ORIGINAL ARTICLE

European Health

Literacy Journal

HEALTH LITERACY AND TRAFFIC ACCIDENTS

Aykut ARDIÇ [1]

[1] Siteler Family Health Center, Bursa, TURKEY

ABSTRACT

Aim: The aim of this study was to examine the relationship between health literacy and traffic accidents.

Methods: Between February 2022 and April 2022, this study was conducted with participants who came to the Family Health Center in Bursa province. Volunteers were asked to fill out a sociodemographic data form and the Newest Vital Sign (NVS) Scale.

Results: According to the results of our study, the NVS score was found to be lower for those who had been in a traffic accident. The NVS score of those who had a traffic accident was found to be low at all levels of education compared to those who had not had a traffic accident. As the level of education increased, NVS scores increased.

Conclusions: At least one of the drivers is at fault in accidents that occur when two vehicles hit each other. It was observed that being involved in an accident in any way was associated with health literacy. The health literacy scale is a scale in which we evaluate the ability of people with NVS to understand what they are reading and to pay attention. Considering that drivers who have a good attention span, a high NVS score and drive more cautiously have less accidents, the education of individuals with low health literacy in traffic accident prevention may be recommended.

Keywords: NVS, health literacy, traffic accident

Corresponding Author: Aykut ARDIC aardic.dr@gmail.com

Received: ***April 23, 2022;*** *Accepted:* ***April 29, 2022;*** *Published Online:* ***April 30, 2022***

Cite this article as: Ardic, A.(2022).Health Literacy and Traffic Accidents European Health Literacy Journal 2(1), 26-35.

Introduction

Health literacy is the proficiency of social and cognitive abilities that enable people to access, understand, interpret and use necessary information that will allow them to make decisions and turn the decisions they make into actions to improve their quality of life, maintain quality of life and protect themselves from diseases (1-3). In the Health Promotion Dictionary published by the General Directorate of Basic Health Services of the Ministry of Health: "It represents the cognitive and social skills that determine the ability and motivation of individuals to access, understand and use information in a way that promotes and maintains good health. Health literacy means achieving a level of knowledge, personal skills and confidence to take action to improve personal health and community health by changing personal lifestyle and living conditions. So, health literacy is more than just being able to read brochures and do what is told" (4). According to the World Health Organization, it has been defined as "the ability to access, understand and use information on the way to maintaining and improving an individual's good health status" (5).

About 1.3 million people die every year in the world due to traffic accidents on highways. About 93% of deaths occur in low- and middle-income countries. Close to 50 million people are injured and many of them remain disabled (6). In our country, 4866 people lost their lives in 983,808 accidents in 2020. 226,266 people were injured. According to the fault rates in accidents, 97% are of people at fault (driver 88.65%, pedestrian 6.93%, passenger 1.46%). Vehicle and road faults are 3% (7). The effect of the human factor in traffic accidents in our country is 97%, while in European countries it is about 50%. The development of behavior, knowledge and skills of a person who is fundamentally at fault in accidents comes to the fore in preventing accidents (8). Information processing and motor skills, as well as driver behavior, affect the result in adverse situations encountered in traffic (9).

There can be many reasons affecting traffic accidents. Insomnia and alcohol are the most well-known human-caused factors. In this study, the relationship between health literacy and traffic accidents were examined.

METHODS

This descriptive study was conducted between February 2022 and April 2022 in the Yenişehir Family Health Center in Bursa province. The study was approved by the University of Medical Sciences, Bursa Yuksek Ihtisas Training and Research Hospital Ethics Committee, dated 09.02.2022 2011-KAEK-25 2022/02-16. Health literacy was assessed with the Newest Vital Sign (NVS) scale.

Sociodemographic information form included: gender, age, body mass index, marital status, education, occupation, income status, smoking status, alcohol use status, chronic disease history, total cost of traffic accidents in the last 5 years, in a traffic accident in the last 5 years, and how many times in a traffic accident.

The Latest Vital Signs Scale (NVS): NVS was developed by Weiss et al. (10). There are 6 questions related to an ice cream nutritional label on this scale and it takes an average of 3-6 minutes. The first four of these questions require calculation. The last two questions do not require numerical skills, but they test reading and understanding. The form measures literacy, calculation and comprehension skills. Each correct answer given by the participant is calculated as 1 point and the level of health literacy is determined according to the total score received. According to the sum of the scores: Total score is 0-1: Low health literacy, Total score is 2-3: Intermediate health literacy, Total score is 4-6: Adequate health literacy. Çiftçi et al. conducted the Turkish validity and reliability study (11).

Statistical Analysis

In this study, we used descriptive statistical values such as number and related percentages for categorical data and median, minimum and maximum for discrete and continuous data, and the Latest Vital Signs Test NVS Scale to evaluate the demographic characteristics of the participants. Spearman's statistical analysis, Kruskal-Wallis test and Mann-Whitney U tests were used. SPSS program was used for statistical analysis (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.) and the type I error performance was considered to be 5%.

RESULTS

Of the 200 people who were given the sociodemographic data form for the study, 109 completed the form (response rate: 54.5%). The demographic characteristics of the participants are given in Table 1. Of the participants evaluated in the study, 82 (75.2%) were male and 27 (24.8%) were female (Table1).

Table1. General Characteristics of the Participants

Sex	Female	Number	27
		%	24.8
	Male	Number	82
		%	75.2
Age (years)	25 - 35	Number	26
		%	23.9
	36 - 45	Number	45
		%	41.3
	46 - 55	Number	19
		%	17.4
	56 - 65	Number	19
		%	17.4
Body Mass Index	Median		25.8
	Minimum		17.09
	Maximum		41.8
Marital Status	Married	Number	96
		%	88.1
	Single	Number	5
		%	4.6
	Divorced	Number	8
		%	7.3
Education	Primary Education	Number	33
		%	30.3
	High School	Number	30
		%	27.5
	University	Number	46
		%	42.2
Occupation	Housewıfe	Number	5
		%	4.6
	Farmer, Fader, Mushroom Grower	Number	20
		%	18.3
	Small Busıness	Number	24
		%	22

			Officer		Number	33
					%	30.3
			Employee		Number	18
					%	16.5
			Retıred		Number	9
					%	8.3
Income			Poor		Number	1
					%	0.9
			Medium		Number	79
					%	72.5
			Good		Number	29
					%	26.6
Smoking			Yes		Number	42
					%	38.5
			No		Number	67
					%	61.5
Alcohol			Yes		Number	8
					%	7.3
			No		Number	101
					%	92.7
Amount of Alcohol Consumed (Cup/ Week)			Median			2.5
			Minimum			1
			Maximum			7
Chronic Disease	Yes	Number	21	Hypertension	Number	6
					%	28.6
				Cardiovascular Disease	Number	6
					%	28.6
		%	19.3	Hyperlipidemia	Number	4
					%	19
				Diabetes Mellitus	Number	2
					%	9.5
				Chronic Obstructive Pulmonary Disease	Number	3
					%	14.3
				Asthma	Number	1

					%	4.8
				Rheumatological Disease	Number	2
					%	9.5
				Liver Disease	Number	2
					%	9.5
				Cancer	Number	1
					%	4.8
				Benign Prostate Hypertrophy	Number	2
					%	9.5
				Hashimato Throiditis	Number	2
					%	9.5
				Migraine	Number	1
					%	4.8
				Esophagitis	Number	1
					%	4.8
				Stroke Paralysis	Number	0
					%	
				Psychiatric Illness	Number	0
					%	
	No	Number	88			
		%	80.7			

29 (26.6%) of the participants evaluated in the study had been in a traffic accident (Table2).

Table2. Participants' Traffic Accident Status

Traffic Accident	Yes	Number	29	How many times have you had an accident in the last 5 years?	Median		1
		%	26.6		Minimum		1
					Maximum		3
				Total Tramer Records in the Last 5 Years	0 - 3000 TL	Number	13
						%	44.8
					3001 - 10000 TL	Number	10
						%	34.5
					10001 - 20000 TL	Number	5
						%	17.2

					20001 - 30000 TL	Number	1
						%	3.4
	No	Number	80				
		%	73.4				

Variables related to the NVS score and the correlation levels are shown in Table3. Statistically, age, marital status, economic status, alcohol use, total cost of accidents and chronic diseases showed significant variability in NVS scores. Women between the ages of 36-45, married and divorced, college graduates, artisans and clerks, those with better economic situation, alcohol use, smoking, non-smokers, people who have had a traffic accident, and those with chronic disease were evaluated. As the level of education increased, the NVS score also increased.

Table3. Evaluation of the Latest Vital Signs Scale (NVS) scores of the participants

			TOTAL NVS			
		Number	Median	Minimum	Maximum	P
Sex	Female	27	5.00	3.00	6.00	.004
	Male	82	4	.00	6.00	
Age	25 - 35	26	4.00	1.00	6.00	.105
	36 - 45	45	5.00	2.00	6.00	
	46 - 55	19	4.00	1.00	6.00	
	56 - 65	19	3.00	.00	6.00	
	TOTAL	109	4.00	.00	6.00	
Marital Status	Married	96	4.5	.00	6.00	.542
	Single	5	3.00	3.00	6.00	
	Divorced	8	4.5	3.00	5.00	
Education	Primary Education	33	3.00	.00	6.00	.000
	High School	30	4.00	2.00	6.00	
	University	46	5.00	3.00	6.00	
Occupation	Housewıfe	5	5.00	3.00	6.00	.000
	Farmer	20	3.00	.00	6.00	
	Tradesmen	24	5.00	1.00	6.00	
	Officer	33	5.00	3.00	6.00	
	Employee	18	4.00	1.00	6.00	

	Retired	9	3.00	2.00	5.00	
Income	Poor	1	3.00	3.00	3.00	.588
	Medium	79	4.00	1.00	6.00	
	Good	29	5.00	.00	6.00	
Smoking	Yes	42	4.00	1.00	6.00	.004
	No	67	5.00	.00	6.00	
Alcohol	Yes	8	4.50	1.00	6.00	.735
	No	101	4.00	.00	6.00	
Traffic Accident	Yes	29	3.00	.00	6.00	.005
	No	80	5.00	1.00	6.00	
Total cost of the accident in the last 5 years	0 - 3000 TL	13	3.00	2.00	6.00	.495
	3001 - 10000 TL	10	3.00	.00	6.00	
	10001 – 20000 TL	5	3.00	1.00	6.00	
	20001 – 30000TL	1	6.00	6.00	6.00	
Chronic Disease	Yes	21	3.00	.00	6.00	.076
	No	88	5.00	1.00	6.00	

Those who had a traffic accident had a lower NVS score (Table 5 and Figure 1).

Table4. The relationship between Traffic Accidents and NVS score

	NVS TOTAL POINTS			
Traffic Accident	**N**	**Median**	**Minimum**	**Maximum**
No	80	5.00	1.00	6.00
Yes	29	3.00	.00	6.00
Total	109	4.00	.00	6.00

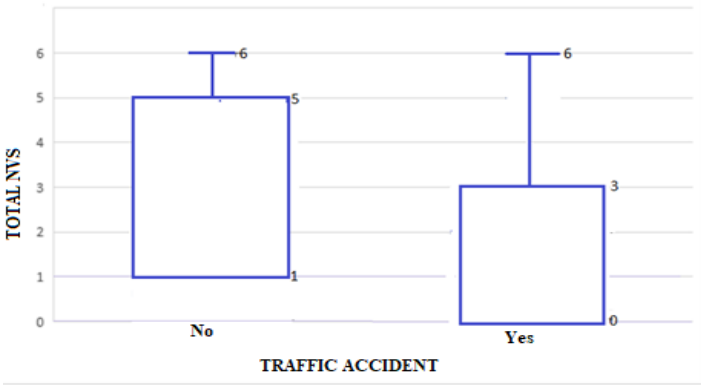

Figure1. The relationship between Traffic Accidents and NVS score

The relationship between NVS score, educational status and traffic accidents is shown in Table 5. The NVS score of those who were in a traffic accident is low at all levels of education compared to those who were not in a traffic accident. As the level of education increases, NVS scores also increase (Figure2).

Table5. Relationship of NVS Score, Educational Status and Traffic Accidents

		NVS Total Points			
Educational Status	**Traffic Accident**	**N**	**Median**	**Minimum**	**Maximum**
Primary/Secondary School	No	23	3.00	1.00	6.00
	Yes	10	2.00	.00	3.00
	Total	33	3.00	.00	6.00
High School	No	21	5.00	2.00	6.00
	Yes	9	4.00	2.00	6.00
	Total	30	4.00	2.00	6.00
University	No	36	5.50	3.00	6.00
	Yes	10	4.50	3.00	6.00
	Total	46	5.00	3.00	6.00
Total	No	80	5.00	1.00	6.00
	Yes	29	3.00	.00	6.00
	Total	109	4.00	.00	6.00

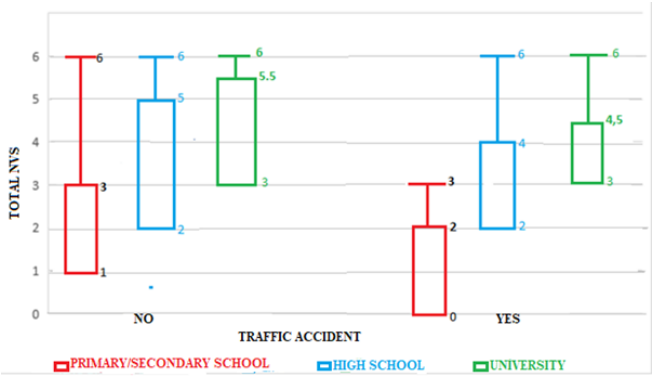

Figure2. The Relationship of NVS Score, Educational Status and Traffic Accidents

DISCUSSION

According to the results of our study, the NVS score was lower for those who had been in a traffic accident. The NVS score of those who had a traffic accident was lower at all levels of education compared to those who had not had a traffic accident. As the level of education increased, NVS scores increased.

According to the fault rates for accidents in our country, 97% were people at fault (7). In European countries, this figure is about 50%. The development of behavior, knowledge and skills of a person who is fundamentally at fault in accidents comes to the fore in preventing accidents (8). Information processing and motor skills, as well as driver behavior, affect the result in adverse situations encountered in traffic (9).

Failure to comply with the conditions required by road, air and traffic speed (38%), failure to comply with the priority of crossing at intersections and crossings (15%), failure to comply with lane monitoring and change rules (9.5%), rear-end collision (8.7%) and failure to comply with the rules of turning (7.9%) are important driver faults that cause traffic accidents (12).

In other studies, it has been determined that the driving skill score is high and the safe driving skill score is low for those with high traffic accidents and traffic fines (9, 13). "The capacity to self-regulate driving behaviors based on awareness of physical, cognitive and sensory limitations is a more important factor in determining potentially safe driving behavior than actual driving ability" (14). Studies have shown that appropriate information about people's health literacy and medical conditions can have a positive effect on their self-care and behavior in traffic, understand factors affecting driving safety, and contribute to appropriate behavior change (15, 16). In a study conducted with those who drive over the age of 65, it was noted that health literacy has the potential to be an important factor in regulating driver behavior. It has been observed that creating awareness about the impact of psychomotor, visual and cognitive skills on driving safety has positive effects (14).

As in our study, in many studies it has been seen that there is a linear relationship between health literacy and education levels (1, 17). Health literacy includes "an observable set of skills that can be developed and improved through effective communication and education" (18). It is known that people with limited health literacy benefit less from preventive health services, and that they are deficient in following medical instructions and managing chronic diseases (19). This situation can also cause decision-making and application deficiencies for safe driving in traffic. According to Tanrıöver et al., about 24% of the community has inadequate health literacy, and about 40% have a limited level of health literacy (20). An improvement in the health literacy of the community can potentially lead to a great benefit in terms of road safety.

From our results, at least one of the drivers is at fault in accidents that occur when two vehicles hit each other. It was observed that being involved in an accident in any way was associated with health literacy. The health literacy scale is a scale in which we evaluate the ability of people with NVS to understand and pay attention to what they are reading. If we consider drivers who have a good attention span, a high NVS score and drive more cautiously, the education of individuals with low health literacy in the field of traffic accident prevention may be recommended.

Disclosure of conflict of interest

None of the author has any conflict of interest to disclose

References

1. Ozaydin F, Demirci H, Karayurek Y. Relatıonship Between Occupational Accidents of Industrial Workers and Health Literacy and Workplace Safety Climate. Eur Health Liter J. 2021; 1: 47-57.
2. Sørensen K, Van den Broucke S, Fullam J, Doyle G, Pelikan J, Slonska Z et all. Health literacy and public health: A systematic review and integration of definitions and models. BMC Public Health. 2012; 12: 80.
3. Gözlü K. A Social Determinant Of Health: Health Literacy. Med J SDU. 2020; 27(1): 137-44.
4. Andrus MR, Roth MT. Health literacy: a review. Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy. 2002; 22: 282-302.
5. Nutbeam D. Health Literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. Health Promot Int. 2000;15:259-67.
6. Road traffic injuries - WHO | World Health Organization. https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries. Access Date: 30.04.2022
7. 2020 yılı karayolları genel müdürlüğü sorumluluğundaki yol ağında meydana gelen trafik kazalarına ait özet bilgiler. Kara Yolları Müdürlüğü. https://www.kgm.gov.tr/SiteCollectionDocuments/KGMdocuments/Trafik/TrafikKazalariOzeti2020.pdf. Access Date: 30.04.2022
8. Gökdağ M, Atalay A. Trafik Eğitiminin Trafik Kazaları Üzerindeki Etkisi. Erzincan Univ J Sci Tech. 2015; 8: 272-83.
9. Kuyumcu Z, Aslan H, Yose M, Ahadi S. Türkiye'de Trafik Kazaları ve Sürücülerin Kazalardaki Payı. Academic Perspect Procedia. 2020; 3: 694-702.
10. Weiss BD, Palmer R. Relationship between health care costs and very low literacy skills in a medically needy and indigent Medicaid population. J Am Board Fam Pract. 2004;17:44-7.
11. Çiftçi F, Demirci H, Çiftçi HN, Ocakoğlu G. Validation of Turkish Version of Newest Vital Sign Scale to Assess Health Literacy. Bezmialem Sci. 2021; 9: 219-25

12. Ülke Geneli. Trafik. http://trafik.gov.tr/kurumlar/trafik.gov.tr/04-Istatistik/Aylik/aralik21.pdf Access Date: 30.04.2022

13. Sümer N, Özkan T. Sürücü Davranişlari, Becerileri, Bazi Kişilik Özellikleri ve Psikolojik Berlirtilerin Trafik Kazalarindaki Rolleri [The role of driver behavior, skills, and personality traits in traffic accidents]. Turk Psikol Derg. 2002; 17: 1–25.

14. Sargent-Cox KA, Windsor T, Walker J, Anstey KJ. Health literacy of older drivers and the importance of health experience for self-regulation of driving behaviour. Accid Anal Prev. 2011; 43: 898-905.

15. Buck D, Godfrey C, Morgan A. The contribution of health promotion tomeeting health targets: questions of measurement, attribution and responsibility. Health Promot Int. 1997; 12: 239–50.

16. Wardle J, Parmenter K, Waller J. Nutrition knowledge and food intake. Appetite. 2000; 34: 269–75.

17. Pelikan JM, Röthlin F, Ganahl K. The European Health Literacy Project, 2009-2012. Ludwig Boltzmann Institut. 2012.

18. Nutbeam, D. Health education and health promotion revisited. Health Educ J. 2019; 78: 705-9.

19. Vamos S, Okan O, Sentell T, Rootman I. Making a case for "Education for Health Literacy": an international perspective. Int J Environ Res Public Health. 2020; 17: 1436.

20. Tanrıöver MD, Yıldırım HH, Ready FND, Çakır B, Akalın HE. Sağlık Okuryazarlığı Araştırması. Sağlık-Sen Yayınları. 2014; 6: 42-47.