

Hand Hygiene Practice – Perception and Performance. A Survey among Dental Teaching Faculty from a Metropolitan City - Chennai, India

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Abstract

The importance of meticulous Hand Hygiene practice in the prevention and spread of infections cannot be overstated. Since teachers in the healthcare professions have the responsibility to preach and practice these measures to future generations of healthcare professionals, a survey on Hand Hygiene Practice (HHP) was initiated. From this study we found that only 55 out of 255 i.e. 21.6% of the dental professionals had adequate awareness and practice on HHP. F-value of 0.815 (P=0.444) for Age and F-value of 0.156 (P=0.855) for years of Experience were the mean scores. Even though age, gender and experience were showing a statistical insignificance, it is of utmost clinically significant unnoticed need in clinical practice. The outcome of this study helped us (teachers and other healthcare professionals) to introspect on the lacunae that existed in teaching, training and retraining (Continuing education – CE) in a uniform systematic method, i.e., to meet WHO and CDC guideline standards. Further, we need to self-audit our protocols and recommend compulsory monitoring and implementation of standard infection control procedures including HHP by regulatory national authorities.

Keywords: Hand hygiene practice; Infection control; Healthcare professionals/faculty; WHO

Introduction

Teachers in the Healthcare profession are at the apex of their knowledge and skills in imparting and inculcating best practices to future generations of healthcare professionals and as care givers to their patients at all times. Hence it's imperative that teachers always preach and practice in accordance with the current best practices in medicine. Proper training and practice of infection control measures including Hand Hygiene is the cornerstone to effective prevention and transmission of infections, especially nosocomial infections.

A preliminary survey was conducted among 2 constituent colleges of a private university in Chennai based on a standard, simplified, Hand Hygiene Perception and Performance Survey of World Health Organization [1,2]. This was collated and the results were published in SRM University's Journal [3]. The findings were intriguing and prompted the authors to conduct a more comprehensive survey using the same format among dental teaching fraternity in 15 colleges spread across the metropolitan city of Chennai, India. This study is cleared by the institutional research and ethical committee.

Rationale

As mandated by International and National Regulatory Bodies in Healthcare, all healthcare professionals should learn, practice and retrain in infection prevention control measures to ensure optimal patient care.

Objective

To find out the prevalence of adequacy in awareness and practice of HHP.

Methodology

Study area

15 different dental colleges (7 colleges offering undergraduate

and postgraduate courses in dentistry and 8 colleges offering only undergraduate course in dentistry) in and around Chennai city, Tamil Nadu state, India.

Study design

Cross-Sectional Study

Study period

Jan 2010 to April 2012

Study population

All faculties of dental colleges who had given the informed consent.

Study tool

The structured tool (official language-English) had the following information's

1. Basic Profile consisting of Institution, Specialty, Age, Gender and Experience as a teacher.
2. The Hand Hygiene Perception and Performance Survey form with

*Knowledge of Hand Hygiene Practice (HHP), awareness of specific standards of Practice.

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*Any formal training undergone by the participants prior to this survey.

*Their perceptions of the importance they, their hospital staff, managements and patients attach to HHP.

*The significance and effectiveness of HHP in prevention and control of infections.

*The performance of HHP as part of their daily routine in patient care and teaching their students.

Sample size

Based on our preliminary study, only 23.4% had formal training in HH and 40% were aware about incidence of nosocomial infection. With type I error of 5% and limit of accuracy of 20%, the minimum required sample size for this study was estimated to be 172.

The data was collected by the CRIs from the participants and the results were then subjected to statistical analysis and interpreted.

Statistical analysis

The present data was analyzed using SPSS 15.0 and the results are presented as descriptive as number, percentage for the qualitative responses. Mean, range, standard deviation, standard error of mean were estimated for the quantitative variables. We have also assigned a score of '1' for the correct response of each item. The total score obtained by the respondents were converted into percentage and was grouped into two, as less than 50% to be 'inadequate measure' on HHP and greater than or equal to 50% as 'adequate measures' of HHP. The inferential non-parametric Chi-Square test, parametric tests - ANOVA, student-*t*-test were used for the statistical significance at 5% level.

Results

In this survey, 325 forms were distributed, out of which 255 dental health professionals from ten colleges has responded out of 15 teaching institutes. 5 institutes failed to respond. Figures within parentheses represent percentage. Among the respondents 120 (47.1) were females and 135 (52.9) males with an age ranging from 23 years to 61 years.

No	Question	Correct Response N (%)
1	Participated in program emphasizing HH protocol	70 (27.5)
2	Within last 3 years received formal training in HH	39 (15.3)
3	Interested to know more about HH	227 (89.0)
4	Hospitalized patients will develop nosocomial infection	178 (69.8)
5	Effectiveness of HH in preventing nosocomial infection	166 (65.1)
6	Priority of HH as patient safety in the institute	138 (54.1)
7.1	Leaders and Senior managers promote HH effectively	158 (62.0)
7.2	Institute makes Hand rub agent available HH effectively	135 (52.9)
7.3	HH posters at point of care as reminders HH effectively	134 (52.5)
7.4	All health care workers receive education HH effectively	124 (48.6)
7.5	Clear, Simple HH instruction made visible effectively	126 (49.4)
7.6	Regular feedback on performance is effective	140 (54.9)
7.7	You-setting example- always perform HH effectively	133 (52.2)
7.8	Patient to remind professional to perform HH effectively	137 (53.7)
8	Routinely use an alcohol based hand rub for HH	202 (79.2)
9	Compliance of HH measures among Health workers is 0 to 100%	137 (53.7)
10	HOD attaching importance to your HH	135 (52.9)
11	Colleagues attaching importance to your HH	120 (47.1)
12	Patients attaching importance to your HH	118 (46.3)

Table 1: Descriptive Statistics for the HH Protocol Response.

These professionals had a mean experience of 7.04 years with a wider range of 1 year to 40 years. 144 (56.5) respondents had experience <5 years and 94 (65.3) belong to the age <30 years.

From table 1, first 6 responses reveal that 70 (27.5) had participated in programs emphasizing HHP and only 39(15.3) received formal training. 69.8 percent of the respondents mentioned that on an average of 37.41 of the hospitalized patients will develop a health care associated infection and so only 64 (25.1) had very high acceptance for effectiveness of HH in preventing it. Also 138 (54.1) had a high priority for HH as patient safety in their institute.

Question 7 and its subsets elicited that, 158 (62.0) leaders and senior managers promote HHP effectively, 134 (52.5) use HH posters, 135 (52.9) respondents used an effective hand rub agent provided by their institute. Among them 124 (48.6) health workers received education and 126 (49.4) accepted that HH instructions are made visible in a clear and simple manner effectively. 140 (54.9) received regular feedback on their HH performance. 133 (52.2) of the respondents were setting an example and 137 (53.7) professionals were effectively reminded by the patients.

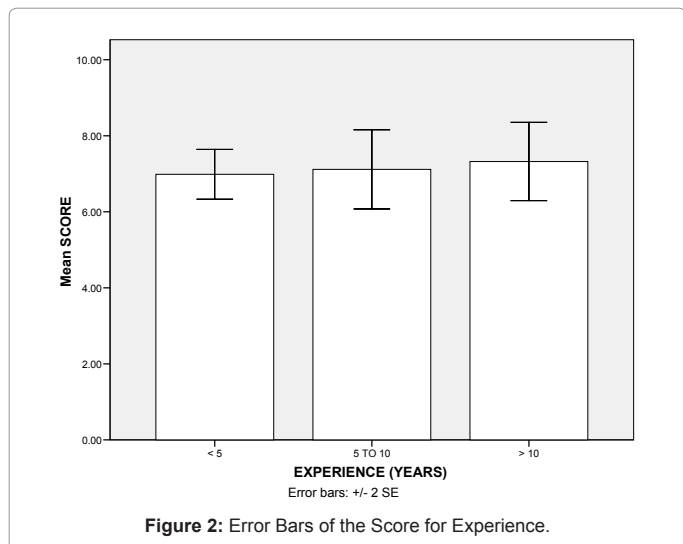
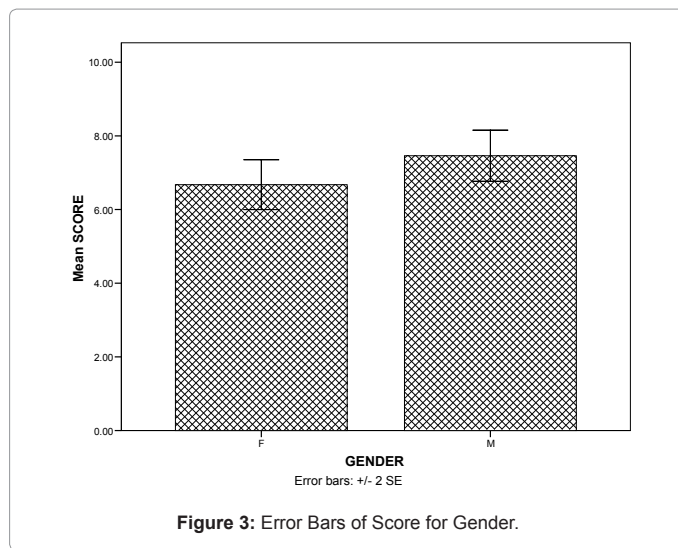
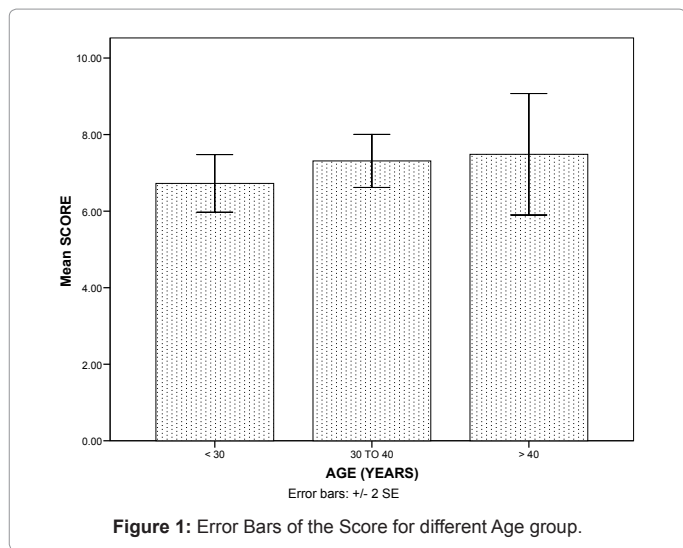
Questions 8-12, reveals that majority 202 (79.2) use alcohol based hand rub routinely and 137 (53.7) had a compliance of HH measures. Majority accepted that their Heads, colleagues attach a moderate to heavy importance on the performance of HH. Question 13 highlighted 75.5% positive response on performance of HHP always in times of need.

Table 2 presents parameters of age, gender, and experience with actual awareness and practice of HHP at times of need. We could observe that 200 (78.4) respondents had inadequate awareness and practice regarding HHP with an equal proportion in the age <30 years with an insignificant Chi-square value 3.04 (P=0.08) and for the age between 30 to 40 years the chi-square revealed an insignificant value 0.19 with (P=0.66). As the increase in year of experience above 5 years the respondents nearly 41.6% had inadequate knowledge and practice regarding HHP and was found to be statistically insignificant with Chi-square 1.72 and P=0.42, but this was equally observed in both sexes, surprisingly females contributing to 83.3% with an insignificance of P=0.07. The odds ratio is also provided for these parameters but it didn't show any significant risk factors. Even though results are not statistically significant, they are of much clinical significance.

The error bars (Figure 1) shows highlights that 105 participants were less than 30 years and had scored a mean value on HHP to be 6.7 ± 0.37 (mean ± SE). 119 were aged between 30 to 40years and obtained a mean score of 7.3 ± 0.34 and 31 were above 40 years with a score of

Variables	Score <50% Inadequate awareness and practice	Score ≥ 50% Adequate awareness and practice	Chi Square value (P-value)	Odds Ratio (95% Confidence interval)
Age (yrs)				
<30	89	16	3.04 (0.08)	2.28 (0.80 – 6.41)
30-40	89	30	0.19 (0.66)	1.21 (0.46 – 3.16)
>40	22	9	-	1
Experience(yrs)				
<5	117	27	0.64 (0.42)	1.35(0.61 – 2.97)
5-10	38	14	0.15 (0.69)	0.84(0.33 – 2.17)
>10	45	14	-	1
Gender				
Female	100	20	3.22 (0.07)	1.75(0.94 – 3.23)
Male	100	35	-	1

Table 2: Inferential Statistics for the Adequacy in HH Awareness and Practice.



7.4 ± 0.79. Also the student-*t*-test between these age groups showed no significant difference in the scores obtained on HHP.

Figure 2 shows 144 professionals had an experience less than 5 years with a mean score of 6.98 ± 0.32, and 52 had the experience between 5 to 10 years and their mean score of measures on HHP was observed to be 7.11 ± 0.52 and 59 professionals had an experience above 10 years with mean score 7.32 ± 0.51 respectively and student-*t*-test showed insignificant differences in the mean scores between these 3 groups. From Figure 3, the error bars with 135 males possessing a mean score of 7.4 ± 0.34 and 120 females with a mean score on HHP measures to be 6.6 ± 0.33 and the student-*t*-test highlights insignificant difference between the mean scores on HHP (P=0.108).

Discussion

The role of proper Hand Hygiene practices as a basic pre-requisite of infection control to prevent hospital based / acquired infections from the turn of 19th century till date is well documented [4].

The awareness of effective HHP in the prevention and spread of nosocomial infections is quite satisfactory, however their actual training

training or participation in a structured multi-faceted program in infection control and HHP as mandated by CDC and WHO guidelines 2009 [5,6] was quite poor, with only 27.5% having participated in a program emphasizing HHP and only 15.3% having actually undergone a training program in HHP as per the above guidelines. Though national [7,8] and international organizations are keen on promoting good HHP as an effective deterrent to spread of infections as outlined in their guidelines in developed countries, there is a need for developing countries and their regulatory bodies to incorporate these guidelines into their undergraduate and postgraduate teaching program curricula [4]. The mode of teaching basics of infection control including HHP has seen many models evolve over time. Some of these include, user defined concept learning (self-study) [9], multi-modal learning with or without demonstration, didactic learning with or without an online component [10]. Cherry et al. [10], in their excellent evidence based meta-analysis research paper have recommended methods for effectively improving HHP among healthcare professionals that would meet the guidelines outlined by WHO. These recommendations are worth emulating and incorporating into all teaching programs globally.

In order to implement these interventions effectively there is an acute need for hospital managements, seniors, peers and patients to communicate, provide and reinforce them in the hospital environment. This will help shape the attitude and performance of healthcare professionals towards HHP in clinical practice. Our study shows that approximately 50% of respondents attach much significance to these events as outlined in tables 1 and 2. The results are quite similar to other studies [4,11,12] in the Indian scenario.

The availability and use of chemical agents (alcohol based hand rubs) as an alternative to hand washing as advocated by WHO in 2009 [5] has improved the compliance of HHP to 79.2% but the sustained performance still depend on the role played by peers, seniors and hospital management in creating a favorable environment to continually practice these measures at all times. The effectiveness of carrying our HHP at times of need has also increased to about 75.5% and compares favorably with other studies done worldwide. However, the differences in monitoring compliance was quite equivocal as aptly reviewed by Gould et al. for the Cochrane Database Review in 2010 [13].

In order to improve compliance many methods have been tried

over the years. Boyce [14] in his review has highlighted successful methods used to improve compliance, such as electronic monitoring systems, electronic motion sensing audible warning system [15] along with other time tested methods such as multimodal interventions, data feedback, active infection control surveillance teams to improve competence and compliance in routinely doing HHP in clinical practice.

Conclusion

Dental and medical professionals are currently facing a daunting task of identifying and treating a myriad range of disease conditions caused by the so called superbugs and bugs resistant to conventional anti-microbial therapy. The onus is now on us to revisit our basics of infection control procedures to evaluate, introspect and implement effective measures to control and overcome the challenges we face in effective infection control measures.

Dental teachers are tasked with teaching and training future dentists in best practices of infection control. Currently there are lacuna in competence (awareness and training) and compliance (performance and monitoring) of HHP among healthcare workers in general and teaching faculty in particular.

There is an urgent need among stakeholders (teachers, practitioners, professional association bodies (Indian Dental Association), monitoring agencies (Dental Council of India) and the Ministry of Health and Family Welfare, Government of India, to draft and implement national guidelines for infection control measures that include:

1. Structured multi-modal hands-on education programs that are on similar lines to programs recommended world-wide.
2. Set up monitoring agencies at the national, state and hospital levels, that are mandated to monitor audit, review and recommend best practices from time to time
3. Motivate and monitor the implementation and performance of these guidelines at all points of contact with patients by encouraging all participants to constantly revisit, renew their accreditation to practice using the continuous credit based, certified learning programs conducted at various levels at a minimum interval of six months.
4. Encourage all practitioners to commit themselves to practice the guidelines at all times through multi-modal approach (posters, hand-outs, videos, short communications) in various scientific forums.
5. Ensure appropriate materials (alcohol based hand rub solutions, single use alcohol based medicated anti-microbial tissue wipes) be present at all points of contact in a hospital environment and encourage newer technologies (electronic, audio based monitors) that act as performance indicators.
6. This will help us to implement the WHO Guidelines [10,16] in letter and spirit (epitomized by the slogan “Clean Hands, Save Lives”), in the best interests of quality patient care.

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