

Social support and subsequent disability: it is not the size of your network that counts

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Abstract

Background: high levels of social support and engagement may help sustain good health and functional ability. However, the definition of social support in previous research has been inconsistent and findings are mixed. The aim of this analysis was to explore the effect of two aspects of social support on subsequent disability in a group of community dwelling older women and men.

Methods: data were drawn from two concurrent prospective observational cohort studies of community-based older Australian women (N = 2,013) and men (N = 680). Baseline and follow-up data were drawn from the second (1999) and fifth (2008) surveys of the women and the second (2001) and third (2008) surveys of the men. At baseline, social support was measured by the two subscales (social network and subjective support) of the Duke Social Support Index (DSSI). The outcome measure was Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs).

Results: overall, social network size was not associated with subsequent disability in either women or men. After adjusting for health status at baseline, lack of satisfaction with social support was associated with greater difficulties in ADLs and IADLs for both women and men.

Conclusions: our results suggest that the provision of social support is insufficient to limit subsequent disability: support provided must be subjectively perceived to be relevant and adequate.

Introduction

Evidence suggests that social support is protective for both mortality and morbidity [1, 2]. However, both the definition and measurement of social support are prone to considerable heterogeneity [1]. In prior work, we have demonstrated that higher social support was associated with lower mortality; however, this relationship was not apparent in older adults who were unhealthy [3]. Functional ability or disability has been identified as an indicator of overall health status among older adults. High levels of social support and engagement may in fact help sustain good health and functional ability [4, 5] but findings have been inconsistent. For example, recent studies

have reported both a positive association between social support and everyday functioning [6] and no relationship between social support and limitations in either activities of daily living (ADLs) or instrumental activities of daily living (IADLs) [7, 8].

Social relationships change with age as older adults modify their social networks to maintain optimal support in the face of limitations such as physical declines [9]. The size of social networks may be less influential on functional ability than the subjective relevance of support offered. The aim of this analysis, therefore, was to explore the effect of social network size and subjective social support on subsequent disability in a group of community-dwelling older women and men.

Methods

Data were obtained from the Men, Women and Ageing (MWA) project, which incorporates data from two population-based longitudinal studies that began in 1996: the 1921–26 birth cohort of the Australian Longitudinal Study on Women's Health (ALSWH) and the Perth Health in Men Study (HIMS). Detailed methods for both studies have been described elsewhere [10, 11]. The human research ethics committees of the University of Newcastle and the University of Queensland approved the research protocol for the Australian Longitudinal Study on Women's Health (ALSWH). The Health in Men Study (HIMS) research protocol was approved by the ethics committee of the University of Western Australia.

Baseline and follow-up data were drawn from the second (1999) and fifth (2008) ALSWH surveys and the second (2001) and third (2008) HIMS surveys, respectively. At baseline, participants in HIMS were aged 69–87 years and ALSWH participants were aged 73–78 years. Additionally, HIMS participants live in an urban area (Perth, Western Australia), whereas ALSWH participants are a national sample including regional and rural areas. To increase consistency, the current analyses were restricted to participants with valid data for both baseline and follow-up, who resided in urban areas and were aged between 73 and 78 years at baseline. The final sample included 2,013 older women (baseline mean age = 75.19, SD = 1.23) and 680 older men (baseline mean age = 76.36, SD = 1.08).

Baseline variables

Social support was measured by an abbreviated version of the Duke Social Support Index (DSSI) [12]. The two subscales of the DSSI measure number of social interactions ('network') and subjective social support ('satisfaction'). Scores for the network subscale ranged from 0 to 21, with higher scores indicating more social contacts. Satisfaction scores ranged from 6 to 18 with higher scores indicative of greater satisfaction. The satisfaction scores were positively skewed, so the median score of 17 was used to dichotomise the variable so that ≥ 17 was categorised as satisfied, and < 17 as not satisfied.

Participants reported if they had ever been diagnosed (yes/no) with any of the following chronic medical conditions: arthritis, osteoporosis, asthma, chronic obstructive pulmonary disease, stroke, heart disease, hypertension and diabetes mellitus.

Outcome variable

Disability at follow-up was assessed by asking participants 'In the last month have you had any difficulty (for example needing to take extra time, changing the activity or using a device to help you) in completing any of these activities?' Responses were scored as 'no difficulty = 0', 'some or

major difficulty = 1' or 'unable to do = 2'. The ADLs included grooming, eating, bathing or taking a shower, dressing upper body, dressing lower body, getting up from a chair, walking inside the house and using the toilet; the IADLs included shopping for personal items or groceries, doing light housework (e.g. washing up), doing heavy housework (e.g. vacuuming), managing money, preparing meals, taking medications, using the telephone, and doing leisure activities or hobbies. The questions and response options were informed by Gill *et al.* [13] and the list of activities was derived from the Katz Index of Independence in ADL [14]. Summed scores of the ADLs and IADLs ranged from 0 to 16 with higher scores indicative of greater disability. The majority of participants scored 0 and 1, therefore, the summed ADLs and IADLs scores were converted into the ordinal categories of '0', '1' or '>1'.

Statistical analyses

Ordinal logistic regression was conducted to examine whether the social network size and satisfaction predicted subsequent difficulties in ADLs or IADLs. Separate analyses were conducted in women and men. A $P < 0.05$ level was chosen for significance. To control for potential confounding of existing morbidity, the regression model adjusted for chronic conditions at baseline.

Results

Baseline and follow-up characteristics of the current sample are presented in Table 1. Women reported a higher prevalence of arthritis, osteoporosis, asthma, heart disease and hypertension. Men reported a higher prevalence of stroke and diabetes mellitus. Women had a significantly larger network size, and were marginally more likely to be satisfied with their social support. The majority of both women and men scored 0 in ADLs. Women experienced higher levels of disability associated with IADLs than men.

Odds ratios (ORs) for subsequent ADLs and IADL status associated with baseline social network size and satisfaction are shown in Table 2. Overall, the social network size was not associated with subsequent disability in either women or men. A small association was observed in women, with larger network size associated with lower odds of having difficulties with IADLs in the adjusted model [OR: 0.93, 95% confidence interval (CI) 0.86–0.99]. In contrast, lack of satisfaction with social support was more strongly associated with subsequent disability, with lower satisfaction associated with greater difficulties in ADLs and IADLs. This result was apparent in both women and men, after adjusting for baseline morbidity. In the unadjusted model the association between satisfaction and ADLs in men (OR: 1.34, CI: 0.92–1.96) did not reach statistical significance, but this is likely to be due to insufficient power as only a very small number ($n = 17$) of older men scored > 1 in ADLs.

Table 1. Baseline morbidity, and social support characteristics and follow-up disability characteristics of older women and men

	Women (<i>n</i> = 2,013)		Men (<i>n</i> = 680)		<i>P</i> -value
	<i>n</i>	(%)	<i>n</i>	(%)	
Baseline characteristics					
Arthritis	1,334	(66.80)	362	(57.01)	<0.001
Osteoporosis	944	(47.27)	68	(11.99)	<0.001
Asthma	347	(17.38)	70	(12.05)	<0.01
COPD	310	(15.52)	79	(13.39)	0.20
Stroke	203	(10.17)	82	(14.31)	0.01
Heart disease	805	(40.31)	202	(33.44)	<0.01
Hypertension	1429	(71.56)	349	(52.56)	<0.001
Diabetes	279	(13.97)	116	(17.44)	0.03
Social support network size					
Mean (SD)	6.70	(1.16)	6.20	(1.28)	<0.001
Social support satisfaction					
Satisfied	1343	(66.72)	426	(62.65)	0.05
Not satisfied	670	(33.28)	254	(37.35)	
Follow-up disability					
Difficulties in ADLs					
Scored 0	1223	(60.76)	415	(61.03)	0.49
Scored 1	721	(35.82)	248	(36.47)	
Scored >1	69	(3.43)	17	(2.50)	
Difficulties in IADLs					
Scored 0	547	(27.17)	311	(45.74)	<0.001
Scored 1	757	(37.61)	285	(41.91)	
Scored >1	709	(35.22)	84	(12.35)	

COPD, chronic obstructive pulmonary disease; ADLs, activities of daily living; IADLs, instrumental activities of daily living.

Table 2. Odds ratios^a for associations of baseline social support network size and satisfaction with subsequent disability as measured by ADLs and IADLs in older women and men

	Women			Men		
	OR	(95% CI)	<i>P</i> -value	OR	(95% CI)	<i>P</i> -value
Network size predicting ADLs						
Unadjusted	1.01	(0.93–1.09)	0.89	0.91	(0.79–1.05)	0.21
Adjusted ^b	0.97	(0.90–1.04)	0.37	0.91	(0.81–1.03)	0.12
Network size predicting IADLs						
Unadjusted	0.96	(0.89–1.03)	0.27	0.91	(0.80–1.04)	0.16
Adjusted ^b	0.93	(0.86–0.99)	0.03	0.91	(0.81–1.01)	0.08
Not satisfied ^c predicting ADLs						
Unadjusted	1.45	(1.19–1.76)	<0.001	1.34	(0.92–1.96)	0.13
Adjusted ^b	1.53	(1.27–1.84)	<0.001	1.52	(1.11–2.08)	0.01
Not satisfied predicting IADLs						
Unadjusted	1.26	(1.06–1.51)	0.01	1.57	(1.10–2.24)	0.01
Adjusted ^b	1.35	(1.14–1.60)	<0.001	1.62	(1.20–2.18)	<0.001

^aOrdinal logistic regression, ordered categories were (i) Scored 0, (ii) Scored 1 and (iii) Scored >1.

^bAdjusted for chronic conditions at baseline, which included arthritis, osteoporosis, asthma, chronic obstructive pulmonary disease, stroke, heart disease, hypertension and diabetes.

^cSatisfied is the reference category.

Discussion

In this community sample of older women and men, our findings demonstrate that aspects of social support are associated

with a lower risk of subsequent disability in both older men and women, after controlling for the presence of chronic conditions. Importantly, it was not the number of interactions with a social network, but subjective satisfaction with the support provided, that was most highly related to a lower risk of subsequent disability. This finding is consistent with previous research suggesting that functional disability is most closely associated with lower subjective social support [4, 5].

The social networks of older adults change over time and generally decline in size with advancing age [15]. This may be due to the loss of members of the networks to illness and death, the inability to physically maintain contact or decreased motivation related to perception of life-time remaining [16]. Social networks are affected by gender with older women reporting larger networks and more social engagement than men [17]. The women in this study had on average larger networks than the men, and the size of these networks was associated with less difficulty in performing IADLs. However, the strongest findings of this study show that, for both women and men, the perception of satisfaction with social support was the more important predictor of subsequent disability. This is consistent with the socioemotional selectivity theory which identifies older adults as active participants in regulating their social environment, particularly utilising social selection to maintain well-being [9, 16]. A limitation of this study is that we were unable to measure ADLs and IADLs at baseline, thus it was not possible to explicate a clear causal pathway. It is possible that reverse causality may explain our findings in that those men and women who were mildly disabled at baseline were unable to maintain the level of social contact that they perceive as optimal. However, we did control for a number of baseline chronic conditions which could be expected to affect physical functioning in late adulthood. Difficulties with household tasks and mobility (IADLs) represent less severe disability than difficulty with self-care tasks (ADLs). As would be expected in a group of community-dwelling older men and women, most were able to manage the more personal self-care tasks represented by ADLs, so our results may not generalise to older adults with greater functional disability. A particular strength of our study is our reliance on a measure of multiple aspects of social support that has been well-validated among older adults. Our results suggest that the provision of social support is insufficient to limit subsequent disability: support provided must be subjectively perceived to be relevant and adequate.

Key points

- Women in this study had more chronic conditions and larger social networks at baseline than men.
- Women's larger social networks were associated with less difficulty performing IADLs.
- For both genders, satisfactory subjective social support, rather than network size, was most strongly associated with subsequent functional ability.

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Body composition and mortality risk in later life

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Abstract

Background: body mass index is used widely to define overweight and obesity. Both high and low body mass indices are associated with increased mortality risk during middle age, but the relationship is less clear in later life. Thus, studies on the relationships between other aspects of body composition and mortality among older subjects are needed.

Objective: to investigate associations between different aspects of body composition and mortality in older people.

Methods: the study population comprised 921 participants aged ≥65 years who underwent dual-energy X-ray (DXA) absorptiometric examination at the Sports Medicine Unit, Umeå University. The main reason for admission was clinical