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RESEARCH

THE EFFECT OF MARITAL STATUS ON HEALTH QUALITY AND FALL RISK OF ELDERLY PEOPLE

ABSTRACT

Introduction: Marriage has important influences on the health of elders. Marital status has been identified as an important social factor associated with better health compared with the never married, widowed, or divorced. The aim of this study was to analyze the impact of marital status on older adults with regard to quality of life, balance and fall risk and psychological well being.

Materials and Method: One hundred subjects who are living in a long term care facility were recruited (38 marreid, 62 single, mean age 80.54±6.33 years, range 65-96 years). Biodex Balance System for the assessment of the dynamic balance and fall risk, short form 36 (SF 36) for the health related quality of life and Geriatric Depression Scale (GDS) for the evaluation of the psychological well-being were used.

Results: After adjustment for age, married group's physical functioning, social functioning, general mental health subscale scores of the SF 36, the mean anterior/posterior score of postural stability test and overall stability index of fall risk test and mean GDS score were statistically better.

Conclusion: In this representative older adult population, these findings suggest that the marriage was related with lower fall risk and better health quality with regard to physical functioning, social functioning and general mental health, and also better psychological well being.

Key Words: Accidental Falls; Quality of Health Care; Long-Term Care; Postural Balance.

ARAŞTIRMA

YAŞLILARDA EVLİLİĞİN YAŞAM KALİTESİ VE DÜŞME RİSKİNE ETKİLERİ

ÖZ

Giriş: Evlilik, yaşlı sağlığı üzerinde önemli etkiye sahip bir faktördür. Hiç evlenmemiş, dul veya boşanmışlarla karşılaştırıldığında evli olma durumu daha iyi sağlık kalitesi açısından önemli bir sosyal faktör olarak tanımlanmıştır. Bu çalışmanın amacı, yaşlılarda hayat kalitesi, denge ve düşme riski ile psikolojik iyilik hali üzerine medeni durumun etkilerini araştırmaktır.

Gereç ve Yöntem: Çalışmaya bakımevinde yaşayan 100 birey dahil edildi (38 evli, 62 bekar, ortalama yaş 80.54±6.33 yıl, yaş aralığı 65-96 yıl). Dinamik denge ve düşme riski Biodeks Denge Sistemi, sağlıkla ilişkili hayat kalitesinin değerlendirilmesi kısa form 36 (KF 36) ile yapıldı. Psikolojik iyilik halinin değerlendirilmesi için geriatrik depresyon skalası (GDS) kullanıldı.

Bulgular: Evli grupta, yaş ayarlaması yapıldıktan sonra yapılan değerlendirmede KF36'nın fiziksel fonksiyon, sosyal fonksiyon ve genel mental sağlık alt skala skorları, postural stabilite testinin anterior/posterior stabilite ortalama skoru ve düşme riski testinin toplam stabilite indeksi skoru ile ortalama GDS skoru istatistiksel olarak daha iyi tespit edildi.

Sonuç: Bu örnek grupta elde edilen bulgulara göre, yaşlı popülasyonda evlilik; düşük düşme riski ile fiziksel fonksiyon, sosyal fonksiyon ve genel mental sağlık açısından daha iyi sağlık kalitesi ve daha iyi duygu durum ile yakın ilişkili görünmektedir.

Anahtar Sözcükler: Yaşlılık;Düşme; Sağlık Kalitesi;Bakımevi; Denge.

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Introduction

Family life is the key to the health of elders. The bond of marriage is especially important in this regard because it confers health-related benefits. Marital status has been identified as an important social factor associated with better health and lower mortality compared with the never married, widowed, or divorced ones. It even accounts for the tendency of less healthy people to be less likely to start a marriage or to remain married (1-3).

Some previous studies show that individuals, who are more involved in social support systems among family, friends, peers, and others, are healthier, live longer, and have greater life satisfaction than the people without such social support systems. The lack of social support increases the risk of mortality and on the other hand supportive relationships associate with lower illness rates, faster recovery rates and higher levels of health care behaviors (1,2).

In general, married people are more likely to engage in positive and less likely to engage in negative health behaviors than widowed, divorced, or single people. Some studies have suggested that the social ties, social networks, and/or social support, which marriage often provides, may reduce the risk of mortality and provide some health benefits (3,4).

With increase in divorce and widowhood rates and decrease in marriage rates in the last decades, it can be expected that these changes will have a significant impact on mortality rates (3) and health of the elders. In relation, understanding the health variations provided by the marriage will be more important in order to determine the future community and health policies.

The aging population is increasing with the extension of the life span (5). The major goal of the health policies is to increase the quality and span of healthy life together (6).

Some issues of special concern in the elderly are quality of life, falls and psychological well-being. Especially falls and fall-related injuries are a major health problem among elderly people. Approximately 30 percent of people who are over 65 years of age and living in the community fall each year (7).

The aim of this study was to analyze the impact of marital status on older adults in regard to quality of life, balance and fall risk and psychological well-being.

Materials and Method

Study participants were 65 years or older people living in a long term care facility. A total of 168 residents were screened by analyzing the records and by interviewing with the registered nurse and the institution physician. Then, one hundred residents who were eligible for the study were invited for assessment. All of the participants agreed to participate and gave informed consents. The assessments were performed after the explanation of the trial.

The inclusion criteria were willingness to participate and age over 65, who had lived at least for 6 months in the facility. Cognitive impairment (Mini Mental State Score <25), unregulated hypertension, decompensated or unregulated cardiac failure, uncorrected vision problems, congenital or acquired structural or functional limb failures such as amputation, hemiplegia, and the usage of orthoses or walking aids were the exclusion criteria.

Biodex Balance System was used for the assessment of the dynamic balance and fall risk. Also, short form 36 (SF 36) for the health-related quality of life and Geriatric Depression Scale (GDS) for evaluation of the psychological well-being were used (8-10). The value 9 for GDS was the cut-off for mild depression in geriatric depression scale. The number of the diseases of the subjects and the number of the drugs used per day were questioned.

Biodex Balance System (BBS, a commercially available balance device, Biodex Medical Systems, Shirley, NY, USA) was used to assess balance, neuromuscular control and fall risk. BBS consists of a movable balance platform which provides up to 20° of surface tilt in a 360° range of motion and the platform is interfaced with computer software (Upper display module-firmware version 1.09, Lower control board-firmware version 1.03, Biodex Medical Systems) that enables the device to serve as an objective assessment of balance and fall risk. Following the recommendations of the previous studies and Biodex balance system manual, the two settings were used to assess the dynamic balance and fall risk; postural stability test and the fall risk test. The measure of postural stability includes the overall (OA), the anterior/ posterior (AP), and the medial/lateral (ML) stability scores. The fall risk test result includes overall stability index (OSI). The high score in the indexes indicates poor balance and increased fall risk. The subjects were asked to stand on the platform of the BBS bilaterally with feet shoulder width apart over midline of the board, to assume a comfortable position and to look straight ahead. Foot position coordinates were constant throughout the test session. The subjects were tested without footwear at all times and with eyes open. Patients and controls were trained approximately one minute for adaptation to the machine in order to reduce any learning effects. During testing, the participants

underwent three trials of 20 seconds each at level 8 with ten-second rest periods between each trial. A mean score was calculated from the three test evaluations and the device prepared the report automatically.

The sample was divided into two groups according to marital status as either married or single (never married, widowed, or divorced). Data were analyzed with SPSS 15.0 software. Patients' demographic variables were analyzed by using descriptive statistics. Firstly, the two groups' outcomes were compared with each other by using independent samples *t*-test. Then one-way analysis of covariance (ANCOVA) was conducted in order to estimate the effects of marriage with adjusting for age. $p<0.05$ value was accepted statistically significant.

RESULTS

The study enrolled 100 subjects ranging in age between 65 and 96 years. The married group comprised 38 subjects (19 married couples) and the single groups comprised 62 subjects (40 females and 22 males) and all of them were widowed (Table 1).

The baseline assessment outcomes were given in Table 1. It was seen that the mean age was significantly different between the groups (p=0.0001). Therefore the results were adjusted according to age in order to estimate the effects of marriage without the confounding effect of age (Table 1).

*3.1 **Quality of life:*** After adjustment for age, married group was significantly better on physical functioning, social functioning, and general mental health subscales of the SF 36 (Table 1).

*3.2 **Balance and fall risk assessment:*** After the adjustment for age, married group's mean AP score of postural stability test and OSI score of fall risk test were statistically better according to single group's (Table 1).

Table 1— Mean Baseline and Adjusted Mean Scores of The Assessments

	Baseline			Adjusted For Age[a]		
	Married Group n=38 (mean±sd)	Single Group n=62 (mean±sd)	p	Married Group (mean±sd)	Single Group (mean±sd)	p
Age	77.97±7.16	82.11±5.22	**0.0001**			
Short Form 36						
Physical functioning	64.51±4.95	47.3±3.55	**0.01**	62.65±5.07	62.65±5.07	**0.032**
Role limitations due to physical problems	55.92±7.15	45.9±4.9	0.23	52.88±6.73	52.88±6.73	0.0562
Bodily pain	66.97±4.88	66.35±3.65	0.92	67.82±4.9	67.82±4.9	0.75
Social functioning	78.61±2.62	66.83±3.25	**0.01**	78.27±3.73	78.27±3.73	**0.023**
General mental health	76.53±3.06	66.89±2.22	**0.01**	76.26±3.02	76.26±3.02	**0.021**
Role limitations due to emotional problems	55.22±6.92	42.59±5.35	0.15	55.5±7.11	55.5±7.11	0.16
Vitality/energy/fatigue	61.05±4.25	57.46±2.96	0.48	61.28±4.1	61.28±4.1	0.45
General health perceptions	56.84±3.76	56.64±2.31	0.96	57.33±3.39	57.33±3.39	0.82
Health compared to last year	50±3.13	52.05±2.57	0.62	50.26±3.33	50.26±3.33	0.70
Postural Stability Test						
Overall	2.61±0.19	3.3±0.24	**0.02**	2.79±0.31	2.79±0.31	0.31
Anterior/Posterior stability	1.71±0.1	2.38±0.16	**0.0001**	1.76±0.21	1.76±0.21	**0.038**
Medial/Lateral stability	1.46±0.12	1.98±0.16	**0.01**	1.57±0.2	1.57±0.2	0.19
Fall Risk Test						
Overall stability index	2.16±0.16	3.18±0.22	**0.0001**	2.27±0.3	2.27±0.3	**0.035**
Geriatric depression scale	5.49±0.76	9.02±0.86	**0.0001**	5.89±1.02	5.89±1.02	**0.032**

[a]All of the outcome scores were adjusted according to age by using ANCOVA to compansate its confounding effect on the variables.

[b]Statistically significant difference (p<0,05).

*3.3 **Psychological well being:*** After the adjustment for age, married group's mean GDS score was significantly better than the single group's. The married group's mean score (5,49±0,76) was in the range of the normal, whereas the single group's mean score (9,02±0,86) was at the border of the mild depression (Table 1).

*3.4 **Chronic health conditions and drug usage:*** There were no significant differences between the groups in regard to number of chronic diseases and drugs used per day. The most common chronic health conditions were cardiovascular diseases and musculoskeletal problems in both of the groups (Table 2).

DISCUSSION

The need for better understanding of the factors that account for the better physical and mental health in older ages is growing with the increase in the aging population. Elderly people are vulnerable and their needs are complex, therefore the efforts to improve their health will be one of the top priorities of the health policies in the following century for most countries. The marriage has some differential effects on individuals' lifestyles. The falls among elderly people are a target for public health preventive efforts, because they are relatively common, have a high cost to the community, and are potentially preventable. They also carry a significant burden of morbidity and mortality (11,12). In this study, the differences between the married and single elders were investigated in regard to health quality, balance and fall risk and psychological well being.

Probably marital status significantly influences social ties and social support (2). Sudha et al. (2) examined the impact of social support ties on subjective health perception among a sample of elderly men and women aged 60 and older. They found that widowhood was associated with poorer self-rated health. This finding has a concordance with ours as all the singles in our study were widows and they had some disadvantages compared to married subjects in regard to some health quality domains, such as balance and fall risk. Besides, a previous study emphasized that for any age/disability group, being married reduces nursing home usage by a factor of 2 to 3 (13). In a recent meta-analysis, it was also found that marriage had a significant protective effect against mortality compared to those widowed, divorced/separated or never married elderly people (14). These findings suggest that being single, divorced or widowed constitute potentially adverse health effects (3).

There are several studies investigating the balance and falls of the elders, risk factors and coping strategies. It is generally agreed that exercise and being physically active in older ages has a protective effect against falls (7,15). The marital status was questioned in some previous studies in regard to physical health, but there was no study that specifically investigated the effects of marriage on balance and falls. In this present study it was found that better balance and reduced fall risk were in concordance with better quality of life in the do-

Table 2— The Number of The Chronic Health Conditions, Mean Numbers of Diseases and Drugs Taken Per Day

	Married Group n=38	Single Group n=62	p
Number of the diseases (*mean±sd*)	2.4±1.5	2.5±1.4	0.60
Number of the drugs (*per day, mean±sd)*	5.2±4.5	5.0±3.4	0.79
Major health conditions (*no of patients*)			
Cardiovascular	21	46	
Musculoskeletal	12	25	
Hyperlipidemia	10	7	
Endocrinological	7	17	
Neuropsychiatric	8	12	
Pulmonary	5	6	
Gastroenterological	3	3	
Urological	1	4	
Cerebrovascular	1	2	
Cancer	–	4	
Others	1	6	

mains of physical health, social functioning and mental health, and better physiological well being. It was not surprising that being physically healthy should be associated with better balance and reduced fall risk, but it was also seen that the falls probably had multi-factorial components such as cognition, attention, social life and physiological well-being other than physical health.

Grundy and Sloggett (4) performed a study that sought for the health inequalities in the older population and their analysis showed that social resources (marital status and social support) had the greatest effect on psychological health and also contributed significantly to variation in self-rated health. In the present study, depression scores of the married group were better than the single group's. The couples probably tend to attend more social, recreational and sports activities. These participations probably provide elders with more active life and eventually result in psychologically and physically better health. In contrast, little contact with such facilities is probably the main cause of unfavorable health quality, psychology and physical performance in regard to balance and fall risk in single elders. Social support particularly provided by a spouse or the perception of available help from the spouse can also help to alleviate the physical and psychological effects of aging. Widowhood causes loneliness (16) and probably leads to less interest in activities surrounding his/her environment. Thus, it eventually leads to the poor health quality, psychology and physical performance in regard to balance and fall risk.

In recent years, the effects of marriage on individuals and the public were investigated by some researchers in regard to health and social life. Prigerson et al. (17) examined effects of widowhood and marital harmony on health, health service use, and health care costs on 755 subjects. The results of this study indicate that widowhood is associated with a substantial increase in health care costs. Furthermore, while the marital harmony appears to be protective for health and to be associated with lower health care costs among married respondents, the reverse appears to be true among widowed respondents. In another recent study, Osler et al. (18) investigated the effects of marital status on health of adult twins. Among all male twins discordant on marital status, the divorced/widowed twin had a higher depression score, a lower cognitive score, and a higher prevalence of smoking than the married co-twin. Among all female twins discordant on marital status, the divorced/widowed twin had a higher depression score and a borderline significant (p = .08) higher prevalence of smoking than the married co-twin. In some of these studies the study populations' ages were younger than our targeted population, but understanding the health, behavioral, and social factors that influence physical performance in midlife may provide clues to the origins of frailty in old age and the future health of elderly populations (19).

In some former studies, the better health of the married persons was associated with their greater access to resources often due to multiple incomes and better economies (2). However, in the present study, all of the residents have the same opportunity to reach similar resources. Therefore, the better health outcomes of married elders in this study probably might be associated with their more common participations in the social, sports or recreational activities and this may bolster healthier lifestyles. Thus, improving single elders' access to resources is undoubtedly very important in order to protect them from lower health quality and unfavorable psychology, and also to prevent them form disability that probably could result from poor balance and falls.

One limitation of this study is that the participants were residents of a long term care facility. Therefore, it is difficult to accept the findings as representative of the general population. However, the institutionalized elders are increasing with the rise in the number of the elders, so these findings had also great value in this sense. On the other hand, the participants' having similar opportunities to reach the resources was an advantage of this study because it provides the elimination of the confounding effects of environmental discrepancies. The second limitation is that all of the singles were widows. But the previous reports suggest that widowhood is a common phenomenon for the elders (20) and therefore this study probably may cover majority of the single elders.

In conclusion, in this representative older adults population, the findings suggest that marriage has a protective effect and provides better health quality in regard to physical functioning, social functioning and general mental health, and also better balance and reduced fall risk and better psychological well being.

We hope that the current findings of this study will contribute to the data that serve as a guide to the future efforts in order to improve the policies. Furthermore, the future researches with more people that cover more variables about the elders are needed in order to constitute more logic and realistic policies for better physical and mental health.

Conflict of interest

None

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