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Patient Hand Hygiene at Home Predicts Their Hand Hygiene Practices in the Hospital

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Abstract

We examine factors associated with hand hygiene practices of hospital patients. Hygiene decreased compared to at home, and home practices were strongly associated with hospital practices. Understanding and leveraging the intrinsic value some patients associate with hand hygiene may be important for improving overall hospital hygiene and decreasing healthcare-associated infections.

Introduction

Healthcare-associated infections (HAIs) rank among the top ten leading causes of death in the United States.¹ Their prevention is essential, and hand hygiene (HH) is the cornerstone of infection prevention. Studies have historically focused on increasing HH compliance among healthcare workers (HCWs) through patient empowerment, and while this has improved HAI rates, research focusing on the HH practices of patients themselves is scarce.² This is needed, as evidence suggests that patients are a common source of their own infections,³ and that by implementing initiatives that target patient HH directly, HAI infection and mortality can be significantly reduced.⁴ Including patients more directly in care is also in line with World Health Organization HH guidelines, which emphasize a multifaceted approach involving patients, providers, and hospitals.⁵

Methods

We conducted a cross-sectional, interviewer-administered survey at the University of Wisconsin (UW) Hospital from October 2012 to May 2013. Patients younger than eighteen, cognitively impaired, or in the intensive care unit were excluded from the study. In the survey, the term “hand washing” included use of soap and water, alcohol-based sanitizer, or antibacterial wipes. The survey was drafted after reviewing the Center for Disease Control’s

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HH guidelines,⁶ and the hygiene protocol at UW hospital. UW HCWs are required to wash hands on entering and exiting patient rooms, and before and after any patient contact, after contact with patient's surroundings, before a procedure and after exposure to potentially infectious fluids. HCW hand hygiene compliance is monitored by unit staff and reported monthly at the hospital wide electronic dashboard. To encourage patient HH, the hospital provides sanitizing wipes on all meal trays.

Statistical analysis was conducted on the basis of three surveyed outcomes: reported comfort asking HCWs to wash their hands, and always washing hands in the hospital before eating and after using the restroom. A P-value <0.05 was considered statistically significant. Comparisons used Pearson's χ^2 test and Kruskal-Wallis' test. Univariate and multivariate regression was conducted, and clinically or statistically (P <0.20) important variables associated with comfort asking HCWs to wash their hands were included in the model. Analysis was performed using STATA (Version 11.2, StataCorp). The UW-Madison Institutional Review Board granted this study exemption from review.

Results

A total of 207 patients participated in the survey (98.6% response rate). The association between patient characteristics and hospital HH practices are reported (Table 1). HH after restroom use significantly decreased upon entering the hospital compared to at home (69.5% vs. 85.0%, P< 0.001). The percentage of patients that never wash their hands after restroom use increased 10-fold in the hospital compared to at home (1.0% to 10.5%), as did the percentage of those rarely washing (0.5% to 5.0%).

HH practices before eating decreased even more than restroom practices when comparing the hospital and home (41.4% vs. 64.7%, P<0.001). The percent never washing before eating rose from 2.9% at home to 22.2% in the hospital, and the percent rarely washing increased from 4.8% to 11.6%. Worse eating hygiene in the hospital was associated with age (P = 0.0069). Patients with mobility problems were more likely to have eating hygiene decline in the hospital (50.6% vs. 31.5%, P=0.026), while patients comfortable asking their HCWs to wash hands were less likely to experience eating hygiene decline (40.5% vs. 55.1%, P = 0.045).

In addition to changes in hospital hygiene, patients' comfort asking HCWs to wash their hands was significantly related to several other variables (Table 2). In particular, being female, having internet access, and having good HH in the hospital before eating were independent factors that each resulted in at least a two-fold increase in reported comfort asking HCWs to wash hands.

Overall, patient self-reported rates on hand hygiene upon entering and exiting the hospital room were low. In both cases, approximately 60% of patients never washed at all (59.3% leaving, 60.7% returning). A majority of the remaining patients who reported at least one instance of HH on entry or exit reported always washing after restroom use in the hospital (81.8% leaving, 82.8% returning). Many patients who always washed in the hospital before

eating or after using the restroom, but had not washed upon entering or exiting the room, reported that this practice had not occurred to them, nor been suggested by HCWs.

Finally, in terms of hospital driven initiatives, 89.4% of patients thought that a bottle of gel sanitizer by the bed would be very helpful or helpful, 87.2% supported disinfectant wipes on food trays, and 73.8% supported hanging posters in patients' rooms that encourage HH. In terms of HCW initiatives, 80.8% of patients supported increased assistance from HCWs, yet fewer supported more frequent reminders from HCWs (74.2%) and having HCWs physically wash the patient's hands (62.3%).

Discussion

Among HCWs, it is recognized that providers' behaviors and attitudes affect compliance with HH regulations and innovations.⁷ Similarly, some differences in patient HH may stem from the intrinsic value each associates with HH, as manifested in their practices at home and self-reported importance of HH for preventing infection. Patients who deemed HH as very important tended to have better hygiene practices at home before eating and after restroom use, and all three measures significantly improved HH practices in the hospital. In fact, while many patients cited limited access as a cause for poor hospital hygiene, mobility problems only hindered HH improvement in the hospital for patients who had poor HH practices at home. Among patients who always wash at home, the percentage with declining hygiene was the same, irrespective of mobility.

One promising intervention for patients with mobility problems and poor HH may be placing a bottle of gel sanitizer at the bedside to improve access. This could be especially important in units such as orthopedics or general surgery, where mobility problems were commonly reported. However, since patients across the hospital overwhelmingly supported putting sanitizer by the bed, this may benefit not only those with poor hand hygiene or mobility problems, but in fact all patients.

To examine perceptions of the importance of hand hygiene in patients, we asked patients about their comfort asking HCWs to practice hand hygiene. Overall, 59.7% of patients reported they were willing to ask HCWs to wash their hands, a response similar to other recent studies.⁸ Traditionally, patient empowerment campaigns have focused on overcoming patient hesitation and shyness as a major hurdle to holding providers accountable for HH compliance.⁹ In accordance with this, we found that patients' HH practices and gender independently and significantly affected their comfort asking HCWs to wash their hands. Patients may be less likely to consider asking providers about hand washing if they do not practice regular hand hygiene themselves. Ultimately, empowering patients to monitor their HCWs may require a more multifaceted approach than previously believed, and the correlations between comfort asking a provider, gender, internet access, and patients' own HH should be investigated further.

It should be noted that our results may not be applicable to care in a children's hospital, with different hygiene practices and HAI risks. Furthermore, by excluding cognitively impaired and ICU populations with more limited self-care, we risk over reporting hygiene frequency.

However, the concern of patients underreporting negatively perceived behaviors is minimized, since over 60% of patients reported to have never washed their hands in at least one situation.

This study provides insight into the developing field of patient-centered HH. As new technology begins to overcome the need for patients as monitors of HCWs,¹⁰ instituting initiatives that focus on the HH of patients may be an important next step in decreasing rates of HAIs.

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Table 1

Association between patient characteristics and hand hygiene practices in the hospital

Characteristic	All patients (n=207)		Always wash before eating (n=198)		Always wash after restroom (n=200)	
	n (%)	Yes	No	Yes	No	P
Median age (IQR)	63 (54, 69)	62 (51, 68)	64 (58, 70)	63 (51, 68)	66 (58, 72)	0.036
Sex- Female	100 (48.3)	40 (42.1)	55 (57.9)	72 (73.5)	26 (26.5)	0.232
Ever worked in healthcare	57 (27.5)	21 (38.9)	33 (61.1)	39 (70.9)	16 (29.1)	0.790
Immediate family member worked in healthcare	76 (36.9)	26 (37.1)	44 (62.9)	51 (70.8)	21 (29.2)	0.732
Race						
White	191 (95.5)	74 (40.2)	110 (59.8)	127 (68.7)	58 (31.4)	0.197
Non-white	9 (4.5)	5 (62.5)	3 (37.5)	8 (88.9)	1 (11.1)	
Has internet access	164 (79.2)	64 (40.8)	93 (59.2)	111 (69.8)	48 (30.2)	0.851
Reports mobility issues	95 (62.9)	33 (37.1)	56 (62.9)	60 (67.4)	29 (32.6)	0.251
Watch television news or read newspaper						
Every day	147 (71.0)	58 (41.1)	83 (58.9)	99 (69.7)	43 (30.3)	0.647
Most days	28 (13.5)	8 (30.8)	18 (69.2)	17 (63.0)	10 (37.0)	
On occasion or never	32 (15.5)	16 (51.6)	15 (48.4)	23 (74.2)	8 (25.8)	
Education level completed						
High school or less	121 (61.4)	55 (45.6)	66 (54.6)	83 (67.5)	40 (32.5)	0.467
Associates degree or higher	76 (38.6)	26 (34.2)	50 (65.8)	55 (72.4)	21 (27.6)	
Concern of acquiring infection while in hospital						
None	70 (36.8)	31 (47.7)	34 (52.3)	48 (71.6)	19 (28.4)	0.654
Moderate	63 (33.2)	21 (35.6)	38 (64.4)	40 (65.6)	21 (34.4)	
Very or extremely	57 (30.0)	23 (40.4)	34 (59.7)	40 (72.7)	15 (27.3)	
Perceived role of hand hygiene in preventing infection						
Very Important	125 (82.8)	57 (47.1)	64 (52.9)	90 (75.0)	30 (25.0)	0.023
Important	22 (14.6)	6 (33.3)	12 (66.7)	11 (55.0)	9 (45.0)	
Slight or moderate importance	4 (2.76)	1 (25.0)	3 (75.0)	1 (25.0)	3 (75.0)	
Not important	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
Practice hand hygiene before eating at home						
Always	134 (64.7)	66 (50.8)	64 (49.2)	99 (75.0)	33 (25.0)	0.019

Characteristic	All patients (n=207)		Always wash before eating (n=198)		Always wash after restroom (n=200)		
	n (%)	Yes	No	P	Yes	No	P
Not always	73 (35.3)	16 (23.5)	52 (76.5)		40 (58.8)	28 (41.2)	
Practice hand hygiene after restroom at home							
Always	176 (85.0)	74 (44.0)	94 (56.0)	0.075	126 (74.1)	44 (25.9)	<0.001
Not always	31 (15.0)	8 (26.7)	22 (73.3)		13 (43.3)	17 (56.7)	
Comfortable asking health care workers to wash hands	120 (59.7)	55 (47.4)	61 (52.6)	0.033	89 (75.4)	29 (24.6)	0.033
Comfortable asking visitors to wash hands	119 (58.1)	50 (43.9)	64 (56.1)	0.396	90 (76.9)	27 (23.1)	0.008

Table 2

Patient reported comfort asking health care workers to wash hands (n=201)

Characteristic	Yes n (%)	No n (%)	Unadjusted OR (95% CI)	P	Adjusted OR (95% CI)	P
Overall	120 (59.7)	81 (40.3)				
Age			0.97 (.96 – 1.00)	0.028	.99 (.97–1.01)	0.347
Sex- Female	68 (70.1)	29 (29.9)	2.34 (1.31 – 4.19)	0.004	2.48 (1.34–4.58)	0.004
Race						
White	110 (58.8)	77 (41.2)	Ref	0.371	--	--
Non-white	6 (75.0)	2 (25.0)	2.10 (.41 – 10.68)			
Education level completed						
High school or less	69 (56.1)	54 (43.9)	Ref	0.192	--	--
Associates degree or higher	51 (65.4)	27 (34.6)	1.48 (.82 – 2.66)			
Ever worked in health care	32 (60.4)	21 (39.6)	1.04 (.55 – 1.97)	0.907	--	--
Immediate family member worked in health care	47 (63.5)	27 (36.5)	1.26 (.70 – 2.28)	0.437	--	--
Watch television news or read newspaper						
Every day	85 (59.4)	58 (40.6)	Ref		--	--
Most days	16 (59.3)	11 (40.7)	.92 (.31 – 2.64)	0.875		
On occasion or never	19 (61.3)	12 (38.7)	.93 (.42 – 2.1)	0.849		
Has internet access	103 (64.4)	57 (35.6)	2.55 (1.27 – 5.14)	0.009	2.52 (1.15–5.54)	0.021
Concern of acquiring infection in hospital						
None	41 (61.2)	26 (38.8)	Ref		--	--
Moderate	31 (51.7)	29 (48.3)	.68 (.33 – 1.37)	0.280		
Very or extremely	35 (61.4)	22 (38.6)	1.01 (.49 – 2.08)	0.981		
Perceived role of hand hygiene in preventing infection						
Very Important	73 (60.8)	47 (39.2)	Ref		--	--
Important	14 (66.7)	7 (33.3)	6.00 (.52 – 68.72)	0.150		
Slight or moderate importance	1 (25.0)	3 (75.0)	4.66 (.47 – 46.14)	0.188		
Not important	0	0	--	--		
Reports mobility issues	54 (59.3)	37 (40.7)	0.86 (.43 – 1.72)	0.67	--	--
Practice hand hygiene before eating at hospital						

Characteristic	Yes n (%)	No n (%)	Unadjusted OR (95% CI)	P	Adjusted OR (95% CI)	P
Not always	61 (53.5)	53 (46.5)	Ref	0.034		
Always	55 (68.8)	25 (31.3)	1.91 (1.05 – 3.48)		2.00 (1.06–3.78)	0.033
Practice hand hygiene after restroom at hospital						
Not always	29 (49.2)	30 (50.9)	Ref	0.034	--	--
Always	89 (65.4)	47 (34.6)	1.96 (1.05 – 3.64)			
Practice hand hygiene before eating at home						
Not always	38 (53.5)	33 (46.5)	Ref	0.188	--	--
Always	82 (63.1)	48 (36.9)	1.48 (.83 – 2.67)			
Practice hand hygiene after restroom at home						
Not always	12 (38.7)	19 (61.3)	Ref	0.012	--	--
Always	108 (63.5)	62 (36.5)	2.756 (1.26 – 6.06)			
Comfortable asking visitors to wash hands	91 (77.8)	26 (22.2)	6.75 (3.59 – 12.69)	<0.001	--	--