Journal of Cross-Cultural Gerontology (2022) 37:221–235
https://doi.org/10.1007/s10823-022-09454-2

ORIGINAL ARTICLE

Exploring the Effects of Gender Differences and Widowhood Status on the Days Spent in Poor Health: A Secondary Data Analysis from India

Babul Hossain[1] · **Md Illias K. Sk**[1]

Accepted: 9 May 2022 / Published online: 24 May 2022
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Abstract

The majority of research in India has focused on the impact of widowhood on health status and health care use, while little emphasis has been paid to the number of days spent in poor health among widowed population compare to other marital categories. Thus, the current study explores the relationship between widowhood and days spent with poor health outcomes among adults in India. Additionally, gender differences in the relationship between widowhood and days with poor health outcomes are further studied.

The research employed nationally representative cross-sectional data from the 75th round (2017–2018) of the National Sample Survey (NSS). To investigate the associations of marital status (married vs widowed) and other factors with days spent in poor health, a negative binomial regression model was used. Additionally, the interaction model of age and widowhood was estimated separately for men and women.

The findings suggest that widowed individuals had consistently prolonged days with an illness, limited activity, and confinement to bed. After adjusting for socioeconomic and demographic characteristics, the findings suggested that widowed women (IRR = 1.141, 95% Confidence interval = 1.01–1.29) were more likely to spend days with limited acitivities than married women. The marital status-age interaction indicated that older widowed women were more likely to have days of restricted activity and confinement to bed than married women, but such link is absent for men.

In India, the elderly widow often spends her days confined to bed and prolonged days with limited activity. Policymakers and practitioners in public health should develop effective policies and programmes to enhance the health and well-being of widowed women, particularly those from socioeconomically disadvantaged backgrounds.

Keywords Poor health days · Widowhood · Gender · India

✉ Md Illias K. Sk
illiaskanchan@gmail.com

Babul Hossain
bhossain399@gmail.com

[1] International Institute for Population Sciences, Mumbai 400088, India

Introduction

Empirical research has demonstrated a consistent and robust link between widowhood and health of people (Butler & Morgan, 1977; Perkins et al., 2016; Verbrugge, 1979). Studies have reported that adults who are widowed or separated/divorced suffer from poor physical health, lower perceived health, and elevated risk of premature mortality than married individuals (Moon et al., 2011; Wilcox et al., 2003). Widows are heavily reliant on outpatient health care, regularly visit nursing facilities, and spend extended periods of time in the hospital (Pandey et al., 2019; Shu-Hsi, 2018). According to the marital protection theory, individual gains social, economic, and psychological advantages from their marriage relationship, which are reflected in their better health and well-being status (Coombs, 1991; Zheng & Thomas, 2013). At the same time, the marriage selection hypothesis argues that it is a healthy person who tends to get married and unhealthy individuals remain unmarried (Joung et al., 1998). In any case, studies have indicated that bereaved women, in particular, are more prone to social and economic suffering, while widower men have more psychological difficulties than married men (Hauksdóttir et al., 2010; Holden & Kuo, 1996).

While the majority of research examine the influence of widowhood on health care use and health status, less emphasis has been given to spending time in poor health outcomes. A recent research found that being widowed was connected with a greater number of days spent with unwellness when compared to married counterparts (Bookwala et al., 2014). According to studies, non-married persons (divorced, separated and widowed) have a greater rate of disability days (Cafferata, 1987). A research found that widows had a greater incidence of disability days and restricted-activity days, even after controlling for age and gender (Collins & LeClere, 1996). Furthermore, the number of days spent in medical facilities due to bed impairment was much greater among widows (Iwashyna & Christakis, 2003; Wolinsky & Johnson, 1992).

While gender has been proven to have a significant role in relationship between the time spent in poor health and marital status, widows, particularly older one have been reported to experience a greater number of days with poor health (i.e., bed disability days and limited activity days) than widowers (Anson, 1989; Nathanson, 1977). Verbrugge (1979) carried the initial research on this topic and found that widowed women had higher partial work impairment, followed by complete work disability, as compared to married women (Verbrugge, 1979). However, there are little differences in employment disability for men based on their marital status. At a same time, recent research examined the role of marital status on days of inactivity due to poor health and found no statistical difference in days of inactivity between widowed and married individuals (Stimpson et al., 2012).

According to the 2011 Indian census, there were about 56 million widowed persons, with 78 percent of them female (Census of India, 2011). In patriarchal society in India, widowed women continue to be stigmatised as "impure" and a "curse" (Chen & Dreze, 1992; Yadav, 2016). The widow's living standard is also influenced by sociocultural norms and beliefs. Following the death of her spouse, a woman experiences social isolation and economic distress within her family and community (Chen & Dreze, 1992; Chen, 1997). In patriarchal societies, father's property or money is majorly transferred from father to son, while daughters often do not claim father's property, despite their legal right to inherit, due to existing socio-cultural traditions. It is also known that widows are not permitted to dwell with their biological family under patriarchal social structures due to patrilineal residency restrictions.

Patrilineal living exacerbates Indian widows' vulnerability, since they often get little psychological or financial assistance or medical treatment from their in-laws' family. Furthermore, widowed women face a lack of job opportunities in Indian context (Chen, 1997). While, the lack of economic resources and restrictions on remarriage, widows are particularly vulnerable to socioeconomic insecurity (Chen & Dreze, 1995). Furthermore, the consequences of social and economic marginalisation are evident in poor physical and subjective health among Indian widows (Perkins et al., 2016).

In India, the majority of research examine the relationship between marital status and poor health outcomes and health care use (Hossain et al. 2021a; Pandey & Jha, 2012; Sengupta & Agree, 2002; Sreerupa & Rajan 2010). On the other hand, days spent with ill health, confined to a bed, or restricted to activities constitute a functional restriction and short-term impairment that need special attention in order to improve overall well-being status for any individual (Choi et al., 2020). In this context, there is a lack of evidence on the influence of widowhood status on days spent in poor health among adults in India.

In Indian society, where marriage is a vital institution for social life, it is worthwhile to determine link between individuals' widowhood status and time spend for poor health. However, the exact mechanism through which widowhood is related with time spending for poor health is unclear in Indian context. Thus, the current research explores the relationship between widowhood and days spent in poor health outcomes separately for men and women in India. Additionally, the interaction effect of age and marital status on the number of days spent in poor health outcomes has also investigated in the current study.

Materials and Methods

Data Source

We analysed data from the 75th round of the National Sample Survey (NSS) on "Social Consumption: Health" (2017–2018). The NSS is a nationally representative survey undertaken by the Government of India's Ministry of Statistics and Program Implementation. Data on household conditions, demographic indicators, morbidity patterns, health services, and health spending were gathered in this survey from all of India's States and Union Territories (except for the rural areas of Andaman and Nicobar Islands). Using a multistage sample technique, interviews were conducted for 555,114 individuals from 113,823 households in randomly selected 8,077 villages and 6,181 urban blocks.

Study Population

Individuals aged 20 years and older who were currently married or widowed were included in this research. Although widowhood is less common in early ages and more prevalent in older ages, the consequence of widowhood varies dramatically

between younger and older ages, particularly among the women (Brien, 2004; Lowe & McClement, 2011). Therefore, we included samples aged 20 years and above. In addition, we excluded those samples reported their current marital status as divorced/separated and never married from the analysis. Finally, the present study included a total of 31,919 individuals aged 20 years and older with complete information about days spent in illness, restricted activity, or confined to bed (see Fig. 1 for sample selection process).

Measures

The outcome variable selected for the study was self-reported days spent in poor health. We considered days of illness, days of restricted to activities, and days confined to a bed as days spent in poor health. These three dependent variables were in count form. In the NSS survey, respondents were asked about the number of days spent in illness, restricted to activities, and confined to a bed within the reference period (in the last 15 days preceding the survey).

The key explanatory variable in the research was marital status, which was classified as married or widowed. Additionally, age, gender, place of residence, social groups, religion, household (HH) size, educational attainment, level of care, health scheme, monthly per capita expenditure (MPCE), and regions were included as other explanatory variables. The sample was classified as 20–39, 40–59, 60–79, and 80+years old. Gender was a binary variable that was classified as either men or women. Households were classified into three categories based on their size: 1–3, 4–6, and 7+. Place of residence categorised as urban and rural. Social groups were divided in three groups SC/ST (Scheduled castes/ Scheduled tribes), OBC (Other backward class) and others. The SC, ST and OBC are legally designated groupings of individuals who are among India's most disadvantaged socioeconomic groups. Among these social groups, SC and ST people are entitled to more government

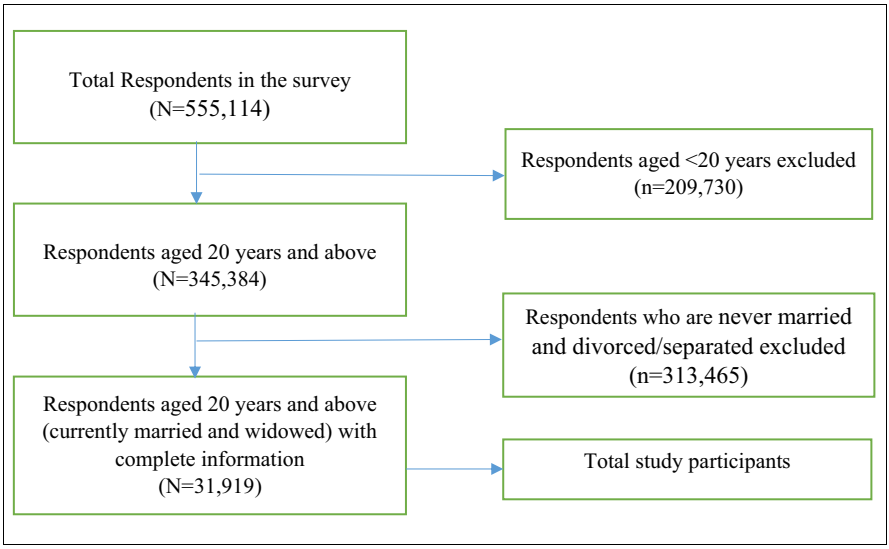

Fig. 1 Flow chart of sample size included for the final analysis in the study

benefits because they are more deprived and backward than OBC people. The religion was further classified as Hindu, Muslim, Christian and others. Educational attainment was characterised as having no formal schooling, having a primary education, or having a secondary education. The level of care was defined as health services provided by private and public health institutions. The eligibility of the included population for a health scheme was a dichotomized variable classified as 'having a scheme' or 'not having a scheme'. Monthly per capita expenditure (MPCE) was classified as less than INR (Indian rupee) 2000, between INR 2000 and 3999, between INR 4000 and 5999, and above INR 6000. The distribution of the widowed population in India was not uniform, thus we also included a region variable comprised of Indian states. Regions were divided into northern (Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Uttarakhand), central (Chhattisgarh, Madhya Pradesh, Uttar Pradesh), eastern (Bihar, Jharkhand, Odisha, West Bengal), north-eastern (Arunachal, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura), western (Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat, Maharashtra), and south (Andaman & Nicobar Islands, Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu, Telangana).

Data Analysis

Descriptive statistical analysis was carried out to show the distribution of study participants. The percentages were estimated using the NSS given sample weight. Our outcome variable, days with poor health outcomes were in count form. The most appropriate technique for analysing count data is Poisson regression. However, fitting Poisson regression was not appropriate for the analysis due to the over-dispersed distribution in reporting of number of days with poor health outcomes. Negative binomial regression, on the other hand, was the ideal way to analyze over-dispersed count data. Thus, we employed negative binomial regression models to determine the association between days spent in poor health outcomes with widowhood and other variables (Byers et al., 2003). The results of negative binomial regression were presented by the incident rate ratio (IRR) with 95% confidence interval (CI). Prior to doing the multivariate analysis, the collinearity between independent variables was determined using correlation matrix (see supplementary table 1). We found a moderate correlation between age and marital status (coefficient values ranging from 0.3 to 0.5) and apart from that, there was either no correlation (coefficient values = 0) or a weak relationship (coefficient values ranging from 0.1 to 0.3) between the independent variables. Additionally, we conducted interaction analyses to determine the effect of age and marital status on days spent in illness, limited activities, and confined to bed for both genders across various age groups. STATA version 12.1/SE was used for all statistical analyses.

Results

Table 1 summarises the study sample's descriptive statistics by marital status. Approximately 21% of the sample population was widowed. The distribution of sample people by marital status varied significantly among age groups. Almost 70% of the

Table 1 Descriptive characteristics of a representative sample by marital status in India: National Sample Survey, 2017–2018 ($N=31,919$)

	Married ($n=25,505$)	widowed ($n=6414$)	Total ($n=31,919$)
Overall	78.21	21.19	100
Age			
20–39	22.89	1.46	18.22
40–59	47.32	30.22	43.6
60–79	27.8	56.27	34
80 +	1.98	12.06	4.18
Gender			
Men	48.48	17.77	41.79
Women	51.52	82.23	58.21
Place of residence			
Urban	49.65	50.5	49.84
Rural	50.35	49.41	50.16
Social Group			
SC/ST	20.74	20.78	20.75
OBC	39.51	40.40	39.68
Others	39.75	38.82	39.57
Religion			
Hindu	73.19	73.96	73.35
Muslim	16.42	15.28	16.19
Christian	6.14	6.67	6.24
Others	4.25	4.08	4.22
HH size			
1 to 3	32.04	40.27	33.83
4 to 6	50.95	47.54	50.2
7 and above	17.01	12.19	15.96
Education			
No formal education	31.09	57.1	36.76
Primary	23.32	24.27	23.52
Above primary	45.59	18.64	39.72
Level of care			
Private	71.63	66.91	70.6
Public	28.37	33.09	29.4
Health scheme			
not covered	71.85	71.93	71.87
covered	28.15	28.07	28.13
MPCE			
Less than 2000	39.67	39.64	39.66
2000–3999	41.03	42.89	41.43
4000–5999	12.59	12.59	12.59
6000 or above	6.71	4.88	6.31

Table 1 (continued)

	Married ($n=25,505$)	widowed ($n=6414$)	Total ($n=31,919$)
Regions			
North	17.31	15.14	16.87
Central	13.34	11.27	12.92
East	18.51	17.23	18.25
North-East	2.93	2.63	2.87
West	13.29	12.74	13.18
South	34.62	40.99	35.90
Mean days with illness	12.67	13.58	12.86
Mean days with restriction on activity	2.71	3.32	2.83
Mean days with confined to bed	0.79	1.03	0.84

MPCE denotes monthly per capita expenditure, NSS sampling weights were applied

married sample was under the age of 60. In comparison, nearly 32% of widowed individuals were under the age of 60. The sample of married persons was equally distributed by gender, whereas the widowed status was dominated by female widows (82%). There was a notable difference in educational attainment between widowed and married adults, with a smaller number of widowed (19%) having completed at least a basic level of schooling compare to married individuals (46%). Widowed adults visited more public health facilities (33%), compared to married adults (28%). The majority of respondents' monthly per capita expenditure (MPCE) ranged from INR 2000 to 3999. In India, the proportion of widowed people was highest in the southern region (41%), followed by the central region (17%). Widowed people reported an average of 13.58 days with illness, 3.32 days restricted from activities, and 1.03 days confined to bed, whereas married people reported a considerably lower average of 12.67 days with illness, 2.71 days restricted from activities, and 0.79 days confined to bed.

Table 2 demonstrates the link between married status and other explanatory factors and days spent in poor health (illness, restriction of activities, and confined to bed) separately for men and women. After adjusting for socioeconomic and demographic characteristics, widowed women were found to be more likely to spend days with limited activities (IRR = 1.141, 95% CI = 1.01–1.29) than married women. Although, widowhood status did not have a statistically significant association with days spent with illness or confined to bed for women. On the other hand, the result showed no evidence of widowhood status as a predictor in the days of health related outcomes for men.

Additionally, age remained a key predictor of days spent in poor health, as older adults were more likely to spend days with illness, restriction in their activities, and confined to bed. Individuals who lived in urban were less likely to spend their days confined to bed. In comparison to the SC/ST category, men from other social groups (IRR = 0.86, 95% CI = 0.75–1.00) were less likely to spend the day with restricted activity, whereas women from other social groups (IRR = 0.76, 95% CI = 0.62–0.93) were less likely to spend the day confined to bed. The result

Table 2 Incident rate ratios for days of poor health from negative binomial regression among adults in India

	Days with illness		Days with restricted activity		Days with confined to bed	
	IRR (OR with 95% CI)		IRR (OR with 95% CI)		IRR (OR with 95% CI)	
	Men	Women	Men	Women	Men	Women
Marital status						
Married						
Widowed	1 (0.99 1.01)	1.01 (1.00 1.02)	0.90 (0.75 1.08)	1.13**(1 1.27)	0.89 (0.66 1.2)	1.15 (0.96 1.39)
Age						
20–39						
40–59	1.29***(1.27 1.3)	1.31***(1.29 1.33)	1.08 (0.92 1.27)	1.24***(1.09 1.42)	0.78*(0.6 1.01)	0.88 (0.72 1.09)
60–79	1.38***(1.36 1.4)	1.39***(1.37 1.42)	1.23**(1.05 1.45)	1.47***(1.25 1.71)	0.89 (0.68 1.15)	1.26*(0.99 1.61)
80+	1.4***(1.37 1.43)	1.40***(1.36 1.45)	1.94***(1.49 2.52)	2.45***(1.86 3.22)	2.00***(1.31 3.07)	3.31***(2.17 5.06)
Place of residence						
Rural						
Urban	1.06***(1.05 1.07)	1.07***(1.06 1.08)	0.83***(0.74 0.92)	0.81***(0.73 0.9)	0.91 (0.76 1.08)	0.94 (0.80 1.10)
Social Group						
SC/ST						
OBC	1.01*(1 1.02)	1.01 (1 1.03)	0.97 (0.84 1.12)	0.95 (0.83 1.08)	1.02 (0.82 1.29)	1.01 (0.82 1.24)
Others	1.04***(1.02 1.05)	1.03***(1.02 1.05)	0.86**(0.75 1.00)	0.9 (0.79 1.03)	0.84 (0.66 1.07)	0.76***(0.62 0.93)
Religion						
Hindu						
Muslim	1.01**(1 1.02)	1.02**(1 1.03)	1.04 (0.9 1.2)	0.95 (0.84 1.09)	0.73***(0.57 0.92)	0.88 (0.72 1.08)
Christian	1.00 (0.98 1.02)	1.00 (0.98 1.03)	1.17 (0.93 1.47)	0.94 (0.76 1.17)	1.4*(0.95 2.05)	0.57***(0.40 0.83)
Others	1.00 (0.98 1.02)	1.02 (1 1.05)	0.9 (0.71 1.15)	1.06 (0.85 1.33)	1.01 (0.68 1.51)	0.94 (0.67 1.32)
HH size						
1 to 3						
4 to 6	1.02**(1.00 1.03)	1.02**(1.00 1.03)	1.02 (0.9 1.15)	1.00 (0.90 1.13)	0.99 (0.80 1.21)	1.03 (0.86 1.23)
7 and above	1.03***(1.02 1.05)	1.02 (1.00 1.04)	0.84**(0.73 0.98)	0.93 (0.8 1.07)	0.89 (0.70 1.13)	1.00 (0.80 1.25)
Education						

Table 2 (continued)

	Days with illness		Days with restricted activity		Days with confined to bed	
	IRR (OR with 95% CI)		IRR (OR with 95% CI)		IRR (OR with 95% CI)	
	Men	Women	Men	Women	Men	Women
No formal education						
Primary	1.02***(1.01 1.04)	1.03***(1.01 1.04)	1.00 (0.78 1.23)	1.03 (0.91 1.17)	0.84 (0.66 1.07)	0.91 (0.74 1.1)
Above primary	1.02**(1.00 1.03)	1.02**(1.00 1.03)	0.85**(0.74 0.97)	1.07 (0.95 1.22)	0.66***(0.53 0.82)	0.88 (0.72 1.07)
Level of care						
Private						
Public	1.04***(1.03 1.05)	1.04***(1.02 1.05)	1.15**(1.03 1.28)	1.09*(0.99 1.21)	1.16 (0.97 1.38)	1.23***(1.05 1.43)
Health scheme						
not covered						
covered	1.04***(1.03 1.05)	1.05***(1.04 1.06)	0.84***(0.75 0.95)	0.87***(0.78 0.97)	0.82**(0.69 0.98)	0.83**(0.7 0.98)
MPCE						
Less than 2000						
2000–3999	1.06***(1.05 1.08)	1.05***(1.03 1.07)	0.97 (0.83 1.14)	0.97 (0.84 1.12)	0.84 (0.65 1.08)	0.94 (0.76 1.17)
4000–5999	1.09***(1.07 1.11)	1.09***(1.08 1.11)	0.89*(0.78 1.02)	1.04 (0.92 1.18)	0.74***(0.6 0.91)	0.9 (0.74 1.08)
6000 or above	1.10***(1.08 1.13)	1.12***(1.09 1.14)	0.73***(0.59 0.9)	0.88 (0.71 1.17)	0.62***(0.44 0.87)	0.99 (0.72 1.36)
Regions						
North						
Central	1.02***(1.01 1.04)	1.02**(1 1.05)	0.92 (0.77 1.1)	1.07 (0.91 1.25)	1.06 (0.8 1.4)	1.17 (0.92 1.49)
East	1.06***(1.05 1.08)	1.08***(1.06 1.1)	1.57***(1.33 1.86)	1.54***(1.32 1.79)	0.99 (0.75 1.3)	0.82 (0.65 1.04)
North-East	0.86***(0.84 0.88)	0.88***(0.84 0.91)	1.42**(1.06 1.9)	1.78***(1.30 2.44)	1.46 (0.9 2.37)	2.12***(1.25 3.59)
West	1.03***(1.01 1.04)	1.02 (0.99 1.04)	0.97 (0.8 1.16)	0.95 (0.8 1.12)	0.92 (0.68 1.24)	0.83 (0.63 1.07)
South	1.08***(1.07 1.09)	1.08***(1.06 1.1)	1.24***(1.06 1.46)	1.32***(1.13 1.53)	0.85 (0.65 1.11)	0.70***(0.55 0.88)

* $P<0.10$; ** $P<0.05$; *** $P<0.01$

also revealed that Muslim men (IRR = 0.73, 95% CI = 0.57–0.92) and Christian women (IRR = 0.57, 95% CI = 0.40–0.83) were less expected to spend days with confined to bed. Household size was also shown to be adversely linked with limited activity days. For men, having education above primary was linked with fewer days spent with limited activity (IRR = 0.85, 95% CI = 0.74–0.97) and confined to bed (IRR = 0.66, 95% CI = 0.53–0.82). Additionally, regardless of gender, those who had a health coverage were considerably less likely to spend days restricted in their activities or confined to bed. Individuals of both genders were more likely to spend days illness as MPCE increased. However, men with the highest MPCE (INR 6000 +) were less likely to spend days confined to bed (IRR = 0.73, 95% CI = 0.59–0.90) or restricted to activities (IRR = 0.62, 95% CI = 0.44–0.87). However, there was no evidence that women were subjected to such conditions. While individuals from the north-east were less likely to have days of illness. Men from the east (IRR = 1.57, 95% CI = 1.33–1.79) and women from the north-east (IRR = 1.78, 95% CI = 1.30–2.44) were, nevertheless, more likely to have more restricted activity days. Women from the north-east were more likely to spend days confined to bed (IRR = 2.12, 95 percent CI = 1.25–3.59) while women from southern region were less likely to spend days confined to bed.

Table 3 shows the interaction effect of marital status and age group on the number of days spent in poor health separately for men and women. For both genders, older persons, regardless of their marital status, were more likely to spend days with the illness. Additionally, the findings suggest that older widowed women (> 80 years) spent more days limited from activities (IRR = 2.69, 95% CI = 1.24–3.69) and confined to bed (IRR = 3.97, 95% CI = 2.62–6.02) than married women.

Discussion

The current research on the relationship between marital status and days of poor health outcomes suggests that for women, widowhood (as opposed to married women) is a major predictor of restricted activity days. However, neither men nor women's marital status was shown to be substantially associated with days spent ill or confined to bed except for the days with restricted activity for women. Moreover, interaction analysis of marital status and age group with days of poor health outcomes further provides valuable evidence. The findings indicate that being older and widowed disadvantages women by increasing the number of days spent in poor health (defined as days with limited activity and confinement to bed). However, older widows are reported to be more vulnerable to poor health than older widowers.

With the widowhood status, women lose their social and financial accessibility from their in laws' families (Sahoo, 2014). Our study evidenced that younger widowed women reported much less days spent confined to bed than younger married women. After the spouse dies, widowed women face barriers to basic needs and health treatment, and they are seen as a burden on the family (Chen & Dreze, 1995; Sahoo, 2014). In such situations, young bereaved women may not want to be

Table 3 Incident rate ratios for interaction effect of marital status and age on days of poor health from negative binomial regression among adults in India

	Days with illness		Days with restricted activity		Days with confined to bed	
	IRR (OR with 95% CI)		IRR (OR with 95% CI)		IRR (OR with 95% CI)	
	Men	Women	Men	Women	Men	Women
Marital status*Age						
Marital1*20–39						
Married*40–59	1.27***(1.24 1.29)	1.30***(1.28 1.32)	1.09 (0.93 1.28)	1.28 (0.93 2.28)	0.8*(0.62 1.04)	0.88 (0.71 1.09)
Married*60–79	1.35***(1.32 1.38)	1.41***(1.38 1.43)	1.23**(1.04 1.45)	1.45**(1.04 2.95)	0.87 (0.67 1.14)	1.19 (0.92 1.54)
Married*80+	1.37***(1.33 1.42)	1.4***(1.3 1.5)	1.89***(1.41 2.55)	2.55***(1.41 4.55)	1.87**(1.15 3.02)	1.86 (0.68 5.08)
Widowed*20–39	1.24***(1.06 1.46)	1.16***(1.07 1.27)	0.96 (0.22 4.14)	4.14 (0.22 46.19)	1.31 (0.14 12.42)	0.32*(0.1 1.02)
Widowed*40–59	1.24***(1.19 1.29)	1.31***(1.28 1.34)	0.87 (0.59 1.3)	1.3 (0.59 2.36)	0.35***(0.18 0.68)	0.93 (0.68 1.28)
Widowed*60–79	1.35***(1.31 1.39)	1.4***(1.37 1.43)	1.14 (0.87 1.48)	1.48 (0.87 2.87)	0.88 (0.57 1.36)	1.48***(1.13 1.95)
Widowed*80+	1.38***(1.33 1.44)	1.42***(1.37 1.46)	1.82***(1.24 2.69)	2.69***(1.24 3.69)	2.01**(1.07 3.77)	3.97***(2.62 6.02)

Marital status and *Age interaction adds adjustment for place of residence, social group, religion, HH size, education, level of care, health scheme, MPCE, regions

* $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$

a burden on other family members, and they often take on home activities despite their poor health. Under these circumstances, younger widowed women who are more physically active and need less health care may report fewer days spent on poor health outcomes. However, we observed that older widows were more vulnerable than older married women in terms of days spent in poor health, especially days spent with restricted activities and confined to bed. Evidences from India have highlighted that unmarried women (including widowed, divorced/separated), especially older one were more likely to experience mobility-related obstacles, and functional limitation-related concerns (Hossain et al., 2021b). Numerous studies have also shown that widowhood in later years may have a negative influence on a woman's physical and mental health, and other health-related behaviours. Elderly widows experience lower financial and economic assistance, as well as higher medical expenses, all of which raise their vulnerability to the onset of various morbidity-related problems, which might also explain increased days spent in poor health among older widows (Davidson et al., 2011; Stimpson et al., 2012).

Additionally, it was shown that bereaved men are less susceptible than widowed women. Men always retain their authority in patriarchal social institutions, even after losing their spouses. For men, marital status had no discernible effect on the number of days spent in poor health outcomes. In patriarchal countries such as India, widower have the same social standing and access to resources as married men (Johnson & Shyamala, 2012). Thus, bereaved men get immediate treatment and proper care if they suffer from poor health, whereas widowed women often lack adequate care and treatment (Chakravarti, 1995; Lamb, 1999).

The current study's results on restricted activities and confinement to bed are consistent with prior research conducted in the United States (Iwashyna & Christakis, 2003; Stimpson et al., 2012). Our findings indicate that men spend fewer or no days in poor health regardless of their marital status. Numerous research have revealed similar findings with initial evidence on gender, marital status and time spent for poor health (Caiger, 2016; Goda et al., 2013). The current research demonstrates that age is a strong predictor of days spent for poor health outcomes, with older widowed persons spending more days in poor health and widowed women being more vulnerable in this context. Similar results were also observed in a prior investigation (Davidson et al., 2011; Stimpson et al., 2012). Apart from marital status, our research showed that parameters such as level of education, MPCE, and health insurance coverage, regions in India had a negative correlation with the number of days spent in poor health. Individuals with a secondary education, health insurance, and a greater MPCE were less likely to spend days in poor health. Our results corroborate those of earlier research done around the world (Gill et al., 2001, 2004).

To our best knowledge, the study is very first to document the relationship between marital status and the number of days spent in poor health in India. However, the study has some limitations. The current research was unable to capture the influence of widowhood length on health outcomes (Perkins et al., 2016). In our investigation, we were unable to account for marital quality, which might undoubtedly have a substantial effect on the time spending for poor health (Robles, 2014). Additionally, since the data are cross-sectional, the research does not account for the pre-widowhood influence on days of poor health. Numerous research are required to

study the influence of marital status on time spend for poor health outcomes by collecting longitudinal data on the quality of marriage, the transitional aspect of widowhood, and disability and morbidity aspects of widowhood status.

In conclusion, the study reveals that widowed individuals spend more days with activity limitation than married individuals. Additionally, the elderly widow spends more days with restricted activity and confined to bed. Policymakers and practitioners in public health should develop effective policies and programmes to enhance the health and well-being of widowed women, particularly those from socioeconomically disadvantaged backgrounds. The Indian government should prioritise programmes such as economic incentives, more work possibilities, and specialised health care for older widowed women in order to guarantee the general well-being of all women in society.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s10823-022-09454-2.

Declarations

Conflict of Interest The authors declare no conflicts of interest in this study.

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