

Comparison of Stroke Knowledge Levels of Nurses Working in an Educational and Research Hospital: A Cross-Sectional Study Bir Eğitim ve Araştırma Hastanesinde Çalışan Hemşirelerin İnme Bilgi Düzeylerinin Karşılaştırılması: Kesitsel Çalışma

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Summary

Objective: In this study, it was aimed to investigate the stroke knowledge levels of the nurse groups working in the departments that had or did not encounter stroke cases before, with a questionnaire prepared using the literature.

Materials and Methods: For this cross-sectional study, the ethics committee approval was obtained from Uşak University's Non-Interventional Researches Ethics Committee (Date: 10.06.2017, No: 2017-10) and the study was carried out in Medical Faculty of Uşak University between 1 December 2017 and 1 February 2018.

Results: In total, 208 nurses (female n=168, male n=40) were involved in the present study. Among those having a previous training on stroke, the scores on risk factors and treatment methods and total scores were found to be statistically significantly higher when compared to those having none (p=0.017, p=0.029, p=0.022). The scores of nurses having experience longer than 16 years in risk factors, symptoms, and differential diagnosis were found to be significantly higher than those having shorter seniorities (p=0.0001, p=0.0001, p=0.044). High school graduates' scores in general knowledge, risk factors, treatment, symptoms, and complications and also their total scores were significantly lower than college graduates and university graduates (p=0.036, p=0.005, p=0.0001, p=0.005, p=0.035, p=0.0001).

Conclusion: Stroke knowledge levels of nurse groups; it has been determined that being a university graduate, having previous education on stroke and having more professional experience have a positive effect.

Key words: Knowledge levels, nurse, stroke.

Özet

Amaç: Bu çalışmada daha önce inme vakalarıyla karşılaşan ve karşılaşmayan bölümlerde çalışan hemşire gruplarının inme bilgi düzeylerinin literatür bilgileri kullanılarak hazırlanan anket ile araştırılması amaçlanmıştır.

Gereç ve Yöntem: Bu kesitsel çalışma Uşak Üniversitesi Girişimsel Olmayan Araştırmalar Etik Kurulunun 06.10.2017 tarihli ve 2017-10 nolu onayı ile 1 Aralık 2017 ile 1 Şubat 2018 tarihleri arasında Uşak Üniversitesi Tıp Fakültesi Hastanesinde gerçekleştirildi.

Bulgular: Çalışmaya toplam 208 (Kadın n=168, erkek n=40) hemşire katıldı. İnme eğitimi alanların risk faktörleri, tedavi yöntemleri ve toplam puanları eğitim almayanlardan istatistiksel olarak anlamlı düzeyde daha yüksekti (p=0,017, p=0,029, p=0,022). 16 yıldan daha fazla çalışan hemşirelerin risk faktörleri, semptomlar ve ayırıcı tanı puanları daha kısa süre çalışan hemşirelere göre istatistiksel olarak anlamlı derecede daha yüksekti (p=0,0001, p=0,0001, p=0,044). Lise mezunlarının genel bilgileri, risk faktörleri, semptomlar, tedavi, komplikasyonlar ve toplam puanları yüksekokul ve üniversite mezunlarına göre anlamlı derecede düşüktü (p=0,036, p=0,005, p=0,0001, p=0,005, p=0,035, p=0,0001).

Tartışma: Hemşire gruplarının inme bilgi düzeylerini; üniversite mezunu olma, inme konusunda daha önce eğitim alma ve daha fazla mesleki deneyime sahip olmanın olumlu yönde etkilediği tespit edilmiştir.

Anahtar Kelimeler: İnme, hemşire, bilgi düzeyleri

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Introduction

Stroke refers to the sudden death of several brain cells due to oxygen deficiency as a result of the interruption of blood flow to the brain because of a blockage or rupture of an artery feeding the brain. Stroke is also one of the leading reasons for depression and dementia (1). It is the second-most common reason of death and permanent disability (2). According to the data of Turkish Statistical Institute (TUIK) for the year 2019, among the death reasons in Turkey, vascular disorders are the most common one (36.8%), followed by cerebrovascular diseases with the rate of 22.2% (3).

Stroke may be ischemic (87%) or hemorrhagic (intracerebral hemorrhage 10% and subarachnoid hemorrhage 3%). The reason for stroke may be thrombolytic or embolic (4). Ischemic stroke is a condition requiring emergency intervention. The treatment aims to protect the ischemic cerebral tissue (5). In acute stroke treatments, intravenous thrombolysis has been used for reperfusion in the last 15 years and endovascular thrombotectomy has been used in recent years. However, independently from these treatments, the rate of patients with ischemic stroke has significantly increased in the same period. The programs aiming to increase the awareness of the importance of early diagnosis is a key to providing stroke patients with a better care (6).

The evidences indicate that the acute ischemic stroke treatment using intravenous recombinant tissue plasminogen activator (tPA) as a primary measure may significantly decrease mortality and disability. The most important indicator of the response to treatment is the time between the emergence of symptoms of acute ischemic stroke and the beginning of treatment. According to a previous study, every 15-min delay in treatment results in a 1-month delay for the independent life of patient (7). A delay in applying to emergency service is a common problem seen after the stroke (8).

Stroke is a disease requiring a team-driven treatment. American Heart Association (AHA) and American Stroke Association (ASA) emphasize that the nurses play a central role in guidelines (9). After the stroke, besides the stroke patients, every individual in the lives of stroke patients may also be affected by the process. It is known that, thanks to the advancements in

technology and medicine, this damage can be limited through early interventions. Not only the lives are saved but also the disabilities can be reduced (10).

In this study, it was aimed to determine the factors affecting the knowledge levels of nurse groups in stroke, a disease in which early diagnosis and treatment are very important.

Material and ve Methods

Research Design

In the present cross-sectional study, the nurses' knowledge of stroke was investigated by a survey.

Participants

The present study was carried out in the Medical Faculty of Uşak University between 1.12.2017 and 1.2.2018. In total of 208 nurses (168 women and 40 men) working in different departments of the Uşak University Medical Faculty Hospital between the dates of the study were involved in the present study.

Data Collection Form

This survey has been prepared by the researchers complied with the literature (4,7,9). In this survey, there are 5 general items about stroke, 10 items about risk factors, 14 items about symptoms, 7 items about differential diagnosis, 9 items about treatment, and 5 items about possible complications of stroke. Fifty items in total are answered as "right" or "wrong" and the answers "right" and "wrong" are scored as "1" and "0", respectively.

Assessment criteria were as follows; nurses' sociodemographic characteristics, level of knowledge about stroke, presence of familial stroke history, experience, and departments in which they have worked in past.

By the departments in which they have previously worked, nurses were first divided into two groups as "stroke" and "others". The nurses, who have worked in neurology, physical therapy, neurosurgery, and emergency service clinics, were gathered in "stroke group", whereas other nurses were assigned to "others" group. These two groups were compared in terms of general knowledge, risk factors, symptoms, and awareness of differential diagnosis and complications. The participants were also compared in terms of age, gender, educational level, years of

experience, previous training on stroke, and presence of familial history of stroke.

Inclusion criteria

Working as a nurse at Uşak University Medical Faculty Training and Research Hospital, having information about the study, volunteering in participation, and answering all the questions.

Exclusion criteria

Missing answer(s) in survey and involuntariness. A total of 216 people applied for the study. 3.7% (n=8) were excluded from the study due to the study exclusion criteria.

Survey and consent forms were delivered in closed envelopes to participants and the filled-out survey forms were collected in closed envelopes into a box. The time to wait for filling the surveys out was set to be 2 minutes.

Ethical Considerations

Ethics committee approval was obtained from Uşak University Non-Interventional Research Ethical Committee (Date: 10.06.2017, No: 2017-10). Uşak University Medical Faculty Hospital were asked for the permission to conduct the study. Following the detailed explanation of the study to the participant nurses those who accepted to participate in the study, verbal and written approval was obtained. The study was conducted in accordance with the Declaration of Helsinki principles.

Statistical Analysis

The data obtained in the present study were analyzed using IBM SPSS Statistics Version 21 package software. The normality of variable distribution was tested using Shapiro Wilk's test because of the number of units. In interpreting the results, the statistical significance was set to be 0.05; since the data were not distributed normally, the intergroup differences were analyzed using Mann Whitney U and Kruskal Wallis-H tests. When statistically significant differences were found in the Kruskal Wallis-H test, the groups with difference were determined using the Post-Hoc Multiple Comparison test. Chi-Square analysis was used in analyzing the relationships between the groups of nominal variables.

Results

In the present study, 208 nurses (168 female and 40 male nurses) were involved. The mean age was

calculated to be 33.5 (Min:17 ; max:59) years. The mean year of working was found to be 13.72 (Min:1 ; max:32) years. The demographic data of participants are presented in table 1.

Table1. Demographic characteristics of participants

		N	%
Age	17-24 years	51	24.5
	25-34 years	39	18.8
	35-44 years	95	45.7
	45+ years	23	11.1
	Total	208	100
Work experience (year)	1-5 years	59	28.4
	6-10 years	25	12.0
	11-15 years	30	14.4
	16+ years	94	45.2
	Total	208	100
Gender	Female	168	80.8
	Male	40	19.2
	Total	208	100
Education	High school	58	27.9
	College	34	16.3
	University	116	55.8
	Total	208	100
Is there anyone who had stroke in your family?	Yes	36	17.5
	No	170	82.5
	Total	206	100
Did you attend any education program about stroke before?	Yes	38	18.7
	No	165	81.3
	Total	203	100
Department	Stroke	49	23.6
	Other	159	76.4
	Total	208	100

The correct answers given to the questions on general knowledge about stroke disease, risk factors, symptoms, differential diagnosis, and complications were analyzed in order to determine whether the answers were affected by age, level of education, years of experience, gender, presence of vocational training in stroke disease, presence of stroke in the family history of the participants and the clinic in which the participant was employed.

No statistically significant relationship was found between gender and stroke knowledge scores ($p>0.05$). The stroke knowledge scores of participants in the age group of 17-24 years in stroke risk factors, symptoms, treatment, complications, and total scores were significantly lower in comparison to the other age groups ($p<0.05$). The stroke knowledge scores of participants in age groups of 17-24 and 45+ years about the differential diagnosis of stroke were found to be statistically significantly lower in comparison to the other groups ($p=0.018$). Regarding the stroke,

high-school graduates' total scores and scores in general knowledge, risk factors, treatment, and complications were found to be significantly lower than college and university graduates ($p<0.05$). When compared to the university graduates, the college graduates' level of knowledge about stroke was found to be significantly lower ($p=0.021$).

The scores of participants, who received training about stroke, in risk factors, treatment methods, and total scores were found to be statistically significantly higher than those who did not receive any training on this subject ($p=0.017$, $p=0.029$, $p=0.022$). Although statistically non-significant, the participants having previous training on stroke know stroke symptoms, differential symptoms, and complications better than those who haven't had this training before. No statistically significant relationship was found

between familial background and level of knowledge about stroke ($p>0.05$). There was no significant difference between the participants, who were working in departments where stroke patients receive treatment, and the participants working in other departments in terms of the level of knowledge about stroke ($p>0.05$). When compared to the others, the scores of those having 16+ years of experience in risk factors, symptoms, and differential diagnosis were found to be significantly higher ($p<0.05$). In comparison to the others, the participants having experience of 1-5 years were found to have significantly lower scores in treatment ($p=0.005$). Compared to others, the participants having 16+ years and 11-15 years of experience were found to have significantly higher total scores and "stroke complications" scores ($p=0.027$, $p=0.0001$) (Table 2).

Table 2. Correlation test results regarding the differences between parameters and stroke knowledge scores

Parameters		General knowledge		Risk factors		Symptoms		Differential diagnosis		Treatment		Complications	
		MP*	p	MP	p	MP	p	MP	p	MP	p	MP	P
Gender	Female (n=168)	80	0.725	70	0.287	86	0.875	57	0.369	67	0.677	80	0.955
	Male (n=40)	80		70		86		57		61.5		90	
Age	17-24 years	60	0.242	60	0.038	71	0.0001	43	0.018	56	0.009	80	0.019
	25-34 years	80		70		93		71		67		100	
	35-44 years	80		70		93		57		67		80	
	45+ years	80		80		93		43		67		80	
Education	High school	60	0.036	60	0.005	71	0.0001	57	0.021	56	0.005	80	0.035
	College	80		70		93		43		61.5		80	
	University	80		80		93		57		67		100	
Stroke Education	Yes	80	0.367	80	0.017	93	0.154	57	0.514	72.5	0.029	100	0.131
	No	80		70		86		57		67		80	
Family History	Yes	80	0.739	80	0.094	93	0.345	57	0.804	67	0.257	80	0.972
	No	80		70		86		57		67		80	
Working are	Stroke	80	0.095	70	0.917	86	0.547	57	0.796	67	0.734	80	0.326
	Others	60		70		86		57		67		100	
Professional Experience (Year)	1-5 Year	60	0.132	60	0.0001	71	0.0001	43	0.044	56	0.005	80	0.027
	6-10 Year	80		70		86		57		56		80	
	11-15 Year	60		70		93		57		67		100	
	16+ Year	80		80		93		64		67		100	

*MP: Median Point

A statistically significant relationship was found between general knowledge and professional experience ($p=0.034$, $p=0.023$). This relationship is weak and directly proportional. General knowledge and professional experience increase with advancing age. Risk factors were found to have a statistically significant relationship with

age, professional experience, and general knowledge ($p=0.019$, $p=0$, $p=0.006$). These relationships are weak and directly proportional. The level of knowledge on risk factors increases with increasing professional experience, general knowledge, and age. Symptoms were found to have a significant relationship with age, experience, and general

knowledge ($p=0$, $p=0.148$). These relationships are weak and directly proportional. As the level of knowledge on symptoms increases, also the experience and general knowledge increase. There is a statistically significant relationship between symptoms and risk factors ($p=0$). This relationship has moderate power and is indirectly proportional. Risk factors increase with increasing symptoms.

The level of knowledge about differential diagnosis of stroke has a statistically significant relationship with experience and general knowledge ($p=0.013$, $p=0.03$). These relationships are weak and directly proportional. The experience increases with an increasing level of knowledge on differential diagnosis of stroke. Differential diagnosis was found to have a statistically significant relationship with risk factors and symptoms ($p=0$). These relationships have moderate power and are directly proportional. As the level of knowledge on differential diagnosis increases, also risk factors and symptoms increase. Treatment was found to have a statistically significant relationship with age, experience, general knowledge, risk factors, symptoms, and level of knowledge on differential diagnosis of stroke ($p < 0.05$). These

relationships are weak and directly proportional. Age, experience, general knowledge, risk factors, symptoms, and differential diagnosis increase with increasing treatment. Complications were found to have a significant relationship with age, experience, risk factors, symptoms, differential diagnosis, and treatment ($p=0.022$, $p=0$). These relationships are weak and directly proportional. As the level of knowledge on complication increases, also the scores in age, experience, risk factors, differential diagnosis, and treatment increase.

Total score was found to have a significant relationship with the scores of age, experience, general knowledge, treatment, complications, risk factors, symptoms, and knowledge of stroke's differential diagnosis ($p=0$). The relationship between total score and age is weak and directly proportional. The relationship of total score with the scores of experience, general knowledge, treatment, and complications is directly proportional and has a moderate power. The relationship of total score with the scores of risk factors, symptoms, and differential diagnosis is directly proportional and has a moderate power. As the total score increases, also the scores of age, experience, general knowledge, treatment, complications, risk factors, symptoms, and differential diagnosis of stroke increase (Table 3).

Table 3. Correlation Test Results on the Relationship Between Parameters

Correlation									
		Age	Professional Experience (Year)	General knowledge	Risk factors	Symptoms	Differential diagnosis	Treatment	Complication
General knowledge	r	,147*	,158*						
	p	0,034	0,023						
	N	208	208						
Risk factors	r	,162*	,295**	,189**					
	p	0,019	0	0,006					
	N	208	208	208					
Symptoms	r	,261**	,377**	0,101	,536**				
	p	0	0	0,148	0				
	N	208	208	208	208				
Differential diagnosis	r	0,06	,171*	,151*	,400**	,490**			
	p	0,392	0,013	0,03	0	0			
	N	208	208	208	208	208			
Treatment	r	,146*	,226**	,190**	,214**	,353**	,325**		
	p	0,035	0,001	0,006	0,002	0	0		
	N	208	208	208	208	208	208		
Complication	r	,159*	,211**	0,113	,218**	,368**	,333**	,307**	
	p	0,022	0,002	0,103	0,002	0	0	0	
	N	208	208	208	208	208	208	208	
Total	r	,241**	,365**	,356**	,664**	,751**	,772**	,585**	,561**
	p	0	0	0	0	0	0	0	0
	N	208	208	208	208	208	208	208	208

* A relationship at a significance level of 0.05, ** Indicates a relationship at the 0.01 level of significance.

Discussion

In the present study, it was determined that the nurses have a low level of awareness of recovering from stroke and that 55% of nurses did not know that a stroke patient can completely recover from stroke within the first 24 hours. On the other hand, stroke is a disease in which a recovery without any sequel is possible with early diagnosis and treatment; after stroke, 50-70% of the patients become functionally independent, 15-30% permanent sequelae, and 20% need nursing care (11).

AHA and ASA have standardized the nursing practices for stroke patients and published various guidelines (9,12). Despite the guidelines that have been published, it can be seen that many of the patients do not receive evidence-based medical care. Moreover, some of them receive unnecessary and even harmful care (7). Fant GN et al. compared the nurses, who have hyperacute stroke certificate, with those having no certificate. Their findings corroborate the nursing specialty certificate and its effects on the patients' outcomes in many disciplines of nursing. Certified Nurses meet the target times for all the stroke activation processes. Uncertified Nurses generally meet the protocol time but 15-min or shorter stroke activation protocol is beyond the target time for teleneurology (8). In their study, Malfitano J et al. found that the stroke training score of nurses, who have no training on stroke, was 58.1% but their score increased to 86.4% after establishing the "coordinator nurse" position and providing the necessary trainings and to 96.9% after a year (13). Although stroke-specific education and training programs are encouraged in nurse education, they are not mandatory. It is difficult to encourage stroke teams to develop basic and common skills unless the quality of service audit and accreditation of stroke rehabilitation programs covering all stroke care workers are mandatory (14). Updated Stroke Guidelines emphasize that effective stroke treatment should be provided as immediately as possible and the measures should be taken in order to prevent the recurrence of stroke. They stated that stroke training programs for different race, age, and gender groups (15). In the present study, the participants, who received stroke training, had higher "risk factors" and "treatment methods" scores and total scores when compared to those, who did not receive this training. Although statistically non-significant, the

participants, who received stroke training, had better knowledge of stroke symptoms, differential diagnosis, and complications. These findings are in corroboration with the previous results reported in literature and emphasize the importance of a standardized training on stroke and the necessity of repeating the training on regular basis.

In a thesis carried out in Turkey by Merdan N. and examining the nurses' level of evidence-based knowledge about acute stroke, no statistically significant difference was observed between the nurses' level of knowledge about acute stroke by their educational level (16). In the present study, however, when compared to college and university students, the high-school graduates had significantly lower total scores and general knowledge, risk factors, symptoms, treatment, and complications scores. College graduates have significantly lower "differential diagnosis of stroke" score when compared to university graduates. This is believed to be because the level of training received on stroke increases with increasing educational level. In a previous study carried out on the dysphagia in stroke, it was determined that there was a positive relationship between tertiary care hospital nurses' years of experience and their knowledge level (17).

In various studies, it was observed that the nurses having longer experience had significantly higher "level of information about stroke" when compared to the nurses having shorter experience (18,19). In the present study, similar to the literature, it was determined that the "complications" scores and "total" scores of participants, who have been working for more than 16 years and 11-15 years, were significantly higher. Nurses with 16+ years of experience had statistically significantly higher scores in risk factors, symptoms, and differential diagnosis in comparison to those having less experience. Treatment scores of those with 1-5 years of experience had significantly lower than those of nurses having longer experience.

The most important point in treatment of stroke is the time. Neurology and emergency service nurses should strictly follow the stroke protocols (8). When a patient with stroke suspicion arrives at the emergency service, triage nurse should identify the symptoms of stroke and note the beginning time of neurological symptoms, the last time the patient felt good, large vessel occlusion assessment, tPA contraindications (20,21). In a study examining the practices of emergency medicine service (EMS) staff on this subject, it was determined that the EMS staff

had insufficient awareness of acute stroke identification and management (22). In a study carried out by Thomas L et al., it was found that the knowledge level of nurses working in services, where the stroke patients receive treatment, was higher than that of those working in medical/elderly care units (23). In a study carried out by Knight K et al., the knowledge of regarding management of stroke-related oropharyngeal dysphagia (OPD) of secondary-level nurses was better than that of nurses working in primary-level and tertiary-level nurses (24). In the present study, no statistically significant difference was determined between the participants working in services, where the stroke patients are followed, and those working in other services in terms of the level of knowledge and they had similar mean total scores. We believe that this is because no specific training on this subject is not offered nor regularly repeated in the services, where the stroke patients are followed.

In a systematic review carried out by Stroebele N et al., it was reported that, although there was a lack of general knowledge independently from the gender, women have higher level of information (risk factors and stroke symptoms) than men and especially their knowledge on risk factors is more evidence-based (25). In a previous study carried out on the general population aged 40 years or more and having no stroke history in background, it was determined that women identified the symptoms of stroke better than men. It was observed that more than the symptoms of stroke identified most by >50% of female and male participants were sudden unilateral weakness or paralysis. Most of the participants did not know the other symptoms of stroke. Independently from the gender, the higher educational level is a determinant of the level of knowledge about stroke (26). In a study carried out on the neurology nurses, it was found that the information level of female nurses was significantly higher than male nurses but they were found to have similar stroke behavior scores (27). Different from the literature, in the present study, no statistically significant relationship was observed between the gender and the level of knowledge on stroke. This difference is observed in the studies carried out on the general population but not in studies, such as the present one, carried out on healthcare professional because the nurses, who

are healthcare professionals, graduate similar educational institutions.

In a study carried out on young adults in Brazil, it was observed that the familial history of stroke had a statistically significant relationship with socioeconomic parameters and risk factors. Poorer socioeconomic status forces young adults to live with their families and, thus, they have more information about the stroke (28). In another study, no statistically significant difference was observed between those with familial stroke history and those having none in terms of knowledge on stroke, perceived threat and control, and final exercise performance. Furthermore, the participants having familial stroke history were found to have significantly less eager to exercise in the future in comparison to those with no familial history of stroke (29). Although there are different results reported in the literature, no statistically significant relationship between familial history and level of knowledge of stroke was observed in the present study.

The present study has several limitations such as monocentric design, limited number of participants, and inability to generalize the results. One of the strengths of present study is that it is one of the few evidence-based study carried out on stroke with nurses from different genders.

Conclusion

The importance of raising awareness that stroke can be completely healed with early diagnosis and deaths may occur in case of a delay in diagnosis and treatment was emphasized again. In the present study, it was observed that having training on stroke and the longer experience increased the level of knowledge of stroke. In parallel with the literature for healthcare professionals, the authors of the present study emphasize the importance of continuous training on stroke.

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Conflict of Interest:

The authors declare no conflict of interest to disclose

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Data used in this study can be provided at the reasonable request

References

1. Owolabi MO, Akarolo-Anthony S, Akinyemi R, et al. Members of the H3Africa Consortium. The burden of stroke in Africa: a glance at the present and a glimpse into the future. *Cardiovasc J Afr* 2015;26(2) Suppl 1:27-38.
2. Ouriques Martins SC, Sacks C, Hacke W, et al. Priorities to reduce the burden of stroke in Latin American countries. *Lancet Neurol* 2019 Jul;18(7):674-83.
3. TÜİK Ölüm ve Ölüm Nedeni İstatistikleri, 2019.
<https://data.tuik.gov.tr/Bulten/Index?p=Olum-ve-Olum-Nedeni-Istatistikleri-2019-33710#:~:text=T%C3%BCrkiye'de%202019%20y%C4%B1l%C4%B1nda%20%C3%B6len,%2C4%C3%BCn%C3%BC%20kad%C4%B1nlar%20olu%C5%9Fturdu> (Erişim tarihi: 30.11.2021).
4. Virani SS, Alonso A, Benjamin EJ, et al; American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart Disease and Stroke Statistics-2020 Update: A Report From the American Heart Association. *Circulation* 2020 Mar 3;141(9):139-596.
5. Balasubramanian A, Mitchell P, Dowling R, Yan B. Evolution of Endovascular Therapy in Acute Stroke: Implications of Device Development. *J Stroke* 2015 May;17(2):127-37.
6. Bhaskar S, Thomas P, Cheng Q, et al. Trends in acute stroke presentations to an emergency department: implications for specific communities in accessing acute stroke care services. *Postgrad Med J* 2019 May;95(1123):258-64.
7. Jauch EC, Saver JL, Adams HP Jr, et al. American Heart Association Stroke Council; Council on Cardiovascular Nursing; Council on Peripheral Vascular Disease; Council on Clinical Cardiology. Guidelines for the early management of patients with acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke* 2013 Mar;44(3):870-947.
8. Fant GN, Lakomy JM. Timeliness of Nursing Care Delivered by Stroke Certified Registered Nurses as Compared to Non-Stroke Certified Registered Nurses to Hyperacute Stroke Patients. *J Neurosci Nurs* 2019 Feb;51(1):54-9.
9. Summers D, Leonard A, Wentworth D, et al. American Heart Association Council on Cardiovascular Nursing and the Stroke Council. Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient: a scientific statement from the American Heart Association. *Stroke* 2009 Aug;40(8):2911-44.
10. Yeganeh M, Bagheri Z, Mohammadi T, et al. The Knowledge of Nurses about Evidence-based Guideline in Patients with Acute Ischemic Stroke. *Journal of Pharmaceutical Research International* 2019;27(1):1-10.
11. Ulusoy EK, Albayrak T, Kasım İ, Yön Mİ. Intravenous Thrombolytic Treatment In Acute Ischemic Stroke: The Awareness, Patient Selection And Transfer. *Turkish Medical Journal* 2012;6(1): 28-32.
12. Mozaffarian D, Benjamin EJ, Go AS, et al. American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics--2015 update: a report from the American Heart Association. *Circulation*. 2015;131(4):29-322.
13. Malfitano J, Turner BS, Piper E, et al. Improving stroke education performance measures scores: the impact of a stroke nurse coordinator. *J Neurosci Nurs* 2013 Dec;45(6):332-7.
14. Clarke DJ. Nursing practice in stroke rehabilitation: systematic review and meta-ethnography. *J Clin Nurs* 2014;23(9-10):1201-26.
15. Powers WJ, Rabinstein AA, Ackerson T, et al. Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke* 2019 Dec;50(12):344-418.
16. Merdan N. Hemşirelerde kanıta dayalı akut inme bilgi düzeyinin değerlendirilmesi. Yüksek lisans tezi, Türkiye Cumhuriyeti Karadeniz Teknik Üniversitesi Sağlık Bilimleri Enstitüsü, Trabzon, 2020.
17. Nepal GM, Sherpa MD. Knowledge of Dysphagia in Stroke among Nurses Working in Tertiary Care Hospital. *Kathmandu Univ Med J (KUMJ)* 2019 Apr-Jun;17(66):126-30.
18. Reynolds SS, Murray LL, McLennon SM, Bakas T. Implementation of a Stroke Competency Program to Improve Nurses' Knowledge of and Adherence to Stroke Guidelines. *J Neurosci Nurs* 2016 Dec;48(6):328-35.
19. Duffy JR, Culp S, Yarberry C, et al. Nurses' research capacity and use of evidence in acute care: baseline findings from a partnership study. *J NursAdm* 2015;45(3),158-64.
20. Heiberger CJ, Kazi S, Mehta TI, et al. Effects on Stroke Metrics and Outcomes of a Nurse-led Stroke Triage Team in Acute Stroke Management. *Cureus*. 2019;11(9):5590.
21. Neumar RW, Otto CW, Link MS, et al. Part 8: adult advanced cardiovascular life support: 2010 American Heart Association Guidelines for Cardiopulmonary

- Resuscitation and Emergency Cardiovascular Care. Circulation 2010 Nov 2;122(18 Suppl 3):729-67.
22. Shire F, Kasim Z, Alrukn S, Khan M. Stroke awareness among Dubai emergency medical service staff and impact of an educational intervention. BMC Res Notes 2017 Jul 6;10(1):255.
23. Thomas L, Harrington K, Rogers H, et al. Development of a scale to assess nurses' knowledge of stroke: a pilot study. Clin Rehabil 1999;13(6):518-26.
24. Knight K, Pillay B, Van der Linde J, Krüger E. Nurses' knowledge of stroke-related oropharyngeal dysphagia in the Eastern Cape, South Africa. S Afr J Commun Disord 2020 Sep 2;67(1):1-7.
25. Stroebele N, Müller-Riemenschneider F, Nolte CH, et al. Knowledge of risk factors, and warning signs of stroke: a systematic review from a gender perspective. Int J Stroke 2011 Feb;6(1):60-6.
26. Itzhaki M, Melnikov S, Koton S. Gender differences in feelings and knowledge about

- stroke. J Clin Nurs 2016 Oct;25(19-20):2958-66.
27. Liu Q, Xu X. Cognition of Nurses in Neurology Department on Rehabilitation Nursing. Transl Neurosci 2019 Apr 23;10:25-30.
28. Lima MJ, Moreira TM, Florêncio RS, Braga P Neto. Factors associated with young adults' knowledge regarding family history of Stroke. Rev Lat Am Enfermagem 2016;24:2814.
29. Aycock DM, Kirkendoll KD, Coleman KC, et al. Family history of stroke among African Americans and its association with risk factors, knowledge, perceptions, and exercise. J Cardiovasc Nurs 2015;30(2):1-6.

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STROKE DISEASE KNOWLEDGE LEVEL QUESTIONNAIRE FORM

1. Gender: Woman / Man
2. Age:.....
3. Education status:
 - a) High school
 - b) College
 - c) University
4. Is there anyone who had stroke in your family?
 - a) Yes
 - b) No
5. Did you attend any education programme about stroke before?
 - a) Yes
 - b) No

A. Stroke General knowledge

1. Stroke occurs as a result of damage to which organ.
 - a) Heart
 - b) Brain
 - c) Legs-arms
 - d) Other
2. The risk of having a stroke again in patients who

have had a stroke is higher than in the normal population.

- a) Yes
- b) No

3. Stroke is a disease of the geriatric population.
 - a) Yes
 - b) No
4. Early diagnosis of stroke reduces mortality and morbidity.
 - a) Yes
 - b) No
5. Stroke symptoms may resolve completely in the first 24 hours.
 - a) Yes
 - b) No

B. Stroke risk factors (you can select more than one option)

Yes, it is a risk factor No, it is not a risk factor

- 1 .Age
- 2 .Gender
- 3.Diabetes mellitus
- 4.Smoke
5. Hypertension
- 6.Obesity
7. Atrial fibrillation

8. Hyperlipidemia
9. Sedentary life
10. Rheumatic diseases

C-Stroke symptoms (you can select more than one option) Yes No

1. Paralysis of the extremities
2. Clouding of consciousness
3. Headache
4. Facial muscle paralysis
5. Syncope
6. Nausea- vomiting
7. Speech disorder
8. Urinary incontinence
9. Visual impairment
10. Speech comprehension disorder
11. Loss of balance
12. Vertigo

D- Which of the following disease or laboratory findings do you think can mimic stroke?

Yes, it mimics No, it doesn't mimics

1. Hypoglycemia/hyperglycemia
2. Hyponatremia/hypernatremia
3. Drug toxicity
4. Alcohol intoxication
5. Meningitis
6. Migraine
7. Conversion disorder

E. Stroke treatment

1. Stroke is a completely recover disease.
a) Yes
b) No
2. Stroke symptoms can be completely resolved with thrombolytic therapy (t-Pa) within the first 4-5 hours,
a) Yes
b) No
3. In stroke patients, the blocked vessel may reopen.
a) Yes
b) No
4. Rehabilitation is part of stroke treatment.
a) Yes
b) No
5. It is necessary to wait for a certain period of time to start rehabilitation. Rehabilitation does not start immediately
a) Yes
b) No

6. Anticoagulant drugs can be used to treat stroke.
a) Yes
b) No
7. Speech impairment is not expected to improve after a year.
a) Yes
b) No
8. Botox can be used in stroke rehabilitation treatment.
a) Yes
b) No
9. The retained limb of stroke patients should be protected when giving the patient a position and during interventional procedures.
a) Yes
b) No
10. Shoulder subluxation may occur in stroke patients
a) Yes
b) No
11. Stroke patients need to use catheter constantly
a) Yes
b) No
12. In stroke, only loss of balance and dizziness may occur without extremity involvement.
a) Yes
b) No
13. Stroke can only cause speech disorder without extremity involvement.
a) Yes
b) No
14. Wrinkling of clothes and bed linen of patients with immobile stroke can cause pressure sores.
a) Yes
b) No
15. DVT (deep vein thrombosis) may develop in stroke patients.
a) Yes
b) No
16. Neuropathic pain may occur in stroke patients.
a) Yes
b) No