

Investigation of the Effect of Scabies Training Given to Nurses Working in Nursing Homes Huzurevlerinde Çalışan Hemşirelere Verilen Uyuz Eğitiminin Etkisinin İncelenmesi

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ABSTRACT

Objective: Scabies infestation is spreading rapidly around the world due to natural disasters and late measures. Also, scabies is frequently seen in residential areas such as nursing homes and in older people. The aim of this study is to examine the effect of scabies training given to nurses working in nursing homes.

Materials and Methods: The study was planned as a quasi-experimental study with a single-group pre-training and post-training design. The population of the study consisted of nurses working in five different nursing homes in İzmir, Türkiye (n=42, response rate 91.1%). Data were collected using a 6-question sociodemographic questionnaire and a 10-question scabies information questionnaire. Data were collected through face-to-face interviews and statistically analyzed using SPSS 26.0.

Results: All 42 nurses, three males and 39 females, completed the questionnaire. The average age of the nurses participating in the study was 35.04±10.55 years. The lowest correct response rate of the nurses was knowledge about whether scabies is transmitted by shaking hands (n=26, 61.9%). Nurses reported that they benefited most from the training in nursing homes (n=16, 38.1%) as a source of information. Nurses most commonly identified the area between the fingers as the typical lesion site of scabies (n=25, 59.52%).

Conclusion: This study revealed that nurses' theoretical knowledge level of nurses working in nursing homes about scabies infestation is inadequate. In particular, deficiencies were observed in basic information about transmission routes and lesion sites. The findings show that nurses need to be better equipped in the fight against infectious diseases such as scabies. Therefore, it is of great importance to implement regular and comprehensive training programs for nurses working in nursing homes. Supporting nurses with up-to-date information and practices will play a critical role in preventing and controlling scabies outbreaks.

Keywords: Health Education, Scabies, Nursing Home, Public Health

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ÖZ

Amaç: Uyuz enfestasyonu doğal afetler ve geç alınan önlemler nedeniyle dünya çapında hızla yayılmaktadır. Özellikle huzurevleri gibi yerleşim alanlarında ve yaşlılarda sıklıkla görülmektedir. Bu çalışmanın amacı, huzurevlerinde çalışan hemşirelere verilen uyuz eğitiminin etkisini incelemektir.

Gereç ve Yöntemler: Çalışma, tek gruplu ön eğitim ve eğitim sonrası tasarıma sahip yarı deneysel bir çalışma olarak planlanmıştır. Çalışmanın evrenini Türkiye, İzmir'deki beş farklı huzurevinde çalışan hemşireler oluşturmaktadır (n=42, yanıt oranı %91,1). Veriler 6 soruluk sosyodemografik anket ve 10 soruluk uyuz bilgi anketi kullanılarak toplanmıştır. Veriler yüz yüze görüşmelerle toplanmış ve SPSS 26.0 kullanılarak istatistiksel olarak analiz edilmiştir.

Bulgular: Üç erkek ve 39 kadın olmak üzere toplam 42 hemşire anketi tamamlamıştır. Çalışmaya katılan hemşirelerin yaş ortalaması 35,04±10,55 yıldır. Hemşirelerin en düşük bilgi puanı, uyuzun el sıkışma yoluyla bulaşıp bulaşmadığı bilgisiydi (n=26, %61,9). Hemşireler, bilgi kaynağı olarak en çok huzurevlerindeki eğitimden (n=16, %38,1) yararlandıklarını bildirdiler. Hemşireler, uyuzun en çok parmak araları (n=25, %59,52) arasında lezyonlu olduğunu belirttiler.

Sonuç: Bu çalışma, huzurevlerinde görev yapan hemşirelerin uyuz enfestasyonu konusundaki bilgi düzeylerinin yetersiz olduğunu ortaya koymuştur. Özellikle bulaşma yolları ve lezyon bölgeleriyle ilgili temel bilgilerde eksiklikler gözlenmiştir. Elde edilen bulgular, hemşirelerin uyuz gibi bulaşıcı hastalıklarla mücadelede daha donanımlı olmaları gerektiğini göstermektedir. Bu nedenle, huzurevlerinde görev yapan hemşirelere yönelik düzenli ve kapsamlı eğitim programlarının hayata geçirilmesi büyük önem taşımaktadır. Hemşirelerin güncel bilgi ve uygulamalarla desteklenmesi, uyuz salgınlarının önlenmesinde ve kontrol altına alınmasında kritik bir rol oynayacaktır.

Anahtar Kelimeler: Sağlık Eğitimi, Uyuz, Huzurevi, Halk Sağlığı

INTRODUCTION

Scabies is caused by the mite *Sarcoptes scabiei* var. It is a neglected skin disease, but it is an important public health problem all over the world (1-3). If diagnosis of scabies is delayed, outbreaks occur that can be long-lasting and difficult to control (3). The worldwide prevalence is unknown but is estimated to be much higher than reported (2,4-6). The prevalence of scabies in Türkiye was determined to be 10.9% in a study conducted in a dermatology clinic in 2022 (7).

Scabies is generally transmitted through skin contact or objects (8,9). Mites are sometimes spread by direct contact and sometimes by contaminated clothing and bedding (1,10). Approximately 15-20 minutes of close contact with an infected individual is sufficient to transmit scabies (11). However, scabies is rarely transmitted through handshakes (12). The incubation period can vary from two to six weeks. In susceptible individuals, symptoms appear within 24 to 48 hours after exposure (13). Itching is usually the most obvious symptom of scabies. It can also begin 3-6 weeks

after the initial infection and is more severe at night (11). Scabies mites can survive for up to three days under normal room conditions (21°C and 40-80% relative humidity). However, in crusted scabies, mites can survive for up to seven days by feeding on crusted skin (11,12,14). Fomites can be transmitted indirectly via items in the patient's room (clothing, bedding, furniture, carpets). This suggests that environmental management measures such as good cleaning of RNCs (Residential Nursing Care) that may be contaminated with mites shed from the patient's skin flakes and crusts may play a role in preventing transmission (10,12,14). Therefore, the patient's belongings should not be shared, should be placed in a dryer at >60°C for 10 minutes, or should be stored in plastic bags for 10 days (10,12).

Scabies infestation occurs in people of all ages, ethnic groups, and socioeconomic statuses. It is most common in conditions of crowding, poverty, poor hygiene, lack of access to water sources, and poor access to health facilities (6,9,11,15,16). Therefore, scabies outbreaks are more common in residential areas such as nursing homes,

nurseries, barracks (military facilities), prisons, and student dormitories (6,10).

Clinical experts report that scabies outbreaks are more common in nursing homes where individuals over the age of 85 live (3,10,17). The epidemiological data for various world regions showed prevalence estimates ranging from 0.2% to 71%, with the highest prevalence in the Pacific region and Latin America. Among countries with the highest rates, the top 10 were Indonesia, China, Timor-Leste, Vanuatu, Fiji, Cambodia, Laos, Myanmar, Vietnam, and the Seychelles(18). Clinical symptoms of scabies may differ in the older people. Residents may be asymptomatic or have mild symptoms. This contributes to the delay in diagnosis in this population (17).

Nursing home residents are often more vulnerable to diseases such as infestations. In such environments, infestation is more likely to spread due to closer contact between residents, inadequate isolation facilities, poor hygiene, and cognitively impaired residents who cannot communicate adequately. Additionally, immunosuppression in the older people causes outbreaks in long-term care nursing home residents. Therefore, staff training is a priority for disease prevention (11).

Scabies can also be transmitted to nursing home residents, staff, and their families (12). High rates of illness are reported among staff working in such facilities (6). In cases of scabies in nursing homes, the older people, visitors, employees and all contacts must be identified and treated (12). It is very difficult to limit nurses' direct contact with infested older people. Nursing home administrators may neglect scabies cases or tend to hide scabies cases instead of actively dealing with them. However, lack of healthcare personnel, improper management of the infection and lack of information cause the spread of infestation (19).

The clinical picture of scabies in nursing homes differs from the classical definitions. This difference leads to delayed diagnosis and inadequate management of vulnerable elderly people (17). Therefore, nurses should be aware of the different clinical picture of scabies in the elderly. There is an urgent need to increase nurses' knowledge about scabies to reduce the prevalence of scabies in nursing homes (1). Nurses should understand basic information about scabies for both themselves and the patients in the healthcare institutions they work in.

Therefore, the aim of this study is to increase nurses' awareness and to examine the effect of scabies education to protect both themselves and nursing home residents.

Hypotheses

For this purpose, the following questions were sought:

1. Is there a significant difference between the scabies knowledge of the nurses participating in the study before and after the training?
2. Theoretical knowledge of nurses about scabies from formal education at school is sufficient.

MATERIALS AND METHODS

Design, Study Setting and Sampling

The research was a study planned in a single-group pre-test and post-test quasi-experimental design. The population of this research consisted of nurses working in five private nursing homes in İzmir, Türkiye's third largest city, between April 15, 2023 and June 15, 2023. The sample of the study consisted of 42 nurses: 39 women and three men, aged 18 and over, who were working in nursing homes.

Inclusion and/or Exclusion Criteria

Inclusion criteria were being an adult and voluntarily participating in the study. The exclusion criteria were incorrect questionnaire completion, unwillingness to participate and having received previous training on scabies. One nurse could not be reached because she was on maternity leave.

Ethical Considerations

The study was approved by the Non-Interventional Ethical Committee of İzmir Katip Çelebi University in Türkiye (date: 23 March 2023, approval number: 0121), and written permission was obtained for research from the nursing homes. Informed consent was obtained from all participants, and the purpose of the study was explained.

Data Analysis

All data were analyzed using IBM-SPSS (Statistical Package for Social Science) version 26 (IBM Corp, Armonk, New York, USA). Descriptive statistics were given as

frequencies, percentages, means and standard deviations. The chi-square test was used to analyze the significant difference between demographic data and questions about scabies. A p value of <0.05 was considered statistically significant.

Data Collection

Data were collected using a general knowledge survey for nursing home nurses and a general self-efficacy survey consisting of closed-ended questions regarding scabies theoretical knowledge.

The researcher prepared a presentation and a brochure about scabies based on literature information (1,20,21). The training content was prepared taking into account the guidelines of the Turkish Dermatology Association and the Ministry of Health (20,21). A presentation with visual materials was prepared for the training content, and three experts were consulted on the content. Based on the feedback from the experts, necessary adjustments were made, and the nurses received training. The researcher provided one-on-one and face-to-face training to the nurses working in the nursing home. The training was a

single session and lasted 30 minutes. The content of the training included topics in line with the literature such as how scabies is transmitted, in which parts of the body it is most common, where it is transmitted, in whom it is more common, lesion differences in the elderly, personal protection methods, and how to provide environmental protection for the disease. At the end of the study, nurses were given a brochure explaining the content of the training and helping them remember the information.

The questionnaire was designed in two parts.

The first part was about information on the nurses including age, sex, the source of scabies theoretical knowledge, history of scabies, and family members or friends with a history of scabies.

In the second part of the questionnaire, the nurses were asked to mark the sentences as true or false to determine the basic information on scabies and its transmission route. Nurses were given training on the contagiousness of scabies. One week later, the questions about the training in the second part were asked again (Table I).

Table I. The questions about the training in the second part

The sentences in the second part of the survey are as follows:	True	False
Scabies is a contagious skin disease.	☒	
Scabies spreads after natural disasters such as earthquakes.	☒	
Scabies is transmitted by sharing clothes for more than 15 minutes.	☒	
Scabies is transmitted by handshaking.		☒
Scabies is transmitted through touching patients' personal items.	☒	
Scabies is spread by shared bedding.	☒	
Scabies is spread by sexual contact.	☒	
Scabies itch is mild during the day and severe at night.	☒	
Clinical features of scabies lesions are scaly erythema and/or papules and vesicles.	☒	
Scabies nodules are located in the male external genitalia (1,20,21).	☒	

RESULTS

Characteristics of the Participants

All 42 nurses, three males and 39 females, completed the questionnaire. The average age of the nurses participating

in the study was 35.04 ± 10.55 years (minimum: 22, maximum: 60) (Table II). The knowledge level of the nurses about scabies nodules was found to be 69.0%, where above 75% is considered normal (Table II).

Table II. Characteristics of the participants (N=42)

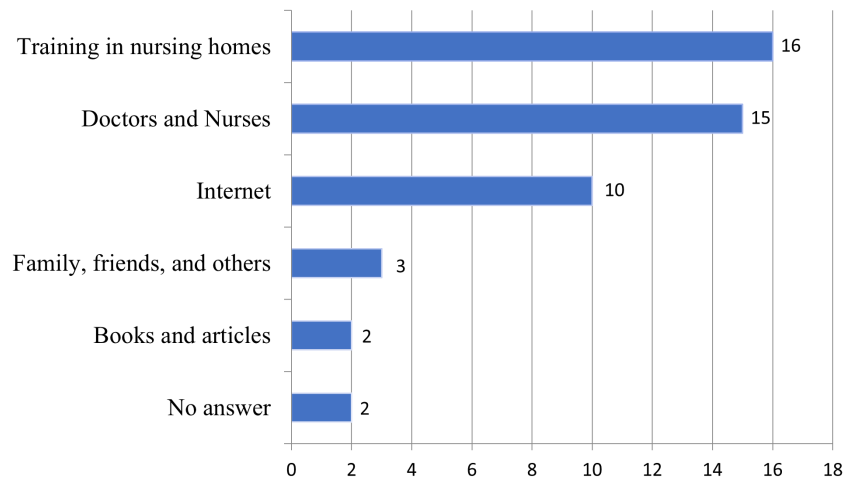
	Frequency* n (%)	Levene test statistics	p-value
Age (years), mean $\pm$ SD	35.04 $\pm$ 10.55	0.907	0.347
Gender		0.996	0.352
Male	3 (7.1)		
Female	39 (92.9)		
History of scabies		3.703	0.061
Yes	19 (45.2)		
No	23 (54.8)		
History of scabies in family and/or friends		3.737	0.060
Yes	20 (47.6)		
No	22 (52.4)		
Have you encountered cases of scabies in your institution?		3.602	0.058
Yes	31 (73.8)		
No	11 (26.2)		
Do you have any information about scabies nodules?		2.768	0.104
Yes	29 (69.0)		
No	13 (31.0)		

*Unless otherwise stated, SD: Standard deviation

Sources of Scabies Knowledge

Nurses reported that they benefited most from the training in nursing homes (n=16) and the least from books and articles (n=2) as a source of information (Figure I).

The Y-axis shows the information sources used by nurses and the X-axis shows the number of nurses using these sources.

**Figure I.** Resources used by nurses for scabies knowledge

Level of Scabies Knowledge

The lowest knowledge score of the nurses was the knowledge about whether scabies is transmitted by shaking hands; 38.1% of the nurses made a false statement about

scabies, saying that it is spread by shaking hands. After the training, the frequency with which this statement was made increased to 78.6%. The difference was found to be statistically significant ($p=0.000$) (Table III). The change

in answers given to the question "Can scabies spread through sexual contact" before and after the training was found to be statistically significant. The correct answer rate increased from 85.7% to 97.6% ($p=0.023$) (Table III). The answers given to the question "Do scabies nodules located on the male external genitalia" were found to be statistically significant in a positive direction after the

training. The correct answer rate increased from 66.7% to 92.9% ($p=0.001$) (Table III).

The correct answer given by nurses to the question of whether scabies spreads after natural disasters such as earthquakes after the training increased from 78.6% to 95%. The difference was found to be statistically significant ($p=0.033$) (Table III).

Table III. Comparison of scabies knowledge scores of nurses before and after training

Knowledge question	Before training		After training		Test statistics/ p-value
	Frequency n (%)	Mean $\pm$ SD	Frequency n (%)	Mean $\pm$ SD	
1. Scabies is a contagious skin disease.					
True	42 (100.0)	1.00 $\pm$ 0.000	42 (100.0)	1.00 $\pm$ 0.000	
False	0 (0.0)		0 (0.0)		
2. Scabies spreads after natural disasters such as earthquakes.					
True	33 (78.6)	1.45 $\pm$ 0.504	40 (95.2)	1.05 $\pm$ 0.216	t=2.206
False	9 (21.4)		2 (4.8)		p=0.033
3. Scabies is transmitted by sharing clothes for longer than 15 minutes.					
True	42 (100.0)	1.00 $\pm$ 0.000	42 (100.0)	1.00 $\pm$ 0.000	
False	0 (0.0)		0 (0.0)		
4. Scabies is transmitted by handshaking.					
True	26 (61.9)	1.38 $\pm$ 0.492	33 (78.6)	1.79 $\pm$ 0.412	t=-4.184
False	16 (38.1)		9 (21.4)		p=0.000
5. Scabies is transmitted through touching patients' personal items.					
True	38 (90.5)	1.10 $\pm$ 0.297	40 (95.2)	1.05 $\pm$ 0.216	t=0.813
False	4 (9.5)		2 (4.8)		p=0.421
6. Scabies is spread by shared bedding.					
True	42 (100.0)	1.00 $\pm$ 0.000	42 (100.0)	1.00 $\pm$ 0.000	
False	0 (0.0)		0 (4.0)		
7. Scabies is spread by sexual contact.					
True	36 (85.7)	1.14 $\pm$ 0.354	41 (97.6)	1.02 $\pm$ 0.154	t=2.354
False	6 (14.3)		1 (2.4)		p=0.023
8. Scabies itch is mild during the day and severe at night.					
True	39 (92.9)	1.07 $\pm$ 0.261	42 (100.0)	1.00 $\pm$ 0.000	t=1.776
False	3 (7.1)		0 (0.0)		P=0.083
Knowledge question	Before training		After training		Test statistics/ p-value
	Frequency n (%)	Mean $\pm$ SD	Frequency n (%)	Mean $\pm$ SD	
9. Clinical features of scabies lesions are scaly erythema and/or papules and vesicles.					
True	36 (92.9)	1.14 $\pm$ 0.354	40 (95.2)	1.05 $\pm$ 0.216	t=1.667
False	6 (7.1)		2 (4.8)		p=0.103
10. Scabies nodules are located in the male external genitalia.					
True	28 (66.7)	1.33 $\pm$ 0.477	39 (92.9)	1.07 $\pm$ 0.261	t=3.417
False	14 (33.3)		3 (7.1)		p=0.001

Analysis of Lesion Locations

Nurses stated the lesion sites of scabies most as between the fingers (n=25) and least as the cubital fossa (n=4) (Figure II).

The Y-axis shows the lesion locations reported by nurses for scabies, and the X-axis shows the number of nurses reporting these locations.

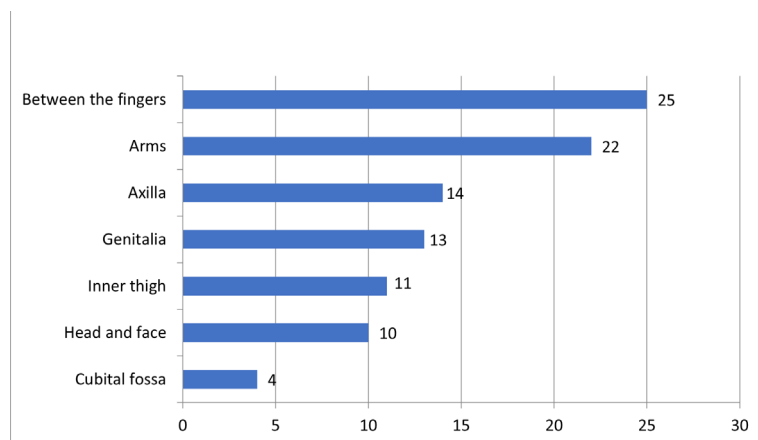


Figure II . Lesion locations reported by nurses for scabies

DISCUSSION

The International Alliance for Scabies Control (IACS) has developed a global control plan to improve the health of affected communities worldwide (1). In this plan, staff training against scabies is one of the highest-level measures to treat, control and prevent the spread of the disease (1).

Hewitt et al. (3), in a study with 39 residents and 28 staff in two nursing homes, detected scabies in all groups. A study examining the scabies epidemic in nursing homes in 2018 was conducted in ten nursing homes and reported that at least one staff member in each of eight homes was diagnosed with scabies. It is also notable in the same study that the skin symptoms of many scabies cases were not noticed by the staff. (17). In a study in East Jakarta in 2014, Ratnasari reported that the prevalence of scabies in male students was 57.4% compared to 42.9% for women (22). In a retrospective observational study conducted by Sponselli et al. (23) with healthcare professionals at a university hospital in Southern Italy, dermatological examinations out of 183 screenings diagnosed scabies in 21 (11.5%) cases. In our study, it was determined that 45% of the nurses working in nursing homes had scabies,

and 47.6% of them encountered scabies in their circle of family and friends. At the same time, 73.8% of nurses reported that they had encountered scabies cases in the institutions where they worked.

Nurses should be knowledgeable about the clinical features and treatment of scabies, and they must be able to identify scabies infections and distinguish them from other skin conditions. Failure to take preventive measures causes the spread of scabies, an increase in the disease burden and the development of an epidemic (3). In the study conducted by Yun et al. (24) in Korea, it was determined that nurses working in nursing homes had insufficient knowledge about the management of scabies patients and appropriate nursing care. In a study examining the knowledge, attitudes and practices of health care providers regarding scabies, Afzal et al. (25) emphasize that the knowledge was sufficient, but they are insufficient to provide infection control such as isolation measures. A study among undergraduate nursing students in China found that knowledge about scabies was low, with almost half of the students unaware of its contagious nature (1). Alsaïdan et al. (26) found that physicians' level of knowledge about scabies in Saudi Arabia was insufficient at 67.5%. In our study, it was also observed that nurses

did not have sufficient knowledge about the spread of the disease and did not have sufficient theoretical knowledge about scabies nodules and pathology. This finding supports the findings of other researchers. Delays in recognition, treatment and prevention of the disease can disproportionately increase this skin infection. Especially, nurses need to be more open to information.

It is very difficult to catch scabies from brief, casual touches such as shaking hands or hugging (27). Scabies is generally transmitted by contact lasting 15 minutes or longer (10). However, in a study by Birjandi et al. (28), it was reported that 66.5% of high school nursing students were infected with scabies by shaking hands. In the study of Liu et al. (1), the rate of nursing students stating that they contracted infection from shaking hands was found to be 34.8%. In our study, the lowest level of knowledge of the nurses was that the disease is transmitted through handshake, with 61.9%. This finding is similar to other studies. However, this misinformation was replaced by academic information given to nurses, and after the training, this rate increased to 78.6%. This result confirmed the H1 hypothesis in our research.

Scabies often occurs at critical times after adverse events such as war, flood, earthquake, and other natural disasters (13), and it is common due to overcrowding and lack of hygiene (1,16). In a study by Bhattarai et al. (29), scabies infestations were reported as well as other common diseases after the 2015 Nepal earthquake. In a study conducted in Pakistan, it was stated that scabies is endemic in the country, and an ideal environment for the formation of new epidemics was provided by the crowding and lack of hygienic conditions in the camps after the earthquake (8). In a study conducted by Peyravi et al. (30) in Iran, scabies cases were seen in the first 10 days after the earthquake in 2017. Oztas et al. (31) conducted a study in northwest Türkiye after the great earthquake in 1999, and reported that the prevalence of parasitic infections was common. Two consecutive earthquakes in Kahramanmaraş on February 6, 2023 changed the lives of millions of people in Türkiye and Syria, and also put many children at risk for infectious diseases such as diarrhea, pneumonia and scabies (32). While the correct answer given by the nurses about the prevalence of scabies in

natural disasters was 78.6% (n=33) before the training, the correct answer increased to a statistically significant 95.2% (n=40) after the training. This result confirmed the H1 hypothesis in our research.

Nurses play a very important role in the control and management of scabies (33). However, limited information is available on the basic knowledge of healthcare professionals, including nurses, regarding scabies biology, transmission, and control (34). In a study conducted by Liu et al. (1) with nursing students, it was determined that most of the students did not have information about scabies nodules and whether they were transmitted through sexual activity. In our study, the level of knowledge about the transmission of scabies nodules through location and sexual activity was found to be low, and it was determined that the level of knowledge increased significantly with the training provided. This result confirmed the H1 hypothesis in our research.

Clinical presentation of scabies in older people residents of care homes differs from classic descriptions familiar to clinicians. This difference probably contributes to delayed recognition and suboptimal management in this vulnerable group (17). In a study by Liu et al. (1), it was determined that the greatest amount of information was in medical books. In addition, this study emphasizes that nursing students have insufficient knowledge about scabies infection (1). In our study also, nurses reported that they benefited most from the trainings held in nursing homes, but it was determined that they had insufficient theoretical knowledge about scabies. This is why in-service training programs are important. This result not confirm the H2 hypothesis in our research.

Study Limitations

This study had several limitations. The gender distribution of nurses working in nursing homes was unbalanced. This study was conducted in five different nursing homes in just one province in western Türkiye. Therefore, the generalizability of this study is limited. Future studies should reach wider audiences, aiming to increase nursing home nurses' basic knowledge of scabies. Also, the most important limitation of this study is the lack of a valid and reliable measurement tool to examine

the relationship between knowledge about scabies and demographic data.

CONCLUSION

This study found that scabies education given to nursing home nurses was effective. It also revealed that nurses had low knowledge about scabies and mostly used internet sources to obtain information. However, after scabies education given to nurses with the help of a brochure, their knowledge about shaking hands, location of scabies nodules, whether it is transmitted through sexual contact and spread after natural disasters was higher than before the education. In societies where hygiene and health conditions are poor, in-service training should be provided to nurses to control infectious diseases such as scabies. Health managers, local governments and civil society organizations should work together to prevent and eliminate scabies in disaster areas, nursing homes and military zones where infectious diseases are common. This study revealed that nurses' theoretical knowledge about scabies is low. Nurses need theoretical knowledge to prevent scabies outbreaks and prevent their spread. This deficiency in nurses needs to be addressed within the scope of formal education.

Conflict of interest

The authors declare that they have no conflict of interests regarding content of this article.

Funding

The authors declare that the study received no funding.

Ethical Approval

The study was approved by the Non-Interventional Ethical Committee of İzmir Katip Çelebi University in Türkiye (date: 23 March 2023, approval number: 0121).

Authors' Contribution

Concept: SY, NA, Design: SY, NA, KB, Supervision: SY, KB, Instrumentation: SY, KB, Data collection and processing: SY, KB, Analysis and interpretation: NA, KB, Literature review: SY, NA, KB, Writing: SY, NA, KB, Critical review: SY, NA.

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