

# A Study to Analyse the Effect of Alterations in Social Ties Among Older Persons Regarding Their Physical Functioning.

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## ABSTRACT

It's common to associate an ageing population with negative ideas like the need for additional medical care. This is especially true of the very elderly. However, the ramifications are more extensive and have an impact on family care in the future as well as concerns with intergenerational interactions, jobs, housing arrangements, and mind-sets. The purpose of this study is to determine if various forms of social support and attachments can lessen the detrimental impacts of changes to physical functioning. Analyses of logistic regression with adjustments for baseline functioning, age, gender, and change frequency were performed on data from two cycles of the Longitudinal Aging Study to determine the impact of various social relationships for subgroups with various numbers of chronic diseases. The presence of various social ties was indicated by the number of daughters, boys, and other family members as well as non-family relationships, partner status, and other demographic data. In terms of social support, loneliness was experienced as well as practical and emotional help. On a 6-item self-report measure, a significant change after 3 years indicated a decline in physical functioning. Therefore, the presence of a spouse protected against a decline in physical functioning in people with no baseline alterations. In older adults who were disease-free, total network size had a negative impact, but in those who had illnesses, it had a favourable impact, mostly because of the positive effects of the number of daughters and non-kin relationships. Consequently, the findings show that older people's physical functioning declines, with or without any changes, depending on the sorts of social ties they have and the assistance they offer.

**Keywords:** Alterations, Social ties, Physical functioning, Longitudinal Aging Study

## INTRODUCTION

Physical functionality has been shown to deteriorate as a result of chronic disorders.

The prevalence and incidence of physical functioning limits have also been demonstrated to be inversely correlated

with the number of chronic illnesses present. However, even among individuals with the same chronic conditions of equal severity, there is a significant amount of variation in the prevalence of limits in physical functioning among older persons [1]. Although the severity of the disease is a significant driver of functional limits, other factors also contribute to the variation in functional limitations among individuals with a similar burden of disease. In this regard, variations in the amount and calibre of social contacts are thought to be significant [1].

Although our study found some distinct differences in the implication of social connections and assistance on deterioration in physical function for senior citizens with varying several chronic diseases, certain restrictions should be considered. First, responses from the respondents' self-reports were used to gauge the existence of chronic conditions [2]. Although some misclassifications may have occurred as a result of this, it doesn't appear plausible that our results were skewed. It has been demonstrated in the past that self-reports of chronic conditions are more reliable than information from general practitioners. Second, our study's follow-up period of three years was unusually brief compared to previous research, which would help to explain the modest impacts we discovered [2].

Recent years have seen a rise in the amount of media and academic attention given to the global "epidemic of loneliness" affecting both elderly individuals and the wider public. There is some variation in the overall prevalence depending on the evaluation technique and the nation or region that was sampled, but the majority of research point to a general prevalence of between 20%–25% [3]. With inconsistent results across studies, the relationship between ageing and the risk and type of loneliness is complicated. A range of favourable and unfavourable psychological aspects, as well as a number of particular events, such as the age-related loss of spouses or partners, changes in one's wider social network, other environmental changes, and so on, may have an influence [4].

The term "social networks" refers to webs of social links (such friends and acquaintances) connected by interpersonal interactions; their creation likely makes it easier to participate in social activities and have access to social assistance. Social network components all describe structural facets of interpersonal connections and take into account network size and member contact rates [5]. The deficient social network raises issues because it promotes a number of negative health outcomes, including disability, death, and quality of life. On the other hand, having many social

links to friends, neighbours, and family is advantageous for lifespan. Additionally, research has linked social network diversity to depressive, anxious, and distressed states, all of which increase the neurobiological changes associated with AD pathology [6].

There is now widespread agreement that this psychosocial element prevents cases of dementia and cognitive decline. This is the result of new data. This data makes it clear that having few social connections and little social contact raises one's likelihood of developing AD and worsening cognitive deficiencies. However, the neurobiological changes connected to the social network in the neurodegenerative process are still unclear, and there aren't many extensive research looking at the pathology's underlying causes [4].

According to the current study, a low social network score indicates social links that are relatively distant and even social isolation, both of which may contribute to an increased occurrence of neurological illnesses. However, the mechanisms governing these processes have not been fully investigated, particularly in light of clinical investigations into such connections with AD disease. The most deeply expressed indicators of the AD disease, according to CSF biomarkers and their ratios. In the preclinical phase, the

ratios of CSF biomarkers simultaneously reflect many AD-related pathologies, indicating a greater risk for impending illness [6].

By reducing malnutrition, nutritional deficiency diseases, and encouraging optimal functioning, healthy diet enhances health-related quality of life (HRQOL). Recursive links exist between diet, ageing, and quality of life. Aspects of nutrition that are altered by aging-related or aging-caused variables, as in the sense of taste and smell, the chewing and swallowing ability, as well as gastrointestinal and faeces function, may have an impact on quality of life. Simultaneously, poor nutrition and a lack of physical activity can result in a loss of appetite, inability to execute ADLs (Activities of Daily Living), changes in quality of life, morbidity, and mortality [7].

The benefits of social support, notably its capacity to lower stress and improve health, have been the exclusive subject of a large portion of study. Contrarily, social support researchers have only recently and infrequently studied bad social interactions and the detrimental effects of receiving assistance [7]. The relative impacts of good and bad social interactions on mental health and wellbeing have not been extensively studied. Good and negative social ties were evaluated jointly in one study, and Rook (1984) discovered that negative social ties

had stronger effects on wellbeing than positive social interactions. Supportive social relationships were defined in this study as those who provide social support, emotional support, or practical support [7].

However, new research shows that there is significant variation in age-related changes in social connectivity and satisfaction with social life. Older persons confront a variety of problems in maintaining their social connections. Loss of social roles may result from changes in the course of life, such as retirement and bereavement, and health issues may make it difficult to engage in social activities [8]. However, social involvement and volunteer work rise with age, in part because of the freer time that retirement brings. Age-related changes in other facets of social connectivity are not linear. Middle-aged people have the lowest rates of communication with their social networks and the highest rates of loneliness [8].

In terms of social isolation, healthy behaviours, physiologic functioning, and health outcomes, empirical evidence on the interactions between loneliness, ageing, and comorbid severe mental illness are also required. For instance, persons with schizophrenia have much greater rates of loneliness, but it is not yet known if or how loneliness affects physiology and outcomes

in the context of an adult lifetime of schizophrenia [9].

Age-related changes in body composition and physical function (PF) increase the likelihood of impairment and loss of independence in the long run. While certain aspects of body composition or muscular strength may be helpful in predicting PF, research on the most important predictor of PF has shown conflicting results [17]. The construction of a conceptual model, with the components of interest being physical activity, body composition, and muscular capacity, may help in comprehending the linked aspects leading to PF. To more fully identify the most important causes of PF and to subsequently guide the creation of therapies meant to lessen physical impairment in older persons, a thorough conceptual model must be developed [10].

The most significant results of this research show that, for older individuals without chronic conditions at baseline, living with a spouse reduces risk of decrease in functioning by 58%, whereas having an extra daughter increases risk by 22% (and drops to 40% when she offers instrumental assistance). For example, when compared to a person with the same baseline score in physical functioning but no partner, a person who lives with a partner and has no (active) daughters in the household has a nearly 60% lower risk of their physical

functioning declining significantly (see below for an indication of the level of decline required) over the next three years [11].

In older civilizations, leading causes of illness and death include Alzheimer's disease and other dementing diseases. Proven methods for delaying the start of dementing illnesses or lowering risk would be extremely helpful. Despite the fact that social networks are thought to be regulators of incident Alzheimer's disease (AD), little information is known about the mechanism pertinent to AD pathogenesis [12]. Two hypotheses were put to the test in this investigation. The stress-buffering theory states that when strong social connections grow, the impact of bad everyday occurrences on psychological suffering diminishes. The stress-amplifying theory, on the other hand, contends that as unfavourable social relationships grow, so does the impact of bad everyday occurrences on psychological suffering [12].

Variations in demographics must also be taken into consideration. The issue of gender disparities is foremost. Women make up the bulk of the elderly, and this percentage climbs as individuals become older. In 1999, the global percentages for those 60 and older were 55% and 65%, respectively. Women outlive males, but

they are more likely to become disabled early and to a greater extent. Another distinction is to marital status, where a much larger percentage of males are still married at the age of 60 [13]. This represented 79% of men vs 43% of women in 1999. (UN, 1999). This has important implications for elder support since males are more likely to have someone to turn to for assistance. Older women are more likely to live alone, be widowed, have poorer health, and have less financial security. Despite the fact that older women presently outnumber older males in terms of morbidity and death, this trend is beginning to reverse [16]. The need to create systems of health care services and economic security programmes that recognise the unique needs of women was one of the goals of the Programme of Action that the United Nations established in 1994. (UN, 1994). The fall in marriages and the high divorce rate are additional significant reasons. Family care, whether provided by younger families to older persons or vice versa, is expected to be significantly impacted by the ensuing changes in family life patterns [14].

Negative perceptions of reliance and burdensomeness and of affluent, egotistical, and callous senior citizens have been brought about by population ageing [19]. Age discrimination is also present, and it is particularly noticeable in the fields

of work and health. However, the number of senior people is rising. Power has increased to match humans. Older people have been far more vocal in social policy than in the UK in some nations, such as the USA, which has 50 million members of the American Association of Retired Persons [15].

As a result, the current study concentrates on how the number and nature of social contacts affect older persons with and without varying numbers of chronic illnesses' risk of physical functional deterioration over a three-year period [18]. In terms of two crucial areas, the current study differs from earlier ones. First, as the number of chronic diseases a subject has may change the social network's impact, the effects of social assistance traits among individuals with various chronic diseases is carefully investigated. Second, it was determined if sons' and daughters' impact differed from that of the members of the kin and non-kin networks. A further distinction was established based on whether these linked ties were active or not [20].

## RESEARCH METHODOLOGY

- In order to conduct this study, data from the Longitudinal Aging Study's (LAS) first two measurement cycles were examined. The LAS is a prospective research that examines the causes

and effects of alterations in the physiological, intellectual, emotional, and social aspects of individuals with baseline ages ranging from 55 to 85. 182 participants were lost to further analyses due to missing information on their baseline physical functioning, social support, and chronic illness status.

- All respondents were approached for a follow-up interview between September 1995 and September 1996, three years following the baseline survey. Due to inadequate information on physical functioning, another 8 respondents who were not able to finish the interview due to significant cognitive or physical disability were also disqualified. There were 2357 participants in the final sample used for the analyses.
- **Measures:** The different measures utilized in this study are as follows:
  - *Physical functioning.* As a test of physical functioning, participants were asked to do six routine daily tasks (ADLs), which included climbing and descending stairs, dressing, sitting and standing up from a chair, cutting one's own toenails, walking 400 metres, and



- using one's own or public transportation.
- *Physical functioning changes:* Using the Edward Nunnally index (EN- index), it was calculated if there had been any changes in each respondent's the physical state between T1 and T2.
  - *Status of chronic diseases:* By asking the respondents if they had any of the following criteria, the presence of chronic illnesses was determined: diabetes mellitus, peripheral atherosclerosis, cerebrovascular accident, chronic non-specific pulmonary disease (asthma, chronic bronchitis, pulmonary emphysema), cardiac disease (including myocardial infarction), osteoarthritis, malignant neoplasm, and rheumatoid arthritis. Application of the same approach was used to determine the state of chronic diseases at the three-year follow-up.
  - *Partner status:* If one exists, the partner relationship is typically regarded as the most significant interpersonal connection within the social network.
  - *Social network size:* Cochran et al.'s technique was used to identify the respondents' social network members.
  - *Social relationship types:* Relationships between sons, daughters, other kin (like siblings), and non-kin were all recognised in this study (such as neighbours and friends).
- In the study, three groups of people—those at baseline without a chronic illness, those with one chronic condition, and those with more than one chronic condition—were distinguished. Between these three subgroups, the demographic traits (gender, age), the physical functioning levels at T1 and T2 and the decline in physical functioning between T1 and T2, the incidence of chronic diseases between T1 and T2, the measures of the structural and functional characteristics of the social support network, as well as loneliness at T1, were compared.
- To determine the statistical significance of differences between the chronic disease subgroups with regard to the effects of social support measures, the interaction effects between social support measures and chronic illness status were separately evaluated using the complete population. In addition to the factors included in the stratified

models, chronic illness status was also included in these analyses as a first-order component.

## RESULTS

- For 2357 respondents, complete follow-up data were available. These individuals were substantially younger and more often female than those who were asked questions in 1992 but were not included in the current study.
- The majority of respondents lived with a spouse, but among those with chronic illnesses, this number was noticeably lower. There was no correlation between the baseline prevalence of chronic conditions, the size of the overall network, or the average quantity of emotional support received.
- Multivariate logistic regression analyses were performed to examine whether different types of social relationships have different effects on decline in physical functioning. The independent variables used in the analyses included partner status, the number of daughters, sons, other kin, and non-kin relationships. These

analyses were adjusted for baseline physical functioning, age, gender, baseline, and occurrence of chronic conditions, and other factors.

- Interaction terms between network factors and the number of chronic illnesses were evaluated using the entire sample. The number of chronic conditions and marital status and the number of daughters' interaction variables persisted in the model after backward elimination, supporting the differences found in the stratified analysis.
- The third set of analysis focused on the issue of whether "active" & "non-active" network participants had differing effects within each social interaction type. The impact of cohabiting was the same as in earlier research.
- The whole sample supported the distinctions found in the stratified analysis. The the number of chronic diseases with partner status, number of "non-active" daughters, and number of "active" daughters were the interaction factors that persisted in the backward removal model.



Table 1: Background characteristics of study population (N=2156) according to number of

	N=755	N=805	N=727	p-value
Male (%)	415 (55.0%)	377 (46.8%)	276 (38.0%)	<0.001
Age at T0 (SD)	66.7 (8.3)	68.5 (8.4)	71.2 (8.2)	<0.001
Physical functioning at T0 (SD) (range 0-30)	29.4 (1.7)	28.3 (3.4)	26.1 (4.9)	<0.001
Physical functioning at T1 (SD) (range 0-30)	28.9 (2.7)	27.2 (4.8)	24.6 (5.9)	<0.001
Decline in physical functioning between T0 and T1 (%)	78 (10.3%)	163 (20.2%)	242 (33.3%)	<0.001
Incident chronic diseases between T0 and T1 (%)	276 (36.6%)	332 (41.2%)	302 (42.5%)	NS
Living with partner (%)	567 (75.1%)	559 (69.4%)	461 (63.4%)	<0.001
Total social network size (SD)	14.0 (8.5)	13.6 (8.2)	13.2 (8.2)	NS
Number of daughters (SD)	1.3 (1.2)	1.3 (1.2)	1.3 (1.2)	NS
‘active’ (SD)	0.5 (0.8)	0.5 (0.8)	0.5 (0.9)	NS
‘non-active’ (SD)	0.8 (1.0)	0.8 (1.0)	0.8 (1.0)	NS
Number of sons (SD)	1.3 (1.2)	1.4 (1.3)	1.3 (1.2)	NS
‘active’ (SD)	0.6 (0.8)	0.6 (0.9)	0.5 (0.7)	NS
‘non-active’ (SD)	0.8 (1.0)	0.8 (1.0)	0.8 (1.0)	NS
Number of other kin (SD)	6.1 (5.0)	5.7 (4.4)	5.6 (4.2)	<0.10
‘active’ (SD)	0.6 (1.1)	0.6 (1.0)	0.6 (1.0)	NS
‘non-active’ (SD)	5.5 (4.9)	5.1 (4.3)	5.0 (4.0)	<0.10
Number of non-kin (SD)	5.4 (4.8)	5.3 (5.1)	5.0 (5.2)	NS
‘active’ (SD)	0.8 (1.4)	0.8 (1.4)	0.8 (1.4)	NS
‘non-active’ (SD)	4.6 (4.5)	4.5 (4.8)	4.2 (4.9)	NS
Mean instrumental support (SD) (range 0-3)	0.7 (0.7)	0.8 (0.7)	0.9 (0.8)	<0.001
Mean emotional support (SD) (range 0-3)	1.8 (0.7)	1.7 (0.7)	1.8 (0.8)	<0.10
Loneliness (SD) (range 0-11)	1.5 (2.1)	1.9 (2.4)	2.3 (2.7)	<0.001

## CONCLUSION

The results imply that a differentiation between the kinds and active participation in social interactions may help to specify the impact on decrease physical functioning as reflected by global metrics of social support. Additionally, the prevalence of chronic conditions appears to have an impact on the outcomes. Includes general measurements of social support as well as specific types of active supportiveness of social interactions. Assistance from a partner seems to have its limits, and daughters are the major sources of successful support from other connections. These details make it easier to understand how social bonds and physical health changes relate to one another.

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