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Level of knowledge about foot health and hygiene practices of healthcare professionals hygiene practices of health professionals

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Abstract
Purpose: The aim of this study is to examine the level of knowledge and hygiene practices of healthcare professionals about foot health. It is a descriptive type study.
Methods: A total of 206 healthcare professionals working in a university hospital were reached. Data were collected between June and August 2023. 'Personal Information Form' and 'Foot Health Knowledge and Hygiene Behaviour Questionnaire' prepared by the researcher were used to collect the data. Online survey method was preferred.
Results: The most common occupations of the participants were nursing with 58.7% and medical secretariat with 15.0%. While working in the hospital, 38.8% wore orthopaedic slippers and 32.5% wore normal slippers. 132 (64.1%) people had previously experienced a foot-related disease. The most important problem related to the foot was foot pain (39.3%) for healthcare professionals. After foot pain, the two most important problems related to the feet were ingrown nail problem (11.2%) and hallux valgus (4.4%). 64.1% stated that they perform regular foot care, 75.2% wash their feet at least once a day and 55.8% dry their feet after washing. 51.5% prefer cotton/woollen socks that do not squeeze the ankles, 82.5% wear closed-toed, round-toed, low-heeled shoes that fit their feet. 98.1% correctly know that foot health affects psycho-social life, while 29.6% do not know that diabetes mellitus can lead to foot complications. 91.3% knew that leaving the feet moist increases the risk of fungal infections. In addition, the frequency of having problems with the feet was found to be associated with the frequency of washing the feet and the frequency of wearing high heels.
Conclusions: The level of knowledge of healthcare professionals about foot health is moderate. Foot hygiene behaviours need to be improved. Scientific studies and training are needed to raise awareness about foot health.

Keywords: Healthcare professionals, foot health, knowledge, hygiene

Introduction

Our feet play an important role in the integrity of the movement system and carry our body[1]. When we do not take the necessary care of our feet, very important disorders occur. While only 5% of newborn babies have foot problems, 60 per cent of adults have various foot disorders. Excess weight, not caring about foot health, making movements that constantly strain the foot, choosing inappropriate shoes and some diseases negatively affect foot health. Deformities and disorders in the feet, starting from the ankles, affect the knees and then the entire spinal system, and may even lead to headaches [2].

Standing and walking for a long time predisposes the lower extremities to stres [3]. Especially nurses can walk more than 6 km and take almost 9 thousand steps in each shift [4]. Foot pain is a common problem in hospital professionals. Prolonged standing, repetitive micro traumas, inappropriate footwear, chronic overload, systemic diseases and hereditary factors disrupt foot biomechanics and cause problems [5]. Since the feet are exposed to constant pressure and work, they need regular care for the continuation of this role [6].

When the literature is examined, it is seen that foot health is mostly studied on patients with diabetes [7, 8, 9]. There are studies on students and military personne l[10, 11]. There are very few studies examining the foot health and hygiene behaviours of healthcare professionals, one of the occupational groups working on their feet for a long time [12, 13, 14]. It is very important to determine the foot health status and related characteristics and to investigate the current state of foot health by focusing on foot health for healthcare professionals who work for a long time and stand for long hours. As a result of a problem with the foot, a decrease in the quality of patient care is inevitable, and the number of days to work decreases due to the discomfort of the health professionals. The aim of this study is to examine the level of knowledge and hygiene practices of healthcare professionals about foot health. It was planned as a descriptive type research.

Methods

Population-Sample: The sample of the study consisted of 206 actively working healthcare professionals.

Inclusion criteria: Being between the ages of 18-65, volunteering to participate in the study, working in the health field (physicians, nurses, midwives, other employees) and being able to use social media, smartphones or computers.

Exclusion criteria: Not volunteering to participate in the study and not being a health professionals.

Ethical decision

Ethics committee approval was obtained from Gaziantep Islamic Science and Technology University Non-Interventional Clinical Research Ethics Committee (decision no: 155.19.14).

Data collection

The data of the study were collected between June and August 2023. The data were collected by sharing the online survey form link created by the researcher using the URL address from Google Form with healthcare professionals via social media accounts and whatsapp application.

Data collection tool/tools

1. Personal Information Form: It consists of 6 questions prepared by the researcher by reviewing the literature. It includes questions such as age, gender, occupation type, educational status, marital status [15, 16].
2. Foot Health Knowledge and Hygiene Behaviour Questionnaire: In order to measure the knowledge and hygiene behaviours of healthcare professionals about foot health, the questionnaire used in Kislak *et al*[15] and Erkoc *et al*[16] study was taken as an example. It consists of three parts; first part; characteristics related to foot health, second part; level of knowledge about foot health, third part; behaviours related to personal foot care.

Statistical method (s) used

Data were analysed using SPSS 21.0 statistical package programme. Data were expressed as mean, standard deviation and percentage. Chi-square test was used to determine the differences between expected and observed in one or more categories. A probability value of $P<0.05$ was considered statistically significant.

Results

52.4% of the participants were male and 47.6% were female. The mean age was 35.7±7.00 years. Most of them (72.3%) were undergraduate graduates. The most common occupations of the participants were nursing with 58.7% and medical secretarial with 15.0%. The number of people with a BMI value of 25-29.9 was 51.0%. While working in the hospital, 38.8% wore orthopaedic slippers and 32.5% wore normal slippers. The weekly standing time was 29.10±9.32. 132 (64.1%) people had previously experienced a disease related to the foot. 20 people (9.7%) stated that they had more than one foot problem. The most important problem related to the foot was foot pain (39.3%) for healthcare professionals. The least mentioned problems were heel spur (plantar fasciitis) (1.9%) and flat feet (1.9%) (Table 1).

Table 1: Distribution of Healthcare Professionals According to Descriptive Characteristics (n= 206)

Variables		Number (n)	Percentage (%)
Mean age mean±sd (Min:Max): 35.7±7.00 (21:57)			
Gender	Female	98	47,6
	Male	108	52,4
Education	High School	52	25,2
	Undergraduate	149	72,3
	Master's/PhD	5	2,4
Ocupation	Physician	6	2,9
	Nurse	121	58,7
	Midwife	4	1,9
	Cleaning Staff	23	11,2
	Medical Secretary	31	15,0
	X-Ray Technician	18	8,7
	Other	3	1,5
BMI	18.5-24.9	98	47,6
	25-29.9	105	51,0
	30-39.9	3	1,5
Preferred footwear while working	Normal Slippers	67	32,5
	Orthopedic Slippers	80	38,8
	Shoes	59	28,6
Foot related disease	Yes	132	64,1
	No	74	35,9
The foot problem	Ingrown nail	17	8,3
	Foot odour	10	4,9
	Hallux valgus	8	3,9
	Callus	7	3,4
	Foot pain	81	39,3
	Heel spur (Plantar fasciitis)	4	1,9
	Tinea pedis	1	,5
	Flat base	4	1,9
Weekly standing time (month) mean±sd (Min:Max) 29.10±9.32 (2:92)			

98.1% of the participants correctly know that foot health affects psycho-social life. 12.6% of the participants are not aware that not paying attention to foot health can cause low back pain. 29.6% people do not know that diabetes mellitus can lead to foot complications. 14.1% of people do not know that overweight has a negative effect on foot health. 18.4% people do not know that not paying attention to foot care in youth will be a problem in old age. 91.3% know that leaving the feet moist increases the risk of fungal infection. 95.1% correctly know that it is recommended to wash the feet with soap at least once a day. 95.1% correctly know that shoes with a narrow front part cause ingrown toenails. 91.3% correctly know that the height of the heel of the shoe should be maximum 2.5-3 cm in terms of health (Table 2).

Table 2: Healthcare Professionals' Level of Knowledge about Foot Health (n: 206)

	True		False	
Questions	**n**	**%**	**n**	**%**
Foot health affects psycho-social life.	202	98,1	4	1,9
Not paying attention to foot health can lead to low back pain.	180	87,4	26	12,6
Not paying attention to foot care in youth is not a problem for old age.	168	81,6	38	18,4
Being overweight negatively affects foot health.	177	85,9	29	14,1
Diabetes does not cause foot problems.	61	29,6	145	70,4
Leaving the feet moist increases the risk of fungal infection.	188	91,3	18	8,7
It is recommended to wash the feet with soap at least once a day.	197	95,6	9	4,4
Shoes with a narrow front part cause ingrown toenails.	196	95,1	10	4,9
For health reasons, the height of the heel of the shoe should be maximum 2.5-3 cm.	188	91,3	18	8,7

While 64.1% of the healthcare professionals state that they perform regular foot care, 35.9% do not perform regular foot care. 75.2% wash their feet at least once a day, 55.8% dry their feet after washing. 51.5% of the participants prefer cotton/woollen socks that do not squeeze the ankles. 82.5% of the participants wear closed-toed, round-toed, low-heeled shoes that fit their feet. 79.1% of the participants do the dressing themselves if a wound occurs on their feet, and if it does not heal, they go to a physician's examination (Table 3).

Table 3: Healthcare Professionals' Behaviours Related to Personal Foot Care (n: 206)

	Number (n)	**Percentage (%)**
Do you do regular foot care?		
Yes	132	64,1
No.	74	35,9
How often do you wash your feet?		
1 per day	155	75,2
2-3 a day	42	20,4
More than 3 times a day	6	2,9
Only when you're taking a shower	3	1,5
How do you wash your feet and dry them after washing?		
Washing with water only	10	4,9
Washing with soap and water	81	39,3
Drying after washing	115	55,8
How do you cut your toenails?		
Straight	79	38,3
Round	113	54,9
Random	14	6,8
How often do you wear shoes with heels (over 2.5-3 cm)?		
A few times a week	13	6,3
Several times a month	42	20,4
Fewer	40	19,4
Never	111	53,9
How do you choose your socks?		
Mercerised and ankle-tight	84	40,8
Cotton/woollen ankle support	106	51,5
I don't care	16	7,8
How do you choose your shoes?		
Closed toe, round toe, low heeled and fitted to the foot	170	82,5
Open front round toe	20	9,7
I don't care	16	7,8
What do you do if you have a wound in your foot?		
If I dress myself and do not heal, I will go to the doctor's examination	163	79,1
I'll wait for it to heal on its own	20	9,7
I'll see a doctor.	23	11,2

No significant difference was observed between the health care professionals' status of regular foot care, washing and drying the feet after washing, the way of cutting toenails, sock selection, shoe selection and the behaviour to be performed if a wound occurs on the foot and the status of experiencing foot-related diseases ($p>0.05$). A significant difference was found between the frequency of washing the feet and the frequency of wearing high-heeled shoes and the status of experiencing foot-related diseases ($p<0.05$) (Table 4).

Table 4: The Relationship of Healthcare Professionals' Experience of Foot-Related Diseases with Foot Care Behaviours

	Experiencing foot-related diseases				Test value	p*
	Yes		No			
Regular foot care	n	%	n	%		
Yes	81	61,3	51	68,9	1,176	,278
No.	51	38,7	23	31,1		
Frequency of washing feet						
1 per day	101	76,5	54	72,9	7,172	,046
2-3 a day	29	21,9	13	17,5		
More than 3 times a day	1	0,8	5	6,7		
Just while taking a shower	1	0,8	2	2,7		
Washing and drying the feet after washing						
Only with water	6	4,5	4	5,4	,940	,704
Washing with soap and water	55	41,6	26	35,1		
Drying after washing	71	53,7	44	59,4		
How to cut toenails						
Flat	48	36,3	31	41,8	5,841	,055
Round	71	53,7	42	56,7		
Random	13	9,8	1	1,3		
Frequency of wearing shoes with heels (over 2.5-3 cm)						
Several times a week	4	3,0	9	12,1	5,841	,044
Several times a month	29	21,9	13	17,5		
Fewer	23	17,4	17	22,9		
Never	76	57,5	35	47,2		
Sock selection						
Mercerised and ankle-friendly	60	45,4	24	32,4	3,464	,173
Cotton/woollen ankle support	62	46,9	44	56,4		
I don't care	10	7,5	6	8,1		
Shoe selection						
Closed front, rounded toe, low heel and foot-fit	112	84,8	58	78,3	1,865	,414
Open front round toe	12	9,0	8	10,8		
I don't care	8	6,0	8	10,8		
What to do if a wound occurs on the foot						
I dress myself, and if it doesn't heal, I go to the doctor's surgery	109	82,5	54	73	3,357	,196
I'll wait for it to heal on its own	12	9,0	8	10,8		
I'll see a doctor.	11	8,3	12	16,2		

*p<0.05, ** Chi Square analysis

Dıscussıon

When the research findings are examined, 38.8% of healthcare professionals wear orthopedic slippers and 32.5% wear normal slippers while working in the hospital. In Yildiz's[17] study conducted only on nurses, it was determined that 78.72% of nurses preferred orthopedic slippers, while the rate of those who preferred orthopedic shoes was 14.89%. In the study conducted by Lee *et al*[18] on nurses in Korea, it was observed that 69.0% wore nurse shoes and 15.5% wore crocs. It is thought that the types of shoes worn predominantly by nurses and healthcare professionals differ according to the department they work in.

While 132 (64.1%) of the healthcare professionals had previously experienced a foot-related disease, 20 (9.7%) stated that they had more than one foot problem. Similarly, in the study of Lee *et al* [18], the rate of experiencing a foot-related disease was determined as 42.53%. In addition, Lee *et al*[18] found that nurses with foot disease had lower scores in terms of foot pain, foot dysfunction, difficulty in shoe selection, and general foot health compared to nurses without foot disease.

In this study, it was determined that foot pain (39.3%) was the most important problem experienced by healthcare professionals related to the feet, while in Yildiz's[17] study, it was determined that a large proportion of nurses (53.9%) experienced pain and complaints related to the soles of the feet. In a study conducted by Tojo *et al*[14] in Japan, 23-51% of 636 nurses complained of foot and ankle pain, while Reed *et al*[12] reported foot and ankle pain in all nurses in a study conducted on nurses in the Australian Children's Hospital. Similarly, in a study conducted by Stolt *et al* [13], 202 (65%) of 411 people had recurrent pain in their feet. Since care and patient intervention in the field of health brings with it a long standing time, foot pain is an inevitable condition as a result of long and tiring working hours.

After foot pain, the two most important problems related to the foot are ingrown nail problem (11.2%) and hallux valgus (4.4%). When the literature was examined, it was observed that 7.8% of nurses had ingrown nail problems in Yildiz's[17] study, while the most common foot diseases were plantar fasciitis (7.8%) and hallux valgus (7.0%) in Lee *et al*.'s[18] study. Similarly, in the study of Stolt *et al* [13], it was found that 18% of nurses experienced hallux valgus. In a study conducted by Nealy *et al*[19] on 502 nurses, it was determined that nurses suffered from many foot-related diseases, including plantar fasciitis (33.0%) and hallux valgus (11.2%) after starting work. Moisture in the feet that remain indoors for a long time can cause bacterial growth.

Almost all healthcare professionals (98.1%) correctly recognise that foot health affects psycho-social life. In the study of Crocker *et al*[20] on patients with diabetic foot problems, it was revealed that patients were affected psycho-socially due to reasons such as loss of function in the foot, medical care cost, economic stress caused by job loss.

In the study, 29.6% people did not know that diabetes mellitus can lead to foot complications. In the study of Denizeri & Satman [21], it was emphasised that foot problems seen in patients with diabetes mellitus are an important condition with high mortality, morbidity and recurrence risk, which reduces the quality of life of the individual. It was expected that healthcare professionals would be more aware of this issue than other professional groups.

14.1% people do not know that overweight negatively affects foot health. In Yildiz's [22] study, it was determined that the increase in BMI increased the pressure and area in the middle parts of the foot. In this direction, we can interpret that health professionals working standing should pay attention to the BMI value.

91.3% people correctly recognised that leaving the feet moist increases the risk of fungal infection. Burucu *et al* [23] stated that foot hygiene and moisture are two very important factors in fungal infections developing in the feet. In addition, inadequate foot hygiene, wrong shoe preference, inadequate hygiene of shoes and socks also support the formation of fungus.

95.1% people know that shoes with a narrow front part cause ingrown toenails. Sargın[24] emphasised in his study that factors such as improper nail cutting and care, wearing narrow shoes appear in the etiology of ingrown toenails.

In this study, a significant difference was found between the frequency of washing the feet and the frequency of wearing high-heeled shoes and experiencing foot-related diseases. Unlike this finding, Lee *et al*[18] found that the foot health of the participants did not show significant differences according to the type of shoes worn in the workplace. It can be said that wearing high heels and not washing the feet at the appropriate frequency may cause an increase in foot problems in healthcare professionals.

In this study, 64.1% of healthcare professionals stated that they performed regular foot care, while only 19.1% of nurses in Yildiz's[17] study stated that they applied routine care to their feet (pedicure, foot massage, foot creaming). Healthcare professionals should perform regular foot care because their feet stay in shoes or slippers for a long time.

55.8% of healthcare professionals always dry their feet after washing. Erkoc *et al* [16] found that 71.9% of individuals with diabetes dry their feet and between their toes after each foot washing. It is observed that this behaviour is lower in healthcare professionals compared to patients. However, health professionals who have knowledge in this field would be expected to perform this behaviour at a higher rate.

51.5% of the participants prefer cotton/woollen socks that do not squeeze the ankles. Erkoc *et al* [16] found that 57.8% of individuals with diabetes preferred cotton or woollen socks that do not squeeze the ankles when buying socks.

82.5% of healthcare professionals wear closed-toed, round-toed, low-heeled shoes that fit their feet. In Erkoc *et al*[16] study, 59.4% of individuals with diabetes preferred shoes with closed front, round toe, low heels and shoes that fit the foot. We can conclude that healthcare professionals pay more attention to the quality of shoes.

Conclusıon

According to this study conducted to determine the level of knowledge about foot health and hygiene practices of healthcare professionals, the results are summarised below:

38.8% of health care professionals wear orthopaedic slippers, 32.5% wear normal slippers and 28.6% wear shoes.

64.1% of the health care professionals had experienced a foot-related disease before, and 9.7% of them had more than one foot problem.

The foot problems experienced were as follows: foot pain 44.2%, ingrown nail 11.2%, hallux valgus 4.4%, foot odour 5.3%, callus 2.9%, heel spur 1.9%, flat sole 1.9%, foot fungus 2.4%.

The level of knowledge of healthcare professionals about foot health is moderate. Healthcare professionals are well aware that foot health affects psycho-social life, feet should not be left moist, shoes with narrow front part trigger ingrown nail problem, heel height of shoes should be maximum 2.5-3 cm, and it is recommended to wash feet with soapy water at least once a day. However, they have less knowledge about the fact that diabetes mellitus may lead to foot complications, that overweight negatively affects foot health, that not paying attention to foot care in youth may lead to problems in old age, and that not paying attention to foot health may cause low back pain.

When the behaviours of healthcare professionals regarding personal foot care are examined, 64.1% of them perform regular foot care, 75.2% wash their feet at least once a day and 55.8% dry their feet after washing. 51.5% of the participants prefer cotton/woollen socks that do not squeeze the ankles. 82.5% of the participants wear closed-toed, round-toed, low-heeled shoes that fit their feet. 79.1% of the respondents do the dressing themselves if a wound occurs on their feet, and if it does not heal, they go to a physician's examination.

The frequency of having problems with the feet was found to be related with the frequency of washing the feet and the frequency of wearing high heeled shoes.

Recommendatıons

There are few studies focusing only on foot problems of healthcare professionals. With this study, it is thought that awareness of foot health will increase. Foot hygiene behaviours of healthcare professionals and their knowledge and practices on this subject are not at the desired level. Foot health is not only a personal issue, but also forms the basis of providing quality care. For this reason, foot disorders and health problems complained by healthcare professionals should be investigated in more detail. Many healthcare professionals suffer from foot-related problems and this suggests the need for interventions to promote better foot health management. It will be important for future research to meet the scientific evidence, especially methods that can measure foot health more objectively or medical diagnostic processes.

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