Older person's living arrangements and health in rural South Africa: Confirming social positioning?

Enid Schatz, University of Missouri
Margaret Ralston, Mississippi State
Sangeetha Madhavan, University of Maryland
Don Willis, University of Missouri
F. Xavier Gomez-Olive, University of the Witwatersrand
Mark Collinson, University of the Witwatersrand

Prepared for Submission to:
Union for African Population Studies'
7th African Population Conference

Older person's living arrangements and health in rural South Africa: Confirming social positioning?

Short abstract:

Although older persons are usually regarded as dependent household members, we explore ways that older persons may be productive household members. We believe that living arrangements are the result of and/or result in older people being dependent on those with whom they live in some cases, and taking on productive roles in others. In this paper, we extend a typology established in previous work of older persons' living arrangements based on social positioning to examine associations between older person's social positioning and health. Using 2010 survey and census data from Agincourt, South Africa, we provide evidence that older people are more likely to report poor health, poor quality of life, and higher levels of disability when they live in "productive" arrangements (single generation, complex linked) than in those where they are likely dependent (two generation, linear linked). Further, within each category women report worse outcomes than men.

Long Abstract:

In earlier work, we have argued that the social positioning of older persons in their households is not homogenous (Schatz et al. 2014). Despite the common assumption that older persons are dependent members of households, our work begins to explore whether there are ways that some older South Africans instead play productive roles in their households. We have established a typology of older persons' households that outlines how older persons' social position differs due to the living arrangements, related to household membership. We believe that different living arrangements are the result of and/or result in older people being dependent on those with whom they live in some arrangements, and older person taking on active and productive roles in other arrangements.

In places like South Africa, where there is a fairly generous non-contributory government sponsored old-age pension, older person's often use this pension to support not only themselves, but also their family's needs. There is substantial evidence from South Africa that older persons pool their pensions with their households, and that this sharing results in better health of all household members (Ardington et al. 2010; Burns, Keswell, and Leibbrandt 2005; Case and Deaton 1998; Duflo 2003; May 2003). Thus, they are playing financially productive roles in their households. Further caregiving roles for those sick with or orphaned by HIV/AIDS, taken on mainly by older women also can be read as active and productive household contributions (Bohman, van Wyk, and Ekman 2011; Boon et al. 2010; Schatz 2007; Schatz and Seeley 2015). However, whether push or pull reasons dominate older persons' taking on productive or dependent roles is not always clear, and thus uncertainty remains as to what the relationship between health and living arrangements might be.

Being a productive member may mean providing carework and other types of work (gardening, cleaning) to the household, or contributing financial resources to the household whether through wages or private or government-funded pensions. Older persons may end up in productive roles because (a) they are in good health, (b) they are needed as substitutes for mothers when women migrate (Madhavan et al 2012), (c) they have pension income to pool in the household, or (d) some combination of all of these. Older persons who are in these productive roles may or may not desire to be in these roles, and may or may not find them rewarding; the engagement and feel of being needed could lead to better physical and mental health. Being a dependent member also has a number of possible reasons and implications. Dependency may be a result of being in poor health and needing care. Dependency also may be a result of having children who have resources and allow the older person to 'enjoy the leisure' of old-age. Thus, the quality of life of a dependent older person could be poor due to poor health, or could be excellent due to feelings of being cared for, physically or emotionally.

In order to investigate further our earlier typology of rural South African households, we use a cross-section of census and survey data from the Agincourt Health and socio-Demographic Surveillance site to assess the association in 2010 between older persons living arrangements and a number of health and wellbeing variables.

Households as a Social Environment

Health and wellbeing are often considered to be the result of interactions between individuals and their environment. Living arrangements and kin play an important role in creating one's social environment and support systems through social roles, norms, histories, and emotions, as well as the household economy (Hughes and Waite 2002). The impact can be

positive, but it is just as possible that excess claims on kinship obligations can be burdensome (Portes 1998). The roles and expectations placed on household members differ in terms of the care and resources they provide or are provided with. Some household members provide more resources to their household than they receive in return, and others receive more than they give. In many cases the expectation is for downward flows of resources to support children when they are young (Caldwell and Caldwell 1993; Goody 1982), but with an upward flow in old age. Political, social, economic, and cultural factors may shift these flows of resources. It is important to also take into account household composition as a possible proxy for economic resources. Households with multiple income earners have an economic advantage over single-earner households that often translates into a health advantage (Hughes and Waite 2002). Thus, the influence of living arrangements on health is closely tied to the way those arrangements pool or drain resources from the household itself. Further, the uneven distribution of demands and resources across household members may result in different health and well-being outcomes for each household member depending on one's expected role (Hughes and Waite 2002).

Living Arrangements and Health

Results from research examining the impact of living arrangements on health and well-being remain mixed depending on place, group, and which particular measure of health and well-being is focused on (Hays 2002). While certain living arrangements have a protective effect, the type of living arrangement that is protective varies quite based on the specifics of each study. Other research complicates the picture further with findings that suggest there is no difference between living arrangements themselves; rather, the meaningful difference lies between those that are in living arrangements in concordance with their preference and those that are not (Sereny 2011). This perspective emphasizes the need for a good fit between the individual and

their home environment/living arrangement, rather than emphasizing one particular arrangement as universally ideal.

In high-income settings, extensive research has shown the positive health effects of marriage (living with a spouse) for men, with less positive outcomes for women (Koball et al. 2010; Pienta, Hayward, and Jenkins 2000). Among older adults, Michael et al. (2001) found that older women who live alone in the United States had lower risk of decline in mental health and vitality. Yet, other work has found that women in late adulthood (age 51-61) report better self-rated health when living with only their husband, or with husband and children, than when living in any other arrangements (Hughes and Waite 2002). Moreover, instrumental support with daily activities from children, can have an entirely different associations with health of older individuals depending on living arrangement and marital status. While instrumental support of the general elderly in Spain is associated with poor self-rated health and high levels of depression, which is likely due to the poor underlying functional abilities of those who receive such support, the opposite is true for elderly widow(er)s who live alone (Zunzunegui, Béland, and Otero 2001). In other words, living arrangements and marital status appear to moderate the relationship between some forms of support and the self-rated health and levels of depression among Spanish elderly.

Norms related to living with adult children differ greatly across low and middle-income countries (LMIC); living with adult children is less common in African countries than in Asia (Bongaarts and Zimmer 2002). These norms may influence the way that living arrangements are associated with older people's health. Among South Korean elderly (age 65 or older) with physical disabilities, those living with a spouse reported better life satisfaction than those living with others or living alone (Kim, Hong, and Kim 2014). Additional evidence from Korea also

shows significantly better physical health status, self-esteem, and family support among those who live with family compared to those who live alone (Sok and Yun 2011). With a sample spanning fifteen countries across sub-Saharan Africa, McKinnon, Harper, and Moore (2013) find that living with children, regardless of whether they are of working age, offers protection against depressive symptoms for individuals age 50 or older. However, a study of Demographic and Health Surveys from 22 African countries showed that HIV is impacting household living arrangements, with greater numbers of older people living alone in high-prevalence countries, and potentially decreasing their familial support and increasing the care they must provide to others (Kautz et al. 2010).

The South African context, however, differs significantly from many other places, even within sub-Saharan Africa, due to the rising morbidity and or mortality among migrant workers related to HIV/AIDS, the impact this has on elders who become caregivers, and the influence of a non-contributory pension program for those in old age (Bohman et al. 2011; Case and Deaton 1998; Schatz and Ogunmefun 2007; Ssengonzi 2009). Qualitative work of elderly households suggests that within the context of a population deeply affected by HIV/AIDS a great deal of resources are directed to the younger generations with HIV/AIDS or their vulnerable children affected by the disease who are living with the elderly, placing greater demands on the aging population and elderly women in particular (Schatz 2007; Schatz and Ogunmefun 2007; Ssengonzi 2009). Thus, the major beneficiaries of social programs such as the old-age pension program in South Africa may be those for whom the elderly are providing care and support, namely persons living with HIV/AIDS and/or orphans and vulnerable children affected by HIV/AIDS (Case and Menendez 2007; Duflo 2003; Schatz and Williams 2012) Moreover, HIV-

related care giving appears to result in a perceived cost to the emotional, physical, and psychological health of elderly caregivers (Schatz and Seeley 2015b; Ssengonzi 2009).

Living arrangements can be a double-edged sword for certain households—helping some members and burdening others. Particularly for a region impacted by HIV/AIDS, the flow of resources between generations seems to be a reversal of what is seen in places where the disease is absent. Moreover, this demand for care often initiates a drastic disruption in the living arrangements of the elderly, resulting in widespread consequences ranging from crowded sleeping arrangement, abandoned gardens (sources of supplemental nutrition), selling off personal property, and a negative impact on social engagement and relationships—particularly marital relations for which prolonged absences related to care giving were straining, infusing them with misunderstanding and distrust (Ssengonzi 2009). This is much different from work focused on the U.S. family that highlights these multigenerational households wherein both children and parents are adults resulting in relationships that have, in later life, become more like "friendships" (Blieszner and Mancini 1987), or instances when children report a role-reversal wherein they have become the primary caretakers of their parents (Fischer 1985).

This paper further extends existing research by investigating which individual characteristics of older persons are most likely to occur in difference living situations demarking the likelihood of the older productive or dependent, and explores associations between particular types of living arrangements and a variety of measures of health and quality of life.

DATA & METHODS

We use data from the Agincourt Health and socio-Demographic Surveillance System (Agincourt HDSS) census along with the 2010 World Health Organization Study of Global

Aging and Adult Health survey (WHO-SAGE). The census, run by the MRC/University of the Witwatersrand Rural Public Health and Health Transitions Unit (Tollman, Director), has collected data annually from all households in the Agincourt sub-district since 1992. As of 2010, the site covered 27 villages—approximately 15,600 households and 89,000 individuals. In 2010, the Agincourt HDSS collected health and wellbeing data on persons over the age of 50 through an abbreviated WHO-SAGE survey. The instrument contained two modules adapted from the full WHO-SAGE questionnaire: Health Status and Activities of Daily Living (following the WHO Disability Assessment Scale version II (WHODAS-II) model), and Subjective Wellbeing. Approximately 60 per cent of the target population completed the questionnaire with only 0.4 per cent refusing. Others were either not found (35%), ineligible (4%) or dead (1.6%). The resulting sample contains 5,980 individuals age 50 and above, about 25% male and 75% female.

Variables

Table 1 describes the living arrangement typology and the health and wellbeing variables. The health and wellbeing variables include a basic self-rated health variable and 3 WHO-constructed composite measures. Each of the composite measures is based on multiple questions in the WHO-SAGE survey and on a 0-100 scale. (1) WHO defines quality of life as "the individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." The *WHOQoL* (World Health Organization Quality of Life measure) is based on questions on self-rated general health and questions on satisfaction. (2) The *WHODAS* II (World Health Organization Disability Assessment Schedule II) scale assesses day-to-day functioning in six activity domains. Ten questions assess individuals' difficulty performing certain activities during the past 30 days. (3) Health status created by using a Rasch partial credit model of Item

Response Theory (2) that served to generate a composite health-state score from 16 question, two from each of the eight domains.

[Table 1 about here]

In previous work we created a typology of living arrangements that includes five categories described in Table 1 (Schatz et al. 2014). In linear linked multigenerational households older persons are more likely to be dependents of the household because the head of household is likely to be their son (or daughter) who would assume primary responsibility for caregiving and financial provision. Complex linked multigenerational are households in which older persons, particularly pensioners, may need to take on more of a productive role. The productive role may include financial contributions, whether from pensions or from income-generating activities. In addition, productive roles may be in the form of physical and in-kind support, such as providing care for the sick or young. Complex linked multigenerational households have additional individuals who may be seeking assistance from other productive household members.

We explore demographic, individual characteristics and other household characteristics of the population. They include household size, percent of household under 15, percent with orphan in household, percent with foster child in household, socio-economic status (SES), education, employment status, nationality of origin, and self-reported health. SES is determined from a household asset score derived from 34 variables collected in 2009 (including information about the type and size of dwelling, access to water and electricity appliances and livestock owned and transport available). The score was derived through principal component factor

analysis and then divided into quintiles (Gómez-Olivé et al. 2010). Education is categorized as no formal education or some education. Employment status, collected in 2008 is coded as currently working or not. The majority of those not working were not looking for work but had retired, having concluded their working career. Employment status focused on those with permanent formal work, so may not capture those doing informal income-generating activities. "South African" captures self-identification as South African or Mozambican. Self-rated health is categorized as "bad" or not.

We first present descriptive statistics by living arrangement to explore the nature and strength of the relationship between key household and individual characteristics and living arrangements. We then take a look descriptively at potential difference between men and women.

PRELIMINARY RESULTS

Table 2. shows background characteristics and health and wellbeing indictors by living arrangements for persons aged 50 plus. 44% of the sample lived in complex linked multigenerational, signaling that the majority of older persons in Agincourt live in household arrangements where they are likely to be productive members. Complex linked multigenerational also have the highest percent of foster and orphan children. Single generation households have the highest percentage in the lowest socioeconomic status quintile and the lowest representation in to be in the highest quintile. They are also highest percentage of individuals reporting to be currently working. Linear linked multigenerational households have the highest percentage in the highest socioeconomic status quintile, where older adults are theorized to be dependent members of the household.

[Table 2 about here]

Table 3 shows health, wellbeing and living arrangements by sex for persons 50 years or older. T-tests and chi-squares were used to test for difference between men and women. The table shows there are significant differences between men and women in living arrangements and on health and wellbeing measures. 16% of women live in a single generation household compared to only 7% percent for men. A higher percentage of women (46%) than men (39%) are living in complex linked multigenerational households. Women are more likely to be in living arrangements where they are likely to be productive than men are. However, there is no difference between the percent of men and women in linear linked multigenerational household, i.e. dependent living situations. As has been shown in other analyses from this site, a higher percentage of women than men report bad self-rated health, and on average women report significantly worse quality of life and higher levels of disability.

[Table 3 about here]

Table 4. shows health and wellbeing scores by living arrangements separately for women and men. T-tests were used to investigate if a significant difference between living arrangements existed. Women living in single generation household have the worst disability score and quality of life score compared to women in other living arrangements. Women living in linear linked multigenerational households have the best disability score and quality of life score. Two generation households are the only type of households where the standard pattern of a higher percentage of women than men reporting bad self-rated health does not hold, for all other health and wellbeing variables, women compared to men living in each type of household report worse quality of life and a higher level of disability.

[Table 4 about here]

DISCUSSION & CONCLUSION

In this paper, we provide evidence that older people are more likely to report poor health, poor quality of life, and higher levels of disability when they live in "productive" arrangements (single generation, complex linked) than in those where they are likely dependent (two generation, linear linked). Further, within each category women report worse outcomes than men. In the next stages of developing this paper we will unpack these results further, and try to untangle issues of selection bias and direction of causality.

References

Ardington, Cally et al. 2010. "The Impact of AIDS on Intergenerational Support in South Africa: Evidence From the Cape Area Panel Study." *Research on Aging* 32(1):97–121.

Blieszner, Rosemary and Jay A. Mancini. 1987. "Enduring Ties: Older Adults' Parental Role and Responsibilities." *Family Relations* 36(2):176–80.

Bohman, D., Neltjie C. van Wyk, and Sirkka-Liisa Ekman. 2011. "South Africans' Experiences of Being Old and of Care and Caring in a Transitional Period." *International Journal of Older People Nursing* 6(3):187–95.

Bongaarts, John and Zachary Zimmer. 2002. "Living Arrangements of Older Adults in the Developing World: An Analysis of Demographic and Health Survey Household Surveys." *Journal of Gerontology: Social Sciences* 57B(3):S145–57.

Boon, Hermien et al. 2010. "Correlates of Grief Among Older Adults Caring for Children and Grandchildren as a Consequence of HIV and AIDS in South Africa." *Journal of Aging and Health* 22(1):48–67.

Burns, Justine, Malcolm Keswell, and Murray Leibbrandt. 2005. "Social Assistance, Gender, and the Aged in South Africa." *Feminist Economics* 11(2):103–15.

Caldwell, John and Pat Caldwell. 1993. "The Nature and Limits of the Sub-Saharan African AIDS Epidemic: Evidence from Geographic and Other Patterns." *Population and Development Review* 19(4):817–48.

Case, A. and A. Deaton. 1998. "Large Cash Transfers to the Elderly in South Africa." *The Economic Journal* 108(September):1330–61.

Case, Anne and Alicia Menendez. 2007. "Does Money Empower the Elderly? Evidence from the Agincourt Demographic Surveillance Site, South Africa1." *Scandinavian Journal of Public Health* 35(69 suppl):157–64.

Duflo, E. 2003. "Grandmothers and Granddaughters: Old-Age Pension and Intra-Household Allocation in South Africa." *World Bank Economic Review* 17(1-25).

Fischer, Lucy R. 1985. "Elderly Parents and the Caregiving Role: An Asymmetrical Transition." Pp. 105-114 in Warren A. Peterson and Jill Quadagno (eds.), *Social Bonds in Later Life*. Beverly Hills, CA: Sage.

Goody, Esther N. 1982. *Parenthood and Social Reproduction: Fostering and Occupational Roles in West Africa*. Cambridge [Cambridgeshire]: Cambridge University Press.

Hays, Judith C. 2002. "Living Arrangements and Health Status in Later Life: A Review of Recent Literature." *Public Health Nursing (Boston, Mass.)* 19(2):136–51.

Hughes, MARY ELIZABETH and LINDA J. Waite. 2002. "Health in Household Context: Living Arrangements and Health in Late Middle Age." *Journal of health and social behavior* 43(1):1–21.

Kautz, T. et al., 2010. AIDS and declining support for dependent elderly people in Africa: retrospective analysis using demographic and health surveys. *BMJ (Clinical Research Ed.)*, 340, p.c2841.

Kim, Hyun-Jun, Seunghye Hong, and Miok Kim. 2014. "Living Arrangement, Social Connectedness, and Life Satisfaction among Korean Older Adults with Physical Disabilities: The Results from the National Survey on Persons with Disabilities." *Journal of Developmental and Physical Disabilities* 27(3):307–21.

Koball, Heather L., Emily Moiduddin, Jamila Henderson, Brian Goesling, and Melanie Besculides. 2010. "What Do We Know about the Link between Marriage and Health?" *Journal of Family Issues* 31(8):1019–40.

Madhavan, S. et al., 2012. Child mobility, maternal status, and household composition in rural South Africa. *Demography*, 49(2), pp.699–718.

May, Julian. 2003. "Chronic Poverty and Older People in South Africa." *Chronic Poverty Research Centre* Working paper 25.

McKinnon, Brittany, Sam Harper, and Spencer Moore. 2013. "The Relationship of Living Arrangements and Depressive Symptoms among Older Adults in Sub-Saharan Africa." *BMC Public Health* 13(1):682.

Michael, Yvonne L., Lisa F. Berkman, Graham A. Colditz, and Ichiro Kawachi. 2001. "Living Arrangements, Social Integration, and Change in Functional Health Status." *American Journal of Epidemiology* 153(2):123–31.

Pienta, Amy Mehraban, Mark D. Hayward, and Kristi Rahrig Jenkins. 2000. "Health Consequences of Marriage for the Retirement Years." *Journal of Family Issues* 21(5):559–86.

Schatz, Enid. 2007. "'Taking Care of My Own Blood': Older Women's Relationships to Their Households in Rural South Africa." *Scandinavian Journal of Public Health* 35(Suppl 69):147–54.

Schatz, Enid, Sangeetha Madhavan, Mark Collinson, F. Xavier Gómez-Olivé, and Margaret Ralston. 2014. "Dependent or Productive? A New Approach to Understanding the Social Positioning of Older South Africans through Living Arrangements." *Research on Aging* 0164027514545976.

Schatz, Enid and Catherine Ogunmefun. 2007. "Caring and Contributing: The Role of Older Women in Rural South African Multi-Generational Households in the HIV/AIDS Era." *World Development* 35(8):1390–1403.

Schatz, Enid and Janet Seeley. 2015, forthcoming. "Gender, Ageing and Carework in East and Southern Africa: A Review." *Global Public Health*.

Schatz, Enid and Jill Williams. 2012. "Measuring Gender and Reproductive Health in Africa Using Demographic and Health Surveys: The Need for Mixed-Methods Research." *Culture, health & sexuality* 14(7):811–26.

Sereny, Melanie. 2011. "Living Arrangements of Older Adults in China: The Interplay Among Preferences, Realities, and Health." *Research on Aging* 33(2):172–204.

Sok, Sohyune R. and Eun K. Yun. 2011. "A Comparison of Physical Health Status, Self-Esteem, Family Support and Health-Promoting Behaviours between Aged Living Alone and Living with Family in Korea." *Journal of Clinical Nursing* 20(11-12):1606–12.

Ssengonzi, R. 2009a. "The Impact of HIV/AIDS on the Living Arrangements and Well-Being of Elderly Caregivers in Rural Uganda." *AIDS Care* 21(3):309–14.

Ssengonzi, R. 2009b. "The Impact of HIV/AIDS on the Living Arrangements and Well-Being of Elderly Caregivers in Rural Uganda." *AIDS Care* 21(3):309–14.

Zunzunegui, M. V., F. Béland, and A. Otero. 2001. "Support from Children, Living Arrangements, Self-Rated Health and Depressive Symptoms of Older People in Spain." *International Journal of Epidemiology* 30(5):1090–99.

Table 1. Descriptions of Household Typology and Dependent variables

Living arrangements	
Single-generation	Households include single persons, couples, and siblings living together.
Two generation	Households include a head, his or her spouse, and children (or parents of the head) and also includes single-parent households and those with step children.
Linear linked multigeneration	Households includes those in which (1) there is no break in generations and (2) the middle generation is comprised of a married couple in the traditional ''productive'' age category (ages 15–49).
Complex linked multigeneration	Households include an older household head's unmarried children or fostered/orphaned grandchildren, and among younger heads, their siblings, nieces/nephews, and/or aunts/ uncles, and/or (parents/daughters/sons)-in-law. Skipped generation households (parental generation is missing) are also included .
Other	This is a catch-all for all the remaining types that are too small to comprise categories on their own. Including households members labeled as other relation-including non-family formations and where no household record is found.
Health and wellbeing	
WHOQOL World Health Organization Quality of Life (WHOQOL)	Enough energy for daily life Enough money to meet needs Satisfaction with: • Your health • Yourself • Ability to perform daily activities • Personal; relationships • Condition of your living place Rate your overall quality of life 0 (high quality of life) to 100 (low quality of life)
World Health Organization Disability Assessment Schedule II (WHODAS)	Interpersonal activities Difficulties in daily living: • Standing • Walking • Household duties • Learning • Concentrating • Self-care 0 (high ability) to 100 (low ability)
Health Status	Mobility Self-care Pain and discomfort Cognition Interpersonal activities Sleep/energy Affect Vision 0 (good health) to 100 (poor health)

Table 2. Background characteristics and health and wellbeing by living arrangements for persons aged 50 plus in 2010, Agincourt HDSS and SAGE

	Single generation	Two generation	Linear linked multigenerational	Complex linked multigenerational	Other	Total
Household characteristics						
Mean household size	1.33	4.50	10.15	7.59	7.33	7.07
Mean percent of household under 15	0	10.05	30.56	29.78	24.42	24.14
Percent with orphan in HH	0	1.6	12	16	14	12
Percent with foster child in HH	0	0.5	25	28	20	20
Socioeconomic status (quintiles)						
First (lowest)	45	18	9	13	17	16
Second	24	21	18	20	20	20
Third	18	21	20	24	19	22
Fourth	8	18	22	20	21	19
Fifth (highest)	6	22	31	24	22	23
Individual characteristics						
Percent Female	55	61	76	78	82	75
Five year age group						
50-54	12	30	15	18	14	17
55-59	12	23	19	17	12	16
60-64	14	15	17	16	13	15
65-69	10	7	16	15	14	14
70-74	16	10	13	14	15	14
75plus	35	15	20	21	31	24
Percent no formal education	12	49	66	59	74	63
Percent currently working	35	28	20	19	14	19
Percent South African	69	69	65	75	59	69
Percent bad self-rated health	19	15	16	18	21	18
Mean WHOQOL	48.41	46.30	46.01	47.20	47.24	47.04
Mean WHODAS	24.32	19.43	19.60	21.62	23.81	21.80
Mean health status	32.52	32.12	33.36	32.01	33.72	32.61
N (% of total)	534 (9)	551 (10)	920(16)	2552 (44)	1207 (21)	5764

Table 3. Health, wellbeing and living arrangements by Sex for persons 50 plus in 2010, Agincourt HDSS and SAGE

	Female	Male	P-value[1]
Living arrangements			
Percent in single generation	16.3	6.9	***
Percent in two generation	7.8	14.6	***
Percent in linear linked multigenerational	16.3	15.0	NS
Percent in complex linked multigenerational	46.1	39.0	***
Percent in other	22.9	15.1	***
Health and wellbeing			***
Percent bad self-rate health	19.5	15.2	**
Mean WHOQOL	47.0	46.0	***
Mean WHODAS	22.9	18.7	***
Mean health status	32.7	32.4	NS

[1]ttest or chi square show significant difference between mean or percent by sex

Table 4 Health and Wellbeing by living arrangements for WOMEN and MEN separately age 50 plus in 2010, Agincourt HDSS and SAGE[1]

	Single generation		Two generation		Linear linked multigenerational		Complex linked multigenerational		Other		Total
Women											
Percent bad self-rated health	26.1	**	14.3	**	17.7	#	19.4	NS	20.8	NS	19.5
Mean WHOQOL	49.2	**	47.2	NS	46.5	**	47.5	NS	47.4	NS	47.0
Mean WHODAS	27.7	***	20.9	*	20.8	**	22.3	*	24.7	***	22.9
Mean health status	33.2	NS	32.5	NS	33.3	#	32.0	**	33.6	*	32.7
Men											
Percent bad self-rated health	17.6	NS	15.8	NS	9.5	**	14.5	NS	19.4	*	15.2
Mean WHOQOL	47.5	*	44.9	#	44.4	*	46.1	NS	46.6	NS	46.0
Mean WHODAS	20.2	#	17.2	#	15.9	**	19.3	NS	20.0	NS	18.7
Mean health status	32.2	NS	31.3	NS	33.4	NS	32.0	NS	33.8	#	32.4

[1]Displays results for mean significant difference tests (for example Single generation vs all)
***0.001, **0.01, *0.05 #.1