Population Ageing (2019) 12:95–108
https://doi.org/10.1007/s12062-018-9218-6

Factors Associated with Perceived Health Status of the Vietnamese Older People

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Received: 2 May 2017 / Accepted: 23 January 2018 / Published online: 3 February 2018

Abstract This study, using data from the Vietnam Aging Survey (VNAS) in 2011 with 2789 persons aged from 60 to 108, explored the factors associated with the perceived health status of the Vietnamese older people. Using logistic regression analysis, the study found that there were no statistically significant differences between older people in their perceived health status in terms of age group, gender, marital status, and living area. In contrast, however, the study also found that reading ability, working status, morbidity, activities in daily living, experience of domestic violence, household income, and satisfaction with housing conditions were strongly correlated with older people's perceived health status. Based on these findings, the study provided a set of recommendations for developing and implementing policies in order to enhance health status of the Vietnamese older people.

Keywords Ageing · Health · Older people · Perceived health status · Policy · Vietnam

Introduction

Population ageing is taking place nearly all around the world. The global share of older people (those aged 60 years and over) increased from 11.7% in 2013 (or 841 million people) to expected 21% by 2050 (or 2.1 billion people) (United Nations Department of

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Economic and Social Affairs - UNDESA 2013). As estimated by United Nations (2012), the large older people population has put heavy pressure to the health care system in all nations. For instance, while communicable diseases is responsible for a much smaller fraction of disability-adjusted life year (DALY) among the older population, at the world level, 85% of persons aged 60 years or over died from non-communicable diseases (NCDs) in 2008. The percentage by region shows that in the more developed regions, 92% of persons aged 60 years or over died from NCDs, while in the less developed regions and least developed countries the percentages were 83% and 74%, respectively (UNDESA 2013).

Vietnam is not exceptional from aging trend. The rate of older people will increase from 10% in 2010 (or 8 million people) to 26% in 2050 (or about 26 million people) (UNFPA 2011). The older persons are projected to exceed the number of children for the first time in 2034, which is sooner than the global. At the same time, various reports show that NCDs negatively affect the quality of life of older people (Pham and Do 2009; Dam et al. 2009; Hoang 2013).

There are several factors influencing the health status of older people. For instance, some studies indicated that the housing environment has been acknowledged as one of the main settings that affect human health (Bonnefoy 2007, Barnes et al. 2013). Some studies showed the positive relationship between income and health status of older people (Fillenbaum et al., 2013, Abegunde and Owoaje 2013, Aguila et al. 2015), while some other studies were not able to demonstrate this association (Feng et al. 2012, Park et al. 2009, Chao et al. 2013). Moreover, few studies have investigated on the relationship between housework and health benefit of the older people in the current literature and findings from these studies are likely inconsistent. While studies suggest that duration of housework per week are associated with poor self-reported health status among women (Borrell et al. 2004), housework could be productive, involves physical activity, and yields a clean and pleasing living environment, all of which could contribute to good health status of the older people (Blair et al. 1992, Besson et al. 2008).

Although studies on health status of older people and its determinants have been conducted in both developed and developing countries, only few anecdotal studies on the health status of older people was conducted in Vietnam. Particularly, no study with in-depth analysis of various socio-economic factors associated with health status of the Vietnamese older people has been undertaken. This study is, therefore, significant because it contributes to the body of evidence on determinants of health status of the Vietnamese older people. It also helps to provide evidence for policy makers at national and sub-national levels to develop and implement appropriate programmes and policies to enhance the health status of the Vietnamese older people as well as their contributions to the society.

Data and Methodology

Data

The research utilises the data from the Vietnam Aging Survey (VNAS) in 2011 to explore factors associated with older people's health status. VNAS was the first-ever

nationally representative quantitative survey on Vietnamese people aged 50 and over, including older people (as defined, those aged 60 and over). The sampling of the VNAS was based on the information of Population and Housing Census-PHC in 2009 (General Statistics Office 2016). The probability proportional to size (PPS) and systematical random selection methods were used to conduct the survey sampling in multi-stages. Eligible participants were selected from 12 provinces representing for six ecological regions (defined by GSO in PHC 2009, which includes Northern Mountain, Red River Delta, Central Coast, Central Highlands, Mekong River Delta, and South-east) with 200 communes and 400 villages in Vietnam. Face-to-face interview was applied to collect data by using a structured questionnaire. The questionnaire was developed based on many research instruments used in ageing surveys by the World Health Organization (namely, Study on global AGEing and adult health - SAGE) and in other countries such as South Korea, China, and Thailand, as well as the questionnaires used in other national surveys conducted in Vietnam (e.g., Demographic and Health Survey, and Vietnam Household Living Standard Survey – VHLSS).

The response rate was about 96%, which yielded about 4000 persons aged 50 and over for the final surveyed sample. For older population, VNAS included 2789 older people aged 60 to 108. Among them, there were 1683 were female (60.3%) and 1106 were male (39.7%); and 2050 were living in rural areas (73.5%), while 739 were living in urban areas (26.5%).

Analytical Method

As one of the most important indicators of well-being, health status is affected by a number of socio-economic and health strategies and policies, which are presented by health promotion, disease prevention programmes, and healthcare services. As such, the determinants of health status for citizens in general and for older people in particular are complicated and include numerous living environment and policy domains. Dahlgren and Whitehead (1991) provided a comprehensive conceptual framework to illustrate these domains, which comprise different layers: (i) general macro conditions (such as socio-economic development, and cultural tradition) which have important long-term health effects; (ii) basic social, health, and economic institutions (such as education, employment, and housing), which sustain or impair a healthy existence; (iii) social and community interactions/exchanges, in which individuals are influenced to have collective decisions; and (iv) individual behavioural choices (such as health-risk behaviors like smoking and drinking). In this paper, given the existing data, we will apply this framework to take into account various individual and household characteristics.

To define factors underlying health status of older people, we will use a multiple logistic regression approach, in which the outcome variable ($\boldsymbol{Y}$) – in this research, it is the health status of an older person – is assumed to be binary which only takes two values (0 or 1), and the independent variables ($\boldsymbol{X}$) are individual and household-level factors of older people. The logistic regression model is defined as follow.

$$P(y_i = 1|X) = \beta_i X_i + \varepsilon_i \quad (1)$$

In which:

- X_i represents individual and household-level factors affecting the health status of an older person;
- β_i is coefficient for each variable X_i;
- ε_i is the error term, which is assumed to follow normal distribution.

For each dummy variable, it is categorized into two groups: the reference group and the comparative group. In estimation, when compared to the reference group, an odds ratio of less than one means that the comparative group is less likely to be healthier, while a value of more than one indicates a greater likelihood. Statistical significance is indicated for the 5% level.

Dependent Variable – Perceived Health Status of Older People

Health status of an older person is measured by his/her perceived health status. In VNAS questionnaire, a respondent rated his/her own health status in a five-point scale, in which the highest point (5) represents for the "very good" health, and then 4 for "good", 3 for "normal", 2 for "bad", and 1 for "very bad". For the purpose of this paper, the model will examine the probability that an older person is set into the group "good health" (which includes those stated that their health is "very good/good/normal", and will be valued at 1) or the group "bad health" (which includes those stated that their health is "poor/very poor", and will be valued at 0).

Independent Variables

Independent variables include those representing for individual and household characteristics of older people in the data.

The individual variables include:

- Age: The older people are divided into three groups by age: (i) young old (60–69); middle old (70–79), and (iii) the oldest old (80 and over). The first group is the reference group.
- Gender: The variable is used to examine the discrepancies in health between old female and male respondents. In the estimation, males are the reference group.
- Marital status: This variable composes of two main groups, i.e., currently married and currently non-married (including never married/single, divorced, separate, and widowed). The former group is the reference group.
- Reading ability: This variable is used as a proxy for an older person's educational level. If a person can read, he/she can be able to get information related to daily living, including those for healthcare. This variable has two categories, i.e., "reading easily" and "reading with difficulty or not able to read", in which the former is the reference group.
- Working status: That an older person was working might be their wish to be active, or their must to earn a living. Thus, it is quite difficult to predict how working would influence on health status of older people. In the estimation, this variable is

defined by two groups, i.e., "currently working" and "currently not working", in which the former is the reference group.

- Morbidity: This variable is clearly important factor influencing health status of older people. In the estimation, it presents the situation that an older person faced any physical illness in the past 12 months, and includes two groups, i.e., "had any sickness", and "had no sickness". The former group is the reference group.
- Activities in Daily Living (ADLs): ADLs are an important indicator showing an older person's capability in doing some basic activities such as washing faces, wearing clothes, and eating. This variable composes two groups, i.e., "had any difficulty in ADLs" and "had no difficulty in ADLs", in which the former group is the reference group.
- Experience of domestic violence: Domestic violence is a crucial factor influencing health of older people. This variable contains two groups – one is those who experienced any domestic violence (being spoken harshly, being refused to talk with family members, or being shaken/hit by family members), and the other is those who did not experience any domestic violence. The former is the reference group.

The household-related variables include:

- Living area: Older people divided into two groups – one includes those lived in urban areas, and the other includes those lived in rural areas. The former group is the reference group.
- Household's annual income in the past 12 months: The older households are divided by two groups – one with VND 50 million (equivalent to $US 2200) and above, and the other one with less than VND 50 million. The threshold VND 50 million shows the economic situation of an older person's household. In the estimation, the former is the reference group.
- Satisfaction with housing: Housing conditions are important to quality of life, and thus health status of older people. In VNAS, the respondents show their satisfaction with housing conditions in a five-point scale, in which the highest point (5) represents for the "very satisfied", and then 4 for "satisfied", 3 for "normal", 2 for "not satisfied", and 1 for "very dissatisfied". For this variable, the estimation will divide by two groups – one is for "satisfied with housing" (which includes those stated that they felt "very satisfied/satisfied/normal", and will be valued at 1) and the other is for "dissatisfied" (which includes those stated that they felt "dissatisfied/very dissatisfied", and will be valued at 0).

There have been a number of studies showing that older people are particularly different in various socio-economic and health indicators in terms of gender (i.e., males vs. females) and area of living (i.e., urban vs. rural). Thus, before conducting the logistic model as in (1), we will conduct Chow tests to determine whether male and female and/or urban and rural older people are statistically different in terms of health status. If the null hypothesis (i.e., there are.

In all calculations, we will use the sample weights to make the whole sample or sub-samples to be representative for the whole older population or specific groups of older people in Vietnam.

Results and Discussions

Demographic Characteristics

Demographic parameters of the VNAS 2011 are presented in Table 1. The age of the surveyed population was ranged from 60 to 108 years old, and the mean age of the respondents was 71.93 years old (SD = 8.89). By age group, the young old accounted for 45.7%; middle old accounted for 33.5%, while the oldest old accounted for 20.8% of the total surveyed population.

Regarding marital status, 57.8% were married, 38.7% were widowed, while other accounted for a very small proportion.

The respondents had low readability: only 53.1% could read with ease; 24.3% could read with difficulty; and 18.8% could not be able to read. This was quite consistent with their reported highest educational achievement: more than 50% did not complete primary school or had no schooling, while only 17.2% could complete primary school (VWU 2012).

About 38% of the respondents were working. The report by VWU (2012) showed that, among working persons, farming work accounted for the majority (about 63%), while wage workers accounted for very small proportion (only 3.5%).

The results for morbidity showed that 27.9% of the respondents had no chronic disease; 28.2% had one chronic disease, while 43.9% had multi-morbidities (at least two diseases at the same time).

For the activities of daily living (ADLs), about 74% of the respondents said that they did not have any difficulty, while the remaining 26% of the respondents said that they had difficulty in at least an activity. Among those reported to have difficulty with at least an activity, VWU (2012) found that the proportion of the older people who report the level of difficulties when eating, getting dressed or undressed, bathing/washing yourself, getting up, and using the toilet at "mild" or "moderate" level were 73%, 57%, 50%, 73% and 64% respectively. On the other hand, the proportion of those who rated these activities as "severe" or "cannot do it at all" were 27%, 43%, 50%, 27%, and 36%, respectively.

About 11% of the respondents experienced a type of domestic violence. According to the report by VWU (2012), women and more advanced age persons had higher rates of experience with domestic violence than did their counterparts.

In terms of household's annual income, the results show that about 68% of the respondents said that their households had the annual income at less than Vietnam Dong (VND) 50 million. The report by VWU (2012) showed that it was likely more men had the annual income bigger than VND 50 million compared to women (44.5% compared to 27.1%, respectively) (P-value<0.01).

For their satisfaction with housing, the proportion of the respondents who reported "satisfied" was about 85.5%.

Health Status of Older People

Our data analysis found that of the investigated respondents, 12.2% perceived that they had very poor health, and 57.1% had poor health status. In contrast, 26.6% perceived normal and only 4.2% perceived good and 0.5% perceived very good health.

Table 1 Demographic variables of the respondents

Characteristics	N	% (weighted)
Age	2789	100.0
60–69	1275	45.7
70–79	934	33.5
80 and over	580	20.8
Gender	2789	100.0
Male	1106	39.7
Female	1683	60.3
Marital status	2789	100.0
Married	1612	57.8
Widow	1078	38.7
Single	65	2.3
Divorced	19	0.7
Separated	15	0.5
Reading ability	2786	100.0
Yes, easily	1479	53.1
Yes, but with difficulty	678	24.3
No	523	18.8
I used to but forgot	106	3.8
Working status	2783	100.0
Currently working	1066	38.7
Currently not working	1717	61.3
Morbidity	2783	100.0
Having no disease	776	27.9
Having one chronic disease	785	28.2
Having multi-morbidities	1222	43.9
ADLs	2783	100.0
No difficulty	2062	74.1
Had difficulty	721	25.9
Experienced with domestic violence	2783	100.0
Yes	312	11.2
No	2471	88.8
Area of living	2789	100.0
Urban	884	31.7
Rural	1905	68.3
Household income in the past 12 months	2783	100.0
Less than VND 50 million	1895	68.1
VND 50 million and over	888	31.9
Satisfaction with housing	2783	100.0
Satisfied	2352	84.5
Dissatisfied	431	15.5

Source: Own calculations, using VNAS 2011

Table 2 presents health complaints of the older people in 30 days prior to the survey date. It shows that the majority of respondents experienced with a number of health issues: back pain (72.4%), headache (70.6%), dizziness (69.0%), joints pain (68.9%), feeling weak (61.2%), coughing (52.7%). In addition, over one-fifth of the respondents also experienced with constipation (27.1%), stomachache (24.8%), vomiting (24.5%), skin problem (22.3%), and fever (20.2%). Moreover, a smaller proportion of the respondents reported to have diarrhea (14.3%) and loss of bladder control (9.7%). In addition, our analysis of data also found that 45.4% of older people were diagnosed with blood pressure problems; 34.1% had arthritis; 17.4% had chronic lung disease emphysema and/or bronchitis; 16.5% had heart diseases, 10.4 had cataract; 8.6% had oral health; 8.3% had angina; and 7.5% had liver diseases. The proportion of the respondents had diabetes, cancer and depression was small: 5.5%, 1.3% and 0.5%, respectively. Among the respondents who diagnosed with a disease, a majority of them received treatment: diabetes (90.8%), blood pressure problem (85.9%), arthritis (84.0%), chronic lung disease emphysema/bronchitis (84.0%), heart diseases (82.2%), angina (76.4%), and liver diseases (74.5%).

Factors Associated with Older People's Health Status

We conducted logistic regression analysis to explore the factors associated with the perceived health status of older people. Prior to the logistic model, as discussed above, we conducted Chow tests to examine whether (i) male and female older people are different in their perceived health statuses, and (ii) urban and rural older people are different in their perceived health statuses. The results indicated that the null hypotheses (i.e., male and female older people / urban and rural older people are not different in their perceived health statuses) are not rejected. This means that we will not need to separate the male and female samples as well as urban and rural samples in the logistic model. Table 3 presents the results of the logistic model for the pooled data.

In term of age, the results show that there were no differences between the young old, the middle old compared to the oldest old in their perceived health status. The analyses by VWU (2012) and Le and Giang (2016) consistently indicated that there were no statistical differences between these groups of older people in their perceived health statuses. In fact, for the diagnosed health status, data from VNAS showed that more advanced ages were statistically correlated with higher number of morbidities. Such contradictory findings imply that there must be some other related factors from the respondents (such as cultural tradition in expressing self-assessment).

For both gender and living area factors, the results are quite consistent with the Chow tests, showing that there were no statistically significant differences between older people in their perceived health statuses in both gender and living area perspectives. Le (2015) also proved these findings various statistical tests. The same finding was also implied in regard to the marital status of older people as the *P*-value of this variable was greater than 0.05.

With a regard to the literacy level, which is presented by reading ability, the results indicated that it was a significant variable: it was likely that those could read easily had 2.24 times chance to higher than those who had difficulty in reading in having better perceived health status (OR = 2.242, 95%CI = 1.534–3.275, P-value<0.001). Reading could help older people access to various sources of information, including those for

Table 2 Health complaints of the older people in the last 30 days

Health complaints	N	% (weighted)
Back pain ($n = 2786$)		
Yes	2017	72.4
No	769	27.6
Headache ($n = 2788$)		
Yes	1967	70.6
No	821	29.4
Dizziness (n = 2788)		
Yes	1925	69.0
No	863	31.0
Joints pain ($n = 2788$)		
Yes	1920	68.9
No	868	31.1
Feeling Weak ($n = 2787$)		
Yes	1707	61.2
No	1080	38.8
Coughing (n = 2788)		
Yes	1470	52.7
No	1318	47.3
Breathing problem ($n = 2787$)		
Yes	1019	36.6
No	1768	63.4
Chest pain ($n = 2784$)		
Yes	1011	36.3
No	1773	63.7
Trembling hands ($n = 2785$)		
Yes	768	27.6
No	2107	72.4
Constipation (n = 2786)		
Yes	755	27.1
No	2031	72.9
Stomachache (n = 2785)		
Yes	691	24.8
No	2094	75.2
Vomiting (n = 2788)		
Yes	684	24.5
No	2104	75.5
Skin problem (n = 2786)		
Yes	622	22.3
No	2164	77.7
Fever ($n = 2783$)		
Yes	563	20.2
No	2220	79.8

Table 2 (continued)

Health complaints	N	% (weighted)
Diarrhea (n = 2788)		
Yes	399	14.3
No	2389	85.7
Loss of bladder control (n = 2788)		
Yes	270	9.7
No	2518	90.3

Source: Own calculations, using VNAS 2011

healthcare, and thus this would help them in daily living. Evidence on the impact of education level to health status of the older people is documented in a number of studies (see, for instance, Bodde et al. 2009, Mack et al., 2003, Simsek et al. 2014). Particularly, a study in Iran on obesity amongst the older people suggested that when using the basic education level is used as the reference group, obesity odds ratios were 1.38 (95% CI: 1.08–1.76) for the moderate education level and 0.92 (95% CI: 0.56–1.52) for the high education level group. Simsek et al. (2014) suggests that lower education level and lower social class were found to be protective factors for smoking in women. In women, the risk of unhealthy diet was found to be 1.54- and 2.18-fold significantly higher, respectively, among those who graduated from primary school and uneducated. With regard to self-perceived health status, education level is significantly related to poor/very poor health status in women (Simsek et al. 2014).

Health is strongly related to working status of older people (Giang and Le 2017; Le 2015; Nguyen 2015). The results here also support for this evidence, indicating that those who were working had about 1.5 times chance higher than those who were not working in having better perceived health status (OR = 1.488, 95%CI = 1.031–2.145, *P*-value<0.05). A study in South Korea found the ORs for obesity were respectively 1.172 and 1.164 in the part-time employees, and 1.451 and 1.399 in the unemployed group for men and women, compared to the full-time employees (Kang et al. 2013). However, in a study in Japan found that working status itself does not appear to associate with health and health-care utilization among older people Japanese (Tokuda et al. 2008). This means that health status should be correlated with other socio-economic factors of older people in explaining their working purpose.

The findings for morbidity and ADLs are the same, in which those who had any morbidity or difficulty in ADLs would have about 0.430 and 0.371 times chances lower than those who had no morbidity or no difficulty in ADLs in having better perceived health statuses, respectively.

Domestic violence is strongly associated with health of older people (VWU 2012; UNFPA 2013). Our estimation showed that older people who experienced domestic violence had 0.527 times chance lower than those who did not experience in having better perceived health status. This finding provides an important implication for protecting rights at home of older people.

The results also implied that amongst those who had their annual income at VND 50 million and higher were likely to have 1.835 times higher chance to have better

Table 3 Factors associated with perceived health status of older people - logistic regression

Variables	Odds Ratio	95% CI		P-value
		Lower	Upper	
Age group				
80+	1			
70–79	0.931	0.586	1.480	0.763
60–69	1.021	2.771	1.740	0.939
Gender				
Male	1			
Female	0.900	0.618	1.312	0.584
Marital status				
Currently married	1			
Currently non-married	1.421	0.934	2.162	0.100
Reading ability				
Reading with difficulty	1			
Reading easily	2.242	1.534	3.275	0.000
Currently working?				
No	1			
Yes	1.488	1.031	2.145	0.033
Had any morbidity?				
No	1			
Yes	0.430	0.323	0.574	0.000
Had difficulty in ADLs				
No	1			
Yes	0.371	0.217	0.633	0.000
Experienced domestic violence?				
No	1			
Yes	0.527	0.340	0.816	0.004
Area of living				
Rural	1			
Urban	1.484	0.994	2.213	0.053
Household income in the past 12 months				
Less than VND 50 million	1			
VND 50 million and above	1.835	1.211	2.780	0.004
Satisfied with housing conditions?				
No	1			
Yes	1.830	1.211	2.767	0.004

Source: Own calculations, using VNAS 2011

perceived health status compared to those whose households had the annual income at less than VND 50 million (OR = 1.835, 95%CI 1.211–2.780, *P*-value<0.01). The finding was similar to those in other studies: A study conducted in Nigeria found that low monthly income were significant predictors of hypertension (Abegunde and

Owoaje 2013). Another study in Mexico showed that when the older people were provided an additional $67 per month, a 44% increase in average household income, significant health benefits associated with the additional income was demonstrated (Aguila et al. 2015). It is worth noting that there were no relations between health and income, depending on how they are measure. For instance, a study in China showed that the health of the older people is not only affected by individual income (Feng et al. 2012). For South Korea, it was indicated higher income was associated with better health status among the older people. However, these effects showed that health status of the aged is related more closely to the individual's wealth than income (Park et al. 2009). Similarly, a study in Italy did not show significant impact of financial issues to health of the older people (de Belvis et al. 2008). Such controversial findings between countries imply that, to provide comparative perspective between income and health, there should be consistencies in definitions and measurements of these variables.

Regarding relation between satisfaction of housing conditions and perceived health status, our results indicated that older people who were satisfied with their housing conditions were 1.830 times higher chance to have better perceived health status than were those who were not satisfied (OR = 1.830, 95%CI 1.211–2.767, *P*-value<0.01). The analyses of VWU (2012) also support this finding, in which those who lived in a house with better quality (such as the house with permanent structure, and kitchen and bathroom were inside the house) had better perceived health status than those who lived in a house with less quality (such as the house with semi-structure, and kitchen and bathroom were outside the house). Barnes et al. (2013) also found thay poor housing conditions are strongly associated with physical illnesses (such as eczema, hypothermia, and heart disease, which in turn seriously affect health status of older people.

Conclusions and Recommendations

Based on the findings of the study, we provide recommendations on the development and implementation of national policies to enhance the health status of the Vietnamese older people.

First, in order to improve the health status of the older people, health and social care policies and programmes should consider multiple socio-economic factors. Particularly, healthcare programmes should consider both adequate and affordable treatments of chronic diseases, while social care programmes should consider various ADLs issues. To do so, the government should develop policies that promote strong intergenerational relationship in older people's families and communities so that members can share experience, workload as well as care and support to each other.

Second, to ensure the effective responses to the healthcare needs of the older people, the government should develop a concrete national plan, which comprise various strategies, policies and programmes, on social protection in which health rights of older people should be included in socio-economic development agenda.

Finally, it also is emphasized that the active participation of older people is vital for the effective development and implementation of policies for the older people. For instance, policies encouraging older people in productive activities – either at their households, communities or businesses – should be considered in order to get their further economic contributions to the society and, at the same time, to prevent labor

exploitation. These policies in turn will contribute to protecting older people's health rights.

References

Abegunde, K. A., & Owoaje, E. T. (2013). Health problems and associated risk factors in selected urban and rural older people population groups of South-West Nigeria. *Annals of African Medicine, 12*, 90–97.

Aguila, E., Kapteyn, A., & Smith, J. P. (2015). Effects of income supplementation on health of the poor older people: The case of Mexico. *Proceedings of the National Academy of Sciences of the United States of America, 112*, 70–75.

Barnes, M., Cullinane, C., Scott, S., & Silvester, H. (2013). *People living in bad housing – numbers and health impacts*. London: NatCen Social Research.

Besson, H., Ekelund, U., Brage, S., Luben, R., Bingham, S., Khaw, K. T., & Wareham, N. J. (2008). Relationship between subdomains of total physical activity and mortality. *Medicine and Science in Sports and Exercise, 40*, 1909–1915.

Blair, S. N., Kohl, H. W., Gordon, N. F., & Paffenbarger Jr., R. S. (1992). How much physical activity is good for health? *Annual Review of Public Health, 13*, 99–126.

Bodde, A. E., Seo, D. C., & Frey, G. (2009). Correlation between physical activity and self-rated health status of non-older people adults with disabilities. *Preventive Medicine, 49*, 511–514.

Bonnefoy, X. (2007). Inadequate housing and health: an overview. *International Journal of Environment and Pollution, vol 30*, Numbers 3/4.

Borrell, C., Muntaner, C., Benach, J., & Artazcoz, L. (2004). Social class and self-reported health status among men and women: what is the role of work organisation, household material standards and household labour? *Social Science & Medicine, 58*, 1869–1887.

Chao, J., Li, Y., Xu, H., Yu, Q., Wang, Y., & Liu, P. (2013). Health status and associated factors among the community-dwelling older people in China. *Archives of Gerontology and Geriatrics, 56*, 199–204.

Dahlgren, G., & Whitehead, M. (1991). *Policies and Strategies to Promote Social Equity in Health*. Stockholm: Institute for Futures Studies.

Dam, V. C., Tran, T. M. O., Duong, H. L., Khuong, A. T., & Nguyen, T. T. (2009). *An assessment of healthcare for the older people in Vietnam*. Hanoi: National Institute of Health Strategies and Policies.

de Belvis, A. G., Avolio, M., Spagnolo, A., Damiani, G., Sicuro, L., Cicchetti, A., Ricciardi, W., & Rosano, A. (2008). Factors associated with health-related quality of life: the role of social relationships among the older people in an Italian region. *Public Health, 122*, 784–793.

Feng, Z., Wang, W. W., Jones, K., & Li, Y. (2012). An exploratory multilevel analysis of income, income inequality and self-rated health of the older people in China. *Social Science & Medicine, 75*, 2481–2492.

Fillenbaum, G. G., Blay, S. L., Pieper, C. F., King, K. E., Andreoli, S. B. & Gastal, F. L. (2013). The association of health and income in the older people: experience from a southern state of Brazil. *PLoS One*, 8, e73930.

General Statistics Office. (2016). *Population Projections 2014–2049*. Hanoi: General Statistics Office.

Giang, T. L., & Le, D. D. (2017). Working beyond the traditional retirement ages: How does chronic health condition influence older workers in Vietnam. *Ageing International*. https://doi.org/10.1007/s12126-017-9301-y

Hoang, T. K. (2013). Study on the health needs and responses of the older people in Dong Anh district, Hanoi Vietnam PhD, NIHE.

Kang, H. T., Lee, H. R., Lee, Y. J., Linton, J. A., & Shim, J. Y. (2013). Relationship between employment status and obesity in a Korean older people population, based on the 2007-2009 Korean National Health and Nutrition Examination Survey (KNHANES). *Archives of Gerontology and Geriatrics, 57*, 54–59.

Le, T. L. (2015). Determinants of labor force participation of older people in Vietnam. Master thesis, the Vietnam-Netherlands Master's Programmes in Development Economics, National Economics University, Hanoi.

Le, D. D., & Giang, T. L. (2016). Gender differences in prevalence and associated factors of multi-morbidity among older persons in Vietnam. *International Journal on Ageing in Developing Countries, 1*(2), 113–132.

Mack, F., Mundt, T., Mojon, P., Budtz-Jorgensen, E., Schwahn, C., Bernhardt, O., Gesch, D., John, U., Kocher, T. & Biffar, R. (2003). Study of Health in Pomerania (SHIP): Relationship among socioeconomic

and general health factors and dental status among older people adults in Pomerania. *Quintessence Int*, 34, 772-8.

Nguyen, N. T. H. (2015). Determinants of labor force participation among rural older people in Vietnam. Master thesis, the Vietnam-Netherlands Master's Programmes in Development Economics, National Economics University, Hanoi.

Park, B. H., Jung, M., & Lee, T. J. (2009). Associations of income and wealth with health status in the Korean older people. *Journal of Preventive Medicine and Public Health, 42*, 275–282.

Pham, T., & Do, T. K. H. (2009). *Review of Older people's healthcare policies in response to age structure changes in Vietnam*. Hanoi: UNFPA and GOPFP.

Simsek, H., Doganay, S., Budak, R., & Ucku, R. (2014). Relationship of socioeconomic status with health behaviors and self-perceived health in the older people: A community-based study, Turkey. *Geriatrics & Gerontology International, 14*, 960–968.

Tokuda, Y., Ohde, S., Takahashi, O., Shakudo, M., Yanai, H., Shimbo, T., Fukuhara, S., Hinohara, S., & Fukui, T. (2008). Relationships between working status and health or health-care utilization among Japanese older people. *Geriatrics & Gerontology International, 8*, 32–40.

UNFPA. (2013). *Baseline surveys on quality of life (QoL) of the older people in Vietnam: Case studies in Hai Duong and Ben Tre provinces*. Hanoi: UNFPA.

UNFPA (United Nations Population Fund). (2011). *The Ageing Population in Vietnam: Current status, prognosis, and possible policy responses*. Vietnam: UNFPA.

United Nations. (2012). *Population Ageing and Development 2012 Wall Chart. Sales No. E.12.XIII.6*. New York: United Nations.

United Nations Department of Economic and Social Affairs (UN-DESA). (2013). *World Population Ageing 2013*. New York: United Nations.

Vietnam Women Union. (2012). *Vietnam Ageing Survey 2011: Key Findings*. Hanoi: Women's Publishing House.