

Table 2. Distribution of nurses' responses to the information form on the preparation of the operation area (N=87).

Items	n	%
1. Which of the following is one of the exogenous risk factors of the preoperative period?		
1. Patient preparation in the operating room	34	39.1
2. Preoperative surgical hand wash	35	40.2
3. Preoperative shaving of the surgical site	30	34.4
4. Surgical clothing and drapes	31	35.5
2. Which of the following is one of the measures in order to reduce the surgical site infection?		
1. Surgical hand washing before the operation		
2. Shortening the preoperative hospital stay		
3. Failure to maintain active surveillance programs in surgical services		
4. Shaving the incision site immediately before the operation if necessary / applying the depilatory on the incision site		
1, 2 and 4	67	77.0
2 and 4	6	6.9
Only 1	7	8.0
1 and 3	6	6.9
3. When preoperative area cleaning should be performed?		
The day before the operation	47	54.0
During the operation	17	19.5
On the operation day	21	24.1
4. Are you following current developments related to preoperative area cleaning?		
Yes	26	29.9
No	61	70.1
5. When the body bath should be taken within the scope of preoperative area cleaning?		
The day before the operation	38	43.7
On the operation morning	48	55.2
6. What should be used in body bath?		
Soap	25	28.7
Povidone iodine	29	33.3
Chlorhexidine gluconate	29	33.3
7. Who should perform the preoperative area cleaning?		
Surgeon	2	2.3
Nurse	52	59.8
Patient caretaker	30	34.5
8. Which of the following is not one of the properties that should be present in the solutions used in the preoperative area cleaning?		
1. Easy to dissolve in water		
2. Should not cause skin irritation and allergic reaction		
3. Should have a broad spectrum		
4. Should smell nice		
1, 3 and 4	6	6.9
1, 2 and 3	42	48.3
3 and 4	1	1.1

Only 4	35	40.2
9. When should the preoperative skin preparation be checked?		
Immediately before the operation	22	25.3
The night before the operation	21	24.1
Operation morning	42	48.3
10. Where should the preoperative skin preparation be checked?		
In sickroom	52	59.8
While the patient is moving to the operating room	10	11.5
In operating room	25	28.7
11. Who should check the preoperative skin preparation?		
Nurse	58	66.7
Surgeon	24	27.6
Anesthetist	1	1.1
Patient caretaker	4	4.6
12. Do you obtain consent for preoperative area cleaning?		
Yes	22	25.3
No	50	57.5

Table 3. Distribution of nurses' responses to the wrong – correct items of information form on the preparation of the operation area (N=87).

Items	Correct		Wrong	
	n	%	n	%
13. Surgical site infections are the infection observed in the operation area within 30 or 90 days following the surgical intervention.	67	77.0	20	23.0
14. The patient's own skin flora is the most important source for surgical site infection.	71	81.6	16	18.4
15. The surgical site infections are not an important cause of mortality and morbidity.	22	25.3	65	74.7
16. There is no need to clean the surgical area before the operation.	21	24.1	66	75.9
17. Microscopic cuts and abrasions on the skin may occur during the removal hair with open razor.	69	79.3	18	20.7
18. The hair should not be cleaned unless they are obstacle to the surgical area.	55	63.2	32	36.8
19. The shaving area may be smaller than the incision site.	22	25.3	65	74.7
20. The hair on the head should only be cut with an electric shaver.	67	77.0	20	23.0
21. When shaving over the bone, it should be shaved against the bone and vertically.	58	66.7	29	33.3
22. The area to be shaved should be shaved against the direction of hair output.	58	66.7	29	33.3
23. The area is painted by beginning from the surgical site with an antiseptic solution in a circular motion from inside to outside.	72	82.8	15	17.2

24.6% of them was working in the general surgery clinic and 53.8% of them were responsible for the care and treatment of 5-15 patients per day. Literature information supports our research. The nurses' working year and the unit they work in

allows that they are more competent about the preoperative period preparations. Likewise, the number of cases that the nurses prepare for the operation during the day is also an important factor in the enhancement of this competency. The

frequency of use of the information is very important in making the preoperative preparatory training received in the schools permanent. As a matter of fact, according to the results of the research, the nurses are making preparations for operation at an average of 5.36 ± 12.287 days.

It was found that 58.6% of the nurses participating in the study received preoperative training, 9.2% of them received it from a course, 33.3% of them from a seminar, 16.1% of them from the Directorate of Health, and 39.1% of them received for 5 hours or less and experienced an average of 74.81 ± 96.002 surgical site infections per day. Researchers [11] emphasized that the most important factor in the prevention of surgical site infections is the comprehensive training of the health care workers about the preoperative period preparations and the application of the training received in the clinical field. Likewise, another study [7] mentioned the link between education and surgical site infections. These results indicate that although the majority of nurses are experiencing the surgical site infection, it proves that reflecting the training on practice is insufficient. On the other hand, the fact that the nurses encountered the surgical site infection has enabled them to experience the precautions that should be taken.

It was found that 74.7% of the nurses who participated in the study were using the electric shavers in the perioperative area cleaning, allocate 12.57 ± 15.076 minutes on average for the area cleaning, 29.9% of them were following the current approaches about the perioperative area cleaning, preferred to use the povidone iodine the most as the antiseptic solution for the operative area cleaning, and the chlorhexidine, ethyl alcohol, and soap solutions are preferred the most respectively after the said solution. Another study [11] stated that open razors and electric shavers are mostly used in the preoperative area cleaning. According to the national and international preoperative area cleaning guidelines, skin preparation plays an important role in preventing surgical site infections. Skin preparation requires a shower or bath, hair removal, removal of foreign substances, and removal of infectious agents from the incision site and surrounding area. The patient should be cleaned on the day of operation and only the hairs that will prevent the operation should be cleaned. A surgical razor with a disposable blade should be preferred for this procedure and this cleaning should be done outside the operating room.

According to the study, it was determined that 40.2% of nurses stated that the preoperative area cleaning is performed by the nurses, 6.9% of them stated that by patients themselves, 13.8% of them stated that by patient's relatives, 58.6% of them stated that by the patient caretaker, and 3.4% of them stated that by the barber. The results obtained contradict the theoretical knowledge obtained during nursing education. The fact that such an important issue, preoperative site cleaning, is applied outside the supervision of the nurse can cause an increase in surgical site infection and undesirable cuts in the skin.

When the distribution of the information delivered by the

nurses participating in the study to the patient about the preoperative preparations was examined, it was determined that 86.2% of them was delivering information regarding the area cleaning, 56.3% of them regarding the type and purpose of the surgery, 54% of them regarding the risks of the operation, 33.3% of them regarding the medicines to be given during the operation, 40.2% of them regarding the surgical position. In another study conducted [16], 72.3% of the nurses stated that preoperative training was given in the clinic and 61.5% of them stated that these trainings were given by the patient's doctor and nurse. Likewise, it is reported [17] that 68.93% of the patients were informed about the operation in the perioperative period. In our study, the fact that the majority of nurses perform preoperative patient training indicates that the nurses fulfill their roles and functions related to training and meet patients' information needs.

It was determined that 57.5% of the nurses knew the exogenous risk factors of the preoperative period correctly.

It was found that 77% of the nurses participating in the study responded correctly by giving the answers of preoperative surgical hand washing, shaving the incision site just before the operation and using an electric shaver for this purpose, 54% of them the answer of performing area cleaning on the day before the operation, 55.2% of them the answer of performing the body bath in the morning of the operation day. Likewise, it was determined that only 28.7% of the nurses who participated in the study stated that body bath should be done with soap, 33.3% of them with povidone iodine, 33% of them with chlorhexidine gluconate, and 48.3% of them stated that the control of preoperative skin preparation should be performed in the morning of the operation day, 28.7% of them stated that this control should be performed in the operating room, and 25.3% of them was taking consent regarding the preoperative area cleaning.

In another study [11], the result that the preoperative area cleaning should be performed just before the operation was reached. National and international guidelines state that the hair on the surgical area should not be removed unless it is necessary to prevent surgical site infections. Additionally, if hair removal is necessary, since using a razor blade will increase the possibility of infection by causing injury to the skin, it is recommended to remove only the hair that will prevent the operation on the day of the surgery. Similarly, the cleaning should be performed with a surgical razor with a disposable blade and this cleaning should be outside the operating room.

It was determined that 77% of the nurses who participated in the study answered correctly the item of "Surgical site infections are the infection observed in the operation area within 30 or 90 days following the surgical intervention", 81.6% of them answered correctly the item of "The patient's own skin flora is the most important source for surgical site infection", 74.7% of them answered correctly the item of "The surgical site infections are not an important cause of

mortality and morbidity". Likewise, 75.9% of them responded correctly by saying that the item of 'There is no need to clean the surgical area before the operation' is wrong, 79.3% of them answered the item of 'Microscopic cuts and abrasions on the skin may occur during the removal hair with open razor' correctly, 36.8% of them responded correctly by saying that the item of 'The hair should not be cleaned unless they are obstacle to the surgical area' is wrong, 74.7% of them responded correctly by saying that the item of 'The shaving area may be smaller than the incision site' is wrong, 77% of them answered the item of 'The hair on the head should only be cut with an electric shaver' correctly, 66.7% of them answered the items of 'When shaving over the bone, it should be shaved against the bone and vertically' and 'The area to be shaved should be shaved against the direction of hair output' correctly, 82.8% of them answered the item of 'The area is painted by beginning from the surgical site with an antiseptic solution in a circular motions from inside to outside' correctly. In another study [18], similar results with our study were obtained. According to Dönmez, preoperative skin preparation includes shower/bath, hair removal and skin preparation on the operating table. Patients should take a shower or bath with soap or skin antiseptic the night before the operation. The aim of preoperative showering/bathing is to reduce the number of microorganisms on the patient's skin, the risk of endogenous and exogenous contamination, and the permanent flora. In order to prevent the SSI, it is recommended that patients take a shower or bath with 4% chlorhexidine gluconate the night before or the morning of the operation. After the shower/bath, the patient should be thoroughly rinsed, dried with a clean and dry towel, and should wear clean clothes. The shampoo, hair conditioner or other hair care products should not be used while taking shower before the surgery. According to Donmez, the hairs in the intervention area should be cleaned by taking some precautions if it is an obstacle for the surgical incision, and prevents the suture and dressing. In national and international studies and published guidelines, it is determined that hair cleaning should not be performed unless it is obligatory. If necessary, it should be performed with the electric razors and depilatories. In cleanings performed with the open razors, there may be abrasions, cuts, and irritations on the skin, which allow the growth of microorganisms causing the formation of the SSI. Therefore, open razors should not be used for hair cleaning. Instead of an open razor, the electric shavers with a disposable head that do not impair skin integrity can be used. Hair removal should be performed in sickrooms since it will disrupt the sterilized environment in the operating room. The most appropriate time for hair removal is the morning of surgery. As the time between the hair removal and operation prolongs, the risk of the SSI increases. Scientists [19] stated that the use of an open razor for perioperative area cleaning will cause skin irritation, cuts, and SSI formation and that the safest method is the electric shaver. According to another study [20] in order to prevent the SSI, besides hair removal, the antimicrobial prophylaxis has long-term protective

effects.

According to the study, when the scores of the information form on the preparation of the operation area is compared based on the occupational characteristics of the nurses, it was found that there is a significant difference based on the unit they worked ($p < 0.05$). According to the results of the analysis, the surgical area preparation scores (14.18 ± 3.321) of the nurses working in the mixed services were statistically significantly higher than the surgical area preparation scores (11.46 ± 2.332) of the nurses working in only the internal service ($p < 0.05$). This is an expected result since the nurses working in mixed service are more likely to encounter surgical cases than those working in the internal service. Surgical site infections are one of the most important problems of surgery in terms of increased mortality, morbidity, length of hospital stay and hospital costs. The patient's own skin flora is the most important source for the SSI and the microorganisms can easily spread from poorly prepared skin to the wound. Therefore, knowing all the risk factors that cause surgical site infection, performing the area cleaning with an electric shaver, which is an effective method, on the morning of the operation and taking the necessary precautions will reduce the SSI incidence. For this purpose, it is recommended that the clinic support nursing practices is supported, that the protocols are established, that the nurses follow the current approaches about skin preparation, and that the nurses are supported and rewarded in order for them to take responsibility related to the subject [21].

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CONFLICT OF INTERESTS

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ETHICAL ASPECTS OF RESEARCH

Approval (30.01.2018/02-05) was obtained from Istanbul Bilim University Institute of Health Sciences Ethics Committee before starting the study.

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