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Changes in Self-Rated Health During the Transition to Retiring Living Among Medicare Managed-Care Recipients

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Abstract

Objectives—Moving into a retirement community may be precipitated by or bring about changes in health status. We hypothesized that moving into a retirement community would be associated with a decline in self-rated health (SRH), but that health-related factors would mitigate this association.

Methods—We analyzed data from 58,272 participants in Cohort 3 of the Medicare Health Outcome Survey. Individuals answered questions regarding living status in 2000 and 2002. Those who moved into a retirement community were compared with those who did not. The primary outcome was change in SRH. We created adjusted and unadjusted models.

Results—2,520 (4.4%) individuals moved into retirement communities between 2000 and 2002. There were no substantial differences in the mean change in SRH between those who moved and those who did not. In adjusted and unadjusted models, moving was not significantly associated with changes in SRH. In an analysis stratified by SRH, only those with the best SRH had a significant decline in SRH during the move.

Discussion—SRH mainly remained stable for most people regardless of moving into a retirement community. These findings argue against environmental context being a main determinant of self-perceived health status among older adults.

Keywords

Retirement; residence; self-rated health; social comparison

Introduction

The institution of retirement, which did not exist until about a century ago, has had broad effects on society (Gruber & Wise, 2002). One direct byproduct is the retirement community, in which older adults who are retired live together, with or without formal rules governing their communal relationships. Retirement communities typically have minimum age restrictions and require that all residents be fully or partially retired. Unlike nursing homes, residents are expected to be able to live independently or with minimal support. Some retirement communities are organizations of single-family dwellings, while others involve a single building and congregate facilities for occasions such as meals.

Moving into a retirement community marks a significant transition in an individual's life (Baltes, Wahl, & Reichert, 1991). It could be motivated by changes in health (Gupta & Galanos, 1996), finances, or need for physical and social support, and the decision may be influenced by the individual's interests in autonomy and social connectedness. In moving to a retirement community, the individual breaks from a previous phase of life, and is subject to at least some change in physical and social surroundings and personal and social behaviors (Cutchin, Marshall, & Aldrich, 2010). As a recent review found, "Relocations can be stressful and these environmental transitions can cause significant disruption to the person-environment and occupational fit, thus influencing health, well-being and quality of life" (Walker & McNamara, 2013). Access to healthcare facilities was reported as a main goal by people considering moving into a retirement setting in Australia, and those in poor physical health were more likely to consider moving (Crisp, Windsor, Butterworth, & Anstey, 2013). The decision to move into a retirement community is therefore an important one that is influenced by and may influence health status. There is utility in ascertaining how individuals' perceptions of health status change during that process. Objective findings about the effects of the transition to retirement living may have relevance for people who are considering it, as well as health care providers, epidemiologists, social scientists, and demographers.

There has been little research about the effects on health status of moving into a retirement community. The health and well-being of older adults in retirement communities has been associated with behaviors, including sexual activity, which may change during the transition to retirement living (Bach, Mortimer, Vandeweerd, & Corvin, 2013). Depression and pain did not seem to worsen during a period of residence in a continuing care retirement community, but status prior to the transition was not ascertained (Mossey & Gallagher, 2004). There has been research about health status in nursing homes, generally finding significantly lower health within nursing homes, when compared to others of the same age (Prieto-Flores, Forjaz, Fernandez-Mayoralas, Rojo-Perez, & Martinez-Martin, 2011). Other research has found more negative self-concept, lower levels of self-esteem (Antonelli, Rubini, & Fassone, 2000), and worse overall satisfaction when comparing institutionalized

elderly to those in the community (Jang, 1992). Nursing homes offer different services and have different populations than retirement communities, and these studies have not addressed the specific longitudinal consequences of the transition to a retirement setting on health or self-perception. On balance, no research has examined anticipated changes in health during the transition to a retirement setting.

There are several contrasting possibilities for how health and self-perception could change during this transition to a retirement community. First, moving into a retirement community may be caused by changes in health status or capabilities, in which case the move would likely be associated with an increase or decline in perceived health. Second, moving into a retirement community could itself change an individual's activities or habits, for instance by providing more or fewer opportunities for social connection or exercise, which might change self-perceptions of health status. Third, being around a group of people who are also retired, and likely older than the general population, might change one's relative self-perception by creating different social networks or frames of reference for capability and health. Research across residential settings has suggested that social connections are an essential part of well-being and functioning among older adults (Ayalon & Green, 2013; Pham-Kanter, 2009; Rodriguez-Blazquez et al., 2012; Schafer, 2011; Wolff, Subramanian, Acevedo-Garcia, Weber, & Kawachi, 2010), and these relationships would be expected to change during the transition to retirement living, although it is undetermined whether the change would be positive or negative.

There are numerous ways of assessing overall health status, and one of the best validated is self-rated health (SRH). This measure has been found to be strongly associated with mortality, symptoms, mental health status, and functional impairments (Idler & Benyamini, 1997; Luppia et al., 2010). Declines in SRH provide a reliable measure of health status during aging (P. H. Diehr, Thielke, Newman, Hirsch, & Tracy, 2013), and serve as a proxy for the risk of death and other negative outcomes.

We sought, by using a large dataset of Medicare Managed Care recipients, who were surveyed two years apart, to ascertain if the move to a retirement community was associated with changes in SRH. We compared changes in SRH between those who did and did not move into a retirement community, and controlled for sociodemographic and health-related factors. Because overall health status may influence changes in health and self-perception, we also conducted analyses stratified by baseline SRH.

Given the tendency of previous research to find lower well-being within nursing homes, and because transitioning into a retirement community generally involves a move to decreased independence, we hypothesized that moving into a retirement community would be associated with a general decline in SRH, and that controlling for incident changes in health and functioning would mitigate the association. Given the importance of social comparison for appraisal of health status, we hypothesized that individuals with worse baseline SRH would show an improvement in SRH during the transition to a retirement community, because they would likely be around other individuals who had health difficulties.

Methods

Participants

We analyzed Data from Cohort 3 of the Medicare Health Outcomes Survey (HOS). Beneficiaries from all Medicare Advantage Organization (MAO) in the United States were randomly selected for the survey. All MAOs in the United States were required to participate in the baseline and follow-up surveys. For MAOs with greater than 1,000 members, the survey was administered to a random sample of 1,000 of the members, while MAOs smaller than 1,000 had all eligible beneficiaries surveyed. Members were deemed eligible if they had been enrolled in an MAO for at least 6 continuous months and were not diagnosed with End Stage Renal Disease. A survey was administered at baseline (2000), and a follow-up survey was administered to the same individuals who were still also in Medicare managed care two years later (2002). 184,482 participants were sent a survey in 2000. The survey asked questions regarding medical and physical health, functioning, behaviors, and sociodemographic characteristics.

Surveys were distributed and returned via mail. Participants received a standardized questionnaire, survey letters, and pre-notification along with reminder/thank you postcards. Each participant who failed to return a survey received up to six follow-up phone calls with the request to return it.

The analyses were completed using data included in the Public Use Data File (PUF) for Cohort 3, which excludes only individual beneficiary-identifying information. Due to the absence of patient-identifiable information, this was not considered human subjects research, and IRB approval was not sought.

Measurements

The main outcome in this analysis was the two year change in SRH between baseline and follow-up. The first question the HOS instrument asked: "In general, would you say your health is:" with response options: "Excellent", "Very good", "Good", "Fair", and "Poor". The results were initially translated to a numerical 1–5 scale for convenience (1=excellent; 2 = very good; 3 = good; 4 = fair; and 5 = poor). In order to diminish assumptions about the relationship between these response categories, and for ease of interpretation of summary measures, the 1–5 scale was recalibrated on 0–100 scale using an established algorithm (P. Diehr et al., 2001). This transformation assigns a value to each SRH category based on the likelihood of being in Good, Very Good, or Excellent health two years later. Poor was coded as 8 points, fair as 27 points, good at 77, very good as 94, and excellent as 96.8.

Movement into a retirement community was the primary predictor of interest. The survey asked, "Is the house or apartment [you currently live in] in a retirement community, building or complex?" The answer categories were "Yes" or "No". We excluded individuals who reported living in a retirement community at baseline. Those who reported "No" initially and then "Yes" were considered to have moved, and those who reported "No" both times not to have moved.

Sociodemographic characteristics may be associated with differential patterns of moving into a retirement community, and both SRH and the moving could be confounded by other health-related factors, in particular functional impairments, symptoms, and diseases. We therefore controlled for various covariates in the analyses. Sociodemographic covariate data included sex, age category (75 and over, or less than 75 years), race (dichotomized as white vs. non-white), education (dichotomized as more than high school vs. high school or less), and marital status (dichotomized as married vs. not married). Age and race could not be analyzed in any smaller categories because the response fields were aggregated into these groupings for the MHOS public use file.

Health-related covariates were selected and categorized based on available measures in the dataset, without making any *a priori* assumptions about the factors that might influence the move to a retirement home. We used 43 total questions from the MHOS dataset, which were grouped into seven domains, as shown Table 1. Diagnoses were measured from the question, “Has a doctor ever told you that you have...”, with a yes or no answer. The functional variables were measured by a question about difficulty performing each activity; those who reported to have difficulty or to be unable to perform it were considered to have that impairment. For physical limitations, the question asked, “The following items are about activities you might do during a typical day. Does your health now limit you in these activities?” The answer of “Yes, limited a lot” was considered to be a positive response. Each of the other variables was dichotomized using cut-points that seemed suitable to identify a low or high degree of the condition.

We were mainly interested in the new onset of health difficulties as predictors of the move to a retirement home. We could not assume that the presence of any of these at either baseline or Year 2 would independently have influenced either the move to a retirement community, or the change in health status during the interval. We therefore created variables for the *new onset* of each of the negative health states or impairments between baseline and Year 2. Those participants who denied the symptom, diagnosis, or impairment at Year 1 and endorsed it at Year 2 were considered to have developed it, and were coded as “1”. Those for whom the symptom was endorsed at both times, was denied at both times, or was endorsed and then denied, were coded as “0”. This approach assumes that the *worsening* in health and functioning might confound the association between moving to a retirement community and changes in self-reported health, but that the presence or improvement in health or functioning would not confound this relationship. For each of the categories, we computed a score for the number of new health symptoms, diagnoses, or impairments.

Analyses

We first characterized the sample. Relevant sociodemographic covariate statistics of sex, age category, race, marital status, education, and health-related covariates (onset of new health problems) were compared between moving and non-moving participants. We compared mean changes in SRH for those who did move and did not move.

Using linear regression models, we evaluated the change in SRH between baseline and follow-up, using movement into retirement home as the main predictor. The first model adjusted only for sociodemographic characteristics. The second adjusted for these

characteristics and new health-related covariates. These were represented as a numerical score of the number of new health difficulties for each of the seven categories shown in Table 1. In order to account for baseline differences, separate linear regression analyses were conducted in each of the baseline SRH categories (“Excellent”, “Very Good”, “Good”, “Fair”, and “Poor”).

Results meeting an unadjusted significance level of $p < 0.05$ were considered to be significant. Because of the investigative nature of this work, no adjustment was made for multiple comparisons. Analyses were completed in Stata IC version 11.2 (College Station, TX).

Results

118,276 participants returned the baseline surveys in 2000 (baseline response rate: 64%). Due to a number of discontinued MAOs, and beneficiaries becoming ineligible for various reasons, the number of beneficiaries who were sent the follow-up survey in 2002 was considerably smaller (71,549; 60% response rate). Of the beneficiaries who received the follow-up survey and answered both the SRH and the retirement questions, 58,272 respondents were included in the analytic data set (49% response rate).

Table 2 shows relevant sociodemographic and health-related characteristics, sorted by those who moved and did not move into retirement living (those who reported living in a retirement community at baseline were excluded from the analysis). Out of the 58,272 respondents, 2,520 (4.4%) people reported moving into retirement living. The majority (65.4%) of those who moved were female. 58.4% of those who entered retirement living were over age 75, while 42.2% of those not moving were over 75. Education and race showed little difference between those moving and not moving. The rate of marriage was lower among those who moved (44.6%) compared to those who did not move (61.2%).

All of the categories of new-onset health difficulties were more common among those entering retirement communities, about 40% higher in prevalence or score, with the exception of new onset pain, which showed little difference. The mean raw (1–5 scale) SRH score was 0.19 points worse for those who entered retirement living, and was 5.0 points worse on the recalibrated (100-point) SRH scale. Both those who did not enter retirement and those who did enter experienced a decrease in mean SRH from baseline to follow-up, with a slightly greater decrease those who moved (−3.57) than those who did not (−3.13) on the 100-point recalibrated scale. Using a t-test the difference was not statistically significant ($p=0.37$).

Table 3 shows the distribution of SRH scores for all the participants in the analysis, and the percentage of persons with each SRH score who entered retirement living. Those with worse SRH were more likely to move, with the exception of “Fair” (which had 5.5% move) and “Poor” (which had 5.2% move).

Figure 1 shows the distribution of changes in SRH between baseline and two years, stratified by whether individuals moved into a retirement community or not. Slightly more than half of participants showed stable SRH. About 22 percent reported a worsening of a single category

in SRH (i.e. from Good to Fair), and about 15 percent reported an improvement of a single category. About three percent showed a worsening of two or more categories, and about two percent showed an improvement of two or more categories. There were no significant differences observed between the group that moved and the group that did not ($p > 0.3$ for all the comparisons of percentages).

Table 4, Model 1, shows the results of the regression model for the change in SRH from baseline to follow-up, adjusted for sociodemographic characteristics. The outcome is the change in SRH using the 100-point recalibrated scale. Positive coefficients in Table 3 indicate an improvement in health, and negative coefficients a decline. Those who transitioned to retirement living showed 0.08-point improvement in SRH compared to those who did not; the result was not significant ($p=0.868$). Age over 75 years was associated with a -1.58 point decline in SRH ($p < 0.001$), but the other covariates were not significant predictors. All of the incident health difficulties were significant predictors of decline in SRH.

Table 4, Model 2, shows the same model, but including new onset changes in health status. In this model, those who transitioned to a retirement home had a 0.19-point improvement in SRH compared to those who did not, but the result was not significant ($p = 0.751$). White race, new symptoms, new diagnoses, new sensory impairments, new depression, new pain, new physical limitations, and new ADL limitations were all significantly associated with declines in SRH from baseline to two years, with the largest decline seen in new pain.

Table 5 shows the modeled changes of SRH, stratified by baseline self-rated health, adjusted for the same covariates as in Table 4. Among those with Excellent SRH, moving to a retirement community was associated with an 8.3-point greater decline in the 100-point recalibrated SRH scale compared to those who did not move. The comparative declines in SRH associated with moving to a retirement community were also significantly different among those with initial Very Good and Good SRH (2.2 point decline for Very good, $p = 0.005$; 1.9 point decline for Good, $p = 0.009$). There was no significant change during the transition to retirement living for those with initially Fair or Poor SRH.

In the fully adjusted model, all coefficient values decreased in magnitude. Only those with Excellent SRH at baseline showed a significant decline in health status associated with transition to retirement living (4.02 points, $p = 0.011$).

Discussion

This is the first study to track self-reported health changes among a large group of Americans during a transition into residence in a retirement community. 4.4% of the 58,272 individuals in the sample population moved into a retirement community between baseline and 2 years. Those who moved into a retirement home were more likely to be women, older, and unmarried. They reported more new symptoms, new diagnoses, new sensorimotor impairments, new physical limitations, and new ADL limitations than those who did not move. Those who moved had slightly worse SRH at baseline.

We hypothesized that, after adjusting for health-related and sociodemographic factors, moving to a retirement home would result in a decrease in SRH. There were no substantial differences in the percent of participants who showed stable, worsening, or improving SRH (Figure 1), based on whether or not they relocated to a retirement community. The unadjusted mean decline in SRH did not vary considerably between those who moved and those who did not (3.13 vs 3.57 points decline on a 100-point scale). After adjusting for sociodemographic characteristics alone or for health-related and functional changes, we found no difference in the change in SRH among those moving into a retirement home compared to those who did not. Overall, there was no evidence that moving into a retirement home was associated with a significant global change in SRH among the participants as a group.

We also hypothesized that individuals with worse SRH would experience an improvement in it during the transition to a retirement community. When participants were characterized by their baseline SRH, after adjustment for sociodemographic variables, those with Excellent, Very Good, or Good SRH had a significant decline in SRH associated with moving into a retirement home. The effect decreased with worsening baseline SRH, and there was no effect observed among those with Fair or Poor SRH. All of the coefficients were diminished after adjusting for health-related factors, suggesting that these health factors, rather than a residential change, may explain much of the observed changes in SRH.

These results may seem counter-intuitive when considered in the context of other research indicating that a residential environment may have a significant impact on health-related well-being (Schafer, 2011). They do not, however, either confirm or disprove other research findings that social comparisons are important determinants of self-rated health (Cheng, Fung, & Chan, 2007; Wolff et al., 2010). Each individual's experience of moving into a retirement community is unique, and the new environment may involve relatively healthier or sicker individuals than the previous living situation. Within a single community, differential effects would be expected across members (Eibner & Evans, 2005).

This observational study does not address the question of how SRH may have changed if those who moved to a retirement community had made a different choice. One possibility is that these participants' SRH would have declined even further if they had continued to age in their original home. A potential interpretation of our results is that, for those who chose to relocate to a retirement community, the new environment provided the support required to meet changing physical or social needs, thereby circumventing or postponing a larger drop in SRH.

Despite the absence of a general effect of relocation on SRH, moving to a retirement community was associated with a significantly greater decline in SRH among people who initially rated their health as Excellent, even after adjustment for the sociodemographic and health-related factors. This suggests that those who consider themselves to be in the best health prior to a move might be at the greatest risk for worsening in health status during it. This is consistent with some previous research about social comparison, which found that those at the very bottom and the very top of the social hierarchy were most influenced by the social status of their peers (Pham-Kanter, 2009). However, our study design does not permit

us to discern whether those with Excellent SRH experienced health-related changes besides those we adjusted for which may have prompted the move, or if moving into a retirement home may have negatively changed their perspective on their health.

Changes in SRH were mainly associated with changes in health factors, in particular new pain, new ADL or physical limitations, and new depression, and all of these (except new pain) were highly significantly associated with the transition to a retirement community (as seen in Table 2). The assumption that health may be lower in retirement communities therefore should not be interpreted as evidence that living in the community *itself* would cause a decline in self-rated health. Our work instead, by tracking people during the transition to retirement living, suggests that they had worsening health across a number of domains coincident with the move. This finding supports the integration of health care within retirement communities, which has been found to be an effective approach for reducing hospitalizations (Bynum, Andrews, Sharp, McCollough, & Wennberg, 2011). There were several limitations of this research. Because of changing plans and drop outs, only about one-third of the initial survey recipients were available for our analysis. There was no suggestion that missingness was related to living status, and our analyses assumed that absence was mainly at random. The definition of retirement home was somewhat vague, referring to a “retirement community, building or complex”, which could encompass a variety of settings. We believe that this question, measured in the same way at two points, still captured a significant change related to living situation. We were not able to assess the reasons why individuals moved, which may be different across different social and economic settings, and the observational nature of the study does not permit inferences about causation or the directionality of observed relationships. We adjusted for a variety of health-related changes, but there may be other events or chronic conditions that were not captured that could account for transition. The mainly negative finding both adjusting and not adjusting for these factors makes this less likely. During the two-year time frame between assessments, it is possible that individuals could have transitioned more than once, such that we could have under-detected transitory changes in health, function, or living status. In general we expect such transitory changes would be infrequent. The data are somewhat dated, but this was the only wave of the HOS survey that asked about retirement living. The dataset had only rough categories for age and race, which did not allow for subgroup analyses based on them.

Conclusions

We found no evidence that moving into a retirement community has any consistent consequences for individuals’ self-perceptions of health. The only group that showed a significant effect was those with Excellent baseline SRH, who had a modest but significantly greater decline associated with the move to retirement living. For most of the older adults in this cohort, self-perception of health seemed to be mainly related to changes in symptoms and functioning, rather than changes in living arrangement. The fact that those who moved to a retirement community experienced modest 2-year declines in SRH, which were comparable to the declines experienced by their healthier peers who did not move, may suggest that the new environment succeeded in meeting increased needs or care demands of those who chose to relocate. Additional work in this area can help to differentiate the effects

of life events on health, groups most at risk for health decline, and how different residential environments influence health status over time.

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References

- Antonelli E, Rubini V, Fassone C. The self-concept in institutionalized and non-institutionalized elderly people. *Journal of Environmental Psychology*. 2000; 20(2):151–164.
- Ayalon L, Green V. Social ties in the context of the continuing care retirement community. *Qual Health Res*. 2013; 23(3):396–406. DOI: 10.1177/1049732312468506 [PubMed: 23202481]
- Bach LE, Mortimer JA, Vandeweerd C, Corvin J. The Association of Physical and Mental Health with Sexual Activity in Older Adults in a Retirement Community. *J Sex Med*. 2013; doi: 10.1111/jsm.12308
- Baltes, MM., Wahl, HW., Reichert, M. *Successful Aging in Long-Term Care Institutions*. Springer Publishing Company; 1991.
- Bynum JP, Andrews A, Sharp S, McCollough D, Wennberg JE. Fewer hospitalizations result when primary care is highly integrated into a continuing care retirement community. *Health Aff (Millwood)*. 2011; 30(5):975–984. DOI: 10.1377/hlthaff.2010.1102 [PubMed: 21555482]
- Cheng ST, Fung H, Chan A. Maintaining self-rated health through social comparison in old age. *J Gerontol B Psychol Sci Soc Sci*. 2007; 62(5):P277–285. [PubMed: 17906169]
- Crisp DA, Windsor TD, Butterworth P, Anstey KJ. What are older adults seeking? Factors encouraging or discouraging retirement village living. *Australas J Ageing*. 2013; 32(3):163–170. DOI: 10.1111/j.1741-6612.2012.00623.x [PubMed: 24028456]
- Cutchin MP, Marshall VW, Aldrich RM. Moving to a continuing care retirement community: occupations in the therapeutic landscape process. *J Cross Cult Gerontol*. 2010; 25(2):117–132. DOI: 10.1007/s10823-010-9113-y [PubMed: 20376695]
- Diehr P, Patrick DL, Spertus J, Kiefe CI, McDonell M, Fihn SD. Transforming self-rated health and the SF-36 scales to include death and improve interpretability. *Med Care*. 2001; 39(7):670–680. [PubMed: 11458132]
- Diehr PH, Thielke SM, Newman AB, Hirsch C, Tracy R. Decline in Health for Older Adults: Five-Year Change in 13 Key Measures of Standardized Health. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*. 2013; 68(9):1059–1067. DOI: 10.1093/gerona/glt038
- Eibner C, Evans W. Relative deprivation, poor health habits, and mortality. *Journal of Human Resources*. 2005; 40:591–620.
- Gruber, J., Wise, DA. *Social security programs and retirement around the world: micro estimation*. National Bureau of Economic Research; 2002.
- Gupta N, Galanos AN. Why healthy elders move to a continuing care retirement community. *N C Med J*. 1996; 57(6):378–380. [PubMed: 8937164]
- Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav*. 1997; 38(1):21–37. [PubMed: 9097506]
- Jang G. Autonomy of institutionalized elderly: Resident and staff perceptions. *Canadian Journal on Aging*. 1992; 11:249–261.
- Luppa M, Luck T, Weyerer S, König HH, Brähler E, Riedel-Heller SG. Prediction of institutionalization in the elderly. A systematic review. *Age and Ageing*. 2010; 39(1):31–38. DOI: 10.1093/ageing/afp202 [PubMed: 19934075]

- Mossey JM, Gallagher RM. The longitudinal occurrence and impact of comorbid chronic pain and chronic depression over two years in continuing care retirement community residents. *Pain Med.* 2004; 5(4):335–348. DOI: 10.1111/j.1526-4637.2004.04041.x [PubMed: 15563319]
- Pham-Kanter G. Social comparisons and health: can having richer friends and neighbors make you sick? *Soc Sci Med.* 2009; 69(3):335–344. DOI: 10.1016/j.socscimed.2009.05.017 [PubMed: 19515477]
- Prieto-Flores ME, Forjaz MJ, Fernandez-Mayoralas G, Rojo-Perez F, Martinez-Martin P. Factors associated with loneliness of noninstitutionalized and institutionalized older adults. *J Aging Health.* 2011; 23(1):177–194. DOI: 10.1177/0898264310382658 [PubMed: 20881107]
- Rodriguez-Blazquez C, Forjaz MJ, Prieto-Flores ME, Rojo-Perez F, Fernandez-Mayoralas G, Martinez-Martin P. Health status and well-being of older adults living in the community and in residential care settings: are differences influenced by age? *Aging Ment Health.* 2012; 16(7):884–891. DOI: 10.1080/13607863.2012.684664 [PubMed: 22621325]
- Schafer MH. Health and network centrality in a continuing care retirement community. *J Gerontol B Psychol Sci Soc Sci.* 2011; 66(6):795–803. DOI: 10.1093/geronb/gbr112 [PubMed: 21979938]
- Walker E, McNamara B. Relocating to retirement living: an occupational perspective on successful transitions. *Aust Occup Ther J.* 2013; 60(6):445–453. DOI: 10.1111/1440-1630.12038 [PubMed: 24299484]
- Wolff LS, Subramanian SV, Acevedo-Garcia D, Weber D, Kawachi I. Compared to whom? Subjective social status, self-rated health, and referent group sensitivity in a diverse US sample. *Soc Sci Med.* 2010; 70(12):2019–2028. DOI: 10.1016/j.socscimed.2010.02.033 [PubMed: 20381225]

Figure 1. Unadjusted distribution of changes in self-rated health categories, separated by movement into retirement living between baseline and two years.

Table 1

Categorization of health-related covariates used to estimate new symptoms, diagnoses, impairments, or limitations

Category	Specific symptom, diagnosis, impairment, or limitation
New Symptoms	Chest pain with exercise; chest pain at rest; shortness of breath while walking up a flight of stairs; shortness of breath while walking; numbness in feet; ankle swelling; tingling in feet; loss of sensation; sores that don't heal; indigestion; and trouble holding urine
New Diagnoses	Congestive heart failure; heart attack; stroke; other heart problems; COPD; GI problems; arthritis in hip; arthritis in hand; sciatica; diabetes; cancer.
New Sensorimotor Impairments	Paralysis; loss of ability to talk; trouble with hearing; trouble with vision
New Depression	Depressed 2 weeks or more in the last year
New Pain	Pain interfered with normal activities
New Physical Limitations	Getting groceries; climbing multiple flights of stairs; climbing one flight of stairs; bending over; walking a mile; walking several blocks; walking one block
New Impaired Activities of Daily Living	Bathing; dressing; eating; getting out of a chair; walking; toileting

Table 2

Characteristics of the sample at baseline

	Did not enter retirement community	Did enter retirement community	p-value of difference between groups (binomial or t-test)
N	56,690	2,582	
Female (%)	57.4%	65.4%	<0.001
Over age 75 (%)	42.2%	58.4%	<0.001
More than high school education (%)	34.4%	33.1%	0.90
White race (%)	89.1%	87.8%	0.98
Married (%)	61.2%	44.6%	<0.001
Number of baseline symptoms, mean (11 possible) [standard deviation]	1.11 [1.48]	1.32 [1.57]	<0.001
Number of baseline diagnoses, mean (11 possible) [standard deviation]	1.81 [1.58]	2.02 [1.58]	<0.001
Number of baseline sensorimotor impairments (4 possible) [standard deviation]	1.99 [0.58]	1.98 [0.65]	0.76
Baseline depression (%)	12.4%	17.2 %	<0.001
Baseline pain (%)	37.0%	45.8%	<0.001
Number of baseline physical impairments, mean (7 possible) [standard deviation]	1.41 [2.09]	1.85 [2.25]	<0.001
Number of baseline ADL limitations, mean (6 possible) [standard deviation]	0.96 [1.48]	1.28 [1.61]	<0.001
Number of new symptoms, mean (11 possible) [standard deviation]	1.84 [2.13]	2.26 [2.33]	<0.001
Number of new diagnoses, mean (11 possible) [standard deviation]	0.59 [0.89]	0.72 [0.97]	<0.001
Number of new sensorimotor impairments (4 possible) [standard deviation]	0.20 [0.37]	0.28 [0.41]	<0.001
New onset depression (%)	6.6%	8.7%	<0.001
New onset pain (%)	14.1%	14.7%	0.18
Number of new physical impairments, mean (7 possible)	1.43 [1.80]	1.66 [1.80]	<0.001
Number of new ADL limitations, mean (6 possible) [standard deviation]	0.50 [1.04]	0.71 [1.31]	<0.001
SRH, mean (1–5 scale, lower = worse) [standard deviation]	2.03 [0.94]	1.84 [0.89]	<0.001
SRH, recalibrated, mean (0–100 scale, lower = worse) [standard deviation]	67.4 [28.4]	62.4 [29.1]	<0.001
Change in SRH from baseline to year 2, mean (1–5 scale, negative = worse) [standard deviation]	–0.11 [0.73]	–0.10 [0.79]	0.68
Change in SRH from baseline to year 2, mean (100-point scale, negative = worse) [standard deviation]	–3.13 [23.8]	–3.57 [27.3]	0.81

Table 3

Distribution of SRH scores, percentage entering retirement living in each category

	N (%)	% Entering Retirement Living
Excellent	3070 (5.4%)	2.4%
Very good	13924 (24.4%)	3.4%
Good	24133 (42.2%)	4.6%
Fair	13321 (23.3%)	5.5%
Poor	2728 (4.8%)	5.2%

Table 4

Modeled changes in SRH from baseline to Year 2, adjusting for sociodemographic characteristics (Model 1) and both sociodemographic and health-related characteristics (Model 2). Coefficients represent the change in SRH between baseline and follow-up.

	Coefficient [95% CI]*	P	Coefficient [95% CI]**	P
Entered retirement home	0.08 [−0.89, 1.05]	0.868	0.19 [−0.99, 1.37]	0.751
Female	0.37 [−0.05, 0.80]	0.083	0.47 [0.00, 0.95]	0.052
Over age 75	−1.58 [−1.99, −1.18]	<0.001	0.20 [−0.27, 0.67]	0.399
White race	−0.39 [−1.03, 0.25]	0.235	−1.26 [−2.04, −0.47]	0.002
Married	0.23 [−0.20, 0.66]	0.301	−0.03 [−0.53, 0.46]	0.894
New symptoms	−1.87 [−1.97, −1.77]	0.000	−1.16 [−1.44, −0.89]	0.000
New diagnoses	−3.41 [−3.65, −3.16]	0.000	−1.92 [−2.25, −1.59]	0.000
New sensory impairments	−4.01 [−4.55, −3.46]	0.000	−0.70 [−1.35, −0.05]	0.036
New depression	−7.31 [−8.12, −6.50]	0.000	−3.02 [−4.02, −2.02]	0.000
New pain	−9.50 [−10.07, −8.93]	0.000	−5.04 [−5.72, −4.37]	0.000
New physical limitations	−3.19 [−3.30, −3.08]	0.000	−3.31 [−3.58, −3.03]	0.000
New ADL limitations	−4.22 [−4.41, −4.04]	0.000	−3.47 [−3.84, −3.09]	0.000

* Adjusted for sociodemographic variables, and each of the health-related domains individually. The coefficient for health-related variables represents the change in SRH for each new symptom (from the list in Table 1).

** Adjusted for all variables simultaneously.

Table 5

Modeled changes in SRH, after controlling for covariates, stratified by baseline SRH category. Coefficients represent the change in SRH between baseline and follow-up that was associated with moving to a retirement community versus not moving.

	Adjusted for sociodemographic variables		Adjusted for sociodemographic and health-related variables	
Baseline SRH	Coefficient [95% CI]	p	Coefficient [95% CI]	p
Excellent	−8.32 [−11.67, −4.98]	<0.001	−4.02 [−7.13, −0.91]	0.011
Very good	−2.18 [−3.72, −0.65]	0.005	−1.16 [−2.72, 0.40]	0.145
Good	−1.92 [−3.38, −0.47]	0.009	−0.33 [−1.98, 1.32]	0.692
Fair	1.27 [−0.66, 3.20]	0.196	1.30 [−1.35, 3.96]	0.336
Poor	3.10 [−0.38, 6.58]	0.081	1.66 [−4.79, 8.10]	0.614