

## Marital Status, Family Ties, and Self-rated Health Among Elders In South India

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**Abstract** This article examines the impact of familial social support ties (indicated by marital status, kin availability, sources of economic support, and frequency and quality of emotional interaction) on subjective health perception among a sample of elderly men and women aged 60 and older in South India. We used 1993 survey data from three states of South India: Kerala, Tamil Nadu, and Karnataka. We hypothesized that (a) widowhood would be associated with poorer self-rated health, (b) number of kin ties would be positively associated with self-rated health, (c) economic and emotional support from kin would improve outcomes, and (d) these associations would be stronger among women than among men. Results of logistic regression techniques supported the first hypothesis and partially supported the third. With regard to the second hypothesis, the presence of specific kin rather than the number of each type of family member was important. For the fourth hypothesis, results suggest that men and women in this sample have broadly similar associations between widowhood and self-rated health. For women however, controlling for socioeconomic status did not weaken the association between widowhood and self-rated health, suggesting the symbolic/cultural importance of this status. In general, these findings suggest that theories on the importance of marital status and kin ties for older adults' self-

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rated health, which were developed and tested in Western societies, need to be refined for Asian societies, where the nature of marriage and widowhood are different.

**Keywords** Aging · Gender · Kin ties · Marital status · Self-rated health · South India

## Introduction

Declines in fertility and mortality have led to population aging and increased longevity throughout the world, including across much of Asia (Hermalin, 1995). Most recent gerontological research on Asia has focused on socioeconomic issues such as seniors' residential patterns, intrafamilial or intergenerational resource transfers, public provision of services and pensions, and others (e.g., Chan & DaVanzo, 1996; DaVanzo & Chan, 1994; Sun, 2002; Schroder-Butterfill, 2004). An emerging body of literature is now beginning to consider dimensions of seniors' of well-being and health, including mortality, functional status, physical health, and subjective health perception (Zimmer, Chayovan, Lin, & Natividad, 2004; Zimmer, Liu, Hermalin, & Chuang, 1998).

Self-assessment of health status, also known as subjective health perception or self-rated health, is a key focus of research on older adults. Cross-culturally and cross-nationally, self-rated health is a reliable predictor of subsequent health outcomes, ranging from specific illnesses to functional status to mortality (e.g., Idler & Benyamini, 1997; Idler & Kasl, 1995), thus making it an important domain of analysis. Studies indicate that self-rated health is itself affected by factors such as age, gender, and education (Johnson & Wolinsky, 1994; Li *et al.*, 1998; Wolinsky & Johnson, 1992). Given its importance as a predictor of future outcomes, self-rated health as affected by social and familial factors warrants further examination. In particular, research is needed that examines the impact of familial social ties and support and marital status on self-rated health in diverse cultural and economic settings.

In more developed Western societies, a long-standing research stream shows that individuals more involved in social support systems among family, friends, peers, and others, are more healthy, live longer, have greater life satisfaction, and have less need for long-term institutional care than persons without such social support systems (Berkman & Syme, 1979; Cohen & Syme, 1985; Durkheim, 1951; House, Robbins & Metzner, 1982; Seeman, Kaplan, Knudsen, Cohen & Guralnik, 1987; Steinbach, 1992). The tie of marriage is especially important in this regard because it confers health-related benefits. The effects vary by gender: Women benefit via an increase in socioeconomic status and men via an increase in social support (Goldman, Korenman & Weinstein, 1995; Hu & Goldman, 1990; Ross, Mirowsky, & Goldsteen, 1990; Zick & Smith, 1991). These issues have been examined less closely for other cultures, particularly those in South Asia, where marriage is nearly universal, gender disparities in access to resources are pronounced, and family ties are of fundamental structural and individual importance.

Therefore, the aims of this article are (a) to explore the impact of familial ties and support—particularly marital status on self-rated health among elderly persons in South Asia (southern India), and (b) to investigate gender differences in these interrelations.

Examining these issues in South Asia clarifies an under-researched area significant for elders in light of ongoing socioeconomic and demographic changes. The proportion of elders in Asian countries has grown, and that of the young has shrunk. Despite these demographic shifts and social changes such as urbanization, industrialization, Westernization; and the entry of women into the extra-familial labor force, the family-based support and co-residence system still remains the mainstay for most seniors in Asia

(Knodel & Debavalya, 1992). It is not clear, however, whether support from family networks is indeed associated with health and well-being among Asian seniors, and whether associations differ between men and women. This article addresses some of these gaps in the literature. The data we examined came from a sample of elderly persons in South India. Our inquiry concentrates specifically on the influence of familial social networks on the health outcomes among men versus women.

### The demographic profile of aging in South India

Although there is a growing body of research on aging in East and Southeast Asia, researchers in South Asia have been largely preoccupied with high fertility, population growth, and family planning. Many parts of South Asia, however—notably Sri Lanka and southern India—have almost completed the demographic transition. In the 1990s, India's overall total fertility rate declined to 3.5 children. Moreover, in the four southern Indian states of Kerala, Tamil Nadu, Andhra Pradesh, and Karnataka, total fertility is near or below replacement level: 1.5, 2.3, 2.1, and 1.9 children, respectively, (International Institute for Population Sciences (IIPS) & ORC Macro, 2000), while mortality has also declined. As a result, the all-India proportion of elders (persons aged 60 and older), which stood at 6.58% in 1991, is projected to reach 9.97% by the year 2021. For the four southern states, the proportion of elders aged 60 and older were 8.77, 7.29, 6.47, and 6.76%, respectively, in 1991, and are projected to reach 15.63, 14.30, 11.63, and 11.18%, respectively, in 2021 (Irudaya Rajan, Mishra, & Sarma, 1999). In absolute numbers, in the year 2021, there is projected to be approximately 134.1 million elderly persons in all of India. Of these, about 5.8, 10.3, 11.5, and 7.8 million will reside in Kerala, Tamil Nadu, Andhra Pradesh, and Karnataka, respectively, (Irudaya Rajan *et al.*, 1999). The growth rate of the elderly population is double the growth rate of India as a whole (Irudaya Rajan *et al.*, 1999).

There are significant gender differences in this aging profile. Since 1971, the remaining life expectancy for a 60-year-old Indian woman has been 1 year more than that of a 60-year-old man (14.7 vs 13.8 years, respectively). From 2021 onward, this difference increases to 1.5 years: 18.2 vs 16.7 years, respectively, for a woman and a man (Irudaya Rajan *et al.*, 1999). This gender gap in life expectancy coupled with South Asian marriage practices mean that many more women than men will be widowed for several years. United Nations estimates suggest that India has the largest number of widows in the world (approximately 33 million), and that approximately 66% of women aged 60 and older are likely to be widowed, compared with approximately 16% of similarly aged men (United Nations, 2001). Older widows with little income and limited access to social security constitute an especially vulnerable section of the population. Policy and research discussions regarding elders in India are thus coming to the forefront.

### Social support, family ties, and health outcomes

Social relationship and identity theories in Western gerontology highlight the importance of social roles and relationships in the pathways to well-being. Social ties are important over and above such background factors as age, gender, socioeconomic status, and life-course trajectory (Berkman & Syme, 1979; Cohen & Syme, 1985; House *et al.*, 1982; Thoits, 1992). The mere presence of social ties (number and nature of ties) is distinguished from individuals' perception of available support, and the functional support actually provided by the ties. The significance of emotional along with economic support and the frequency and quality of the relationships are underscored.

Such linkages have been examined less carefully across different cultural and economic settings, and this study addresses potential variations across settings. It may be that social relations operate in specific ways in diverse cultural or socioeconomic milieux; or it may be that the effect of social ties transcends situational specificities (Antonucci, Lansford & Akiyama, 2002). Investigating these issues in an Asian setting will suggest appropriate modifications to the theoretical framework in order to facilitate cross-cultural comparative research. For example, it may be that Western social and philosophical ideologies emphasize greater individualism, and thus having a supportive social network promotes individuals' well-being in these settings. In contrast, in Asian societies, where family ties are paramount and pervasive, elders' family networks may not vary enough to influence well-being outcomes or may produce certain kinds of tensions while mitigating other forms of stress. The impact on health outcomes is thus less clear and needs specific investigation.

Most research in South Asia focuses on elders' economic status and living arrangements, mainly inquiring whether basic physical needs are being met (review in Irudaya Rajan *et al.*, 1999). These studies assume that the presence of familial ties will ensure that elderly persons' support needs are being met and that desirable health outcomes will ensue. It is less clear whether the familial ties meet these needs and, thus, whether they are actually positively associated with well-being and health.

Much of the discussion on residential patterns among India's elders involves the decline of the joint family. This argument rests on an assumption that, in the near past, an idyllic and cooperative set of coresidential familial networks provided for the needs of the members, and that social changes such as modernization, Westernization, urbanization, and industrialization disrupted these arrangements, leaving elders vulnerable (e.g., Bhat & Dhruvarajan, 2001; Sharma & Dak, 1987). Another recurrent theme is that of the respect "traditionally" accorded to elders in South Asian cultures. Cohen (1992) criticized the unquestioning acceptance of these assumptions. First, scholars have demonstrated that the Indian joint family was historically never as prevalent as is assumed. Given fertility, mortality, and property division patterns, most families went through an expanding and contracting developmental cycle. Second, joint families are characterized as much by conflict or competition between siblings, genders and generations as by cooperation. Third, respect for elders is often bound up in expectations (based on traditional Hindu life-cycle notions) that elders will progressively disengage from the world to focus on spiritual development. In practice, however, older men were shown in one New Delhi study to report loss of authority and respect, and older women reported physical overwork. Older persons advised maintaining some control over resources to retain children's respect and to prevent themselves from feeling like a burden (Van Willigen, Chadha & Kedia, 1995). Marulasiddiah (1966) described how respect accorded by family members to elders in a rural Karnataka state village varied by gender, caste, class, and family situation. K. N. S. Yadava, S. S. Yadava, and Vajpeyi (1997) underscored that income-producing family members were accorded higher respect because of their economic contributions to the family. Lamb (1997), examining how changes in the use of domestic space index age-related status hierarchies of rural persons, showed that elders moved from the centers to the peripheries of living spaces, took on fewer and lighter domestic duties, gained respect and freedom from encumbering ties and responsibilities, but lost tangible household political and economic powers.

In India, despite the varying prevalence of extended families at any one time, it is younger people who have more options in forming alternative family arrangements. For elders, the family remains almost the only source of residential, economic, and emotional sustenance. Studies that examine the actual provision of support to the elderly by their

children show that such support is not completely reliable, varying as it does by socioeconomic status, landholding, gender, presence of a spouse, and number of surviving sons (Dharmalingam, 1994; Kanbargi, 1985; Marulasiddiah, 1969). When sons or male kin are not available, support from daughters or sisters is mobilized (Miltiades, 2002; C. S. Ramanathan & P. N. Ramanathan, 1994).

Issues surrounding the quality of relationship ties have also been less frequently considered in the Indian context. However, Yadava *et al.* (1997) showed that quality of and satisfaction with familial ties with sons and daughters was significantly associated with the physical health status of seniors in rural Uttar Pradesh state. Additional research on this point is needed, given the importance of this factor in comparable studies in the Western gerontological literature.

Thus, there needs to be further empirical investigation of the extent to which kin ties provide a supportive environment for elderly persons in India and how this is reflected in their health outcomes. In this article, we aim to investigate the impact on South Indian seniors' self-rated health, of their number of family ties and their assessments of quality of support provided by the ties.

### Gender differences in social support, family ties, and health outcomes

In more developed Western societies, women outlive men, but report more illness and lower well-being at every age. There appear to be few gender differences in quantity and quality of social relations among elders in several industrialized nations (including Japan, a non-Western nation). However, gender differences in psychological well-being among elders seem to be related to differences in resource deficits (i.e., widowhood, illness, and financial strain), which are in turn affected by social networks, especially among women (Antonucci *et al.*, 2002). For South Asia in particular, gender plays a major role in kin availability, support in old age, and resource availability, particularly through the statuses of parenthood and widowhood. The demographic literature on South Asia debates the 'old age security' issue relating to childbearing in South Asia, which suggests that parents with at least one surviving son to take care of them in old age are better off than those without (e.g., Cain, 1988; 1991; Nugent, 1985). This concern is especially pertinent for women, whose access to extra-familial sources of livelihood and support is limited and grows more so with age. Vlassoff (1990) showed that sons were of significant cultural and symbolic importance for widows (though not all the widows in the study were elderly). Other studies have shown that parents rely on help from daughters when sons are not available (Miltiades, 2002; Reddy, 1989). Examining the way availability of kin ties and economic and emotional support from kin actually translate into the well-being of elderly persons—and in particular scrutinizing gender differences in these linkages—thus gains salience.

Among familial ties, the role of marital status (particularly widowhood) is specifically underscored in the general literature on social support and health and on gender and family issues in South Asia. Widowhood, which involves the loss of one of the closest personal relationships (spouse), has a key impact on social networks, especially among older persons. Empirical evidence from more developed Western societies shows that married persons have better health and lower mortality compared with the never married, widowed, or divorced, even accounting for the tendency of less healthy persons to be less likely to enter into marriage or to remain married (Lillard & Waite, 1995; Waldron, Hughes, & Brooks, 1996). In general, marital status affects health through pathways of (a) socioeconomic status and (b) social ties associated with actual social support. Regarding the former, married persons often have greater access to resources (often due to multiple

incomes) and economies of scale, which may bolster healthier lifestyles and use of health care (Waite & Gallagher, 2000; Wyke & Ford, 1992). Regarding the latter, the increased social support network deriving from marriage includes the benefit of socialization and nurturing from spouses and children (Berkman & Glass, 2000; House, Umberson, & Landis, 1998). Both increased resources and enhanced social networks buffer stressful events—a key role played by social support in promoting health.

Gender issues figure prominently in the relationship between marital status and health outcomes (review in Reidy, Ofstedal, & Knodel, 2002). Men and women benefit differentially from marriage in terms of socioeconomic status, social ties and support, and health outcomes. In Western societies, too, women's history of lower participation in paid work, interrupted work trajectories, occupational segregation, and lower wages has led to a socioeconomic status that is, on average, lower than men's (Hardy & Hazelrigg, 1993; Meyer, 1990). Thus, through marriage, women benefit from access to men's socioeconomic resources. On the other hand, caring, nurturing, and kin-keeping roles are traditionally the province of women. Thus, through marriage, men benefit from the enhanced nurturing, social ties, and support networks that women maintain (Goldscheider, 1990). Following marital disruption, women's socioeconomic status declines, and men's social networks diminish. However, following widowhood, women's socioeconomic situation deteriorates while support rallies around men. One study suggests that after controlling for socioeconomic status, marriage is no longer a significant predictor of women's mortality (Zick & Smith, 1991), reinforcing the argument that women's primary benefit from marriage is enhanced resources.

These associations remain to be examined in settings where marriage is still nearly universal, gender disparities in access to resources remain pervasive, and general social and economic development is uneven, as is characteristic of South Asia. Marriage is a deeply significant and near-universal life event for men and women in South Asia. Regarding socioeconomic status, across most of South Asia, the prevalence of patrilineal family and kinship forms embedded in largely patriarchal societies means that women, especially, derive social standing and access to resources largely through marriage and motherhood and that women's opportunities outside marriage are restricted (Rahman, 1993). This situation is also true of the more bilateral/matrilineal kinship forms often prevalent in southern India (many of which have been transforming to patrilineal forms during the past few decades; e.g., J.C. Caldwell, Reddy & P. Caldwell, 1988). This pattern would be especially applicable to current cohorts of elders. Although it is likely that men also benefit from marriage—gaining the social status (and associated ties) of husband and father and accumulating assets through receiving dowry payments—the significance of marital status is still likely to be greater for women.

The argument that marital status influences social ties and social support is very salient for India, where marital status significantly influences social networks, especially for women. Although marriage is nearly universal and rates of marital dissolution are very low, widowhood is a very likely life event. This is especially true for older women, given South Asian marriage patterns of women marrying older men, male–female adult mortality differentials, and restrictions on remarriage for most women but not men. Statistics indicate that among Indian women aged 60 and above, 66% are widows, compared with only 16% of men (United Nations, 2001). Widowhood not only restricts social ties that accrue through a spouse, but substantially decreases women's socioeconomic status, usually moving women (especially those of upper castes) to a socially and ritually unfavorable position. Agarwal (1998) argued that widowhood is often coterminous with old age among women, and that the male advantage in property inheritance and control that characterize much of India renders women progressively more vulnerable. Women in female headed



households, especially those elderly or widows, appear most at risk for impoverishment (Shanthi, 1995) because such households tend to be smaller in size and are affected by economies of scale (Dreze & Srinivasan, 1997).

Marriage also substantially affects ties with other family members. A substantial and influential discussion in the social demography literature points out how broad differences in marriage systems between North and South India are associated with variations in women's position within the family and key demographic outcomes (e.g., Dyson & Moore, 1983; Kishor, 1993; Malhotra, Vanneman, & Kishor, 1995).<sup>1</sup> In northern India, kinship systems generally emphasize marriage that is exogamous with respect to the bride and groom's patriline and typically their village (though marriage is endogamous within caste, sect, and region). Under these arrangements, women's ties with their natal families become substantially curtailed after marriage, in terms of both contact and support (though formal or ritual contacts are maintained). Such systems increase the vulnerability of married women who depend on bearing and rearing sons for their main source of status and support after widowhood. Southern Indian kinship systems, in comparison, are endogamous in terms of preferring cross-cousin or uncle–niece marriage in many communities (though these are often not achieved in reality: significant proportions of South Indian women are married to non-relatives), and southern women therefore maintain comparatively more ties with their natal families after marriage.<sup>2</sup> Little, however, is known about the extent of natal or marital familial support among older southern Indian women and men of different marital statuses and how this, in turn, affects their self-rated health. As is suggested by the social demography literature, it may be that distinctive patterns in these associations are found in southern Indian settings.

Whether in northern or southern India, residence patterns after marriage usually mean that women reside with their husbands and, often, his parents and brothers. This means that a woman's contact with her parents and siblings is qualitatively and quantitatively different in comparison to a man's contact with his family members. On the one hand, a woman's contact with her family may often be viewed as warm and affectionate; on the other hand, especially in northern India, she is frequently considered to have few rights in her natal home except under specific formal or ritual circumstances. Moreover, women's ties with their married sisters would be further attenuated as the latter marry into other families, whereas ritualistic ties with brothers are valued in order to maintain a link to women's natal homes. Men are not alienated from their natal homes in this manner, but their contact with their brothers may often be marked by competition, and contact with their sisters (who would marry out) may be marked by the same parameters that exist between married women and their brothers. The responsibility for caring for parents also usually rests on men. As was discussed above, sons rather than daughters would be important, particularly for women. Thus, because of marriage systems and associated residence patterns, marital status has a substantial impact on the type and meaning of contact and relations with kinfolk, impacts which differ for women compared with men. However, few quantitative studies have examined the nature and scope of the association of availability of different types of kin on well-being in later life.

<sup>1</sup> Significant within-region variations exist, however.

<sup>2</sup> Throughout most of India, marriage systems enjoin endogamy of caste and sect, and, in practice, frequently that of region and language.

This discussion has shown that both social ties and socioeconomic status are substantially linked to marital status in South Asia, especially among women. The discussion also highlights gaps in what is known about the impact of familial social ties and support on self-rated health among men and women in cross-cultural settings, particularly in South Asia. Research addressing these gaps thus becomes imperative, and our article addresses this goal.

### Conceptual framework and hypotheses

The main focus of this article is to examine the impact of familial social ties on subjective health perception of elderly men and women. Relationships that are well established in Western research on aging need exploration and verification across different cultures. We control for background socioeconomic status, sociodemographic characteristics, and report of recent illness. We have four hypotheses: (a) We expect that persons who are widowed will report poorer self-rated health than others, net of socioeconomic status; (b) we hypothesize that elderly persons who have greater kin network size will report better self-rated health; (c) We expect that individuals who report better quality support from kin will also report better self-rated health; and (d) we expect that women's self-reported health will be more strongly affected by family ties and marital status than men's.

### Materials and Methods

We examined these relationships in a sample of 1,755 elderly persons (664 women and 1,091 men) in three states of South India (Kerala, Tamil Nadu, and Karnataka). The Aging Survey 1993, a study on the elderly population in India, was conducted by researchers at the Centre for Development Studies, Trivandrum, Kerala state, with funding from United Nations Economic and Social Commission for Asia and the Pacific, Social Development Section, and technical assistance in questionnaire design from the China Research Centre on Aging, in Beijing (with representation from other Asian nations including China, Korea, Thailand, and Singapore). One district was randomly selected from each of the three states. Two rural areas and one urban area were then selected from each district, and a total of 7,500 households were subsequently sampled. Interviews were conducted with households that had been identified as having families with elderly persons (aged 60 or older) for the detailed survey. In households in which more than one eligible elderly person was present, all were interviewed. The interviews were conducted according to a standardized survey schedule. The questionnaire was translated into the local language of each state and then back-translated into English to ensure accuracy (subregional variations in language were not formally accommodated; however, in practice, interviewers often facilitated the process by explaining in local dialects). The interviews were conducted and subsequently entered into the computer by trained field staff under the supervision of the project leaders. Refusal to participate or non-response was negligible. However, it was not always possible to conduct interviews under optimal conditions, as frequently other family members would be present and listen to the questions and answers.

A standard survey schedule was canvassed among the sample, gathering cross-sectional information on socioeconomic variables, health status, residence patterns, and support networks among closer and extended family members. Material support, social contact, and satisfaction on various dimensions were also ascertained, enabling a more detailed investigation of the quality and frequency of various kinds of social support networks.



## Dependent variable

We considered subjective health perception at the time of the interview as a dichotomous measure, where those who felt very unhealthy (coded 0), versus those who felt fairly all right or very healthy (coded 1). We analyzed this outcome by logistic regression techniques (described below).

## Explanatory variables

Explanatory variables focused on the extent and type of family (kin) social ties. We considered availability of different kinds of kin, marital status, economic and emotional support received, and assessment of quality of support. We measured kin social ties by two types of indicators: size (number of sons, daughters, brothers, and sisters living at the time of the study) and availability (whether the respondent had at least one living member in each category: son, daughter, brother, or sister; 1=yes, 0=otherwise). Marital status contrasted those who were currently widowed (coded 1) with other statuses (coded 0). Because marital status and coresidence with spouse were highly correlated, coresidence with spouse was not used (marital status was used instead). Coresidence with other household members was indicated by number of persons living within the household.

Economic support ties were indicated by the respondent's report of source of support: self, children, other relatives, or other sources such as organizations (coded 1 in each case, 0 if otherwise). Respondents were allowed to report more than one source of support. Approximately 53% of the respondents reported only one source of support, and 44% reported two sources. Only about 3% reported more than two sources of support. Of those reporting two sources of support, about 99% reported support from self and children. All other combinations of support accounted for less than 1% of the cases; after exploratory analyses, these latter cases were discarded from the analysis. Thus, we incorporated into the model dummy variables indicating whether the respondent was supported by children only, both self and children, and by wider kin only, and the reference category was whether the respondent was supported by self only.

We measured frequency of emotional support by summing three items: whether there was weekly exchange of letters, gifts, or visits with children living elsewhere (coded 1 in each case, 0 if otherwise). A second similar index of interaction with siblings was included. Quality of emotional support was given by the respondent's report of whether they felt consulted or included by their family (coded 1 if yes, in each case; 0 if not).<sup>3</sup>

<sup>3</sup> The measurement of these variables follows widely standardized approaches used in most quantitative, questionnaire-based studies (e.g., the longitudinal Survey of the Health and Living Status of the Elderly in Taiwan, 1989–1996, or the Association of South East Asian Nations sponsored Surveys of the Elderly in Thailand, the Philippines, and Singapore), where self-reports by the study participants form the bases of information. This is an approach that has advantages as well as shortcomings. On the one hand, self-reports by the participant may either reflect socially normative answers or mask underlying complexities. For example, even a comparatively straightforward enumeration of number of persons lived with may not be as clear cut as it appears on the surface. Particularly in rural settings, living alone may sometimes mean merely sleeping and cooking in a separate front room of a house shared by other family members, with additional close kin living just across a narrow street, and with frequent sharing of provisions by all (e.g., as demonstrated by Marulasiddiah, 1969). Variables measuring more complex and dynamic concepts such as quality of kin ties are likely to be fraught with even more ambiguity. However, the advantages of standardized survey methods are also widely known; they include enabling of hypothesis testing through substantial sample size and comparability with other studies. In short, insights from ethnographic studies are complemented by the numerical size and wider focus of survey-based quantitative studies. The results were interpreted with these issues in mind.

Control variables included age (in years), literacy, economic status (measured by an index comprising land ownership, receipt of pension, ownership of bank account, and number of household possessions), religion (1=Hindu, 0=other), and rural/urban residence (1=rural, 0=urban). Physical health status was a dummy variable indicating whether the respondent had suffered any illness in the previous month (no information on the nature or severity of the illness was available).

### Analytic methods

We first present bivariate associations of marital status and kin-tie variables by gender. In order to test the first hypothesis, we examined the impact of presence and number of available kin on self-rated health, controlling for the background factors enumerated above. In order to test the second hypothesis, we examined the impact of being widowed on self-rated health. We tested the third hypothesis by including the family social support indicators in the model. The fourth hypothesis tested gender differences in the associations. As a first step toward this goal, we estimated an overall model (combining both genders), which specifically tested interaction terms between gender and the social network variables of interest. Then, we ran the equations separately for men and women. For simplicity, only the results of the gender-stratified models are presented here, with symbols indicating which social tie coefficients differed significantly between men and women according to the interaction terms in the overall model.

Because the dependent variable was dichotomous, we used a logistic regression procedure to estimate the relationships (Hosmer & Lemeshow, 1989). The logistic regression procedure uses maximum likelihood estimation techniques to estimate the probability of the outcome (coded 1) occurring. Logistic regression calculates changes in the log odds of the dependent variable. The model coefficients can be interpreted based on their sign and significance and the 95% confidence interval around each coefficient point estimate. As was mentioned earlier, the dependent variable was coded such that a value of 1 indicated better self-rated health. Therefore, positive values of coefficients indicate variables associated with better self-rated health.

### Sample characteristics

Interviews were conducted with 544, 604, and 607 elderly persons from the states of Kerala, Tamil Nadu, and Karnataka, respectively, (a total of 1,755 respondents). Of the total respondents, almost 90% were Hindu, 38% were female ( $n=664$ ), and 62% were male ( $n=1,091$ ).

Table 1 presents other characteristics of the respondents, categorized by gender. Men and women in the sample were similar in average age: 65 and 66 years old, respectively. Gender differences were apparent across most of the profile in terms of socioeconomic status, kin availability, coresidence, and sources of economic support. Women's lower literacy and lack of access to productive resources or assets as compared with men should be underscored. Gender differences in current marital status and coresidence were also apparent. We found that 83% of men versus 26% of women reported being currently married. Marital status and residence with spouse were, as expected, highly correlated: 84% of men and 26% of women reported that their spouse lived in the house with them, whereas 13% of men and 71% of women reported being widowed. Individuals who had never married, were divorced, or were separated accounted for less than 2% of each gender. Proportions of men and women reporting coresidence with children were similar: 86% and

**Table 1** Sample Characteristics

Variable	Men	Women
<b>Socioeconomic status</b>		
Owns land (%)	50	34
Any household member owns land (%)	58	59
Has house in own name (%)	68	38
Has savings for emergency (%)	25	14
Has bank account in own name (%)	29	10
Contributes money for household expenses (%)	65	38
Has enough income to live off (%)	29	16
Working for income now (%)	53	25
Can read and write (%)	49	19
Proportion engaged in agricultural work	27	12
Average number assets owned	2.5	2.1
Mean age (years)	66	65
<b>Kin availability</b>		
Currently married (%)	85	27
Widowed (%)	13	71
Never married / divorced / separated (%)	1.9	1.7
Average number of children	3.0	3.4
Average number of living siblings	1.6	1.8
<b>Coresidence</b>		
Lives with spouse (%)	84	26
Lives with children (%)	86	85
Lives alone (%)	1	7
Average number of people living with	4.1	3.8
<b>Source of economic support</b>		
Supported by children only (%)	25	51
Supported by self only (%)	20	12
Supported by other relatives only (%)	0.6	0.3
Supported by other sources only (%)	0.1	0.5
Supported by self and children (%)	50	30
<b>Emotional support</b>		
Average weekly interaction with children living elsewhere	1.9	1.7
Average weekly interaction with other relatives living elsewhere	1.6	1.4
Feels included by family (%)	30	32
<b>Subjective health perception</b>		
Very healthy (%)	28	29
Fairly all right (%)	68	66
Very unhealthy (%)	5	6
Report of illness within the last month (%)	28	27

Coresidence patterns do not add up to 100% because study participants could report more than one answer (i.e., they could coreside with spouse *and* children, as most men reported doing).

85%, respectively. It should be noted that coresidence patterns do not add up to 100% because study participants could report more than one answer (i.e., they could coreside with spouse *and* children, as most men reported doing). We also note that the data presented here only relate to self-reports of marital status and residence patterns; they do not imply any inferences on household headship. Under conventional sample survey conditions, especially those that may involve multiple household members, accurate or unequivocal

reports on this topic may be difficult to obtain. Sources of economic support also varied by gender, with men relying more on self only or self and children, and women relying more on children only.

With regard to reported frequency and quality of emotional support from kin, and physical health (i.e., report of illness within the last month and experience of chronic illness), there were, notably, few gender differences in this sample. Distributions of subjective health perception categories were also very similar between men and women.

Table II shows bivariate associations between self-rated health and marital status, kinship tie indicators, and social support indicators, separately for men and women. These associations show that being currently widowed was significantly associated with self-rated health among men and women. The effect size appeared stronger among women than among men. The next group of bivariate associations suggest that having at least one son or daughter, and one brother or sister, was associated with self-rated health among men (significant at least at the 05 level). For women, the former two were marginally significant at the 0.10 level, whereas the latter two were significant at the 0.05 level. Exploratory analyses suggested that size of kin ties (i.e. number of sons, daughters, brothers, or sisters) was not significant for men or women. Only the presence of at least one such member was significant. Thus, subsequent multivariate analyses focused on kin availability rather than kin-tie size. The next set of variables, indicating sources of economic support, show that being supported by children only or self and children was positively associated with women's self-rated health, whereas for men there was no significant relationship. Weekly contact with children living elsewhere had no significance for either gender, but weekly interaction with siblings living elsewhere did for both. Regarding relationship quality indicators, feeling included by relatives was significant for men but not women.

In sum, the bivariate associations support the notion that marital status, particularly widowhood, is importantly associated with self-rated health for both genders. Other family tie variables (presence of male and female children and siblings; frequency, content, and quality of kin networks) show that number of kin ties appears to have less impact than the presence of at least one kin member in each category. Source of economic support seems more important for women than for men, suggesting better outcomes associated with

**Table II** Bivariate Associations Between Marital Status, Family Tie Variables and Self-rated Health, by Gender

Variable	Men		Women	
	<i>F</i> or $\chi^2$	<i>p</i>	<i>F</i> or $\chi^2$	<i>p</i>
Currently widowed	9.933 <sup>a</sup>	0.001	22.170 <sup>a</sup>	0.000
At least one son	4.135	0.024	2.388	0.075
At least one daughter	9.051	0.001	2.322	0.076
At least one brother	6.519	0.006	11.825	0.000
At least one sister	4.929	0.016	12.948	0.000
Supported only by children	0.267	0.329	7.504	0.004
Supported by self and children	1.673	0.110	3.099	0.047
Supported only by other relatives	2.702	0.102	0.081	0.540
Weekly interaction with children living elsewhere	0.789	0.223	0.802	0.228
Weekly interaction with siblings living elsewhere	3.789	0.013	4.855	0.018
Feel included by family	9.933	0.001	0.139	0.392

<sup>a</sup>Statistic for "currently widowed" is *F* ratio; all other statistics in the column are  $\chi^2$ .

support from children. Relationship quality also seems associated with better self-rated health among men.

**Results**

The multivariate analysis of self-rated health is presented in Table III, by gender. For brevity, we present only the variables indicating the impact of familial ties and physical health status net of the control variables (demographic and socioeconomic status). Exponentiated logistic regression coefficients are presented: Values less than 1 indicate a negative association with self-rated health, whereas those greater than 1 indicate a positive relationship. We also present 95% confidence intervals around the coefficient point estimates.

For men and women, being currently widowed was negatively associated with the likelihood of good or fair self-rated health in the full model, net of socioeconomic status and demographic indicators. The effect size appeared larger for women. In other words, marital status exerts an effect on self-rated health net of socioeconomic status and of the other family network indicators presented in the model, for both genders, but a little stronger for women.

For men, having at least one daughter improved subjective health perception, but having sons, brothers, or sisters had no impact. For women, however, having at least one brother was associated with better self-rated health, whereas having daughters, sisters, and sons was not significant in the multivariate model.

Being supported by relatives only (as compared with the reference category of being supported only by self) worsened self-rated health. Unexpectedly, weekly contact with siblings was associated with poorer self-rated health for men in the full multivariate model. However, feeling included by the family was associated with positive self-rated health. As

**Table III** Logistic Regression Coefficients for the Chance or Reporting Better Self Rated Health, by Gender

Variable	Men			Women		
	Exp(B)	95% CI		Exp(B)	95% CI	
		Lower	Upper		Lower	Upper
Currently widowed	0.340*	0.201	0.576	0.580*	0.377	0.895
At least one son	1.510	0.917	2.478	1.102	0.924	1.126
At least one daughter	1.442*	1.109	2.042	1.111	0.701	1.763
At least one brother	1.106	0.711	1.453	1.423*	1.940	2.153
At least one sister	1.183	0.859	1.630	1.422	0.893	2.265
Supported only by children	1.108	0.502	2.446	2.156	0.893	5.203
Supported only by other relatives	0.008	0.001	43.167	2.393	0.317	17.934
Supported by self and children	0.771	0.358	1.659	1.249	0.509	3.069
Number of members in household	0.911*	0.830	0.999	1.020	0.924	1.126
Weekly interaction with children living elsewhere	0.836	0.581	1.439	1.486	0.774	2.854
Weekly interaction with siblings living elsewhere	0.596*	0.401	0.385	0.755	0.464	1.226
Feel included by family	1.687*	1.223	2.327	0.755	0.488	1.169
Was ill in the last month	0.608*	0.438	0.858	0.356*	0.218	0.580
-2 LL $\chi^2$ / df / p	1,327.52 / 19 / 0.000			596.54 / 19 / 0.000		

\*  $p \geq .05$ .

expected, men and women who had experienced sickness in the past month were more likely to feel in poorer health.

In summary, marital status appears to play a substantially important net role in influencing self-rated health for both men and women, net of the control variables. Presence of children and other kin has some impact. Economic support and frequency of interaction with kin living elsewhere appears to play no role, and family relationship quality is important among men in the multivariate context.

## Discussion

These results lend support to the first hypothesis that, as in other cultures, marital status is associated with subjective health perception among elderly persons in southern India. Specifically, being widowed is associated with poorer perceived health, net of socioeconomic status or other family ties, for both men and women, with an apparently greater effect size for women. However, in contrast to other cultures, where studies have found that the benefit of marriage for women is through the pathway of improved socioeconomic status, in the present study controlling for socioeconomic status does not decrease the magnitude of the marital status—self-rated health association among women. This finding underscores the critical role of marital status for women in South Asian society in terms of not only resource access or economic vulnerability, but also social position. In South Asian cultures, marriage substantially shapes the lives of women and remarriage for widowed women is very restricted. Widowhood, especially for women, has been identified as being associated not only with lower economic status, but also with social deprivation and great ritual/symbolic disfavor (Chen, 2000; Dreze & Srinivasan, 1997). Although older women enjoy higher status and greater access to household resources compared with younger women, widowhood renders them very vulnerable, especially if they do not have the support of their sons (Das Gupta, 1996, discussing North Indian widows). India has the largest number of recorded widows in the world, and widowhood in India has been described not only as a marital status but also as a social institution (United Nations, 2001).

The results of the present study underscore this by indicating that widowhood is associated with poorer health (in addition to economic or social vulnerability) net of socioeconomic status and social ties. Thus, improving older widows' access to resources, although undoubtedly of importance in order to preserve them from poverty, may be insufficient to fully ameliorate their situation. The stigma associated with the status of widowhood will also need to be addressed, which is a much more difficult proposition. The present results also suggest that widowhood has an important effect among men, too. Although men face fewer restrictions on remarriage compared with women, men who do remain widowed constitute a specific subgroup that may be less re-marriageable (due to poor health or other reasons) and thus more vulnerable than the general population of older men.

Furthermore, the current finding that widowhood status remains important among men and women after controlling for socioeconomic status and network variables raises the notion that the theoretical conclusions drawn from empirical observations concerning sources of gender differences in the effect of marriage on well-being may not apply in all sociocultural settings. The findings presented here suggest that marriage networks are of extreme importance for men and women, including through symbolic or other pathways.

Regarding the second hypothesis, greater numerical size of family ties in terms of number of sons, daughters, brothers, or sisters, was not significant in a bivariate or multivariate association for older men or women. Rather than number of kin, the



availability (presence) of at least one daughter (for men) and one brother (for women) lends limited support to the second hypothesis. Other studies elsewhere on Asia (Zimmer *et al.*, 1998, for Taiwan) found no impact of social network variables (frequency, emotional support, and organization membership) other than marital status on transitions over time in elderly persons' functional status. Nor have other studies found an association between coresidence with sons and functional status impairment in southern India, although they did in North India; Sengupta and Agree (2002) did so for Northern India. The present results from South India, however, suggest limited support for the idea that kin availability is associated with better self-rated health. Our third hypothesis was partially supported as our indicator of better relationship quality appeared associated with better self-rated health among men, but not women.

The fourth hypothesis concerned gender differences in the associations. Following arguments that the aging experience in India is deeply gendered (e.g., Cohen, 1992; Lamb, 1997) and findings that elderly women in India are especially vulnerable to destitution, we had hypothesized gender differences in the associations between family tie indicators and self-rated health. Bivariate gender differences indicated that women in this sample were indeed much less educated, had access to fewer assets, and reported numerically fewer family ties than their male counterparts. The present multivariate results, however, suggest that in this setting, gender differences in the relationship between family networks and self-rated health were less than hypothesized. Specifically, widowhood and recent illness affected both men and women similarly (negatively), although the magnitude of the effects seemed stronger among women for the former variable and for men in the latter. Presence of brothers appeared important only for women and daughters only for men, and emotional issues appeared to affect self-rated health only for men in the multivariate context.

Thus, gender differences in well-being in this sample might result from differential access to family-based economic and emotional resources by men and women across the life course, in addition to the varying nature of social relationships of each gender or the varying effect of social networks on well-being. These results parallel the findings that in five of eight other Asian settings (in Bangladesh, the Philippines, Singapore, Taiwan, Thailand; the exceptions were Malaysia and Vietnam), marriage benefited women and men similarly (Reidy *et al.*, 2002).

In sum, the present study contributes to the literature by indicating that widowhood is an important factor affecting perceived health of older persons in southern India (especially women, due to the symbolic and socioeconomic implications of this status). Kin availability is also found to be important, which points out that future changes in demographic patterns, as fertility continues to decline and family relationships are reconfigured by social change, can resonate at the individual level by influencing health perceptions. Third, gender differences in the nature of the associations suggest that marriage in general benefits both men and women (although widowhood is more detrimental for women). These results provide some measure of quantitative evidence to supplement the insights provided by the rich tradition of regional ethnographic studies and enables comparison with studies from other regions of Asia. With regard to re-examining current gerontological theories in the light of this varied cultural evidence, the present study indicates that some theoretical assertions regarding the importance of marital status for the well-being of men and women that were substantiated in Western settings may differ in other settings where the symbolic nature of marriage and widowhood (especially for the different genders) is markedly different.

This study has cast some light on the interlinkages between various types of familial support (coresidence, economic support, and emotional support) and self-rated health in southern India. However, the results suggest patterns that need exploration and support

through future research, particularly that utilizing time series data and more nuanced measurement of quality of family ties. The shortcomings of using a cross-sectional data set became clear in the course of this analysis; however, given the current unavailability of longitudinal data for South Asia, these results point the directions in which future studies might follow. Ethnographic studies such as those cited earlier in this article provide much information about the nuances of quality and emotional components of ties among seniors and their family members. However, further incorporation of these insights into standardized survey questionnaires would enable better testing and cross-cultural comparison of these issues. Moreover, we had no information in this study about whether coresident sons and daughters were adults or children. In addition, although the sample of elderly men and women used in this study reflects their prevalence in the population, the fact that elderly men were mostly married and elderly women mostly widowed means that the study compared the two genders at a time in their life course when their social networks were significantly different. Future studies of gender differences in the association between social networks and well-being might utilize more comparable samples of men and women.

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