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Physical Examination Skills Used by Nursing Students and Determination the Barriers Encountered in the Use of These Skills

Abstract

Aim: This paper investigated nursing students' physical examination skills and barriers preventing them from putting those skills into practice.

Methods: The sample consisted of 98 intern nursing students at the Faculty of Nursing of Akdeniz University. Data were collected using a demographic characteristic questionnaire, the Barriers to Nurses' Use of Physical Assessment Scale (BNUPAS), and the Physical Examination Skills Inventory. The study was approved by an ethics committee. Institutional permission was obtained.

Results: Participants (66 women and 32 men) had a mean age of 22.3 ± 1.09. Thirty-six participants did clinical practice in surgical units and 34 in internal units. They used the physical examination skills of "inspection and palpation of the head region (71.4%)" and "evaluation for conjunctivitis and jaundice (65.3%)" once or twice during their clinical practice. They had high BNUPAS "lack of time and interruptions" (3.25 ± 0.81) and "ward culture" (2.92 ± 0.67) subscale scores.

Conclusion: Nursing students mostly do not put their physical examination skills into practice as part of their daily patient assessment. Ward culture and lack of time prevent them from using their physical examination skills.

Keywords: Physical examination, Physical examination skills, Barriers scale, Students, Nursing

Ayşegül Korkmaz Doğdu[1]
Fatma Arıkan[2]
Emine Kol[1]

[1] Department of Nursing Fundamentals, Akdeniz University School of Nursing, Antalya, Turkey
[2] Department of Internal Medicine Nursing, Akdeniz University School of Nursing, Antalya, Turkey

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Corresponding Author: Ayşegül Korkmaz Doğdu
E-mail: ayseguldogdu@akdeniz.edu.tr

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Introduction

Physical examination is a process in which healthcare professionals collect objective data on patients' clinical health status[1] and evaluate bodily systems comprehensively.[2] Physical examination skills have been an integral part of professionalization in nursing in the last decade of the twentieth century.[3] Physical examination skills help nurses collect objective data,[4] which allow them to interpret clinical findings[5] and plan and revise interventions.[6] Physical examination also makes patients feel cared for and valued because nurses pay attention to their needs and concerns.[7]

Nursing education helps students acquire knowledge and develop skills.[8] Nurses with professional knowledge and skills are better at protecting their patients' health and well-being.[8] According to international organizations on nursing education, nurses with a bachelor's degree should possess the ability to assess systematically and comprehensively.[9,10] Courses on physical examination skills were first integrated into the nursing education curriculum in the early 1970s in North America.[11] Colleges in North America and Australia have been offering courses on history-taking, inspection, palpation, percussion, and auscultation skills as a part of pre-enrollment training since 1977.[12]

Research shows that some barriers prevent nurses from putting physical examination skills into practice in clinical settings.[13–17] The greatest barrier is the difference between theory and practice. Therefore, although students develop many physical examination skills during their undergraduate years, they do not use them in actual clinical settings.[15–17] Some of those skills are thyroid examination, internal ear inspection with an otoscope, hearing tests (Rinne and Weber), physical assessment jugular venous pressure, breast examination, palpation of axillary and regional lymph nodes, inspection and palpation of the penis and scrotum, palpation of the inguinal hernia, an inspection of the perianal region, and palpation of the rectal wall and prostate gland.[15,17] Research shows that nursing students avoid using physical examination skills because of the following reasons: they lack confidence[14] and time[13] and think that using those skills depends on the specialty area and has little effect on patient care.[13]

Research in general shows barriers preventing nursing students from using their physical examination skills in clinical settings. Nursing students should learn those skills and put them into practice in clinical settings because they have numerous positive health outcomes. This indicates that it is of paramount significance to identify the impediments preventing nursing students from using physical examination skills in clinical settings. Therefore, this paper investigated what barriers nursing students faced when implementing physical examination skills in clinical settings. The research questions are as follows:

- What physical examination skills do nursing students use during clinical practice?
- What prevents nursing students from using physical examination skills?

Methods

Research Type
This was a descriptive study.

Setting
The research was conducted at the Faculty of Nursing of Akdeniz University. The faculty does not offer a separate course on physical examination skills, but the "Fundamentals of Nursing II" and "Internal Medicine Nursing" courses address those skills. Besides, the "Physical Examination" course is available for master's and doctoral students.

Population and Sample
The study population consisted of 221 fourth-year intern nursing students of the faculty of nursing. No sampling was performed because the goal was to recruit as many students as possible. Students were informed of the research purpose and procedure. The sample consisted of 98 participants because students were either absent (n = 71), declined to participate (n = 30), or failed to complete the data collection forms (n = 22). The participation rate was 65.38%. Data were collected on April 20-21, 2017. Data collection took 15-20 minutes.

Data Collection Tools
The data were collected using a demographic characteristics questionnaire, the Barriers to Nurses' Use of Physical Assessment Scale (BNUPAS), and the Physical Examination Skills Inventory (PESI).

The demographic characteristics questionnaire was based on a literature review conducted by the researcher.[15,18,19] The questionnaire consisted of questions on age, gender, marital status, and grade point average (GPA). It also asked which clinical units they could use their physical examination skills in and whether undergraduate education was good enough for them to develop physical examination skills.

BNUPAS was developed by Douglas et al. (2014)[20] to determine the impediments preventing nurses from using their physical examination skills. The original scale has a Cronbach's alpha (α) of 0.80.[20] The scale was adapted to Turkish by Korkmaz et al. (2018).[21] The Turkish version (α = 0.82) consists of 30 items and 6 subscales: reliance on others and technology, lack of time and interruptions, ward culture, lack of confidence, lack of influence on patient care, and specialty area. The items are scored on a 5-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly Agree). The total score is the sum of the average scores of the subscales. Higher scores indicate high perceived barriers. The scale had the Cronbach's alpha (α) of 0.85 in this study.

PESI was developed based on the physical examination content of the "Fundamentals of Nursing II" and the "Internal Medicine" courses offered by the faculty of nursing. The inventory consists of 32 items on general physical examination, as well as cardiovascular, abdominal, neurological, and physical examination skills. Each item is responded "I do not know how to use it," "I know how to use it, but have never used it," "I have used it once or twice in my clinical practice," and "I have used it 2-5 times a day." A pilot study was conducted with five students to determine the intelligibility and relevance of the items. The inventory was revised based on the results.

Ethical Considerations
The study was approved by the ethics committee of the faculty of medicine of Akdeniz University (No: 709,044,504/130). Permission was obtained from the faculty of nursing of Akdeniz University (Document Date and No: 24/03/2017-E.40299).

Data Analysis
The data were analyzed using the Statistical Package for Social Sciences (IBM Corp. Released 2013, IBM SPSS Statistics for Windows, version 22.0. Armonk, NY, USA). The Kolmogorov–Smirnov test was used for normality testing. The results showed normal distribution. Number, percentage, mean, and standard deviation were used for descriptive statistics. The effect of age, GPA, and gender on scale scores was determined using Pearson's correlation and independent group *t*-test.

Results

Participants (66 women and 32 men) had a mean age of 22.3 ± 1.09. The majority of the participants (81.6%) had a GPA of at least 2.50. Participants stated that they made the best of their physical examination skills in internal units (46.9%), surgical units (30.6%), or other units (intensive care-emergency service) (22.4%). Less than half the participants (35.7%) stated that undergraduate education was good enough to teach them how to use physical examination skills (Table 1).

The physical examination skills that participants "used once or twice during clinical practice" were inspection and palpation of the head region (71.4%), evaluation of chest deformity (66.3%), and evaluation for conjunctivitis and jaundice (66.3%) (Table 2). The physical examination skills that participants "used 2-5 times a day" were tibial edema assessment (28.6%), using Glasgow coma scale-assessment for impairment of consciousness level (25.5%), petechiae and ecchymosis assessment (24.5%), assessment of upper and lower extremities for ulcer, tenderness, discoloration, and tissue integrity (24.5%), height and weight measurement (24.5%), and evaluation of the sense of touch (24.5%). Participants "knew how to" palpate the frontal and maxillary sinus (30.6%) and palpate and percuss the liver (28.6%) but had never used those skills. Participants stated that they "did not know" how to assess extraocular movements (18.4%), palpate the frontal and maxillary sinus (14.3%), and assess peripheral neuropathy (14.3%) (Table 2). Participants had a mean BNUPAS score of 2.66 ± 0.48. They had a mean "lack of time and interruptions," "ward culture," "lack of confidence," "specialty area," "reliance on others and technology," and "lack of influence on patient care" score of 3.25 ± 0.81, 2.92 ± 0.67, 2.49 ± 0.82, 2.49 ± 0.76, 2.45 ± 0.61, and

Table 1. Demographic Characteristics and Clinical Practice (N = 98)

Characteristics	n	%
Age (years)		
Mean ± SD (22.3 ± 1.09)		
Gender		
Woman	66	67.3
Man	32	32.7
GPA (Min = 1.98-Max = 3.79)		
2.50>	80	81.6
2.50≤	18	18.4
The unit where students best used physical examination skills		
Internal units	46	46.9
Surgical units	30	30.6
Others (intensive care-emergency service)	22	22.4
Internship practice course		
Surgical units (surgical diseases, gynecological diseases)	36	36.7
Internal units (internal medicine, pediatrics, psychiatry)	34	34.7
Others (public health, nursing management)	28	28.6
The effectiveness of nursing education on the use of physical examination skills		
Effective	35	35.7
Ineffective	63	64.3
Total	**98**	**100.0**

2.19 ± 0.72, respectively (Table 3). Age was weakly and positively correlated with "lack of influence on patient care" ($P < .001$). There was no correlation between GPA and subscale scores ($P > .05$) (Table 4).

Discussion

This paper looked into nursing students' physical examination skills and the barriers to their use. Participants assessed cyanosis, jaundice, and chest deformity once or twice during clinical practice (Table 2). They stated that they inspected tibial edema, used the Glasgow coma scale to assess consciousness level, inspected petechiae and ecchymosis, assessed the lower and upper extremities for ulcers, tenderness, discoloration, tissue integrity, measured body weight and height, and checked for the sense of touch 2-5 times a day. However, they rarely used those skills (Table 2). The physical examination skills participants knew in theory but had never used were palpation of the frontal and maxillary sinus and palpation and percussion of the liver. Participants did not know how to assess extraocular movements, palpate the frontal and maxillary sinus, and check for peripheral neuropathy (Table 2). These results indicate that nursing students do not use their physical examination skills as much as they are supposed to. Giddens (2007)[15] reported that nursing students rarely or never inspected the internal ear with an otoscope, palpated the thyroid gland, assessed hearing using Weber's test, and examined the prostate for lumps even though they learned how to perform them in school. Nursing students rarely use the physical examination skills of musculoskeletal and head, ear, and eye assessment and chest and abdomen evaluation,[14] palpation of joints for tenderness, Gaita assessment, and consciousness level assessment (Glasgow coma scale).[19] Some other studies also show that nursing students do not use some of the physical examination skills they learn during their undergraduate years.[14,15,19] Nursing curricula should address physical examination skills, and schools should provide students with the opportunity to put those skills into practice in clinical settings.

Participants had high BNUPAS "lack of time and interruptions" subscale scores (Table 3), suggesting that they cannot use physical examination skills effectively because they do not have enough time and have to deal with interruptions. They also had a high BNUPAS "ward culture" subscale score, indicating that the dominant culture in clinical settings prevents them from putting their physical examination skills into practice. Earlier studies have shown that the barriers preventing nursing students from using physical examination skills are specialty area,[14] lack of confidence,[13,14] lack of time and interruptions, and lack of influence on patient care.[13] Afifi (2017)[22] found that intern nursing students did not use physical examination skills because they were too busy (lack of time) or were discouraged by cultural factors and physically examined patients according to their clinical condition and only at admission, or just forgot how to use those skills. Our results agree with the literature and indicate that nursing students cannot use their physical examination skills due to excessive workload and lack of time.[23–26] Physical examination is a critical step for managing care. Therefore, academics and healthcare professionals should encourage nursing students to use physical examination skills to help them become professionally more competent.

Unlike earlier studies,[13,20] our results showed that ward culture was another impediment preventing nursing students from using physical examination skills. Ward culture is a key factor in the widespread use of interventions because all healthcare professionals act according to ward culture consisting of their values, beliefs, and practices.[27] Ward culture affects nursing interventions.[28] Nursing students need the right role models to develop and implement physical examination skills in clinical settings.[13,16,20] Therefore, hospitals should have the right ward culture and the right role models to help nursing students develop physical examination skills during their clinical practice.

Conclusion

Most nursing students do not use physical examination skills for day-to-day patient assessment. They assess for cyanosis, jaundice, and chest deformity once or twice during clinical practice. Ward culture and the lack of time are the barriers that prevent them from putting their physical examination skills into practice in clinical settings. Therefore, we should revise undergraduate nursing curricula and allow students to perform lab and bedside interventions to help them develop physical examination skills.

Ethics Committee Approval: The study was approved by the ethics committee of the faculty of medicine of Akdeniz University (No: 709,044,504/130).

Table 2. Frequency of Physical Examination Skills Used during Clinical Practice (N = 98)

Physical Assessment Skills	I Do Not Know How to Use It n (%)	I Know How to Use It, But Have Never Used It n (%)	I Have Used It Once or Twice in My Clinical Practice n (%)	I Have Used It 2-5 Times a Day n (%)	Total
1. Inspect and palpate the heed region (scalp, ear, nose assessment)	7 (7.1)	10 (10.2)	70 (71.4)	11 (11.2)	98 (99.9)
2. Palpate the maxillary and frontal sinuses	14 (14.3)	30 (30.6)	47 (48.0)	7 (7.1)	98 (100.0)
3. Inspect the mouth area, the structure of the teeth, and the mucosa	5 (5.1)	15 (15.3)	56 (57.1)	21 (21.4)	97* (98.9)
4. Check for conjunctiva and facial jaundice	7 (7.1)	8 (8.2)	64 (**65.3**)	18 (18.4)	97* (99.0)
5. Perform edema control in tibia	5 (5.1)	9 (9.2)	56 (57.1)	28 (28.6)	98 (100.0)
6. Perform turgor control	7 (7.1)	9 (9.2)	60 (61.2)	21 (21.4)	97* (98.9)
7. Inspect cyanosis on the fingertips, lips, and nails	5 (5.1)	8 (8.2)	63 (**64.3**)	22 (22.4)	98 (100.0)
8. Check for petechiae and ecchymosis	8 (8.2)	12 (12.2)	54 (55.1)	24 (24.5)	98 (100.0)
9. Perform hematoma control	6 (6.1)	16 (16.3)	54 (55.1)	21 (21.4)	97* (98.9)
10. Assess the upper and lower extremities for ulcers, tenderness, discoloration, and integrity	4 (4.1)	10 (10.2)	59 (60.2)	24 (24.5)	97* (99.0)
11. Assess the joints and muscles in terms of size, shape, and color	6 (6.1)	6 (6.1)	63 (**64.3**)	23 (23.5)	98 (100.0)
12. Assess the motion of the joints in all directions	7 (7.1)	17 (17.3)	55 (56.1)	18 (18.4)	97* (98.9)
13. Assess lymph nodes	8 (8.2)	21 (21.4)	56 (57.1)	11 (11.2)	96* (97.9)
14. Inspect the heart, thoracic areas, neck area, and peripheral vein	8 (8.2)	21 (21.4)	57 (58.2)	12 (12.2)	98 (100.0)
15. Measure height and weight	4 (4.1)	12 (12.2)	58 (59.2)	24 (24.5)	98 (100.0)
16. Inspect chest deformity	9 (9.2)	9 (9.2)	65 (**66.3**)	15 (15.3)	98 (100.0)
17. Palpate the apex beat	8 (8.2)	18 (18.4)	55 (56.1)	17 (17.3)	98 (100.0)
18. Auscultate the apex beat	7 (7.1)	14 (14.3)	56 (57.1)	20 (20.4)	97* (98.9)
19. Auscultate heart sounds (from aortic, pulmonary, tricuspid, mitral focus)	12 (12.2)	19 (19.4)	47 (48.0)	19 (19.4)	97* (99.0)
20. Perform lower extremity thrombophlebitis control	11 (11.2)	16 (16.3)	58 (59.2)	12 (12.2)	97* (98.9)
21. Listen to bowel sounds	7 (7.1)	7 (7.1)	62 (63.3)	22 (22.4)	97* (99.9)
22. Palpate the abdomen superficially and deeply	10 (10.2)	16 (16.3)	55 (56.1)	16 (16.3)	97* (98.9)
23.Percuss and palpate the liver	13 (13.3)	28 (28.6)	45 (45.9)	11 (11.2)	97* (99)
24. Perform abdominal acid control	11 (11.2)	17 (17.3)	58 (59.2)	10 (10.2)	96* (97.9)
25. Check for rebound sensitivity	11 (11.2)	22 (22.4)	53 (54.1)	9 (9.2)	95* (96.9)
26. Evaluate the level of consciousness (Glasgow Coma Score)	7 (7.1)	11 (11.2)	55 (56.1)	25 (25.5)	97* (99.9)
27. Evaluate extra ocular movements (by drawing the letter H)	18 (18.4)	26 (26.5)	46 (46.9)	8 (8.2)	98 (100.0)
28. Perform swallowing control	8 (8.2)	18 (18.4)	50 (51.0)	22 (22.4)	98 (100.0)
29. Assess the sense of touch	8 (8.2)	10 (10.2)	56 (57.1)	24 (24.5)	98 (100.0)
30. Evaluate peripheral neuropathy	14 (14.3)	19 (19.4)	51 (52.0)	14 (14.3)	98 (100.0)
31. Inspect the motor system	9 (9.2)	15 (15.3)	52 (53.1)	22 (22.4)	98 (100.0)
32. Assess balance and coordination	8 (8.2)	11 (11.2)	57 (58.2)	22 (22.4)	98 (100.0)

*n is different for items not responded by all participants.

Table 3. Barriers to Nurses' Use of Physical Assessment Scale (BNUPAS) Scores

BNUPAS Subscales	Mean ± SD	Median (Min-Max)	Cronbach's Alpha
Lack of influence on patient care	2.19 ± 0.72	2.00 (2.00-2.45)	0.78
Reliance on others and technology	2.45 ± 0.61	2.44 (2.00-2.85)	0.77
Lack of confidence	2.49 ± 0.82	2.42 (2.37-2.56)	0.79
Specialty area	2.49 ± 0.76	2.33 (2.48-2.50)	0.73
Ward culture	2.92 ± 0.67	3.00 (2.76-3.09)	0.67
Lack of time and interruptions	3.25 ± 0.81	3.33 (3.08-3.51)	0.83
Total	**2.66 ± 0.48**	**2.68 (1.55-3.62)**	**0.85**

Table 4. Correlation between Variables (Age and GPA) and BNUPAS Subscale Scores

Variables		Reliance on Others and Technology	Lack of Time and Interruptions	Ward Culture	Lack of Confidence	Lack of Influence on Patient Care	Specialty Area	Total
Age	r^*	0.058	-0.097	-0.079	0.110	**0.358**	0.021	0.068
	p	.574	.342	.438	.280	**<.001**	.837	.504
	n	98	98	98	98	**98**	98	98
GPA	r^*	-0.065	-0.045	-0.043	-0.148	0.075	-0.129	-0.084
	p	.524	.658	.674	.145	.465	.207	.409
	n	98	98	98	98	98	98	98

*Pearson's correlation

Informed Consent: The purpose of the study was explained to the individuals participating in the study and their written consent was obtained with an Informed Consent Form.

Peer-review: Externally peer-reviewed.

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References

1. Bayer L. *Patient Clinical Examination of Adults: Learning Videos in English*. [bachelor's thesis]. Lahti, Finland: Lahti University of Applied Sciences; 2016.
2. Olgun N, Tosun N. *Sağlığın Değerlendirilmesi Klinik Karar Verme*. İstanbul: Akademisyen Kitabevi; 2017.
3. West SL. Physical assessment: Whose role is it anyway? *Nurs Crit Care*. 2006;11(4):161-167. [Crossref]
4. Görgülü RS. Hemşireler İçin Fiziksel Muayene Yöntemleri: İstanbul Tıp Kitabevi; 2014.
5. Zambas SI, Smythe EA, Koziol-Mclain J. The consequences of using advanced physical assessment skills in medical and surgical nursing: A hermeneutic pragmatic study. *Int J Qual Stud Health Well-being*. 2015;20(2016;11(1):32090. [Crossref]
6. Majczak JA, Hohl M. The physical nursing examination of the hospitalized older adult. *Cogitare Enferm*. 2015;20(2):314-322.
7. Zambas SI. Purpose of the systematic physical assessment in everyday practice: Critique of a "sacred cow". *J Nurs Educ*. 2010;49(6):305-310. [Crossref]
8. Dela Cruz QFN, DiBerardino PL, Endrano BRCA, Gonzaga MCM, Guerrero RDA. Health Assessment in the new curriculum: A Descriptive study on student nurses' competence in performing physical examination. *CAM Research Journal*. 2014;2(1):72-95.
9. Australia NaMBo. *National Competency Standards for the Registered Nurse*. Australia: Australian Nursing & Midwifery Council; 2000: 1-32.
10. Europe TESi. *Reference Points Fort He Design and Delivery of Degree Programmes in Nursing*. Spain: Deusto University Press; 2009.
11. Milligan K, Neville S. Health assessment and its relationship to nursing practice in New Zealand. *Contemporary Nurse*. 2001;10(2):1-11. [Crossref]
12. Rushforth H. Reflections on a study tour to explore history taking and physical assessment education. *Nurse Educ Pract*. 2008;8(1):31-40. [Crossref]
13. Alamri MS, Almazan JU. Barriers of physical assessment skills among nursing students in Arab Peninsula. *Int J Health Sci (Qassim)*. 2018;12(3):58-66.
14. Douglas C, Windsor C, Lewis P. Too much knowledge for a nurse? Use of physical assessment by final-semester nursing students. *Nurs Health Sci*. 2015;17(4):492-499. [Crossref]
15. Giddens JFA. Survey of physical assessment techniques performed by RNs: Lessons for nursing education. *Research Briefs*. 2007;46(2):83-87.
16. Giddens JF, Eddy L. A survey of physical examination skills taught in undergraduate nursing programs: Are we teaching too much? *J Nurs Educ*. 2009;48(1):24-29. [Crossref]
17. Secrest JA, Norwood BR, duMont PM. Physical assessment skills: A descriptive study of what is taught and what is practiced. *J Prof Nurs*. 2005;21(2):114-118. [Crossref]

18. Birks M, Cant R, James A, Chung C, Davis J. The use of physical assessment skills by registered nurses in Australia: Issues for nursing education. *Collegian*. 2013;20(1):27-33. [Crossref]
19. Kohtz C, Brown SC, Williams R, O'Connor PA. Physical assessment techniques in nursing education: A replicated study. *J Nurs Educ*. 2017;56(5):287-291. [Crossref]
20. Douglas C, Osborne S, Reid C, et al. What factors influence nurses' assessment practices? Development of the barriers to nurses' use of physical assessment scale. *J Adv Nurs*. 2014;70(11):2683-2694. [Crossref]
21. Korkmaz Doğdu A, Arıkan F, Kol E, Aslan N. *Hemşirelerin fiziksel muayene becerileri kullanımındaki engeller ölçeği'nin türkçe geçerlik güvenirlik çalışması*. In: Dikmen Y , editor. *Hemşirelerin fiziksel muayene becerileri kullanımındaki engeller ölçeği'nin türkçe geçerlik güvenirlik çalışması*. Sakarya/TÜRKİYE: Vize Yayıncılık; 2018 718-725.
22. Afifi MH. *"Physical Assessment Skills among Nursing Students and Interns: A Gap between What Is Taught and What Is Practiced*. Athens: ATINER'S Conference Paper Series; 2017.
23. Enns CL, Sawatzky JA. Emergency nurses' perspectives: Factors affecting caring. *J Emerg Nurs*. 2016;42(3):240-245. [Crossref]
24. Sadule-Rios N, Aguilera G. Nurses' perceptions of reasons for persistent low rates in hand hygiene compliance. *Intensive Crit Care Nurs*. 2017;42 Oct. :17-21. [Crossref]
25. Yılmaz E, Çeçen D, Aslan A, Kara H, Kızıl Toğaç H, Mutu S. Cerrahi Kliniklerde Çalışan Hemşirelerin Kanıta Dayalı Hemşireliğe Yönelik Tutumları ve Araştırma Kullanımında Algıladıkları Engeller. *Hemsirelikte Egitim Ve Arastirma Dergisi*. 2018;15(4):235-241.
26. Arslanhan Ş. *Bir Kadın Sağlığı Eğitim Ve Araştırma Hastanesinde Çalışan Hemşire Ve Ebelerin Kanıta Dayalı Uygulamalara Yönelik Tutumlarının Ve Araştırma Sonuçlarını Kullanmadaki Engellerinin Belirlenmesi [Yüksek Lisans]*. Ankara: Hacettepe Üniversitesi; 2019.
27. Kantek F. *Örgüt Kültürü*. In: Baykal ÜT, Türkmen EE , editors. *Hemşirelik Hizmetleri Yönetimi*. İstanbul: Akademi Basın; 2014. 680-696.
28. Flott EA, Linden L. The clinical learning environment in nursing education: A concept analysis. *J Adv Nurs*. 2016;72(3):501-513. [Crossref]