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THE IMPACT OF A SHORT EDUCATIONAL INTERVENTION MODEL ON HEALTHCARE WORKERS' KNOWLEDGE OF SCABIES: A SINGLE-GROUP PRETEST-POSTTEST INTERVENTION STUDY

SAĞLIK ÇALIŞANLARINDA KISA EĞİTİM MODELİNİN UYUZ HASTALIĞI KONUSUNDAKİ BİLGİ DÜZEYİNE ETKİSİ: TEK GRUP ÖN TEST-SON TEST MÜDAHALE ÇALIŞMASI

Özge EREN KORKMAZ[1] Burcu AÇIKALIN ARIKAN[2] Nurbanu SEZAK[2]

[1]Dokuz Eylül Üniversitesi, Epidemiyoloji Bilim Dalı, İzmir

[2]Demokrasi Üniversitesi Buca Seyfi Demirsoy Eğitim ve Araştırma Hastanesi, Enfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Kliniği, İzmir

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SUMMARY

Introduction: *The aim of this study was to assess the effect of a short-term educational intervention on healthcare workers' knowledge of scabies, including its transmission, clinical presentation, treatment, and prevention methods.*

Material and Method: *This intervention study included 200 healthcare workers (doctors, nurses, and hospital staff) working in a tertiary hospital. Participants completed a pretest before attending a 15-minute educational session on scabies. A posttest was administered after the session. Participants' knowledge was assessed using a 10-item multiple-choice test.*

Results: *The study demonstrated a significant increase in participants' knowledge levels following the training. The median pretest score was 8.00 [Q1;Q3: 6.00; 9.00], while the median posttest score was 10.0 [Q1;Q3: 9.00; 10.0]. In terms of gender, male participants showed a larger effect size for knowledge improvement (Cohen's d: 1,48), whereas the effect was moderate among female participants (Cohen's d: 0.91). Among professional groups, the greatest knowledge improvement was observed in doctors (Cohen's d: 1.94) and hospital staff (Cohen's d: 1.12), while the effect remained moderate for nurses (Cohen's d: 0.88). Regarding years of professional experience, those with 6-10 years of experience benefited the most from the training (Cohen's d: 1.88). Participants who had not previously received training on scabies showed greater knowledge improvement compared to those who had prior training (Cohen's d: 1.18 vs. 0.98). Additionally, participants with no prior experience of scabies outbreaks in hospitals benefited more from the training compared to those who had such experience (Cohen's d: 1.06 vs. 0.84).*

Conclusion: *This study demonstrates that a short-term educational intervention significantly improved healthcare workers' knowledge of scabies. Regular in-service training on scabies is essential to prevent outbreaks in healthcare settings, and continuous updates in healthcare worker education are crucial.*

ÖZ

Giriş*: Bu çalışmanın amacı, sağlık çalışanlarının uyuz hastalığı hakkında (bulaşma, klinik belirtiler, tedavi ve önleme yöntemleri) bilgi düzeylerini değerlendirmek ve kısa süreli bir eğitim müdahalesinin etkisini incelemektir.*

***Gereç ve Yöntem**: Bu müdahale çalışmasına, üçüncü basamak bir hastanede görev yapan 200 sağlık çalışanı (doktorlar, hemşireler ve hastane personeli) katılmıştır. Katılımcılar, 15 dakikalık bir uyuz eğitimi oturumundan önce bir ön test doldurmuş ve oturumun hemen ardından bir son test uygulanmıştır. Katılımcıların bilgi düzeyleri, toplam 10 sorudan oluşan çoktan seçmeli bir test ile değerlendirilmiştir.*

***Bulgular**: Çalışma, eğitim sonrasında katılımcıların bilgi düzeylerinde anlamlı bir artış olduğunu göstermiştir. Eğitim öncesi testin ortanca puanı 8,00 [Q1;Q3:6,00;9,00] iken, eğitim sonrası testin ortanca puanı 10,0 [Q1;Q3:9,00;10,0] olarak bulunmuştur. Cinsiyet açısından, erkek katılımcıların bilgi artışında daha yüksek bir etki büyüklüğü (Cohen's d: 1,48) gösterdiği, kadınlarda ise bu etkinin orta düzeyde olduğu (Cohen's d: 0,91) belirlenmiştir. Meslek grupları arasında en büyük bilgi artışı doktorlarda (Cohen's d: 1,94) ve hastane personelinde (Cohen's d: 1,12) görülürken, hemşireler için bu etki orta düzeyde kalmıştır (Cohen's d: 0,88). Deneyim yılı açısından, 6-10 yıl deneyime sahip çalışanlar, eğitimden en fazla fayda sağlayan grup olarak öne çıkmıştır (Cohen's d: 1,88). Daha önce uyuz eğitimi almamış olanların bilgi düzeylerindeki artış, eğitimi olanlara kıyasla daha yüksektir (Cohen's d: 1,18 vs. 0,98). Ayrıca, uyuz salgını deneyimi olmayan katılımcılar, salgın deneyimi olanlara kıyasla eğitimden daha fazla fayda sağlamıştır (Cohen's d: 1,06 vs. 0,84).*

***Sonuç**: Bu çalışma, kısa süreli bir eğitim müdahalesinin sağlık çalışanlarının uyuz hastalığı konusundaki bilgi düzeylerini önemli ölçüde artırdığını göstermektedir. Sağlık kuruluşlarında uyuz salgınlarını önlemek için düzenli hizmet içi eğitimlerin yapılması ve sağlık çalışanlarının eğitimlerinin sürekli güncellenmesi büyük önem taşımaktadır.*

INTRODUCTION

Scabies is a disease caused by the parasite Sarcoptes scabiei var. hominis, which burrows into the skin and lays eggs, leading to severe itching and redness. It is one of the leading dermatological conditions, particularly in developing countries, affecting over 200 million people globally at any given time and more than 400 million people annually (1). Scabies is commonly transmitted through direct and prolonged close contact with an infected person. It can spread through close contact within as little as 15–20 minutes. Sharing personal items such as bedding, clothing, and towels, as well as sexual contact, facilitates the transmission and spread of scabies (2). Symptoms typically appear within 2–6 weeks, with the most common sign being intense and bothersome itching, especially at night. Severe nocturnal itching, along with papular and vesicular lesions on the skin, increases suspicion of scabies. Diagnosis is made clinically based on these characteristic features and confirmed via microscopic or dermatoscopic examination (2,3). Scabies outbreaks and their complications impose a significant economic burden on healthcare systems, particularly in low-income countries (1,4). In hospitals, not only patients but also doctors, nurses, and personnel involved in patient care or cleaning services are at risk (4,5). Therefore, it is essential to conduct in-service training programs and establish appropriate protocols in hospitals to ensure early recognition of scabies, proper diagnosis, and effective management of cases. These measures include understanding necessary precautions, ensuring appropriate cleaning of rooms and equipment, and implementing suitable isolation measures (5). Studies in the literature have demonstrated that educational interventions are effective in preventing the spread of contagious diseases such as scabies. Educating healthcare workers, staff in rehabilitation centers, and the general public about scabies, alongside the implementation of infection control systems, plays a critical role in preventing the spread of scabies (4,6,7). This study aims to evaluate the extent to which a short and accessible scabies training program for healthcare workers improves their knowledge about the transmission routes, clinical findings, treatment methods, and prevention measures of the disease. Additionally, the study seeks to explore the potential impact of this training on preventing the spread of scabies within healthcare institutions.

MATERIALS AND METHODS

Aim and Type of the Study

This study is an intervention research designed to collect data using a single-group pretest-posttest model. It was conducted to examine the impact of the "Scabies and Prevention Methods" course on the knowledge levels of doctors, nurses, and hospital staff regarding the transmission routes, disinfection methods, clinical findings, treatment, and prevention of scabies parasites, as well as its relationship with demographic and professional characteristics. Ethical approval for the study was obtained (Date: 25.09.24, Decision No: 2024)

Study population

The study population consisted of all healthcare workers (doctors, nurses, and hospital staff) working in a tertiary hospital during September–October 2024. Based on the assumption of a medium effect size (Cohen's d = 0.5) and with 95% power at a 5% significance level, sample size calculations determined that a minimum of 54 participants per group would be sufficient.

Data Collection Tools

Healthcare workers were given a 15-minute presentation consisting of 16 slides covering the causative agent, epidemiology, transmission routes, clinical findings, treatment, and prevention of scabies. Participants were asked to complete a 10-item multiple-choice test form both before (pretest) and after (posttest) the presentation. The interval between the two tests was approximately 30 minutes. Before the pretest, participants were informed about the study, and their voluntary consent to participate was obtained. Those who declined to participate were excluded from the study.

Statistical Methods

In this study, various statistical analyses were conducted to evaluate the change between participants' pretest and posttest scores. Along with descriptive statistics, the Shapiro-Wilk test was used to assess the normality of the data distribution. Since the data did not follow a normal distribution, the Wilcoxon Signed-Rank Test was applied for paired groups. The Kruskal-Wallis and Mann-Whitney U tests were performed to analyze differences in pretest and posttest score changes between groups.

To determine the effect size, Cohen's d was calculated, and the results were visualized using box plots. A p-value of 0.05 was considered statistically significant. All analyses were performed using the R programming language (2024.04.1+748) with the packages "dplyr," "rstatix," "effsize," and "ggplot2."

RESULTS

A total of 200 participants with a median age of 34.0 [Q1;Q3: 26.0;42.0] took part in the study. Of these, 27.5% were female and 72.5% were male. The participants included 68.5% nurses, 23.5% doctors, and 8.0% hospital staff. The median years of experience was 8.00. Additionally, 33.5% of the participants reported having prior training on scabies, and 24% indicated previous experience with scabies outbreaks within the hospital. The median pretest score for all participants was 8.00 [6.00;9.00], while the median posttest score was 10 [10.0 [9.00;10.0]. (Table 1).

Table 1. Demographic and Professional Characteristics of Participants, Pretest and Posttest Scores

Parameters	N(%)
Age, median [Q1;Q3]	34.0 [26.0;42.0]
Gender	
Male	55 (27.5%)
Female	145 (72.5%)
Profession	
Doctor	47 (23.5%)
Nurse	137 (68.5%)
Staff	16 (8.0%)
Years in profession, median [Q1;Q3]	8.00 [2.00;20.0]
Training on scabies	
None	133 (66.5%)
Have	67 (33.5%)
Experience with scabies outbreak in hospital	
None	152 (76.0%)
Have	48 (24.0%)
Pretest, point, median [Q1;Q3]	8.00 [6.00;9.00]
Posttest, point, median [Q1;Q3]	10.0 [9.00;10.0]

In the analysis by gender, it was found that both women and men had significantly higher posttest scores compared to their pretest scores (for women, $z = 8.651$, $p < 0.001$; for men, $z = 5.671$, $p < 0.001$). The effects observed in men after the intervention were found to be stronger than those in women (Cohen's d: 1.48 vs. 0.91, respectively).

In the evaluation by occupation, significant increases in posttest scores were observed in nurses, staff, and doctors after the intervention ($p < 0.001$; $p = 0.019$; $p < 0.001$, respectively). According to the Kruskal-Wallis test, a borderline significant difference was found in the posttest-pretest score differences between occupational groups ($\chi^2 = 5.71$, $p = 0.057$). The Cohen's d values were 0.88 for nurses, 1.94 for staff, and 1.12 for doctors, indicating that interventions had a very large effect on staff and doctors (Table 2).

Table 2. Comparison of Pretest and Posttest Results by Demographic and Professional Characteristics

	Pretest N=200 median [Q1;Q3]	Posttest N=200 median [Q1;Q3]	z	Wilcoxon test p	Point difference Median, [Q1;Q3]	Kruskal-Wallis χ^2, p	Mann Whitney U p	Cohen's d
Gender								
Female	9 [6;9]	10 [9;10]	8,651	<0.001	1 [0;3]	-	0.680	0.91
Male	8 [7;8.5]	10 [9;10]	5,671	<0.001	2 [0.5;2]			1.48
Profession								
Nurse	9 [6;9]	10 [9;10]	8,349	<0.001	1 [0;3]	χ^2= 5.71,	-	0.88
Staff	7 [7;8]	8 [7,75;9]	2,332	0.019	0 [0;2]	p=0.057		1.94
Doctor	8 [8;9]	10 [10;10]	5,759	<0.001	2 [1;2]			1.12
Years in profession								
0-5 years	8 [6;9]	9 [9;10]	6,175	<0.001	1 [0;3]	χ^2= 43.02,	-	1.03
6-10 years	9 [8;9]	10 [10;10]	4,506	<0.001	1 [1;2]	p=<0.001		1.88
11-15 years	6 [2;6]	10 [7;10]	3,868	<0.001	4 [4;5]			1.05
>15 years	9 [7,25;9]	10 [9;10]	6,051	<0.001	1 [0;2]			0.96
Training on scabies								
None	8 [6;9]	10 [9;10]	6,622	<0.001	1 [0;3]	-	0.549	1.18
Have	9 [8;9]	10 [9;10]	8,085	<0.001	1 [1;2]			0.98
Experience with scabies outbreak in hospital								
None	8 [7;9]	10 [9;10]	5,508	<0.001	1 [0;2]			1.06
Have	8 [6;9]	10 [10;10]	8,785	<0.001	2 [1;4]	-	<0.001	0.84

P<0.005 statistically significant

Analysis by years of experience showed significant differences between pretest and posttest scores for each experience group (p <0.001). Notably, participants with 11-15 years of experience showed the largest pretest-posttest score difference (median [Q1;Q3], 4 [4;5]) compared to other groups. The effect of the intervention in participants with 6-10 years of experience was considered very large (d = 1.88). Large effect sizes were also observed in the other groups (Table 2).

The increase in posttest scores was statistically significant for participants who had received prior training on scabies and those who had not (both p <0.001). In terms of score differences, similar increases were observed in both groups (p = 0.549). A very large effect of the intervention was seen in participants who had not received prior scabies training (Cohen's d: 1.18). Additionally, a large effect was observed in participants with prior training experience (Cohen's d: 0.98) (Table 2).

The increase in posttest scores was statistically significant for participants with and without prior hospital scabies outbreak experience (both p <0.001). The median score difference was significantly higher in participants with experience compared to those without (p <0.001). Cohen's d values were 1.06 for participants without hospital scabies outbreak experience and 0.84 for those with experience. A large effect was observed in those without prior experience, while in the experienced group, although the effect of the intervention was relatively lower, it was still considered to be at a large effect level (Table 2).

Figure 1 shows the change in participants' pretest and posttest scores. According to this graph, the intervention led to a positive change in the test scores (Figure 1).

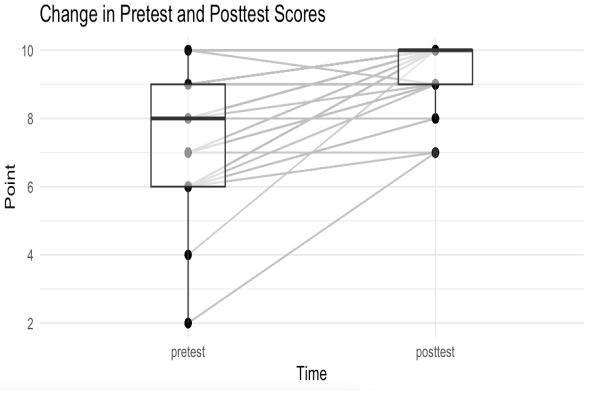


Figure 1. Boxplot Showing Change in Knowledge Levels of Healthcare Workers Before and After Scabies Training

DISCUSSION

Scabies cases are increasing worldwide, often causing outbreaks in communal living settings and hospitals. These outbreaks are most commonly seen in nursing homes and hospitals (8). In hospitals, delayed diagnosis, lack of knowledge about transmission routes, prevention methods, and decontamination of contaminated surfaces can lead to rapid person-to-person transmission (9). It is crucial to educate doctors, nurses, and healthcare personnel, who are in constant direct contact with patients, about these topics to prevent outbreaks and protect themselves from infection (10). In this study, we demonstrated that a 15-minute lecture on scabies and prevention methods significantly improved knowledge levels among healthcare workers.

Healthcare is a dynamic field that requires continuous support through education. Surveys have shown that even after completing undergraduate or associate degrees, individuals working in this sector feel inadequate and express a need for their knowledge to be updated through in-service training (11). Scabies is a disease with widespread misinformation in society and insufficient knowledge among many individuals. Increasing awareness through education could effectively prevent outbreaks.

A study conducted in China with 132 nursing students at the undergraduate level revealed a lack of knowledge about scabies in 82.6% of participants. Nearly half were unaware that scabies is contagious, emphasizing the urgent need to increase scabies awareness among nurses (12). Another study demonstrated a significant decrease in outbreaks when even non-medical individuals received scabies education (13). Similarly, it has been highlighted that educating non-medical auxiliary healthcare staff working in hospitals about recognizing, suspecting, and taking preventive measures against scabies could prevent outbreaks (14). The effectiveness of educational interventions in preventing scabies transmission has been validated in several intervention studies (4,6).

In our study, the posttest score increases were statistically significant for both participants who had previously received education on scabies and those who had not. The educational intervention had a particularly strong impact on participants without prior scabies education. Additionally, the training was observed to be more effective for non-medical auxiliary healthcare staff. Clinically, this finding suggests that intensive educational programs targeted at this group could be beneficial, and training these staff members may be crucial for more effectively preventing the spread of scabies within hospitals.

The significant pretest-posttest differences observed among doctors, participants with prior scabies education, and those who had experienced scabies outbreaks indicate that previously acquired knowledge about scabies is easily forgotten. This underscores the importance of regularly updating this knowledge through in-service training programs.

A systematic review identified two significant risk factors for scabies outbreaks: prolonged hospital stays and the use of devices such as catheters. The use of equipment like urinary catheters and other devices is often inevitable in patients with extended hospital stays. To prevent the transmission of scabies in hospitalized patients, it is emphasized that healthcare workers should know how to properly use protective equipment and educate patients about scabies prevention (7).

A prospective study identified dementia as the sole risk factor for scabies outbreaks in nursing homes (15). Dementia patients hospitalized in clinical settings may face difficulties in expressing their complaints. The diagnosis of scabies in such patients can only be made when healthcare workers, particularly nurses providing care, suspect the condition. However, a healthcare worker with insufficient or no knowledge about scabies may fail to consider this possibility. Regular educational interventions are essential to enhance the knowledge levels of healthcare workers and enable them to take preventive measures. Such efforts could significantly reduce delays in diagnosing scabies, improve early detection, and prevent its spread in healthcare settings.

Limitations and Strengths

This study has several limitations. The use of a single-group pretest-posttest design without a control group hindered a stronger evaluation of the training's effect. Additionally, the study was conducted in a single hospital, limiting the generalizability of the results. The short time frame for post-intervention assessment does not provide information on the long-term effects of the training; therefore, follow-up studies are necessary to assess information retention over time. The data were collected through self-report methods, which carries the risk of bias due to

participants' tendency to present themselves as more knowledgeable. All these limitations highlight the need for broader research to support the findings of our study.

Among the strengths of this study are the provision of a short and accessible educational intervention for healthcare workers and the assessment of its impact on their knowledge levels. The detailed analysis of knowledge improvements based on professional groups offers an important contribution in identifying which groups may need more training. Furthermore, the statistical analysis of pre- and post-test scores provides objective data that demonstrates the effectiveness of the intervention.

CONCLUSION

In conclusion, this study demonstrated a significant increase in knowledge levels before and after the scabies training, highlighting the importance of in-service education for all healthcare workers, including doctors, on scabies. It emphasizes the need for regular training programs on this topic to ensure continuous knowledge improvement.

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Corresponding Author

Özge EREN KORKMAZ (MD)
Dokuz Eylül Üniversitesi, Epidemiyoloji Bilim Dalı, İzmir
Tel: 05444672365 / E-mail: ozgeeren727@gmail.com
ORCID: 0000-0002-9476-4938

Burcu AÇIKALIN ARIKAN (MD) ORCID: 0000-0002-4955-0789
Nurbanu SEZAK (Dr. Öğr. Üyesi) ORCID:0000-0001-9472-1340