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Do Widows Use More Health-Care Medical Resource Than Widowers? A Study of Emergency Medicine in Taiwan

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***Abstract*—This paper explored the utilization of emergency medicine between the widowers and widows among the elderly in Taiwan. Subject data were obtained from the National Health Interview Survey in Taiwan, a study conducted in 2009 that encompassed observations 65 years of age and older. Chi-square test was used to determine the utilization of emergency medicine between the widowers and widows. Main empirical results confirmed that the life satisfaction, budget balance, self-reported health, functional limitation, and stroke significantly associated with utilization of emergency medicine for both widowers and widows. Nevertheless, diabetes significantly raised the utilization of emergency medicine for widows but not for widowers. Moreover, the utilization of emergency medicine was strongly correlated with predisposing, enabling and need characteristics among the elderly widowhood.**

Keywords—emergency medicine, widow, widower

I. Introduction

Marriage has been identified as an important factor associated with health and health service. Married people generally enjoy better health (Duncan et al., 2006; Wu and Hart, 2002) and lower utilization of health-care service (Ho, 2008; Yang and Jinman, 2007) than their non-married counterparts. Widowed people typically suffer the effects of bereavement, with spousal death affecting health, particularly in older people. It is well known that the effects of chronic disease and deterioration of physical function increase with age. The elderly have a poorer health status and are more likely to use health-care service than relatively younger people. Thus, what are the impacts of widowhood on health-care service among the elderly? How great is this impact? What is the different between widowers and widows? Population aging and the accompanying increase in the number of widowed people in Taiwan are important and timely issues to study.

Most of the previous studies described utilization of health service based on heart disease, lung trouble and stroke from in-patient (Horwich et al., 2009; Peberdy et al., 2008) and out-patient service (De Valle et al., 2006; Geraghty et al., 2008).

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These literature used different observations and medicine, empirically examined medical treatment effects in America, British and European. However, beside chronic disease threaten directly adults' health, physical functional deterioration often induced emergency case, particular for the elderly. Although Asaro et al. (2007); Banerjea and Carter (2006); Slaughter et al. (2005) mentioned the emergency treatment; but all of them did not discuss the elderly widowhood. Particularly, elderly are less likely to enjoy better health and more likely to have emergency case after spousal death. Therefore, to fill the gap, this paper emphasizes the utilization of emergency medicine among the elderly widowhood in Taiwan.

This paper followed the health behavior of previous studies (Andersen, 1995; Andersen et al. 1973, 1994) and controlled predisposing, enabling and need characteristics to examine the utilization of emergency medicine among the elderly widowhood. Predisposing characteristics included age, education and living arrangement. Enabling characteristics included life satisfaction, budget balance residence and health insurance. Need characteristics included self-reported health, chronic disease and functional limitations respectively. Furthermore, because being married likely imposes different impacts between males and females in terms of health (Duncan et al., 2006; Liu, and Umberson, 2008) and because the gender variable showed significance ($p < 0.001$) in our initial empirical test, this study examined the utilization of emergency medicine by gender.

II. Data

Data were derived from the 2009 National Health Interview Survey (NHIS) of Taiwan conducted by the Nation Health Research Institutes, Food and Drugs Administration, and Health Promotion Administration, Ministry of Health and Welfare, Taiwan. The NHIS used a multistage stratified systematic sampling scheme.

First, the target population for the original survey was 22,942,706 individuals whose households were registered in any 1 of the 23 counties in Taiwan in the year 2008. A total of 164 townships (or districts) and 30,528 persons were sampled. Among them, 25,632 persons completed the survey; the response rate was about 84.0%. To increase study sample homogeneity, inclusion was restricted to elderly aged 65 and over. A total of 2,904 elderly were recruited as participants.

Among these, subjects who reported never married, married with a currently living spouse, separate and divorce were excluded. The final sample size was thus 998. This paper tracks the survival of the 998 respondents in 2009 and analyzes the relative utilization of emergency medicine for specific subgroups.

As mentioned earlier, this paper controlled predisposing, enabling and need characteristics to examine the utilization of emergency medicine among the widowhood groups. 998 married subjects lost their spouse in 2009. Among these, 786 (78.8%) married women lost their husbands and 212 (21.2%) married men lost their wives during the study period. Not surprisingly, the proportion of widows was larger than that of widowers. The number of widows was nearly 3.7 times that of widowers. Mean ages were 77.13 and 78.52 for widows and widowers respectively. Widows with a higher education showed a lower proportion of widowhood. Less than 10% (9.9%, n = 78) of survey respondents with more than primary educational levels lost their husbands. On the contrary, widowers with a lower education showed a lower proportion of widowhood (20.8%, n = 44). In terms of enabling characteristics, nearly 70% elderly widowhood satisfied (and average) their life status and budget balance for their later life. Finally, in terms of need characteristics, more than half elderly widowhood showed physical function limitations. Particularly, widows (71.8%, n = 564) showed a higher proportion than widowers (56.6%, n =120). Furthermore, about 50% elderly widowhood (53.7% for widows, 49.5% for widowers) experienced high blood. Less than 10% elderly widowhood experienced asthma and kidney diseases. Approximately 3% of respondents submitted missing information on the widowhood.

III. Results

A Chi-square test was performed to identify examination items that whether significantly related to utilization of emergency medicine among the elderly widowhood. Descriptive statistics for predisposing, enabling and need characteristics were presented as frequencies or proportions. First of all, in terms of predisposing characteristics, Table 1 indicates that the utilization of emergency medicine showed significant associations with age for widows and education for widowers (all $p < 0.05$). The proportions of utilization of emergency medicine significantly decreased with higher education levels among elderly widowers. Next, in terms of enabling characteristics, Table 2 indicates that the utilization of emergency medicine showed significant associations with life satisfaction and budget balance for both widows and widowers. The prevalence rates of utilization of emergency medicine in deficit groups were significantly higher than in surplus groups regardless of widows and widowers.

Finally, in terms of need characteristics, Table 3 indicates that the utilization of emergency medicine showed significant associations with self-reported health ($p < 0.001$) and functional limitations ($p < 0.05$) for both widows and widowers. The prevalence rates of utilization of emergency medicine significantly increased with higher self-reported poor health. The prevalence rates of utilization of emergency medicine in those with functional limitations were significantly higher than those without. Moreover, for the chronic disease, stroke showed significance on the utilization of emergency medicine regardless of widows ($p < 0.001$) and widowers ($p < 0.01$). Nevertheless, diabetes significantly raised the utilization of emergency medicine for widows ($p < 0.05$) but not for widowers.

IV. Conclusion

Much of the current literature examined the utilization of emergency medicine from predisposing, enabling and need characteristics. This paper was different from previous literature, focused on elderly widowhood and used econometric analysis to estimate the utilization of emergency medicine in Taiwan. A number of findings supported previous results, whereas others present results either not or less frequently cited elsewhere.

In terms of predisposing characteristics, age illustrated a significant effect on emergency among the elderly widows. However, for the elderly widowers, age lost significance, perhaps due in part to the optimism of respondents and in part to respondents' feeling of self-respect. This result was different from the findings of Asaro et al. (2007); Banerjea and Carter (2006). Moreover, there was an education gradient in emergency for elderly widowers. Utilization of emergency medicine was lower among those with higher education levels. These findings were consistent with a substantial body of international evidence (Barba et al., 2006; Slaughter et al., 2005).

In terms of enabling and need characteristics, life satisfaction, budget balance, self-reported health and functional limitations showed significance on emergency for both widows and widowers. The results provided evidence that self-reported health and functional limitations might be relatively reliable indicators of health status (Malmstrom et al., 2007; Zimmer et al., 2005). Moreover, for the chronic disease, when other factors were excluded, stroke showed significance on emergency for both widows and widowers. This analysis echoes the opinions of Chen et al. (2007) and Ho et al. (2009) that subjective reports of stroke were overall more strongly associated with emergency than were reports of other related ailments. Therefore, elderly widowhood should pay more attention to their cardiovascular status to reduce the utilization of emergency medicine in later life.

Finally, due to data limitations, results might not be generalized for emergency medicine associated with widowers and widows following the death of a spouse in the general population. Indeed, health-care service differences may be reflected in elderly widowhood variance among subjects. Therefore, this emergency analysis of the study represents only a preliminary assessment to understand the relationship between widows and widowers. In the near future, the author plans to examine more carefully the different health-care service among the specific groups.

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TABLE 1: The Proportions of Predisposing Characteristics and Their Association with Emergency Medicine

Variables	Widow			Widower		
	Yes	No	*p* -Value	Yes	No	*p* -Value
	n (%)	*n* (%)		*n* (%)	*n* (%)	
Age			0.011*			0.609
65-74	47 (14.5)	277 (85.5)		19 (26.0)	54 (74.0)	
75-84	80 (23.7)	258 (76.3)		21 (22.1)	74 (77.9)	
85 over	23 (18.5)	101 (81.5)		8 (18.2)	36 (81.8)	
Education			0.085			0.035*
No formal education	89 (20.2)	352 (79.8)		12 (27.3)	32 (72.7)	
Primary education	41 (15.4)	226 (84.6)		31 (26.7)	45 (73.3)	
More than primary	20 (25.6)	58 (74.4)		5 (9.6)	87 (90.4)	
Living Arrangement			0.059			0.069
Alone	27 (14.4)	161 (85.6)		9 (14.5)	53 (85.5)	
With others	123 (20.6)	475 (79.4)		39 (26.0)	111 (74.0)	

Note: *, ** and ***denote statistical significance at 0.05, 0.01 and 0.001 levels, respectively

TABLE2: The Proportions of Enabling Characteristics and Their Association with Emergency Medicine

Variables	Widow			Widower		
	Yes	No	*p* -Value	Yes	No	*p* -Value
	n (%)	*n* (%)		*n* (%)	*n* (%)	
Life Satisfaction			0.000***			0.016*
Satisfy	32 (12.9)	216 (87.1)		16 (23.2)	54 (76.8)	
Average	46 (15.8)	245 (84.2)		11 (15.3)	61 (84.7)	
Dissatisfy	72 (30.4)	155 (69.6)		22 (31.0)	49 (69.0)	
Budget Balance			0.009**			0.022*
Surplus	96 (17.1)	466 (82.9)		31 (20.8)	118 (79.2)	
Deficit	54 (24.1)	170 (75.9)		17 (27.0)	46 (73.0)	
Residence			0.930			0.247
Urban	80 (19.5)	331 (80.5)		16 (16.8)	79 (83.2)	
Town	23 (17.1)	112 (82.9)		11 (25.0)	33 (75.0)	
Rural	47 (19.6)	193 (80.4)		21 (28.8)	52 (71.2)	
NHI			0.399			0.588
Yes	150 (19.2)	638 (80.8)		48 (22.7)	163 (77.3)	
No	0 (0.0)	3 (100.0)		0 (0.00)	1 (100.0)	

Note: *, ** and ***denote statistical significance at 0.05, 0.01 and 0.001 levels, respectively

TABLE 3: The Proportions of Need Characteristics and Their Association with Emergency Medicine

Variables	Widow			Widower		
	Yes	No	*p* -Value	Yes	No	*p* -Value
	n (%)	*n* (%)		*n* (%)	*n* (%)	
Self-Reported Health			0.000***			0.000***
Good	26 (12.8)	177 (87.2)		6 (9.8)	55 (90.2)	
Average	40 (13.2)	263 (86.8)		13 (17.8)	60 (82.2)	
Poor	84 (30.0)	196 (70.0)		29 (37.2)	49 (62.8)	
Functional Limitation			0.000***			0.024*
Yes	127 (22.5)	437 (77.5)		34 (28.3)	86 (71.7)	
No	23 (10.4)	199 (89.6)		14 (15.2)	78 (84.8)	
Chronic Disease						
High blood			0.174			0.290
Yes	88 (20.9)	334 (79.1)		27 (25.7)	78 (74.3)	
No	62 (17.0)	302 (83.0)		21 (19.6)	86 (80.4)	
Diabetes			0.010*			0.711
Yes	43 (26.1)	122 (73.9)		9 (25.0)	27 (75.0)	
No	107 (17.2)	514 (82.8)		39 (22.2)	137 (77.8)	
Choles			0.282			0.947
Yes	31 (16.4)	158 (83.6)		8 (22.2)	28 (77.8)	
No	119 (19.9)	478 (80.1)		40 (22.7)	136 (77.3)	
Stroke			0.000***			0.009**
Yes	25 (36.2)	44 (53.8)		12 (41.4)	7 (58.6)	
No	125 (17.4)	592 (82.6)		36 (19.7)	147 (80.3)	
Asthma			0.091			0.305
Yes	11 (29.7)	26 (70.3)		5 (33.3)	10 (66.7)	
No	139 (18.6)	610 (81.4)		43 (21.8)	154 (78.2)	
Kidney			0.146			0.051
Yes	13 (27.1)	35 (92.9)		7 (41.2)	10 (58.8)	
No	137 (18.6)	601 (81.4)		41 (21.0)	154 (79.0)	

Note: *, ** and ***denote statistical significance at 0.05, 0.01 and 0.001 levels, respectively