

A survey of hand-washing facilities in the outpatient department of a tertiary care teaching hospital in India

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Abstract

Introduction: Inadequate hand-washing facilities have been reported as a barrier to hand washing. This study aimed to evaluate the availability and accessibility of hand-washing facilities and supplies of hand-washing agents in the outpatient department (OPD) complex of a tertiary care teaching hospital.

Methodology: A checklist containing 13 variables was prepared and all rooms of direct patient care in the OPD were assessed on one occasion.

Results: Out of 211 rooms surveyed, a hand-washing facility was available in 209 (99.05%) rooms. Among these, 206 (98.56%) sinks were easily accessible and were placed close to users. Almost all sinks (99.5%) had hand-operated taps. Thirty-five (16.75%) sinks had no soap stand, and at 21 (10.5%) sinks, soap stands were found to be broken. At 14 (6.70%) sinks, soap bars were not available, while an antiseptic agent was available at 6 (2.87%) sinks. Four (1.91%) sinks had no towel stand, and at 8 (3.83%) sinks the towel stands were broken. At 43 (20.57%) sinks no towel was available, and at 23 (11%) sinks the towels provided were dirty. No sink drain was found to be blocked. No sink had hand-washing instructions displayed demonstrating the correct technique of hand washing.

Conclusion: Physical facilities required for hand washing were adequate though not perfect. There is a need to shift from hand-operated taps to non-manual taps and from cloth towels to paper towels. Hospital managers in developing countries should continuously strive to provide the best possible hand-washing facilities within their financial resources.

Key words: hand washing; infection; sink; survey; OPD; hospital

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Introduction

Worldwide, the delivery of health care is challenged by a wide range of safety problems. The traditional medical oath, “First do no harm,” is rarely violated intentionally or unintentionally by any health-care workers (HCWs). Accordingly, the World Alliance for Patient Safety selected hospital-associated infections (HAI) as the topic for its first Global Patient Safety Challenges in 2005. However, the fact remains that in spite of advances in the health care system, patients are harmed every day in every country around the globe in the course of receiving health care, and patient safety in hospitals remains at risk from HAI [1].

More than 1.4 million people around the world become seriously ill from HAI at any given time [2]. Studies conducted in developing countries and resource-poor settings have reported HAI rates from 6% to 27% [3-5]. The burden of HAI in India is poorly documented, and the Hospital Infection

Society of India estimates that the incidence of HAI in India ranges from 5-30% [6].

It has been shown that most infections are transmitted by the hands of HCWs [7] and hand washing causes a significant reduction in the carriage of potential pathogens on the hands of HCWs [8]. Semmelweis [9] demonstrated more than a century ago that hand washing itself was sufficient in reducing the incidence of infections. While measures as simple and inexpensive as hand washing with soap and water can be implemented to reduce HAI and save millions of lives, compliance with hand hygiene is still low in developing countries [10-11].

The proportion of medical care that is given in outpatient settings is increasing rapidly [12]. Though the overall incidence of infection in outpatient departments may be low, numerous serious outbreaks have been reported in outpatient facilities. Goodman and Solomon [13] reviewed published articles and identified 53 reports of transmissions that occurred in

Table 1. Checklist for survey of hand-washing facilities in outpatient department

1.	Availability of sink	Yes/No
2.	Accessibility of sinks	Accessible/ Not accessible or blocked
3.	Physical condition of sink	Intact/ Broken
4.	Type of tap	Hand operated/ Elbow operated
5.	Working status of tap	Working/ Not Working
6.	Availability of soap stand	Yes/ No/ Broken
7.	Availability of cleansing agent	Yes/ No
8.	Type of cleansing agent	Soap bar/ Liquid soap/ Antiseptic
9.	Availability of towel stand	Yes/ No/ Broken
10.	Availability of towel	Yes/ No
11.	Physical condition of towel	Clean/ Dirty
12.	Condition of sink drain	Open/Blocked
13.	Availability of Hand washing instructions demonstrating correct technique	Yes/ No

outpatient settings between 1961 and 1990. They concluded that outbreaks were frequently associated with "lack of adherence to established infection control procedures". Inadequate hand washing was one of the factors identified for most of these outbreaks in outpatient settings. Later, Herwaldt *et al.* [12] concurred with the conclusions drawn by Goodman and Solomaon.

Although research on the role of the availability and accessibility of hand-washing facilities in increasing compliance of hand washing is conflicting [14-19], one barrier to appropriate hand washing that is commonly reported by HCWs is an inadequate number or inconvenient placement of sinks [20-21]. In developing countries, inadequate access to soap and water and limited infrastructure regarding the provision of sinks are obstacles to performing hand hygiene during health-care delivery [22]. As managers are responsible for ensuring the provision of adequate facilities and supplies of hand-washing agents in all clinical settings [23], their commitment in this area is crucial to improve compliance with hand washing and reducing infection rate [19,24]. We therefore conducted this study to evaluate the availability and accessibility of hand-washing facilities and supplies of hand washing agents in the outpatient department (OPD) complex of the Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh. PGIMER, Chandigarh, is a 1,593-bed tertiary level teaching, research and referral health-care institute in India. Its OPD complex is a five-storied standalone building exclusively serving outpatients in a total of 42 general clinics and 69 special clinics of medical and

surgical specialties. The average annual OPD census is 1.4 million with a daily average of 4,000-4,500.

Although some studies are available on hand-washing facilities in inpatient settings, including intensive and critical care areas [24-27], this is the first study evaluating hand-washing facilities in the outpatient setting of a large tertiary care teaching hospital in India.

Methodology

After a literature review was performed [19, 24-27], a survey checklist (Table 1) that assessed the conditions at each sink was prepared. The accessibility of each sink was evaluated for its blockage by equipment or any other material, or faulty architectural design. Hand hygiene with non-aqueous, alcohol-based hand products (ABHP) is not a standard practice in the OPD of our hospital, thus we evaluated only the availability of a soap bar. Similarly, paper towels or electric hand dryers are not used in our hospital OPD and drying hands with a cloth towel is standard practice.

Two researchers (MD and RK) together assessed all the rooms of the new OPD complex on a single occasion. The data collected was transcribed into SPSS 16.0 (SPSS Inc., Chicago, USA) and descriptive statistical analysis was performed.

Results

A total of 211 rooms of the new OPD complex were surveyed (Table 2), including the rooms of consultants, senior residents, junior residents, nurses and technicians, dressing rooms, treatment rooms, and plaster rooms. Store rooms, reception, record rooms, changing rooms, X-ray and ultrasound rooms,

Table 2. Results of hand-washing facilities survey in outpatient department

Total number of OPD rooms surveyed		211
Sinks	Available	209 (99.05%)
	Inaccessible sinks	3 (1.44%)
	Broken sinks	1 (0.48%)
Taps	No tap	2 (0.96%)
	Nonworking taps	1 (0.48%)
	Elbow operated taps	1 (0.48%)
Soap Stand	No soap stand	35 (16.75%)
	Broken soap stand	21 (10.48%)
Soap Bar	No soap bar	14 (6.70%)
Antiseptic agent	Available	6 (2.87%)
Towel Stand	No towel stand	4 (1.91%)
	Broken towel stand	8 (3.83%)
Towel	No towel	43 (20.57%)
	Dirty towel	23 (11.05%)
Sinks with blocked drains		0
Sinks with hand-washing instructions		0

seminar rooms and other rooms which are not involved in patient consultation or treatment were not included in survey.

Out of 211 rooms surveyed, a hand-washing facility was available in 209 (99.05%) rooms. Among these, 206 (98.56%) sinks were easily accessible and were placed close to users, whereas 3 (1.44%) sinks were blocked by equipment (*e.g.* couch, trolley). No sink was found inaccessible due to faulty design. One (0.48%) sink was broken, requiring replacement; 2 (0.96%) were without a tap; and one (0.48%) had a nonworking tap. Only one (0.48%) sink had an elbow-operated tap, all the remaining sinks had hand-operated taps. There were 35 (16.75%) sinks without soap stands, and at an additional 21 (10.05%), the soap stands were broken. At 14 (6.70%) sinks, a soap bar was not available while an antiseptic agent was available at 6 (2.87%) others. At 4 (1.91%) sinks no towel stand was available and at 8 (3.83%) the towel stands were broken. At 43 (20.57%) sinks no towel was available and at 23 (11%) the towels were found to be dirty. No sink drain was found blocked. Finally, no sink had hand-washing instructions displayed to demonstrate correct hand-washing technique.

Discussion

India is one of the prominent member countries of the World Alliance for Patient Safety. In 2006, the Ministry of Health and Family Welfare, Government of India, in collaboration with the World Health Organisation, pledged adherence to the "Clean Care is Safe Care" initiative, endorsing India's

commitment to promote high standards of clinical care practice and to reduce health-care associated risks. Widespread implementation of high standards of hand hygiene and effective HAI control requires implementing system changes, overcoming resource constraints, and instituting human and organisational changes [6,22].

The aim of the present study was to provide baseline data concerning the availability and accessibility of hand-washing facilities in the outpatient department of a large tertiary care teaching hospital in India. We found that the availability and accessibility of sinks and soap was high, though the non-availability of towels and soap stands at sinks was also high. This study is the first of its kind in India. Three studies evaluating hand-washing facilities in indoor settings have been previously published, with the findings that facilities for hand hygiene were inadequate: Amazian *et al.* [25] investigated hand-washing facilities in 22 hospitals of four Mediterranean countries; Kesavan *et al.* [26] evaluated hand-washing facilities in the elderly care wards of 7 UK hospitals; and Caniza *et al.* [24] assessed hand-washing facilities at a resource-poor pediatric hospital in El Salvador. Amazian *et al.* [25] assessed 908 sinks; Kesavan *et al.* [26] assessed 264, and Caniza *et al.* [24] assessed 17 sinks in 5 wards at each point of use (132 time points, 2-15 observations/sink).

The present study assessed 209 sinks in the outpatient department. The accessibility of hand-washing facilities was high, as less than 2% of sinks

were inaccessible and/or broken. This is unlike the results of Kesavan *et al.* [26], who found 11% of sinks inaccessible and Amazian *et al.* [25], who reported 10% of sinks were non-functional. Caniza *et al.* [24] reported that access was good at only 18.9% of the time points observed. Almost all sinks in the present study (99.5%) had hand-operated taps. Amazian *et al.* [25] reported 93% hand-operated taps, whereas Kesavan *et al.* [26] reported 39% hand-operated taps. The comparatively low number (39%) of hand-operated taps reported by Kesavan *et al.* [26] could be explained by the fact that the study was conducted in a developed country. A striking observation of the present study was the high number of sinks without soap stands. Overall, 16.75% sinks lacked soap stands and an additional 10.48% had broken soap stands. Despite this lack of soap stands, the availability of cleansing agents was high as only 6.7% sinks were without soap, as compared to 42.9% and 12.1% reported by Amazian *et al.* [25] and Kesavan *et al.* [26] respectively. Caniza *et al.* [24] reported that soap was available at 93.2% of time points. Although the use of non-aqueous, alcohol-based hand products (ABHP) is not a standard practice in the OPD of our hospital, antiseptic agents were found at 2.87% sinks. This number is comparable to those of Amazian *et al.* [25] and Kesavan *et al.* [26] who reported 4.1% and 6.8% sinks with antiseptic agents, respectively. Although the number of sinks without towel stands or with broken towel stands was less than 6%, there was no towel at 20% of the sinks. At an additional 11% of sinks, towels were dirty and therefore potential reservoirs for recontamination. Kesavan *et al.* [26] reported the availability of paper towels at 97.4% of sinks, whereas Caniza *et al.* [24] found that paper towels were present at 61.3% of the time points observed.

It is advisable to display hand-washing instructions demonstrating correct hand-washing technique near sinks as this is one method of improving hand hygiene [19]. Our study did not find any sink with hand-washing instructions displayed. Although we did not measure hand-washing compliance directly, the results provide some indirect evidence that the facility surveyed provides convenient access to hand washing, which has been argued to increase hand-washing compliance among HCWs [15,24].

The results of this study should be interpreted in light of a limitation that the findings cannot be generalised to other tertiary care hospitals as

PGIMER, Chandigarh, is an autonomous institute directly funded by the government of India and similar resources may not be available to other tertiary care hospitals.

In conclusion, the study has shown that the physical facilities required for hand washing in the OPD were adequate though not perfect. More effort and resources should be put in place for the maintenance and upgrading of the existing infrastructure. There is also a need to shift from cloth towels to paper towels as evidence from other investigations suggests that cloth towels are significant potential sources of reinfection [19]. Hand-washing instructions demonstrating the correct technique should also be displayed near sinks. Hospital managers in developing countries should continuously strive to provide the best possible hand-washing facilities available within their financial resources.

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