

## PAPER DETAILS

TITLE: Bir Egitim ve Arastirma Hastanesinde Hizmetlilerin Koruyucu Ekipman Kullanimlarinin ve El Hijyeni Uygulamalarinin Degerlendirilmesi

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# Evaluation of Hygiene Applications and Protective Equipment Usage of Cleaners Working in an Education and Research Hospital

## Bir Eğitim ve Araştırma Hastanesinde Çalışan Hizmetli Personelin El Hijyeni Uygulamaları ve Korucu Araç kullanımların Değerlendirilmesi

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### Abstract

**Objective:** In this study, evaluation of hygiene applications and protective equipment usage and hygiene applications of attendants working in İstanbul Education and Research Hospital has been the primary objective. **Materials and Method:** This definitive type investigation has been conducted by applying a face to face survey form consisting of 29 questions directed to 332 attendants working in İstanbul Education and Research Hospital and who have accepted to participate in the study.

**Findings:** 78.6% of participants have stated that they were wearing gloves; 31% that they were using bonnet-headress-hats; 47.3% that they were using masks; 71.1% have said that they were washing their hands after toilet and 62.7% were washing up before lunch. 41% of attendants have stated they have been educated before working and 84.2% after initiating work. There was not a statistically significant difference between educational status, age, previous working experience, status of occupational education receiving before and after beginning work and working units ( $p>0.05$ ).

There was not a significant difference between gender and educational status of attendants in whole protective equipment usage and; between working time and age groups in whole hand hygiene applications ( $p>0.05$ ). In those attendants educated about infectious diseases and hygiene and personal protective measures, ratio of whole protective equipment usage and whole hand hygiene applications have been found higher ( $p<0.05$ ).

**Result:** In those attendants educated about infectious diseases and hygiene and personal protective measures, ratio of whole protective equipment usage and whole hand hygiene applications have been found higher.

**Key Words:** Attendants, Cleaners, Hygiene, Hand Washing

### Özet

**Amaç:** Bu çalışmada; İstanbul Eğitim ve Araştırma Hastanesi'nde çalışan hizmetli personelin el hijyeni uygulamaları ve korucu malzeme kullanımının değerlendirilmesi amaçlanmıştır.

**Gereç ve yöntem:** Tanımlayıcı tipte yapılan bu araştırma, İstanbul Eğitim ve Araştırma Hastanesi'nde araştırmaya katılmayı kabul eden 332 hizmetli personele 29 sorudan oluşan anket formu, yüz yüze görüşülerek uygulanmıştır.

**Bulgular:** Hizmetlilerin %78,6'sı eldiven, %31'i bone-başlık-şapka ve %47,3'ü maske kullandığını, %71,1 tuvaletten çıktıktan sonra ve %62,7'si yemeklerden önce ellerini yıkadığını ifade etmiştir. Hizmetlilerin %41'i göreve başlamadan önce, %84,2'si göreve başladıktan sonra meslekleri ile ilgili herhangi bir eğitim aldığını ifade etmiştir. Hizmetlilerin eğitim düzeyi, yaşı, daha önceki iş deneyimi, işe başlamadan önce ve sonraki dönemde meslekleri ile ilgili eğitim alma durumları ile çalışma birimleri arasında istatistiksel olarak anlamlı fark bulunmamıştır ( $p>0.05$ ). Tüm korucu malzeme kullanımında hizmetlilerin cinsiyeti ve eğitim düzeyleri arasında, tüm el hijyeni uygulamaları açısından çalışma süresi ve yaş grupları arasında bir fark bulunamamıştır ( $p>0.05$ ). Hizmetlilerin meslek eğitimi konularından bulaşıcı hastalıklar ve hijyen ile kişisel korunma yolları konularında eğitim alanlarda; tüm koruyucu malzeme kullanımı ve tüm el hijyeni uygulamaları daha yüksek bulunmuştur ( $p<0.05$ ).

**Sonuç:** hizmetlilerden bulaşıcı hastalıklar ve hijyen ile kişisel korunma konularında eğitim alanlarda tüm koruyucu malzeme kullanımı ve tüm el hijyeni uygulamaları daha yüksek bulunmuştur.

**Anahtar Kelimeler:** Temizlik Elemanları, Hizmetli, Hijyen, El Yıkama, Korucu Araç

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## Introduction

Defining population-at-risk, determining origins of infection, and knowing the ways of infestation are significant steps in preventing infectious diseases.<sup>1</sup> Hospital-based infectious diseases may, inter alia, be attributed to various causes such as patients, visitors, hospital staff, equipments used for diagnosis and treatment, and the hospital environment itself.<sup>2</sup>

Employees of subcontracted services in hospital environment are at all times exposed to influences of external environmental pollutants. Hand washing is the cheapest, easiest and most effective method known so far to protect the body from diseases and for protection against infections. Washing hands is especially critical after using the toilet and before meals.

Particularly for those working in jobs exposed to bodily contamination sources and more particularly for those working in contact with blood products and contaminated wastes, the most important and vital means for protection against infectious agents are surely a gown specifically for protection from blood-borne infectious agents, primarily HIV and Hepatitis B, as well as gloves in the case of jobs prone to staining of hands, in addition to other protective clothing items (gown, gloves, goggles, bonnets, face masks, etc.) so as to protect hands, eyes, ears and the body as a whole during the works.<sup>3,5</sup>

Another important instrument is to give training seminars and hands-on-training to healthcare workers on protection from nosocomial infections and control of infectious diseases.<sup>6,7</sup>

Being a part of the hospital environment, just like other healthcare professionals, employees of subcontracted services in hospitals also have very important inherent duties and responsibilities focused not only on protecting themselves against said infections, but also on preventing the spreading of infections within the hospital.

In this study, we aimed at detecting and reporting the general practices of the subject employees of subcontracted services in Istanbul Training and Research Hospital with regard to use of protective equipments and hand hygiene, in addition to the factors associated therewith.

## Materials and Methods

This descriptive study has been conducted in Istanbul Training and Research Hospital from February 15th to March 15th, 2010. A written clearance for the study has been received from Istanbul Provincial Health Department.

A literature-based questionnaire of 29 questions has been addressed through face-to-face interviews to 332 servants who work in the hospital and have given informed consent for the study.

The questionnaire prepared by the researchers consists of topics such as socio-demographic features, level of knowledge and attitudes about protection against infections, and ways of transmission of infections.

The questionnaire questions were designed as open-ended, multiple choice and multiple answers or multiple choice and single answer questions.

Data collected therein have been evaluated by using SPSS 11.5 software package. Statistical significance is considered and taken as  $p < 0.05$ .

### Findings:

80.7% (268) of 332 respondents are males, 82.8% (275) are first-time servants and 41.5% (137) have an education level of elementary school or higher. 51.6% of female servants and 23.9% of male servants work in clinics. It is detected that females have worked mostly in clinics and males mostly in the administration area and in operation room/intensive care unit during the last six months ( $p < 0.05$ ). It is also found that servants working since more than 6 years are working mostly in administration area and clinics, while servants working since less than 6 years are working mostly in operation rooms/intensive care units and emergency rooms ( $p < 0.05$ ) (Table 1).

41% of servants stated that they have received some occupational training (hospital cleaning services and rules to be obeyed / points of care) before beginning to work, while 84.2% stated that they have received this kind of occupational training after beginning to work. No statistically significant difference was detected with respect to education level, age, previous work experience, and occupational training received before and after beginning to work ( $p > 0.05$ ) (Table 1).

It is stated that 78.6% (261) of respondents wear gloves, 31% (103) wear bonnets / headaddresses / hats and

**Table 1:** Some Demographic Features of Servants

Variables		Number (%)	Clinics	Poly clinics	Administra- tion	Operation Room and Intensive Care Unit	Emergency Room	p
Gender	Female	64 (19.3)	33 (51.6)	14 (21.9)	5(7.8)	8 (12.5)	4 (6.2)	0,000
	Male	268 (80.7)	64 (23.9)	63 (23.5)	45 (16.8)	71 (26.5)	25 (9.3)	
Education Level	Secondary and below	193 (58.5)	55 (28.5)	40 (20.7)	32 (16.6)	47 (24.4)	19 (9.8)	0.700
	Secondary and over	137 (41.5)	42 (30.7)	35 (25.5)	18 (13.1)	32 (23.4)	10 (7.3)	
Age Group	Below 35 years	64 (19.3)	26 (40.6)	6 (9.4)	4 (6.2)	21 (32.8)	7 (10.9)	0.771
	Over 35 years	268 (80.7)	71 (26.5)	71 (26.5)	46 (17.2)	58 (21.6)	22 (8.2)	
Which Job (in order)?	First job	275 (82.2)	84 (30.5)	60 (21.8)	43 (15.6)	66 (24)	22 (8.0)	0.456
	2nd or more	57 (17.2)	13 (22.8)	17 (29.8)	7 (12.3)	13 (22.8)	7(12.3)	
How long have you been working here	5 years or less	136 (41.0)	46 (33.8)	21 (15.4)	13 (9.6)	41 (30.1)	15 (11.0)	0.002
	More than 6 years	196 (59.0)	51 (26.0)	56 (28.6)	37 (18.9)	38 (19.4)	14 (7.1)	
Received any training after beginning work?	Yes	261 (84.2)	84 (89.4)	58 (80.6)	33 (78.6)	64 (85.3)	22 (81.5)	0.431
	No	49 (15.8)	10 (10.6)	14 (19.4)	9 (21.4)	11(14.7)	5 (18.5)	
Received any training before this job?	Yes	135 (41.0)	45 (46.4)	27 (35.1)	20 (41.7)	29 (37.2)	14 (48.3)	0.493
	No	194 (59.0)	52 (53.,6)	50 (64.9)	28 (58.3)	49 (62.8)	15 (51.7)	

**Table 2:** Distribution of Use of Protective Equipments and Hygiene Practices Regarding Working Units of Servants

	Variables (n)	Number (%)	Service	Clinics	Administra- tive area	Operation Rooms and Intensive Care Unit	Emergency Room	p
Use of Protective Equip- ment	Gloves	261 (79.1)	86 (88.7)	58 (76.3)	31 (62.0)	62 (78.5)	24 (85.7)	0.004
	Bonnet, Headdress, Hat	103 (31)	28 (28.9)	17 (22.1)	7 (14.0)	42 (53.2)	9 (31.0)	0.000
	Mask	157 (47.3)	51 (52.6)	23 (29.9)	17(34.0)	49 (62.0)	17 (58.6)	0.000
Hand Hygiene (When do you wash your hands?)	Before Work	189 (56.9)	64 (66.0)	44 (57.1)	21 (42.0)	48 (60.8)	12 (41.4)	0.025
	After Work	232 (69.9)	78 (80.4)	57 (74.0)	25 (50.0)	53 (67.1)	19 (65.5)	0.003
	Before Toilet	135 (40.7)	44 (45.4)	31 (40.3)	12 (24.0)	36 (45.6)	12 (41.4)	0.114
	After Toilet	236 (71.1)	73 (75.3)	59 (76.6)	29 (58.0)	54 (68.4)	21 (72.4)	0.168
	When Hands are Stained	217 (65.4)	67 (69.1)	50 (64.9)	30 (60.0)	52 (65.8)	18 (62.1)	0.848
	On Going Home	201 (60.5)	64 (66.0)	53 (68.8)	23 (46.0)	47 (59.5)	14 (48.3)	0.046
	Before Lunch	208 (62.7)	65 (67.0)	52 (67.5)	27 (54.0)	47 ( 59.5)	17 (58.6)	0.447
	After Lunch	155 (46.7)	48 (49.5)	32 (41.6)	18 (36.0)	41 (51.9)	16 (55.2)	0.276
While lunch, taking off gown	Yes	73 (23.7)	18 (24.7)	14 (19.2)	10 (13.7)	28 (38.4)	3 (4.1)	0.092
	No	235 (76.3)	75 (31.9)	61 (26.0)	33(14.0)	28 (38.4)	22 (9.4)	
Frequency of change of gown/uniform	Once a week	248 (74.7)	75 (30.2)	63 (25.4)	37 (14.9)	55 (22.2)	18 (7.3)	0.202
	Once every two weeks or less frequent	84 (25.3)	22 (26.2)	14 (16.7)	13 (15.5)	24 (28.6)	11 (13.1)	

**Table 3:** Distribution of Use of Protective Equipment and Hand Hygiene Practices Regarding Age, Gender, Working Time and Educational Status of Cleaning staff

Variable	Gender			Working Time				Educational Status			Age Group		
	Female	Male	p	Less than 1 year	1-5 years	6 or more	P	Elementary or below	Elementary or over	p	Below 35	Over 35	p
Gloves	53 (82.8)	208 (78.2)	0.495	18 (72.0)	98 (88.3)	145 (74.7)	0.013	147 (76.6)	112 (82.4)	0.219	51 (79.7)	210 (78.9)	1.000
Bonnet-Head-dress	20 (31.2)	83 (31.0)	1.00	9 (36.0)	45 (40.5)	49 (25.0)	0.016	61 (31.6)	41 (29.9)	0.809	32 (50.0)	71 (26.5)	0.000
Mask	34 (53.1)	123 (45.9)	0.331	14 (56.0)	67 (60.4)	76 (38.8)	0.001	89 (46.1)	67 (48.9)	0.655	35 (54.7)	122 (45.5)	0.211
Before Work	46 (71.9)	143 (53.4)	0.008	13 (52.0)	73 (65.8)	103 (52.6)	0.070	105 (54.4)	82 (59.9)	0.367	41 (64.1)	148 (55.2)	0.210
After Work	48 (75.0)	184 (68.7)	0.365	16 (64.0)	81 (73.0)	135 (68.9)	0.604	127 (65.8)	103 (75.2)	0.070	41 (64.1)	191 (71.3)	0.289
Before Toilet	33 (51.6)	102 (38.1)	0.065	12 (48.0)	47 (42.3)	76 (38.8)	0.614	68 (35.2)	66 (48.2)	0.023	26 (40.6)	109 (40.7)	1.000
After Toilet	48 (75.0)	188 (70.1)	0.540	19 (76.0)	82 (73.9)	135 (68.9)	0.555	130 (67.4)	105 (76.6)	0.084	41 (64.1)	195 (72.8)	0.171
When hands are stained	44 (68.8)	173 (64.6)	0.562	18 (72.0)	77 (69.4)	122 (62.2)	0.347	117 (60.6)	98 (71.5)	0.046	41 (64.1)	176 (65.7)	0.884
Before going home	41 (64.1)	160 (59.7)	0.571	16 (64.0)	73 (65.8)	112 (57.1)	0.310	110 (57.0)	89 (65.0)	0.171	39 (60.9)	162 (60.4)	1.000
Before lunch	42 (65.6)	166 (61.9)	0.667	15 (60.0)	68 (61.3)	125 (63.8)	0.873	115 (59.6)	91 (66.4)	0.249	36 (56.2)	172 (64.2)	0.252
After lunch	32 (50.0)	123 (45.9)	0.579	9 (36.0)	58 (52.3)	88 (44.9)	0.249	85 (44.0)	69 (50.4)	0.265	29 (45.3)	126 (47.0)	0.889
Frequency of change of gown Once a week	47 (19.0)	201 (81.0)	0.545	15 (6.0)	81 (32.7)	152 (61.3)	0.144	134 (54.5)	112 (45.5)	0.015	46 (18.5)	202 (85.5)	0.631
Once every two weeks	17 (20.2)	67 (79.8)		10 (11.9)	30 (35.7)	44 (52.4)		59 (70.2)	25 (29.8)		18 (21.4)	66 (78.6)	

**Table 3:** Distribution of Use of Protective Equipment and Hand Hygiene Practices Regarding Age, Gender, Working Time and Educational Status of Cleaning staff

Education topics	Total n (%)	Service n (%)	Clinics n (%)	Administration n (%)	Emergency Room and Intensive Care Unit	Emergency Room n (%)	p
General Hygiene	65 (77.4)	43 (74.1)	25 (75.8)	47 (73.4)	17 (77.3)	0.982	0.982
Use of Cleaning Materials	48 (57.1)	23 (39.7)	13 (39.4)	34 (53.1)	7 (31.8)	0.078	0.078
Using Fields of Cleaning Materials	49 (58.3)	30 (51.7)	13 (39.4)	35 (54.7)	10 (45.5)	0.407	0.407
Hygiene rules and infectious diseases	61 (72.6)	42 (72.4)	14 (42.4)	39 (60.9)	9 (40.9)	0.003	0.003
Personal Hygiene	47 (56.0)	23 (39.7)	9 (27.3)	31 (48.4)	6 (27.3)	0.017	0.017

**Table 5:** Distribution of Protective Equipment and Hand Hygiene Practices of Servants Regarding Receiving Occupational Training and Training Topics

Variables		Hygiene rules and infectious diseases (sub-issue)				Personal Protection (sub-issue)			General occupational training		
		Total	Educated	Non-educated	p	Educated	Non-educated	P	Educated	Non-educated	P
Gloves		261(79.1)	164 (91.6)	97 (64.2)	0.000	115 (90.6)	146 (71.9)	0.000	229 (85.4)	32 (51.6)	0,000
Bonnet-headress		103(31.0)	72 (39.8)	31 (20.5)	0.000	58 (45.3)	45 (22.1)	0.000	88 (32.7)	15 (2.8)	0.226
Mask		157(47.3)	107 (59.1)	50 (33.1)	0.000	82 (64.1)	75 (36.8)	0.000	137 (50.9)	20 (31.7)	0.007
Before Work		189(56.9)	120 (66.3)	69 (45.7)	0.000	88 (68.8)	101 (49.5)	0.001	160 (59.5)	29 (46.0)	0.066
After Work		232(69.9)	150 (82.9)	82 (54.3)	0.000	108 (84.4)	124 (60.8)	0.000	196 (72.9)	36 (57.1)	0.021
Before Toilet		135(40.7)	97 (53.6)	38 (25.2)	0.000	71 (55.5)	64 (31.4)	0.000	113 (42.0)	22 (34.9)	0.322
After Toilet		236(71.1)	150 (82.9)	86 (57.0)	0.000	105 (82.0)	131 (64.2)	0.000	197 (73.2)	39 (61.9)	0.089
When hands are stained		217(65.4)	142 (78.5)	75 (49.7)	0.000	104 (81.2)	113 (55.4)	0.000	181 (67.3)	36 (57.1)	0.142
Before Going Home		201(60.5)	140 (77.3)	61 (40.4)	0.000	99 (77.3)	102 (50.0)	0.000	167 (62.1)	34 (54.0)	0.254
Before Lunch		208(62.7)	139 (76.8)	69 (45.7)	0.000	100 (78.1)	108 (52.9)	0.000	175 (65.1)	33 (52.4)	0.082
After Lunch		155(46.7)	106 (58.6)	49 (32.5)	0.000	81 (63.3)	74 (36.3)	0.000	129 (48.0)	26 (41.3)	0.400
Frequency of change of gown	Once a week	103(68.2)	145 (80.1)	248 (74.7)	0.016	144 (70.6)	104 (81.2)	0.038	42 (66.7)	206 (76.6)	0.110
	Once every two weeks	48 (31.8)	36 (19.9)	84 (25.3)		60(29.4)	24(18.8)		21 (33.3)	63	

47.3% (157) wear masks (Table 2). Of protective equipments, gloves are used mostly by respondents working in clinics, and masks / bonnets / headdresses / hats are used mostly by respondents working in operation room / intensive care units ( $p<0.05$ ). A statistically significant difference is detected among units in terms of use of protective equipments and items ( $p<0.05$ ) (Table 2).

It is found that bonnets/headress/hats are used less by those over 35 years of age and those working since more than 6 years; gloves are used mostly by those working since 1-5 years, and masks are used less by those working since more than 6 years ( $p<0.05$ ). Difference between proper use of protective equipments on one hand and gender or level of education on the other hand is found statistically insignificant ( $p>0.05$ ) (Table 3).

As for hand hygiene practices, 56.9% (189) of servants have stated that they wash their hands before work, 69.9% (232) after work, 40.7% (135) before using the toilet, 71.1% (236) after using the toilet, 62.7% (208) before meals, 46.7% (155) after meals and 65.4% (217) if and when their hands are stained; 74.7% (248) have sta-

ted that they change uniforms/gowns once every week (Table 2).

41.4% of servants working in emergency room say that they wash hands before work and 48.3% wash hands after work, while 42% of servants working in the administration area say they wash up before work, and 50% wash their hands after work. Hand washing habits before work and before going home have been found to be uncommon as for respondents working in the emergency room and the administration area ( $p<0.05$ ). No statistically significant difference is detected between hand washing habits before and after using the toilet, before and after meals, or when hands are stained on one side and the servants' working units on the other side (Table 2).

Hand washing before work in female servants, and hand washing before using the toilet as well as when hands are stained and the frequency of changing uniform/gown have been found higher in those with education level of secondary school and higher ( $p<0.05$ ). Nor was a statistically significant difference detected in hand hygiene practices between seniority (past job experience) and

age groups ( $p>0.05$ ) (Table 3)

Distribution of topics of training given to respondents are shown in table 4. 75.5% (197) of the servants say that they have been educated in general hygiene, 63.2% (165) in hygiene rules and communicable diseases and 44.4% (116) in personal protection. No difference was detected between general hygiene, usage of cleaning materials and work environment for servants working in different units. Servants working in the emergency room and administration area state that they have received less training about hygiene rules and communicable diseases than those working in emergency services and administration area ( $p<0.05$ ) (Table 4).

Servants answering "yes" to the question "have you received any occupational training (hospital cleaning and rules to be obeyed/points of care about the topic)?" are found to use masks and gloves and to abide by hand hygiene rules after work more strictly than that of the respondents answering "no" to the same question ( $p<0.05$ ). However, the difference between trained and non-trained for bonnet - hat usage and other hand hygiene practices ( $p>0.05$ ) was not statistically significant. It is found that respondents stating to have taken occupational training on hygiene rules and communicable diseases are more prone to use of protective equipments and abidance by hand hygiene practices and habits than those stating to have taken no such training ( $p<0.05$ ) (Table 5).

## Discussion

41% of servants have stated that they have received occupational training (hospital cleaning and rules on this topic to be obeyed/points of care) before beginning work and 84.2% of them after beginning work.

In the studies about rules on hospital cleaning and rules to be obeyed/points of care, 20.5 - 100% of workers have stated that they have received training after beginning to work.<sup>8-10</sup> In our study, rate of respondents taking occupational training after beginning work is consistent with literature data. In our study, rate of respondents trained on use of mask and gloves and on hand washing practices after work has been found higher than those not trained ( $p<0.05$ ). However, difference between those trained on use of bonnet/headress/hat and hand hygiene practices and those not trained thereon has been found

statistically insignificant ( $p>0.05$ ).

63.2% of cleaning staff in this study have stated that they have been trained about hygiene rules and infectious diseases and 44.4% of them about personal protective measures being the sub-issues of occupational training. In studies conducted with servants, 43.8–45.5% of workers have stated that they have not been trained on protection and hygiene.<sup>8,11</sup> In our study, it is found that servants who have said that they have been trained on sub-issues of occupational training such as hygiene rules and communicable diseases with protection methods were more prone to use of protective equipments and abidance by hand hygiene practices than those non trained thereon ( $p<0.05$ ). It is finally concluded that it is more rational and effective for hospital servants to take training on hygiene rules and infectious diseases and ways and means of protection rather than taking general occupational training on protective equipments and hand hygiene.

In this study, it is detected that female servants work mostly in clinics, that servants working since more than 6 years work mostly in administration area and polyclinics and that less experienced servants work mostly in operation rooms/intensive care units and emergency rooms ( $p<0.05$ ).

In this study, no statistically significant difference is detected between servants' education levels, age, previous working experience, occupational training receiving before and after beginning to work and working units ( $p>0.05$ ).

This study revealed that in recruitment of servants for different units of a hospital, the hospital administration does not generally pay attention to assignment of highly educated, adequately experienced and well-trained personnel in the units exposed to a higher risk in terms of infections.

Accordingly, in employment of servants in hospitals, it is recommended that staff with a lower level of occupational knowledge and experience should first be employed in administration areas or offices where the risk of infections and communicable diseases is relatively lower, and be later, i.e. in line with the increase in their job experience and knowledge level, employed in units such as intensive care unit, operation rooms and emergency rooms where occupational and infectious risks are relatively



higher.

Personal protective equipments are important measures to protect healthcare workers from infections as well as for preventing transmission of infections within the hospital.<sup>1</sup> Participants have stated that 78.6% use gloves, 31% use bonnets or headdresses, 47.3% use mask as protective equipment while working.

In a study conducted in England in 2006, the rate of glove usage as required has been found to be 100% in assistant healthcare workers.<sup>12</sup> In a study conducted with household staff, it has been reported that 98.0% of staff were using gloves<sup>10</sup>. In another study conducted with household staff, it has been reported that 98.8% of workers were wearing gloves while working.<sup>9</sup>

Use of gloves and other protective equipments in our study has been found to be lower than other studies. In our study, there was not a difference between gender and level of education of servants regarding proper use of protective equipments ( $p>0.05$ ). In this study, it is detected that servants working in administration area have used protective equipment such as masks, gloves, headdresses-bonnets less than servants working in other units.

The reason that protective equipments are used less by those working in administration area might be that there is a relatively lower risk of infection and communicable diseases and accordingly less need to use protective equipments in administrative offices, as well as that the servants working in these units have less training on personal protection than those working in other units. Providing regular training about topics of weaknesses reported in practices is important in increasing motivation and level of knowledge of servants. Thus, servants especially those working in units with high risks should be trained on protection from nosocomial infections and on control of communicable diseases with seminars and hands-on-training.<sup>6,7</sup>

In this study, 56.9% of the servants have stated that they wash their hands before work, 69.9% after work, 40.7% before using the toilet, 71.1% after using the toilet, 62.7% before meals, 46.7% after meals and 65.4% when hands are stained.

In a study conducted with cleaning staff it is reported that 63.4% of the cleaning staff wash their hands

before work, 47.3% before using the toilet, 1.8% after work, 14.3% before lunch, and 15.2% after lunch<sup>8</sup>. In another study, the rate of hand washing among cleaning staff has been found to be 36%<sup>12</sup>. In a study with household staff, it has been reported that nearly all of the staff (99.4%) wash their hands before and after work.<sup>5</sup>

In a study conducted in Kayseri with cleaning staff, the rate of hand washing after work has been found 98.4% in females and 96.8% in males.<sup>14</sup> Hand hygiene practices in this study have been found higher than some of these studies and lower than others. However, the hand washing rates are based on the statements of respondents believed to be true. That is why these rates may not exactly reflect the truth. In an observatory study, 100% of the participating servants have stated that they wash hands after certain events, while our observations have revealed that this rate is in fact only 25.2%.<sup>15</sup>

In another observatory study, rate of hand washing of nurses in a 48 month follow-up period has been reported as 66.0%.<sup>16</sup>

Our study did not reveal any difference between seniority and age groups of servants regarding hand hygiene. In this study, hand washing habits before work and after work have been found to be lower in servants working in emergency rooms and administration areas ( $p<0.05$ ). Hand washing before work was higher in females whereas hand washing before the toilet and when hands are stained, and frequency of uniform/gown changing have been found to be higher in those who had secondary school or higher education level ( $p<0.05$ ). No statistically significant difference is detected between seniority and age groups of servants regarding hand hygiene. In our study, it is detected that servants trained on hygiene rules and communicable diseases are more prone to proper hand hygiene practices than those not trained ( $p<0.05$ ). We believe that on-the-job training must be organized on hand hygiene practices and infectious diseases for those working in emergency service and other relevant units.

### Conclusions and Suggestions

Our study did not indicate any statistically significant difference between gender and level of education of servants regarding proper use of protective equipments, between seniority and age groups regarding hand hygiene



ne. However, among servants, proper use of protective equipments and proper hand hygiene practices have been reported to be higher in servants trained on hygiene rules and communicable diseases than those not trained.

During on-the-job training of servants, we think that internal regulations considering primarily hygiene rules and personal protection measures and providing continuous training will positively contribute to prevention of infections.

In employment of servants in hospitals, it is re-

commended that staff with a lower level of occupational knowledge and experience should be employed in units with lower risk of infection and communicable diseases (administration area or offices) to be employed later in units such as intensive care unit, operation rooms and emergency rooms where occupational and infectious risks are relatively higher as the rank of experience and knowledge of servants get higher and thus will positively affect patient and healthcare worker safety with higher dedication.

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