

## Practice of Personal Hygiene & Morbidity Pattern among Medical Students of a Rural Medical College, West Bengal, India

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### Abstract:

**Introduction:** Personal hygiene is now regarded as one of the most important element of infection control activities. It alone can significantly reduce the risk of cross- transmission of infection in health care setting.

**Objectives:** The current study was planned to find out the practice of personal hygiene & frequency of morbidities among medical students under study.

**Methodology:** It is a cross-sectional epidemiological study conducted at Malda Medical College, West Bengal, India, during February 2015. A pre-designed and pre-tested questionnaire was used to collect data from 201 medical students of 2 semesters selected randomly by lottery method among 4 semester batches currently studying.

**Result:** Among 201 participants 70.15% were male & 29.85% female; mean age being 23.11±3.69 years. 97.01% students has habit of washing hands after going to toilet, 94.03% wash hands before taking food & 96.52% wash hands after attending clinical and practical classes; 10.95% students use plain water & 84.58% use soap or detergent water. 99% students brush daily. 50.25% and 34.33% students trims nails weekly and fortnightly respectively. Among males 95.04% & among females 96.67% take bath daily. 99.00% students clean clothes weekly or earlier. Among male students 27.66% and among female 3.33% have some kind of addiction of substances. 24.88% students suffered from illnesses during preceding four weeks.

**Conclusion:** Universal compliance to personal hygiene among the medical students wasnot found. Though 'Personal Hygiene' topic is included in the medical curriculum, efforts to improve understanding of infection control and personal hygiene among students is expected to play a major role in curbing disease transmission when the students pass out and join the healthcare work force in future.

**Keywords:** Personal hygiene, morbidity, medical student, West Bengal.

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### I. Introduction

Personal hygiene is now regarded as one of the most important element of infection control activities.<sup>1</sup>  
<sup>2</sup> Due to increasing prevalence, severity of illness, complexity of treatment, superimposed by multi drug resistant pathogen infections, health care practitioners are reversing back to the basics of infection preventions by simple measures like personal hygiene. This is because enough scientific evidence supports the observation that if properly implemented, personal hygiene alone can significantly reduce the risk of cross- transmission of infection in health care facilities.<sup>2</sup> Proper personal hygiene practice of medical students is more important as they interact with patients during training & provide medical care after completion of their studies. With these backgrounds, the current study was planned to find out the practice of personal hygiene, frequency of morbidities which is considered to have root in personal hygiene practices and examination of relationship between hygiene practice and morbidities.

### II. Methodology

It is a descriptive epidemiological study, cross-sectional in design, conducted at Malda Medical College, a Rural Medical College of West Bengal, India, during February 2015. Among 4 currently studying semester groups, 2 semesters i.e., 6<sup>th</sup> & 8<sup>th</sup> semesters were selected randomly by lottery method. All 97 students of 6<sup>th</sup> semester and 115 students of 8<sup>th</sup> semester batch were included in the study but due to some or other reason 91(93.81%) student of 6<sup>th</sup> semester and 110(95.65%) students of 8<sup>th</sup> semester batch were successfully interviewed. A pre-designed and pre-tested questionnaire was used to collect data from students. Anonymity

was maintained. Data analyzed in Microsoft Excel software of Microsoft Office 2014 software package in computer.

### III. Result

Altogether 201 student participants were there in the study among which 91(45.27%) were of 6<sup>th</sup> semester batch and 110(54.73%) were from 8<sup>th</sup> semester batch. Among 6<sup>th</sup> semester students 65(71.43%) were male and 26(28.7%) were female whereas among 8<sup>th</sup> semester students these figures were 76(69.09%) and 34(30.91%) respectively. Overall 141(70.15%) were male and 60(29.85%) were female. (Table 1)

Religion-wise 64(70.33%), 26(28.57%) and 1(1.10%) were Hindu, Islamic and Christian among 6<sup>th</sup> semester students whereas these figures were 91(82.73%), 16(14.55%) and 3(2.73%) respectively among 8<sup>th</sup> semester students. Overall, 155(77.11%) were Hindu, 42(20.90%) were Muslim and 4(1.99%) were Christian. (Table 1)

Among 6<sup>th</sup> semester students 86(94.51%) stay in college hostel, 1(1.10%) each in outside mess and rented house and 3(3.30%) in their own house. Among 8<sup>th</sup> semester students 98(89.09%) stays in college hostel, 5(4.55%) in outside mess, 4(3.64%) in rented house and 3(2.73%) in own house. For the whole group of study participants 184(91.54%) stay in college hostel, 6(2.99%) in outside mess and own house and 5(2.49%) in rented house. (Table 1)

Among 6<sup>th</sup> semester students 81(89.01%) came from West Bengal, 2(2.20%) each from Bihar, New Delhi and Rajasthan, and 1(1.10%) each from Kerala and Madhya Pradesh. Among 8<sup>th</sup> semester students 99(90.00%) were from West Bengal and 4(3.764%) each from Bihar and Kerala state. As a whole 180(89.55%) student belong to State West Bengal, 6(2.99%) from Bihar, 5(2.49%) from Kerala, 2(1.00%) each from New Delhi and Rajasthan and 1(0.50%) from Madhya Pradesh. (Table 1)

More no. of students in 8<sup>th</sup> semester group came from urban residence whereas among 6<sup>th</sup> semester students a small more no. of students came from rural area. Among 6<sup>th</sup> semester students 47(51.65%) from rural area and 44(48.35%) from urban area whereas these figures were 32(29.09%) and 78(70.91%) respectively for 8<sup>th</sup> semester students. Overall more urban students were there than rural one (60.70% urban vs. 39.30% rural.) (Table 1)

Mean age of the students was 22.04± 2.82 years and 24±3.4 years respectively for 6<sup>th</sup>& 8<sup>th</sup> semester batch of students. Age range were 20 – 28 years for 6<sup>th</sup> semester students and 20 – 32 years for 8<sup>th</sup> semester students. No physically challenged students were there. (Table 1)

Hand washing practice after going to toilet, before touching/ eating food and after leaving clinical / practical classes were asked.

Among 6<sup>th</sup> semester students 90(98.90%) wash hands after going to toilet, 89(97.80%) wash hands before touching/ taking food and 90(98.90%) wash hands after attending clinical/ practical classes. The corresponding figures for 8<sup>th</sup> semester students were 105(95.45%), 100(90.91%) and 104(94.55%) respectively. Considering all the students, 195(97.01%) students has habit of washing hands after going to toilet, 189(94.03%) has practice hand washing before taking food and 194(96.52%) wash hands after attending clinical and practical classes.

9(9.89%) of 6<sup>th</sup> semester students and 13(11.82%) of 8<sup>th</sup> semester students use plain water for washing hands; overall being 22(10.95%) students use plain water. Similar proportion of 6<sup>th</sup> and 8<sup>th</sup> semester students use soap or detergent water for cleansing hands (77(84.62%) and 93(84.55%) respectively); overall being 170(84.58%). Remaining 5(5.50%) of 6<sup>th</sup> semester and 4(3.64%) of 8<sup>th</sup> semester students use sanitizer, antiseptic& other material, overall being 9(3.98%). (Table 2)

Among 141 male students, 137(97.16%) wash hands after going to toilet, 133(94.33%) wash hands before touching food and 136(96.45%) wash hands after attending clinical/ practical classes. Among 60 female students these figure were 58(96.67%), 56(93.33%) and 58(96.67%) respectively.

Comparison of hand washing between students of rural and urban origin was also made. It was noted that among 79 rural origin students 78(98.73%) students wash hands after going to toilet, 73(93.41%) wash hands before taking food and 77(97.47%) wash hands after attending clinical classes. These figures were 117(95.90%), 116(95.08%) and 117(95.90%) among 122 students of urban origin.

Disposition of hand washing practices were also examined among various religious groups of students. It was found that all the 4 Christian students wash hands after going to toilet and before touching food. Among 155 Hindu students 150(96.77%) wash hands after going to toilet and 145(93.55%) wash hands before touching/ taking food. Among Muslim students these figures were 41(97.62%) and 40(95.24%) respectively.

All students of 6<sup>th</sup> semester batch brush daily. 1.82% of the 8<sup>th</sup> semester batch do not brush daily.

Brushing teeth at morning is desirable but brushing both at morning and after dinner is hygienically recommended to prevent dental caries. 90(98.90%) and 30(32.97%) students of 6<sup>th</sup> semester brushes teeth at morning and both at morning & after dinner respectively. The similar figures for 8<sup>th</sup> semester students were 106(96.36%) and 12(10.90%) respectively. Considering all the students under study, 196(97.51%) students

brushes at morning and 42(20.90%) brushes both morning and after dinner. Few students of both the group brushes at noon only or in combination with morning or night. (Table 3)

Trimming nails is part and parcel of good hygiene as untrimmed nails helps in transmission of several food and water borne diseases. Among the participant students under study 49(53.85%) of 6<sup>th</sup> semester and 52(47.27%) of 8<sup>th</sup> semester students trims weekly which is hygienically recommended. 26(28.57%) of 6<sup>th</sup> semester and 43(39.09%) of 8<sup>th</sup> semester trims fortnightly. Overall 101(50.25%) and 69(34.33%) students trims nails weekly and fortnightly respectively. (Table 3)

89(97.80%) students of 6<sup>th</sup> semester and 103(93.64%) of 8<sup>th</sup> semester batch take bath daily. Considering both the semester groups of students, among males 134(95.04%) and among females 58(96.67%) take bath daily. 5.26% of the student having home state West Bengal do not take bath daily. All the other state students take bath daily.

90(98.90%) students of 6<sup>th</sup> semester, 109(99.09%) of 8<sup>th</sup> semester and overall 199(99.00%) students clean clothes weekly or earlier. (Table 3)

While comparing of clothes cleaning among male and female students it was found that female students clean clothes more frequently than males. 24(40%) female students clean clothes daily, 17(28.33%) on alternate days, 7(11.67%) clean bi-weekly and 12(20.00%) do it monthly. Whereas among male students 17(12.06%) clean daily, 26(18.44%) on alternate days, 29(20.57%) bi-weekly, 68(48.23%) monthly and 1(0.71%) as and when required. (Figure 1)

10(10.99%) students of 6<sup>th</sup> semester and 31(28.18%) of 8<sup>th</sup> semester has some or other kind of addiction. Among male students 39(27.66%) and among female 2(3.33%) have some kind of addiction.

Smoking, alcoholism and chewing tobacco were the addiction found among study participants. 9(9.89%) of the 6<sup>th</sup> semester, 29(26.36%) of 8<sup>th</sup> semester and overall 38(18.91%) students addicted to smoking. 6(6.59%) of 6<sup>th</sup> semester, 6(5.45%) of 8<sup>th</sup> semester and altogether 12(5.97%) students has alcohol addiction. 2(1.82%) of 8<sup>th</sup> semester students and altogether 2(1.00%) students has habit of chewing tobacco. (Table 4)

69(75.82%) students of 6<sup>th</sup> semester and 75(68.18%) of 8<sup>th</sup> semester said that they get clean and safe water supply at their place.

22(24.18%) of 6<sup>th</sup> semester and 28(25.45%) of 8<sup>th</sup> semester students suffered from some or other illnesses during preceding four weeks of the interview for the current study.

Students were asked for illnesses they suffered during preceding four weeks of data collection. Among 6<sup>th</sup> semester students 18(19.78%) suffered from cough, cold, fever, 2(2.20%) in diarrhea, vomiting and skin disease and 69(75.82%) were healthy during the period. Among 8<sup>th</sup> semester group of students 16(14.55%) suffered from cough, cold, fever, 1(0.91%) from asthma, 9(8.18%) from diarrhea, vomiting and 2(1.82%) from skin disease. (Table 5)

Hand washing practices and incidence of gastrointestinal illness were compared among students under study. It was found that among 195 students who wash hands after going to toilet, 10(5.13%) had suffered from gastrointestinal illness in the preceding four weeks. Among 6 students who do not wash hands after excretion 1(20.00%) had some kind of gastrointestinal disorders. This difference was not found significant statistically. (Chi-Square with Yates Correction = 0.098, df=1, p>0.05).

Among 101 students who clip nails weekly 6(5.94%) suffered from Gastrointestinal diseases in preceding four weeks; similar proportion (5.80%) of students having fortnightly nail trimming habit suffered from gastrointestinal disease during same period. 1(3.33%) of the monthly nail trimming 30 students had seen similar illness during that period.

#### **IV. Discussion**

In the study of Kadi A and Salati SA, among 60 medical students 60% and 40%. The average awareness regarding the positive indications of hand hygiene was 56%. Rests of the 44% of students were either not sure or unaware of the indications of hygiene. Only 29% of students were able to identify all the five indications for hand hygiene. There was no significant difference between two genders.<sup>3</sup>

In the present study also, 97.01% students has habit of washing hands after going to toilet, 94.03% has practice hand washing before taking food and 96.52% wash hands after attending clinical and practical classes.

Mohesh G and Dandapani A showed in their study, Four hundred and forty students were randomly selected from each year of MBBS course and surveyed with a pretested structured questionnaire. 96 reported that they are aware of hand hygiene practices, but 3/4 th of them said that they had no formal training on the same. 50% of them accepted that, hand hygiene practices before and after handling a patient will prevent health care associated infections. Although 94% agreed, 6% disagreed hand hygiene as an important preventive measure for cross infections. 95% of them washed their hands before and after their food intake. 70% of them used soap and water whereas only 6.36% used alcohol based agents. 1/4 th of the students didn't have a habit of washing their hands after handling a patient. Girls differed from boys in their opinions on hand hygiene, they practiced hand hygiene better than boys.<sup>4</sup>

Similar picture was also noted in the present study, 10.95% students use plain water. 84.58% students use soap or detergent water for cleansing hands, remaining 3.98% use sanitizer, antiseptic & other material.

Mobashr KA and Ibrahim MA showed in their study, most of the medical students performed hand hygiene. Females had better attitudes than males. The study showed that the overall average of medical student's knowledge about health care associated infection was 68.34%.<sup>5</sup>

Ayub A et al. showed in their study, only 31.25% medical students always followed hand hygiene procedure. Complete knowledge about hygiene and infection control procedures present only among 77.5% of students.<sup>6</sup>

#### **Above studies are correlates with the present study.**

Usman S and Bhat S in their study showed, oral health and knowledge and attitude was high among the dental students as it is significant part of their professional education but medical students showed poor oral health knowledge comparatively.<sup>7</sup>

In the present study, 98.90% and 32.97% students of 6<sup>th</sup> semester brushes teeth at morning and both at morning & after dinner respectively. The similar figures for 8<sup>th</sup> semester students were 96.36% and 10.90% respectively.

Herity BA and Horgan JM showed in their study, altogether 28.8% of the medical students in this study were current smokers (33.8% male and 18.9% female); Male students smoked more than female students. Altogether, 74.6% of the medical students drank alcohol regularly (81.2% male and 61.4% female).<sup>8</sup>

In the present study also male students (27.66 %) are addicted more than females (3.33 %). 18.91% students addicted to smoking and 5.97% students has alcohol addiction.

Miko BA et al. showed in their study, While the vast majority of study participants (92%) believed that hand washing was important for infection prevention, there was a large amount of variation in reported personal hygiene practices. More women than men reported consistent hand washing before preparing food ( $p = .002$ ) and after using the toilet ( $p = .001$ ). Liquid hand soap was the most common product used for hand hygiene (83.4%) with a minority regularly using hand sanitizer (35.7%). 5.4% of study subjects perceived hand sanitizer as more effective than soap and water. Similar to personal hygiene, household hygiene habits varied greatly among study participants. While the majority of subjects reported that their living space was cleaned on a weekly basis (62.7%), a subset reported cleaning on a daily basis (10.6%) or monthly basis (12.2%). 10.8% of study subjects stated that their room was "never" cleaned. The vast majority of study participants (98.8%) described their health as either "excellent" or "good;" 79.6% reported no medical co morbidities. The most commonly noted health conditions were asthma (9%) and seasonal allergies (11%). Type 1 diabetes mellitus (0.4%) and cardiovascular disease (0.2%) were rarely noted. Several survey respondents reported symptoms of an infectious disease over the preceding month. Common complaints included cough (54.3%), runny nose (71.3%), upset stomach (49.3%), vomiting (16.6%), diarrhea (19.4%), and fever (13%).<sup>9</sup>

The current study also showed similar picture that 16.19% students suffered from cough, cold, fever, 5.24% in diarrhea, vomiting and 1.90% from skin disease 0.48% from Asthma; 71.90% were healthy during the period.

## **V. Conclusion**

Among medical students under study, 2.99% do not wash hands after going to toilet, 5.97% do not wash hands before taking food & 3.48% do not wash hands after attending clinical and practical classes; 84.58% use soap or detergent water. 1% students do not brush daily, 49.75% students do not trim nails weekly, 1% students do not clean clothes at least weekly. Among male students 27.66% and among female 3.33% have some kind of addiction of substances. 24.88% students suffered from illnesses during preceding four weeks. Being interacting with patients during day to day academic activities during studentship and would be direct care provider to patients, all medical students are expected to practice standard personal hygiene practice. Universal compliance to personal hygiene among the medical students under study were not found. Though 'Personal Hygiene' topic is included in the medical curriculum, it should be given emphasis so that student understand the importance of it and convert it in practice in their daily life. The improved understanding of infection control and personal hygiene among students is expected to play a major role in curbing disease transmission when the students pass out and join the healthcare work force in future.

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**Tables:**

**Table 1.Profile of the students under study.**

Student's profile	6th semester (n=91)	8th semester (n=110)	Total (n=201)
	No.(%)	No.(%)	No.(%)
Gender			
Male	65(71.43)	76(69.09)	141(70.15)
Female	26(28.57)	34(30.91)	60(29.85)
Religion			
Hinduism	64(70.33)	91(82.73)	155(77.11)
Islam	26(28.57)	16(14.55)	42(20.90)
Christianity	1(1.10)	3(2.73)	4(1.99)
Residential status			
College hostel	86(94.51)	98(89.09)	184(91.54)
Outside Mess	1(1.10)	5(4.55)	6(2.99)
Rented house	1(1.10)	4(3.64)	5(2.49)
Own house	3(3.30)	3(2.73)	6(2.99)
Home state			
West Bengal	81(89.01)	99(90.00)	180(89.55)
Bihar	2(2.20)	4(3.64)	6(2.99)
Kerala	1(1.10)	4(3.64)	5(2.49)
Madhya Pradesh	1(1.10)	0(0.00)	1(0.50)
New Delhi	2(2.20)	0(0.00)	2(1.00)
Rajasthan	2(2.20)	0(0.00)	2(1.00)
Residential status			
Rural	47(51.65)	32(29.09)	79(39.30)
Urban	44(48.35)	78(70.91)	122(60.70)

**Table 2.Hand washing practices of students under study.**

	6 <sup>th</sup> semester (n=90)	8 <sup>th</sup> semester (n=110)	Total (n=201)
	No.(%)	No.(%)	No.(%)
Hand washing practice			
After going to toilet	90(98.90)	105(95.45)	195(97.01)
Before touching/ taking food	89(97.80)	100(90.91)	189(94.03)
After clinical / practical classes	90(98.90)	104(94.55)	194(96.52)
Use of cleansing materials			
Plain water	9(9.89)	13(11.82)	22(10.95)
Soap or detergent water	77(84.62)	93(84.55)	170(84.58)
Antiseptic, Sanitizer &Other materials	5(5.50)	4(3.64)	9(3.98)

**Table 3. Frequency of brushing teeth, nail trimming and cleaning clothes.**

	6 <sup>th</sup> semester (n=91)	8 <sup>th</sup> semester (n=110)	Total (n=201)
	No.(%)	No.(%)	No.(%)
Time of brushing			
Only Morning	59(64.84)	91(82.73)	150(74.63)
Only Night	1(1.10)	3(2.73)	4(1.99)
Only Noon	0(0.00)	1(0.91)	1(0.50)
Morning, noon	0(0.00)	2(1.82)	2(1.00)
Morning, night	30(32.97)	12(10.91)	42(20.90)
Morning, noon, night	1(1.10)	1(0.91)	2(1.00)
Frequency of nail trimming			
Weekly	49(53.85)	52(47.27)	101(50.25)
Fortnightly	26(28.57)	43(39.09)	69(34.33)
Monthly	15(16.48)	15(13.64)	30(14.93)
When required	1(1.10)	0(0.00)	1(0.50)
Frequency of cleaning clothes			

Daily	16(17.58)	25(22.73)	41(20.40)
Alternate days	11(12.09)	32(29.09)	43(21.39)
Once in three days	20(21.98)	16(14.55)	36(17.91)
Weekly	43(47.25)	36(32.73)	79(39.30)
Monthly	0(0.00)	1(0.91)	1(0.50)
When required	1(1.10)	0(0.00)	1(0.50)

**Table 4. Nature of addiction among students under study.**

Nature of addiction	6 <sup>th</sup> semester	8 <sup>th</sup> semester	Total
	No.(%)	No.(%)	No.(%)
Smoking	4(4.40)	23(20.91)	27(13.43)
Alcohol	1(1.10)	1(0.91)	2(1.00)
Chewing tobacco	0(0.00)	1(0.91)	1(0.50)
Both smoking & alcohol	5(5.49)	5(4.55)	10(4.98)
Both smoking & chewing tobacco	0(0.00)	1(0.91)	1(0.50)
No addiction	81(89.01)	79(71.82)	160(79.60)
Total	91(100.00)	110(100.00)	201(100.00)

**Table 5. Nature of illnesses in preceding four weeks.**

Illness	6 <sup>th</sup> semester	8 <sup>th</sup> semester	Total
	No.(%)	No.(%)	No.
Cough, cold fever	18(19.78)	16(14.55)	34(16.19)
Diarrhoea, vomiting	2(2.20)	9(8.18)	11(5.24)
Asthma	0(0.00)	1(0.91)	1(0.48)
Skin disease	2(2.20)	2(1.82)	4(1.90)
No illness	69(75.82)	82(74.55)	151(71.90)
Total	91(100.00)	110(100.00)	201(95.71)

**Diagram 1. Comparison of frequency of clothes cleaning practices among male & female students.**

