et al.*<sup>26</sup> were included.

## Analyses

The characteristics of the study sample were examined using descriptive statistics. Bivariate associations of variables expressing background characteristics, health behaviours and self-management abilities with those reflecting physical health, depressive symptoms and well-being were examined. Regression analyses were then performed to identify relationships of health behaviours, self-management abilities, and physical health with depressive symptoms and well-being while controlling for background characteristics.

## Results

Of, 2350 older Turkish immigrants asked to participate, 213 were ineligible due to change of address ( $n = 110$ ), serious medical issue or death ( $n = 102$ ) or non-Turkish ethnic background ( $n = 1$ ). A total of 680 respondents completed the questionnaire (final response rate 32%).

Table 1 displays descriptive statistics for the older Turkish immigrant population. The average age of the 680 respondents was 72.90 [standard deviation (SD) 5.02; range 66–95] years, and 47.6% of them were women. The majority of respondents reported having low education (80.3%) and low income (83.4%) levels. The mean number of chronic diseases was 2.68 (SD 1.87; range 0–10). Most (90.6%) respondents were chronically ill, and 69.4% had more than one chronic disease. According to their self-reported body mass indices, 86.5% of respondents were overweight and 46.0% were obese. More than half of respondents had sufficient weekly fruit (58.2%) and vegetable (55.3%) consumption. About one-third (33.5%) of respondents smoked and 43.0% could be considered to be physically active.

Table 2 displays the results of the bivariate analyses. Single marital status and low educational level were associated positively with depressive symptoms and negatively with well-being. The number of chronic conditions was associated negatively with physical health and well-being, and positively with depressive symptoms. A positive relationship was found between sufficient vegetable consumption and well-being ( $r = 0.11$ ,  $P < 0.01$ ). Physically active status was

**Table 1** Descriptive statistics for older Turkish older immigrants ( $n = 680$ )

Characteristic	Range	% or mean (SD)
Sex (female)		47.6%
Age (years)	66–95	72.90 (5.02)
Marital status (single/widowed)		28.7%
Education (low)		80.3%
Income (low)		83.4%
Number of chronic diseases	0–10	2.68 (1.87)
Chronically ill		90.6%
Co-/multi-morbidity		69.4%
Body mass index (kg/m <sup>2</sup> )	17.65–68.59	30.32 (5.61)
Overweight		86.5%
Obese		46.0%
Healthy diet		
Sufficient fruit consumption		58.2%
Sufficient vegetable consumption		55.3%
Physically active		43.0%
Smoking		33.5%
Self-management abilities	1–4	2.52 (0.62)
Physical health	0–100	54.83 (18.18)
Depressive symptoms	1–4	2.28 (0.66)
Well-being	1–4	2.79 (0.55)

SD, standard deviation.

**Table 2** Associations with physical health, depressive symptoms and well-being ( $n = 680$ )

Characteristics	Physical health	Depressive symptoms	Well-being
Sex (female)	0.12**	0.21***	-0.11**
Age (years)	-0.05	0.08*	-0.06
Marital status (single/widowed)	-0.05	0.16***	-0.11**
Education (low)	-0.07	0.16***	-0.11**
Income (low)	-0.06	0.10*	-0.06
Number of chronic diseases	-0.15***	0.36***	-0.26***
Body mass index	-0.13***	0.06	-0.06
Eating enough fruit	-0.01	-0.06	0.07
Eating enough vegetables	-0.01	-0.07	0.11**
Physically active	0.09*	-0.28***	0.20***
Smoking	0.06	0.16***	0.07
Self-management abilities	0.12**	-0.53***	0.54***

\*\*\*:  $P < 0.001$ .

\*\* :  $P < 0.01$ .

\* :  $P < 0.05$ .

associated positively with physical health ( $r = 0.09$ ,  $P < 0.05$ ) and overall well-being ( $r = 0.20$ ,  $P < 0.001$ ), and negatively with depressive symptoms ( $r = -0.28$ ,  $P < 0.001$ ). Smoking was related positively to depressive symptoms ( $r = 0.16$ ,  $P < 0.001$ ). Self-management abilities were related positively to physical health ( $r = 0.12$ ,  $P < 0.05$ ) and well-being ( $r = 0.54$ ,  $P < 0.001$ ) and negatively to depressive symptoms ( $r = -0.53$ ,  $P < 0.001$ ).

The results of the multivariate regression analyses are displayed in table 3. The number of chronic diseases was associated negatively with physical health ( $\beta = -0.20$ ,  $P = 0.005$ ) and overall well-being ( $\beta = -0.13$ ,  $P = 0.039$ ), and positively with depressive symptoms ( $\beta = 0.21$ ,  $P < 0.001$ ). Among health behaviours, a weak positive relationship was found between sufficient vegetable consumption and well-being ( $\beta = 0.14$ ,  $P = 0.017$ ). In addition, weak relationships were found between physical activity and depressive symptoms ( $\beta = -0.16$ ,  $P = 0.007$ ), smoking and depressive symptoms ( $\beta = 0.16$ ,  $P = 0.009$ ), and self-management abilities and physical health ( $\beta = 0.17$ ,  $P = 0.015$ ). The strongest relationships were found between self-management abilities and depressive symptoms ( $\beta = -0.39$ ,  $P < 0.001$ ) and overall well-being ( $\beta = 0.49$ ,  $P < 0.001$ ).

**Table 3** Results of multivariate regression analyses

Characteristic	Physical health		Depressive symptoms		Well-being	
	$\beta$	<i>P</i>	$\beta$	<i>P</i>	$\beta$	<i>P</i>
Sex (female)	-0.04	0.643	0.04	0.632	-0.03	0.694
Age (years)	-0.00	0.949	0.02	0.699	-0.07	0.264
Marital status (single/widowed)	0.14	0.070	-0.03	0.691	0.03	0.670
Education (low)	0.01	0.936	0.06	0.303	0.01	0.918
Income (low)	0.01	0.944	0.03	0.582	0.03	0.584
Number of chronic diseases	<b>-0.20</b>	<b>0.005</b>	<b>0.21</b>	<b>&lt;0.001</b>	<b>-0.13</b>	<b>0.039</b>
Body mass index	-0.08	0.282	-0.03	0.609	-0.05	0.433
Sufficient fruit consumption	0.03	0.636	0.05	0.390	-0.06	0.303
Sufficient vegetable consumption	0.03	0.697	-0.06	0.290	<b>0.14</b>	<b>0.017</b>
Physically active	0.01	0.940	<b>-0.16</b>	<b>0.007</b>	0.02	0.731
Smoking	0.09	0.206	<b>0.16</b>	<b>0.009</b>	0.01	0.886
Self-management abilities	<b>0.17</b>	<b>0.015</b>	<b>-0.39</b>	<b>&lt;0.001</b>	<b>0.49</b>	<b>&lt;0.001</b>
$r^2$	12%		36%		31%	

Significance of bold values is  $P < 0.05$ .

## Discussion

This study aimed to identify relationships of background characteristics, health behaviours and self-management abilities with physical health, depressive symptoms and well-being among older Turkish immigrants residing in Rotterdam, the Netherlands. Chronic diseases, overweight and obesity were highly prevalent among respondents. During the same period in which this study was conducted (2015/2016), a much smaller percentage of the general Dutch population aged  $\geq 65$  years was overweight compared with our Turkish sample (60% vs. 86.5%); the prevalence of obesity differed to a lesser degree (42% vs. 46%).<sup>27</sup> In addition, a larger percentage of Turkish elders were chronically ill compared with the general Dutch population aged  $\geq 65$  years (90.6% vs. 79.9%).<sup>28</sup> The prevalence of chronic diseases is known to be higher among those with lower educational levels,<sup>29</sup> which could explain this finding, as 80.3% of older Turkish immigrants participating in this study were less educated.

With increasing numbers of chronic diseases, older immigrants had worse physical health and well-being, and more depressive symptoms. Healthy behaviours and self-management abilities may protect chronically ill older immigrants from the deterioration of health and well-being, and the onset of depressive symptoms. However, we found only weak relationships between the outcome variables and physical activity, sufficient vegetable consumption and smoking, and the latter two health behaviours were not associated with all outcome variables. A smaller percentage of older immigrants met the norm for physical activity compared with the general older population in the Netherlands (43% vs. 50%).<sup>30</sup> The prevalence of smoking was also greater among older Turks compared with the general Dutch population aged  $\geq 65$  years (33.5% vs.  $\sim 15\%$ ).<sup>31</sup> This is in line with earlier research showing that the percentage of smoking in the Netherlands is highest in the Turkish population, especially among Turkish men.<sup>32,33</sup> Regarding dietary behaviour, older Turkish respondents were healthier than the older general population in the Netherlands in 2015/2016 in terms of sufficient fruit (58.2% vs. 43%) and vegetable (55.3% vs. 30%) consumption. These findings are in line with earlier research showing that immigrants ate more fruit and vegetables than did older Dutch people.<sup>34</sup> In terms of health behaviours, older Turkish people are thus expected to benefit especially from smoking cessation and physical activity interventions.

The strongest relationships were found between broader self-management abilities and the outcome variables, especially depressive symptoms and overall well-being. These findings are important, given that these abilities are amendable. Examples of the most commonly used self-management interventions are

health education, lifestyle education, enhancement of knowledge about chronic diseases and their risk factors, support of a healthy diet and promotion of physical exercise and smoking cessation. However, older patients' abilities to self-manage their overall well-being, such as having a positive frame of mind, taking initiative and self-efficacy, should also be addressed. Interventions that aim to enhance self-management abilities may be useful additions to traditional interventions, which usually focus solely on the physical decline associated with ageing and chronic conditions.<sup>35-37</sup>

The limitations of this study should be considered when interpreting the findings. First, although the response rate was low, it was comparable to those in other surveys conducted in this population [61]. Most non-response was due to the inability to reach respondents after a minimum of two door-to-door contact attempts (following the two contact attempts via mail), potentially resulting in non-response bias. To improve the response rate, this number should be increased to six contact attempts, which was not feasible in our study.<sup>38,39</sup> To investigate potential non-response bias, we conducted non-response analyses. No significant difference in gender was found between respondents and non-respondents. The mean age of these groups, however, differed significantly; on average, respondents were younger than non-respondents [72.11 (SD = 5.10) vs. 72.73 (SD = 5.00), respectively]. Educational level of our sample is comparable to other studies showing that  $\sim 80\%$  of Turkish older migrants only completed elementary school or less.<sup>40</sup> Second, the data collected were cross-sectional, preventing determination of causality. Third, although this study showed that self-management abilities are important for older Turkish people, we did not investigate whether interventions aiming to enhance these abilities actually improved self-management. Further research is necessary to explore ways in which the self-management abilities of older Turkish people can be improved. Fourth, we investigated fruit and vegetable consumption only, not how food was prepared or the total fat or calorie intake per day, which are also known to be important.<sup>41</sup> Fifth, we also did not include alcohol consumption to our analyses given that only two male respondents drank more than the norm ( $\geq 3$  units per day at  $\geq 4$  days a week). If you would look at health behaviours among immigrant populations outside the Muslim community, it would be interesting to add this health behaviour. Finally, our study sample consisted of older Turkish people residing in Rotterdam, which limits the generalizability of our study findings.

## Conclusion

Based on the results of this study, we can conclude that in addition to health behaviours, broader self-management abilities related to the maintenance of overall well-being are important for older



Turkish people. While only weak relationships were found with health behaviours, strong relationships were found with broader self-management abilities, depressive symptoms and well-being. In terms of health behaviours, older Turkish people are expected to benefit most from smoking cessation and physical activity interventions. Older immigrants, including Turks, however, may especially benefit from interventions that enhance broader self-management abilities related to the maintenance of overall well-being. Interventions to improve self-management abilities may help older Turkish people better deal with functional losses and chronic diseases as they age further. Such interventions will probably need to be adjusted for this population to be effective.<sup>38</sup> The current national public health policy, however, devotes no specific attention to high-risk ethnic groups. We feel that these results provide a useful basis for the design of effective interventions for successful ageing among older Turkish people in the Netherlands.

## Funding

This study was supported by a grant provided by the Erasmus University of Rotterdam.

*Conflicts of interest:* None declared.

### Key points

- Chronic diseases, overweight and obesity are highly prevalent among Turkish elderly.
- Smoking cessation and physical activity interventions may partly improve outcomes.
- Interventions aimed at broader self-management abilities seem especially effective.
- A broader focus is needed on self-management abilities to maintain overall well-being.

## References


- White P. Migrant populations approaching old age: prospects in Europe. *J Ethn Migr Stud* 2006;32:1283–300.
- Lewinter M, Kesmez SS, Gezgin K. Self-reported health and function status of elderly Turkish immigrants in Copenhagen, Denmark, Scand. *J Public Health* 1993;21:159–63.
- Van der Wurff FB, Beekman ATF, Dijkshoorn H, et al. Prevalence and risk-factors for depression in elderly Turkish and Moroccan migrants in the Netherlands. *J Affect Disord* 2004;83:33–41.
- Solé-Auró A, Crimmins EM. Health of immigrants in European countries. *Int Migr Rev* 2008;42:861–76.
- Solé-Auró A, Guillén M, Crimmins EM. Health care usage among immigrants and native-born elderly populations in eleven European countries: results from SHARE. *Eur J Health Econ* 2012;13:741–54.
- World Health Organization. U.S. National Institute on Aging, Global health and ageing. Available at: [http://www.who.int/ageing/publications/global\\_health/en/](http://www.who.int/ageing/publications/global_health/en/); 2011 (28 June 2017, date last accessed).
- National Center for Health Statistics. *Healthy People 2010 Final Review*. Hyattsville, MD: National Center for Health Statistics, 2012.
- Ujic-Voortman JK, Bos G, Baan CA, et al. Obesity and body fat distribution: ethnic differences and the role of socio-economic status. *Obes Facts* 2011;4:53–60.
- Nierkens V, de Vries H, Stronks K. Smoking in immigrants: do socioeconomic gradients follow the pattern expected from the tobacco epidemic? *Tob Control* 2006;15:385–91.
- Baltes PB, Baltes MM. Psychological perspectives on successful aging: the model of selective optimization with compensation. In: Baltes PB, Baltes MM, editors. *Successful Aging: Perspectives from the Behavioral Sciences*. Cambridge: Cambridge University Press, 1990: 1–34.
- Hopman-Rock M, Westhoff MH. The effects of a health educational and exercise program for older adults with osteoarthritis for the hip or knee. *J Rheumatol* 2000;27:1947–54.
- Holman HR, Lorig KR. Overcoming barriers to successful aging. Self-management of osteoarthritis. *West J Med* 1997;167:265–8.
- von Faber M, Bootsma-van-der-Wiel A, van Exel E, et al. Successful aging in the oldest old: who can be characterized as successfully aged? *Arch Intern Med* 2001;161:2694–700.
- Cramm JM, Nieboer AP. Disease management: the need for a focus on broader self-management abilities and quality of life. *Popul Health Manag* 2015;18:246–55.
- Cramm JM, Nieboer AP. Self-management abilities, physical health and depressive symptoms among patients with cardiovascular diseases, chronic obstructive pulmonary disease, and diabetes. *Patient Educ Couns* 2012;87:411–5.
- Cramm JM, Hartgerink JM, de Vreede PL, et al. The relationship between older adults' self-management abilities, well-being and depression. *Eur J Ageing* 2012;9:353–60.
- Cramm JM, Hartgerink JM, Steyerberg EW, et al. Understanding older patients' self-management abilities: functional loss, self-management, and well-being. *Qual Life Res* 2013;22:85–92.
- Nieboer AP, Cramm JM. How do older people achieve well-being? Validation of the Social Production Function Instrument for the Level of well-being-short (SPF-ILs). *Soc Sci Med* 2018;211:304–13.
- Nieboer A, Lindenberg S, Boomsma A, van Bruggen AC. Dimensions of well-being and their measurement: the SPF-IL scale. *Soc Indicators Res* 2005;73:313–53.
- Jenkinson C, Layte R, Jenkinson D et al. A shorter form health survey: can the SF-12 replicate results from the SF-36 in longitudinal studies? *J Public Health Med* 1997;19:179–86.
- Bjelland I, Dahl AA, Haug TT, Neckelmann D. The validity of the Hospital Anxiety and Depression Scale: an updated literature review. *J Psychosom Res* 2002;52:69–77.
- Cramm JM, Hartgerink JM, de Vreede PL, et al. The role of self-management abilities in the achievement and maintenance of well-being, prevention of depression and successful ageing. *Eur J Ageing* 2012;9:353–60.
- Kemper HGC, Ooijendijk WTM, Stiggelbout M. Consensus over de Nederlandse norm gezond bewegen [Consensus on the Dutch standard for healthy physical activity.]. *TSG* 2000;78:180–3.
- Sun F, Norman IJ, While AE. Physical activity in older people: a systematic review. *BMC Public Health* 2013;13:449.
- World Health Organization, Promoting fruit and vegetable consumption around the world. Available at: <http://www.who.int/dietphysicalactivity/fruit/en/> (17 August 2017, date last accessed).
- O'Halloran J, Miller GC, Britt H. Defining chronic conditions for primary care with ICPC-2. *Fam Pract* 2004;21:381–6.
- Statline, Lengte en gewicht van personen, ondergewicht en overgewicht; vanaf 1981. Available at: [https://www.volksgezondheidenzorg.info/onderwerp/chronische-ziekten-en-multimorbiditeit/cijfers-context/prevalentie#node-prevalentie-chronische-ziekte-naar-leeftijd-en-geslacht](http://statline.cbs.nl/Statweb/publication/?DM=SLNL&PA=81565NED&D1=2-4&D2=a&D3=0, 11-12&D4=0&D5=34-35&HDR=T&STB=G1, G2, G3, G4&VW=T, 2017 (27 June 2017, date last accessed).</a></li>
<li>NIVEL, Zorgregistraties eerste lijn, 2016. Available at: <a href=) (27 June 2017, date last accessed).
- van Bakel AM (red.). Hoeveel mensen hebben één of meer chronische ziekten in Nederland? In: *Regionale VTV, Regionaal Kompas Volksgezondheid Hart voor Brabant*. 's-Hertogenbosch: GGD Hart voor Brabant, Regionaal Kompas Volksgezondheid Hart voor Brabant\Thema's\Bevolking\Chronisch zieken, 2010.
- Hildebrandt VH, Bernaards CM, Stubbe JH. Trendrapport Beweging En Gezondheid. Hoofdstuk 2. TNO, 2011/2012.
- Deuning CM. (RIVM), Hoeveel mensen roken er in Nederland? In: *Regionale VTV, Regionaal Kompas Volksgezondheid Hart voor Brabant*. 's-Hertogenbosch: GGD Hart voor Brabant, Regionaal Kompas Volksgezondheid Hart voor Brabant\Thema's\Gezondheidsdeterminanten\Leefstijl\Roken, 2014.
- Ariëns GAM, Middelkoop BJC, Smilde-van den Doel DA, Struben HWA. Gezondheidsvragen in de Stadsenquête Den Haag 2001 en 2003; de uitkomsten bekeken in relatie tot etnische achtergrond en opleidingsniveau. *Epidemiol Bull* 2006;41:2–11.
- van Lindert H, Droomers M, Westert GP. *Een kwestie van verschil: verschillen in zelfgerapporteerde leefstijl, gezondheid en zorggebruik*. Utrecht/Bilthoven: NIVEL/RIVM, 2004.

- 34 Statline CBS, Leefstijl en (preventief) gezondheidsonderzoek; persoonskenmerken. Available at: <http://statline.cbs.nl/Statweb/publication/?DM=SLNL&PA=83021ned&D1=0,3,5,15-16,19,21,26,41,47-48,59,69-72&D2=0-2,12-13,30-42&D3=0&D4=1-2&HDR=T&STB=G1,G2,G3&VW=T> (27 June 2017, date last accessed).
- 35 Frieswijk N, Steverink N, Buunk BP, Slaets JJP. The effectiveness of a bibliotherapy in increasing the self-management ability of slightly to moderately frail older people. *Patient Educ Couns* 2006;61:219–27.
- 36 Kremers IP, Steverink N, Albersnagel FA, Slaets JJP. Improved self-management ability and well-being in older women after a short group intervention. *Aging Ment Health* 2006;10:476–84.
- 37 Schuurmans H. Promoting well-being in frail elderly people: theory and intervention. Dissertation, Groningen Intervention Program, University of Groningen, 2004. <http://opc.ub.rug.nl>.
- 38 CBS, 2012. *Key Figures Rotterdam*. Centrum voor Onderzoek en Statistiek (Centre for Research and Statistics), 2006.
- 39 Schellinghout R. *Gezondheid En Welzijn Van Allochtone Ouderen [Health and Wellbeing of Ethnic Minority Elderly]*. The Hague: Sociaal en Cultureel Planbureau, 2004.
- 40 Dagevos J. Allochtone ouderen. In: *Rapportage Ouderen 2001. Veranderingen in De Leefsituatie*. Den Haag: SCP, 2001.
- 41 World Health Organization, Healthy diet 2015. Available at: <http://www.who.int/mediacentre/factsheets/fs394/en/>, 2015 (27 June 2017, date last accessed).

.....  
*The European Journal of Public Health*, Vol. 28, No. 6, 1092–1097

© The Author(s) 2018. Published by Oxford University Press on behalf of the European Public Health Association. All rights reserved.  
 doi:10.1093/eurpub/cky038 Advance Access published on 23 March 2018  
 .....

## Morbidity and housing status 10 years after shelter use—follow-up of homeless men in Helsinki, Finland

Agnes Stenius-Ayoade <sup>1,2,3</sup>, Peija Haaramo<sup>4</sup>, Hannu Kautiainen<sup>1,5,6</sup>, Sanna Sunikka<sup>3,7</sup>, Mika Gissler<sup>8,9,10</sup>, Kristian Wahlbeck<sup>11</sup>, Johan G. Eriksson<sup>1,5,12</sup>

1 Folkhälsan Research Center, Helsinki, Finland

2 National Institute for Health and Welfare, Mental Health Unit, Helsinki, Finland

3 Department of Social Services and Health Care, City of Helsinki, Helsinki, Finland

4 National Institute for Health and Welfare, Public Health Promotion Unit, Helsinki, Finland

5 Department of General Practice and Primary Health Care, University of Helsinki, and Helsinki University Hospital, Helsinki, Finland

6 Unit of Primary Health Care, Kuopio University Hospital, Kuopio, Finland

7 The Finnish Foundation for Supporting Ex-Offenders, Helsinki, Finland

8 Information Services Department, National Institute for Health and Welfare, Helsinki, Finland

9 Research Centre for Child Psychiatry, University of Turku, Turku, Finland

10 Division of Family Medicine, Department of Neurobiology, Care Sciences and Society, Karolinska Institute, Stockholm, Sweden

11 The Finnish Association for Mental Health, Helsinki, Finland

12 National Institute for Health and Welfare, Chronic Disease Prevention Unit, Helsinki, Finland

**Correspondence:** Agnes Stenius-Ayoade, Mental Health Unit, National Institute for Health and Welfare, Po Box 30, 00271 Helsinki, Finland, Tel: +358 (0) 503463512, Fax: +358-295247155, e-mail: [agnes.stenius@helsinki.fi](mailto:agnes.stenius@helsinki.fi)

**Background:** Homelessness is associated with increased mortality, morbidity and social difficulties and periods of homelessness are sometimes prolonged or repeated. However, there are no long-term follow-up studies focusing upon housing status among homeless people. The aim of this study was to examine morbidity and housing outcomes and to identify factors predicting being independently housed 10 years after shelter use. **Methods:** By combining data from several registers we followed all 552 homeless men who stayed in shelter in Helsinki during 2004 and determined their housing situation and morbidity 10 years later. Their situation was compared with an age-matched control group from the general population ( $N=946$ ). Using logistic regression analysis, we assessed the predictive effects of socioeconomic factors and health service use at baseline on becoming independently housed. **Results:** By the end of the follow-up 52.0% of the formerly homeless study group had died, compared with 14.6% of the controls. At 10 years, 6.0% were independently housed, 37.5% lived in supported housing and 4.5% were still or again homeless. Psychiatric disorders, including substance use disorder, were present in 77.5% of the homeless, compared with 16.1% among the controls. Being married (OR 8.3, 95% CI 3.0 to 23.2) and having less than four shelter nights in year 2004 (OR 9.1, 95% CI 2.7 to 30.8) strongly predicted being independently housed 10 years later. **Conclusions:** Homeless staying in shelters have high mortality and morbidity and most of those surviving, are in need of support in their everyday lives even years after the shelter period.

.....

## Introduction

Homelessness is associated with chronic disease and social problems that hamper entering the housing market and staying there.<sup>1,2</sup> There is evidence that while most homeless persons at any given time are temporarily homeless, a minority experience repeated or prolonged, long-term homelessness.<sup>3,4</sup> A

study on shelter users in Helsinki metropolitan area showed that 55% of them had been homeless for over a year and 23% for over 5 years.<sup>5</sup> Studies suggest that chronic and repeated homelessness is associated with poor health outcomes.<sup>6</sup>

Tracing homeless people for interview-based follow-up studies is difficult: most studies have rather short follow-up periods.<sup>6–12</sup> Hence, the long-term outcome of homelessness in terms of