American Journal of Infection Control 43 (2015) 1009-11

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Brief report

Knowledge, attitudes, and practices of health care personnel concerning hand hygiene in Shiraz University of Medical Sciences hospitals, 2013-2014

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Key Words:
Hand hygiene
Health care personnel
Health care–associated infections
Infection prevention

This study evaluated knowledge and self-reported attitudes and practices concerning hand hygiene among hospital workers in Shiraz, Iran, using a 68-question survey divided into 4 sections: demographics, knowledge, attitudes, and practices. Work experience had a correlation with practices and knowledge ($P < .05$), and knowledge and practices scores were positively correlated ($P < .05$). Participants appear to have sufficient knowledge and proper attitudes regarding hand hygiene; however, compliance practices were suboptimal.

Health care–acquired infections (HAIs) can occur anywhere health care is provided. HAIs are among the most common preventable medical complications among hospitalized patients.[1,2] HAIs occur in approximately 5% of hospitalized patients causing significant increases in morbidity and mortality.[2] The Centers for Disease Control and Prevention estimated that in 2002, >1.7 million HAIs and 99,000 HAI-associated deaths occurred in hospitals.[3,4]

In addition to the human toll, HAIs place significant financial burdens on health care systems. However, recent studies suggest that proper and consistent application of existing infection prevention and control practices can lead to up to a 70% reduction in certain HAIs. The financial benefit of using these preventive practices is estimated to be $25-$31.5 billion in medical cost savings per year.[4,5]

Elimination of HAIs requires culture change among all members of a health care personnel (HCP) team plus the support of facility leadership. Success is based on a combined effort of personal commitment, implementation of evidence-based practices, and proper resource allocation.[4,6]

One of the key elements in the control of HAIs is universal hand hygiene (HH) among HCP. Raising awareness, significant training, incentives, and behavior modification have improved HH; however, the overall rate remains a concern. HCPs' hands readily become contaminated with transient bacteria posing a risk for transmission and possible HAI. Proper HH is one of the simplest and most effective measures for preventing HAIs.[7-9] Other studies indicate that HCP with better knowledge of and attitudes toward standard precautions have better HH compliance.[9-11]

Our study aimed to assess knowledge levels, attitudes, and self-reported practices of HCP toward HH in several Shiraz hospitals.

METHODS

Study design

This cross-sectional study was conducted among HCP affiliated with 5 Shiraz University of Medical Sciences hospitals using

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Funding/Support: Supported by the Vice-Chancellor for Research, Shiraz University of Medical Sciences (grant no. 5852).
Additional information: This study was performed by Milad Hosseinialhashemi in partial fulfillment of the requirements for certification as a general practitioner at Shiraz University of Medical Sciences, Shiraz, Iran.
Conflicts of interest: None to report.

http://dx.doi.org/10.1016/j.ajic.2015.05.002

Table 1
Demographic data from study respondents

Demographics	Ward-unit						Total
	Internal medicine	Surgery	Obstetrics-delivery assistant	ICU	Burn	Oncology	
Position							
Physician	4 (9.5)	9 (7.3)	8 (13.8)	8 (26.7)	10 (20.4)	12 (16.0)	51 (13.5)
Medical-nursing student	6 (14.3)	3 (2.4)	6 (10.3)	3 (10.0)	4 (8.2)	5 (6.7)	27 (7.2)
Nurse-midwife-technician-therapist	32 (76.2)	111 (90.2)	44 (75.9)	19 (63.3)	35 (71.4)	58 (77.3)	299 (79.3)
Degree							
Associate's	17 (40.5)	55 (44.7)	21 (36.2)	5 (16.7)	9 (18.4)	14 (18.7)	121 (32.1)
Bachelor's	19 (45.2)	51 (41.5)	29 (50.0)	17 (56.7)	27 (55.1)	45 (60.0)	188 (49.9)
Master's	5 (11.9)	10 (8.1)	3 (5.2)	5 (16.7)	3 (6.1)	10 (13.2)	36 (9.5)
General practitioner	1 (2.4)	5 (4.1)	3 (5.2)	2 (6.7)	9 (18.4)	1 (1.4)	21 (5.6)
Specialist	0 (0.0)	0 (0.0)	1 (1.7)	1 (3.2)	1 (2.0)	4 (5.3)	7 (1.8)
Subspecialist	0 (0.0)	2 (1.6)	1 (1.7)	0 (0.0)	0 (0.0)	1 (1.4)	4 (1.1)
Total	42 (100.0)	123 (100.0)	58 (100.0)	30 (100.0)	49 (100.0)	75 (100.0)	377 (100.0)

NOTE. Data are shown as n (%) within each ward-unit.
ICU, intensive care unit.

convenience sampling from July 2013-July 2014. Approval for the study was obtained from Shiraz University of Medical Sciences' Committee of Ethics. Verbal consent was obtained, and participation was voluntary.

Participants

Included were physicians, medical residents and students, nurses, midwives, nursing-midwifery students, and therapists-technicians working in internal medicine; surgical, burn, oncology, and obstetrics wards; and intensive care units. Sex, work experience, and type of work contract did not affect inclusion.

Sampling

A minimum sample size of 322 was needed to obtain a confidence level of 95% with a confidence interval of 5%. Sample size calculations came from the scientific literature and other Shiraz studies.

Trained interviewers distributed self-report questionnaires with instructions during all working shifts and collected them immediately after completion. The interviewers answered any participant questions. Respondents were assured that all responses would be kept confidential and used for research purposes only.

Questionnaire design and scoring

An infection control expert developed the questionnaire. It included the following 4 sections: demographics (5 items), knowledge (24 items), attitudes (8 items), and practices (31 items). It was pretested on a random sample of HCP. Reliability was assessed using a Cronbach α internal consistency coefficient ($r = 0.77$).

Correct knowledge answers received 1 point. Attitudes were assessed on a 5-point, Likert-type scale. Practice items had 5 possible choices: always, often, sometimes, seldom, and never. Always and often responses received 1 point, whereas the other 3 received zero points. When respondents achieved 0%-25%, 26%-50%, 51%-75%, and 76%-100% of their total possible score, they were assessed as being very poor, poor, moderate, and good, respectively.

Statistical analysis

Data were examined for frequencies, means, and SDs. Analysis involved SPSS Statistics Version 21 (SPSS, Chicago, IL).

Table 2
Scores of knowledge, attitudes, and practices of health care workers in each ward-unit

Ward/Unit	Mean	SD	*P* value
Knowledge (no. of enrolled people)			
Internal medicine (42)	12.64	2.46	<.001
Surgery (123)	13.10	2.62	
Obstetrics-delivery assistant (58)	12.86	1.81	
ICU (30)	14.86	2.96	
Burn (49)	13.93	2.64	
Oncology (75)	16.08	2.14	
Total (377)	13.85	2.72	
Attitude (no. of enrolled people)			
Internal medicine (42)	32.45	2.78	<.001
Surgery (123)	32.97	2.90	
Obstetrics-delivery assistant (58)	35.48	2.98	
ICU (30)	31.96	3.35	
Burn (49)	32.28	2.90	
Oncology (75)	33.74	3.04	
Total (377)	33.28	3.14	
Practice (no. of enrolled people)			
Internal medicine (42)	14.33	5.95	<.001
Surgery (123)	12.50	4.02	
Obstetrics-delivery assistant (58)	20.98	5.97	
ICU (30)	12.43	4.80	
Burn (49)	15.08	6.09	
Oncology (75)	16.48	4.41	
Total (377)	15.13	5.78	

ICU, intensive care unit.

Independent-samples *t* test and 1-way analysis of variance were used to determine intergroup differences. Correlation coefficients were calculated between age and knowledge, age and attitude, age and practice, work experience and knowledge, work experience and attitude, work experience and practice, knowledge and practice, knowledge and attitude, and attitude and practice. Also, a correlation coefficient was calculated by age and experience. *P* values of $\leq$.05 were considered significant. Correlation was significant at the .05 level (2-tailed).

RESULTS

Of the 500 HCP (out of a possible 2,756) approached, 377 (75.4%) returned completed questionnaires. Respondents were 20-52 years old (29.98 ± 6.24). Work experience ranged from 0-30 years (5.34 ± 5.25). Most respondents were women (80.6%, $P < .001$). The distribution of education levels was not balanced (1-sample χ^2 test, $P < .001$). Detailed demographic data of the respondents are shown in Table 1.