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RESEARCH

ASSESSMENT OF THE ACTIVITIES OF DAILY LIVING OF THE ELDERLY IN REFERENCE TO THE THUNDER BAY INDEX

ABSTRACT

Introduction: A total of 175 elderly individual residing in Ovacık within the province of Kırıkkale participated in this study, which aimed to determine the changing needs of the elderly by means of the Thunder Bay Index and assess their daily living activities using the Thunder Bay Index.

Materials and Method: In the study, the Thunder Bay Index and the Katz Index of Independence in Activities of Daily Living served as data collection tools. Methods used for the analysis of the data were percentage, standard deviation, arithmetic mean, T test, and variance analysis.

Results: When the Thunder Bay Index statistics are evaluated individually, the most positive answer was given to the item: "I can accept my past" (\bar{x} =3.81). The most negative answer was given for the following item: "I can procure some money from state funds when I need to" (\bar{x} =2.58). When the group averages are considered, elderly individuals who have a lower level of education, have less income, have four or more children, do not own their house, gave more negative opinions regarding their needs. The results demonstrate that elderly individuals who could independently take a bath, change clothes, sit, stand, use the toilet, walk, and shop gave more positive opinions than those who were partially or completely dependent.

Conclusion: It is not possible to prevent aging; however, it is possible to offer elderly individual minimum dependence and a better quality of life by satisfying their needs.

Key Words: Elderly; Daily Living Activities; Thunder Bay Index.



ARAŞTIRMA

YAŞLILARIN GÜNLÜK YAŞAM AKTİVİTELERİNİN THUNDER BAY ÖLÇEĞİ'NE GÖRE DEĞERLENDİRİLMESİ

Öz

Giriş: Yaşlıların Thunder Bay ölçeği ile değişen ihtiyaçlarını belirleyerek, günlük yaşam aktivitelerinin Thunder Bay Ölçeği'ne göre değerlendirilmesini amaçlayan bu çalışmaya Kırıkkale ili, Ovacık mahallesinde ikamet eden 175 yaşlı katılmıştır.

Gereç ve Yöntem: Çalışmada veri toplama aracı olarak "Thunder Bay Ölçeği" ve "Katz Günlük Yaşam Aktiviteleri Ölçeği" kullanılmıştır. Verilerin çözümlenmesinde frekans, yüzde, standart sapma, aritmetik ortalama, t testi ve varyans analizi kullanılmıştır.

Bulgular: Thunder Bay Ölçeğindeki maddelere ilişkin istatistikler incelendiğinde, en olumlu madde "Geçmişimi kabul edebilirim" (\bar{x} =3,81), diğer maddelere göre daha olumsuz madde ise "İhtiyacım olduğunda devlet kaynaklarından para temin edebilirim" (\bar{x} =2,58) maddesidir. Grup ortalamaları incelendiğinde, eğitim düzeyi düşük olanların, aylık gelir düzeyi düşük olanların, 4 ve üzerinde çocuğa sahip olanların, kiraclarının diğer gruplara göre ihtiyaçları konusunda daha olumsuz görüş belirttikleri tespit edilmiştir. Banyo, giyinme, oturma/kalkma, tuvalet, yürüme ve alışveriş esnasında bağımsız olduğunu belirten yaşlıların bağımlı ve yarı bağımlı olduğunu belirten yaşlılara göre daha olumlu görüş belirttikleri saptanmıştır.

Sonuç: Yaşlılık kaçınılmazdır ancak bireyin bağımlılık gereksiniminin en az düzeyde tutulabileceği, ihtiyaçlarının giderilerek yaşam kalitesinin sürdürülebileceği bir yaşlılık mümkündür.

Anahtar Sözcükler: Yaşlı; Günlük Yaşam Aktivitesi; Thunder Bay Ölçeği.

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Received: 04/04/2015

Accepted: 01/06/2015

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INTRODUCTION

Elderliness is a developmental stage in one's life associated with the advancement of chronological age accompanied by biological, psychological, and sociological aspects that has the highest rates of requirement for care and medical attention (1). The possibility of encountering physical problems increases with elderliness. Additionally, an individual's loss of social and economic power increases the risk of psychological problems (2). In this context, the elderly are required to satisfy their fundamental needs, perform their daily activities, have enough income, become self-sufficient, and live in a safe environment (3).

As an individual's age increases, their daily living activities decrease; in later years, certain health problems arise. Physical activity slows down some age-related deterioration in the body. Therefore, the biological and psychological losses caused by elderliness create social losses (4,5). During the elderliness period, changes such as retirement, transformation from an extended to a nuclear family, loss of loved ones, physical and cognitive deterioration, and increased dependence on others to accomplish daily activities lead to an increase in an individual's needs and place him/her into a psychologically incompatible medium. A study conducted by the American Geriatric Society found that 40% of individual between the ages of 65 and 75 reported inadequate daily living activities (6).

A successful aging process depends not only on the individual's characteristics but also on the psycho-social, financial, and physiological support services that society provides. The elderly's contribution toward their families, societies, and economies should be accepted and supported, their access to social environments should be facilitated, their needs should be determined, and their rights should be respected (7).

While studies examining the daily activities of the elderly have been conducted in Turkey (1,5,8-10), only one used the Thunder Bay Index; it focused on its validity and reliability (3). Therefore, the present study was conducted to assess the changing needs of the elderly by means of the Thunder Bay Index and to determine their daily living activities with respect to the Thunder Bay Index.

MATERIALS AND METHOD

Participants

The study involved participants aged 65 years or older in the Ovacik quarter of the province of Kırıkkale. Due to time and

cost restrictions, a group of 175 individuals was designated for sampling using a systematic sampling method, which is a type of probability sampling. The study protocol was approved by the university research ethics committee and informed consent was obtained from all individuals who agreed to participate the study.

A maximum of 1300 elderly people were identified residing at the study site, and thus, sample size was calculated using the formula that is recommended for quantitative studies and finite population (11). In this formula, population size (N) was 1300, standard deviation calculated with the first 30 questionnaires was $\sigma=0,7$; effect size was $d=0.10$; theoretical value corresponding to $\sigma=0.05$ significance level was $z_{0,05}=1.96$; and minimum sample size calculated with this formula was 165 people. Considering missing and not returning questionnaires, a total of 180 questionnaires were distributed and 175 questionnaires were evaluated.

Data Collection

In the study, the Thunder Bay Index questionnaire was used as the data collection method. The School of Social Work at Lakehead University developed the Thunder Bay Index; Yıldırım et al. evaluated its validity and reliability in Turkish (3). This index is comprised of 38 items and divided into five headings, which are identified according to Maslow's hierarchy of needs: Physiological, Safety, Love/Belonging, Esteem, and Self-Actualization. Cronbach's alpha coefficients regarding the needs of the elderly are calculated as follows: 0.71 for Physiological, 0.81 for Safety, 0.82 for Love/Belonging, 0.76 for Esteem, and 0.77 for Self-Actualization.

The "Katz Index of Independence in Activities of Daily Living" (ADL) was also used in this study. The ADL index comprises eight questions regarding daily activities, including taking a bath, changing clothes, using the toilet, moving, sitting and standing, walking, cooking, cleaning and shopping (12).

Data Analysis

The SPSS for Windows software program was used as a data analysis tool, and descriptive statistics (frequency, percentage, arithmetic mean, standard deviation) are primarily used. When comparing the opinions of the elderly about the Thunder Bay Index with regard to groups, a T-test was used if there were two groups and variance analysis was used if there were more than two groups. Lastly, the Cronbach's alpha coefficient regarding the reliability of the index was calculated as 0.897.



RESULTS

The distribution of the elderly who participated in this study with respect to certain characteristics is presented in Table 1. According to this distribution, a little over half (56.6%) of the 175 participants are women. Some of the largest percentage groups observed in the table are elderly individuals between the ages of 71 and 75 (33.2%) who are primary school graduates (38.9%), have an income between 892

and 1500 Turkish Liras (TL) (44.6%), have three children (29.7%), live with their spouses (40.6%), own their houses (76.6%), and have “*Emekli Sandığı*” (state retirement and social security fund for civil servants) as their social security (39.4%).

According to Table 2, the quaternary scale, which assesses the physiological needs of the elderly and their need for safety, respect, love, and self-actualization, reached an average value of $\bar{x} = 3.32$. When the statistics are evaluated individually,

Table 1— Distribution of the Participants with Respect to Their Characteristics

Variable	Group	Number (n)	Percentage (%)
Gender	Female	99	56.6
	Male	76	43.4
Age	65–70	43	24.6
	71–75	58	33.2
	76–80	41	23.4
	81–85	23	13.1
	85 or older	10	5.7
Education Status (Last graduated level)	Primary School	68	38.9
	Secondary School	55	31.4
	High School	27	15.4
	Higher Education	25	14.3
Monthly Income	891 TL or less (Minimum Wage)	34	19.4
	892–1500 TL	78	44.6
	1501–2250 TL	29	16.6
	2251–3000 TL	19	10.9
	3001 TL or more	15	8.5
Number of Children	None	4	2.3
	One	18	10.3
	Two	36	20.6
	Three	52	29.7
	Four	33	18.8
	Five or more	32	18.3
Living ...	Alone	33	18.8
	With Spouse	71	40.6
	With Spouse and Children	28	16.0
	With Children	43	24.6
House Property	House Owner	134	76.6
	Tenant	41	23.4
Social Security	Yeşil Kart (Health card for uninsured citizens)	12	6.9
	Emekli Sandığı (State Retirement and Social Security fund for civil servants)	69	39.4
	Bağkur (Social Security and Pension system for artisans, craftsmen and the self-employed)	35	20.0
	SSK (Social Security Institution for private sector employees)	59	33.7
Total		175	100.0



Table 2— Descriptive Statistics Regarding the Thunder Bay Index.

Items / Questions	1	2	3	4	\bar{x}	sd
	%	%	%	%		
I can accept my past (e)	0.6	0.6	16.6	82.3	3.81	0.45
I try to make the best of my current condition (sa)	1.1	2.3	17.1	79.4	3.75	0.55
I trust my judgment (sa)	-	4.6	20.0	75.4	3.71	0.55
I feel that I am loved by my kith and kin (l)	1.7	2.3	22.3	73.7	3.68	0.61
My room is adequately heated (p)	1.7	7.4	14.3	76.6	3.66	0.69
I can rest when I want to (p)	4.0	4.0	17.1	74.9	3.63	0.75
I can get support from someone in times of emergency (s)	3.4	5.7	16.6	74.3	3.62	0.75
I am not afraid of being myself (e)	0.6	8.0	22.3	69.1	3.60	0.66
I can decide what is right or wrong for me (sa)	2.3	4.0	25.1	68.6	3.60	0.68
The bathroom in my room is adequate for my hygiene need (p)	5.7	3.4	18.3	72.6	3.58	0.81
I have enough clothes (p)	4.0	4.6	24.0	67.4	3.55	0.76
I feel fine/comfortable even if I cannot do a job perfectly (e)	4.6	8.0	22.9	64.6	3.47	0.83
I always find someone when I want to chat (l)	5.1	9.7	20.0	65.1	3.45	0.87
I feel free to be myself and I accept the consequences (sa)	6.3	5.1	26.9	61.7	3.44	0.85
I have close friends (l)	9.1	4.6	20.6	65.7	3.43	0.94
I feel safe in my relations with others (e)	2.3	7.4	35.4	54.9	3.43	0.73
I think I can manage myself (sa)	4.0	6.9	31.4	57.7	3.43	0.79
I take care of my own well-being (e)	6.3	6.3	29.1	58.3	3.39	0.86
I love the way I live my life (e)	6.3	9.7	24.0	60.0	3.38	0.90
I am content with the satisfaction of my health needs (s)	5.7	10.3	24.6	59.4	3.38	0.89
I feel important / I feel that I matter (l)	4.6	9.7	29.7	56.0	3.37	0.84
I trust my own skills to overcome an issue (e)	5.1	7.4	38.9	48.6	3.31	0.82
I enjoy life (l)	6.9	8.0	35.4	49.7	3.28	0.88
I feel powerful (sa)	8.0	9.1	33.1	49.7	3.25	0.92
I have an appropriate diet (p)	8.0	8.6	36.6	46.9	3.22	0.91
I can do things I want to do (e)	9.1	10.3	29.7	50.9	3.22	0.97
I believe that individuals are genuinely honest and reliable (sa)	4.6	17.7	34.3	43.4	3.17	0.88
I can deal with the ups and downs of the life (e)	8.0	13.7	33.7	44.6	3.15	0.94
I can pass the time with individual even though I do not approve everything about them (sa)	8.6	12.6	34.9	44.0	3.14	0.95
It is easy to provide suitable living conditions for an elderly person (p)	8.6	15.4	36.6	39.4	3.07	0.94
Some exercises are part of my daily routine (p)	17.1	7.4	26.9	48.6	3.07	1.12
Other individuals do not have to agree with my view (e)	15.4	17.7	17.1	49.7	3.01	1.14
I can wander/travel when I need to (s)	13.1	21.7	22.9	42.3	2.94	1.08
I have a good time with my friends (l)	21.1	13.7	24.0	41.1	2.85	1.17
I can cope with daily life as I did in the past (s)	20.6	17.7	22.3	39.4	2.81	1.17
I have enough savings for rainy days (s)	28.6	11.4	17.1	42.9	2.74	1.28
I feel safe when I am alone (s)	25.7	11.4	29.7	33.1	2.70	1.18
I can procure some money from state funds when I need to (s)	34.9	9.7	18.3	37.1	2.58	1.30

(p) Physiological, (s) Safety, (l) Love/Belonging, (e) Esteem, (sa) Self-Actualization, 1: I agree-4: I disagree.

the most positive answers were given to the following items: "I can accept my past" (\bar{x} =3.81); "I try to make the best of my current condition" (\bar{x} =3.75); and "I trust my judgment" (\bar{x} =3.71). The most negative answers were given for the following items: "I can procure some money from state funds when

I need to" (\bar{x} =2.58); "I feel safe when I am alone" (\bar{x} =2.74); and "I have enough savings for rainy days" (\bar{x} =2.70).

Concerning the opinions of the elderly regarding their physiological needs and their need for safety, love and belonging, esteem, and self-actualization differ considerably



($p>0.05$) with respect to factors such as gender, age, and individuals they live with, their opinions also differ considerably ($p<0.05$) with respect to factors such as education, monthly income, number of children, house property, and social security (Table 3). When the group averages are considered, elderly individuals who have a lower level of education, have less income, have four or more children, do not own their house, and use a *Yeşil Kart* (Green Card, which is a health

card for uninsured citizens) gave more negative opinions regarding the above-mentioned needs.

The table 4 shows that, while the participants' opinions regarding the Thunder Bay Index do not differ considerably with respect to their dependence status for cooking and cleaning ($p>0.05$), they differ considerably with respect to their dependence status for taking a bath, changing clothes, sitting, standing, using the toilet, walking, and shopping ($p<0.05$).

Table 3— Comparison of Elderly Individuals' Opinions Regarding the Thunder Bay Index with Respect to Certain Characteristics.

Variable	Group	\bar{x}	sd	t	P
Gender	Female	3.35	0.51	1.017	0.310
	Male	3.28	0.42		
Age	65–70	3.37	0.44	2.311	0.060
	71–75	3.37	0.50		
	76–80	3.26	0.49		
	81–85	3.34	0.39		
	85 or older	2.92	0.44		
Education Status (Last graduated level)	Primary School	3.11	0.46	16.256	0.000*
	Secondary School	3.27	0.43		
	High School	3.55	0.33		
	Higher Education	3.73	0.40		
Monthly Income (TL)	891 or less (Minimum Wage)	2.91	0.48	15.720	0.000*
	892–1500	3.31	0.41		
	1501–2250	3.41	0.43		
	2251–3000	3.51	0.34		
	3001 or more	3.83	0.26		
Number of Children	None	3.34	0.45	7.306	0.000*
	One	3.73	0.27		
	Two	3.49	0.45		
	Three	3.31	0.45		
	Four	3.14	0.48		
	Five or more	3.08	0.44		
Living ...	Alone	3.32	0.56	0.033	0.992
	With Spouse	3.31	0.45		
	With Spouse and Children	3.30	0.47		
	With Children	3.33	0.46		
House Property	House Owner	3.41	0.44	5.008	0.000*
	Tenant	3.01	0.47		
Social Security	Health card for uninsured citizens (Yeşil Kart)	2.83	0.44	11.135	0.000*
	State Retirement and Social Security fund for civil servants (Emekli Sandığı)	3.51	0.45		
	Social Security and Pension system for artisans, craftsmen and the self-employed (Bağkur)	3.15	0.42		
	Social Security Institution for private sector employees (SSK)	3.29	0.43		

* $p<0.001$

**Table 4**— Comparison of the Opinions of the Elderly Regarding the Thunder Bay Index with Respect to Their Daily Living Activities.

Variable	Group	\bar{x}	sd	t	P
Taking a bath	Dependent	3.06	0.54	4.365	0.014*
	Partially Dependent	3.23	0.44		
	Independent	3.37	0.46		
Changing clothes	Dependent	2.93	0.53	7.447	0.001*
	Partially Dependent	3.09	0.44		
	Independent	3.38	0.46		
Sitting down / Standing up	Dependent	3.07	0.49	4.085	0.018*
	Partially Dependent	3.09	0.49		
	Independent	3.36	0.46		
Using the toilet	Dependent	3.04	0.47	6.726	0.002*
	Partially Dependent	2.99	0.46		
	Independent	3.37	0.46		
Walking	Dependent	2.97	0.49	4.003	0.020*
	Partially Dependent	3.17	0.53		
	Independent	3.36	0.45		
Cooking	Dependent	3.25	0.46	0.569	0.567
	Partially Dependent	3.32	0.48		
	Independent	3.35	0.48		
Cleaning	Dependent	3.23	0.52	1.315	0.271
	Partially Dependent	3.37	0.43		
	Independent	3.31	0.50		
Shopping	Dependent	3.28	0.49	5.975	0.003*
	Partially Dependent	3.22	0.49		
	Independent	3.51	0.39		

*p<0.001

The results demonstrate that elderly individuals who could independently take a bath, change clothes, sit, stand, use the toilet, walk, and shop gave more positive opinions than those who were partially or completely dependent.

DISCUSSION

Analysis of the scientific statistics related to the opinions of the elderly who participated regarding the items included in the Thunder Bay Index showed that the average value was $\bar{x} = 3.32$ on a quaternary scale assessing the general needs of the elderly, such as physiological, safety, love and belonging, esteem, and self-actualization. This value may be considered a positive outcome on a quaternary scale. The items with the most positive answers were “I can accept my past” ($\bar{x} = 3.81$), and “I try to make the best of my current condition” ($\bar{x} = 3.75$). The most negative answers were given to the items “I can procure some money from state funds when I need” ($\bar{x} = 2.58$), and “I feel safe when I am alone” ($\bar{x} = 2.74$). This fin-

ding suggests that the elderly can satisfy their needs regarding “self-actualization” and “esteem” more efficiently than those for “safety” and that the latter is what the elderly primarily need. Additionally, because this study was conducted using the Thunder Bay Index, limited data were available for making comparisons and creating arguments.

According to the results of the T-test and variance analysis, which were conducted to compare the participants’ opinions regarding the Thunder Bay Index with respect to certain characteristics, the general opinions of the elderly regarding their physiological needs and their needs for safety, love and belonging, esteem, and self-actualization do not differ considerably with respect to gender, age, and the individual they live with ($p > 0.05$). However, they differ considerably with respect to their level of education, monthly income, number of children, house property, and type of social security ($p < 0.05$). When the group averages are considered, elderly individual who have a lower level of education, have less inco-



me, have four or more children, do not own their house, and use a *Yeşil Kart* gave more negative opinions about the above-mentioned needs. This may be because these groups face difficulties while satisfying their fundamental needs. As individuals get older, their medical costs and the costs of their care increase. If an elderly person has social security and his or her level of income is enough to sustain a healthy, comfortable way of living, his or her level of satisfaction regarding his or her needs is likely to increase (3).

The study showed that the elderly are usually independent while taking a bath, changing clothes, sitting down, standing up, using the toilet, walking, and cooking; they are partially dependent on others for house cleaning. Ünsaldı and Piyal found that elderly individual suffering from chronic diseases completely depend on others for heavy housework, doing the laundry, ironing, shopping, and cooking (13). İnanır et al.'s study indicated that elderly patients are partially dependent on others for activities such as cleaning, shopping, transportation, cooking, taking a bath, using the telephone, taking medicines, doing the laundry, managing their budget, and self-care (14). However, they are independent during activities such as changing clothes, using the toilet, transferring, and feeding; they study found that they are not fully dependent on others for anything.

It becomes clear that the opinions of the elderly regarding the Thunder Bay Index do not differ considerably with respect to their dependence status during cooking and cleaning ($p>0.05$). Their opinions differ considerably with respect to their dependence status during activities such as taking a bath, changing clothes, sitting down, standing up, using the toilet, walking, and shopping ($p<0.05$). The results show that the elderly individual who reported as independent during activities such as taking a bath, changing clothes, sitting down, standing up, using the toilet, walking, and shopping gave more positive opinions than those who reported as partially or completely dependent. This may be a result of the fact that when elderly individual are less dependent, they are more capable of satisfying their physiological needs and their needs for safety, love and belonging, esteem, and self-actualization.

Considering the findings of the study three recommendations have been presented. Based on the Thunder Bay Index items for which the elderly gave the most negative opinions, their "safety" needs should be addressed primarily by taking necessary steps and their level of income should be upgraded. Care and support required for elderly individual to maintain their daily living activities and their quality of life should be provided. Nationwide studies on larger samplings should be

performed to examine the needs of the elderly and their daily living activities.

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