HAND HYGIENE PRACTICES FOR GENERAL MEDICINE STUDENTS IN IASI, ROMANIA

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Abstract

Hands have been identified as the main source of germ transmission during medical care. Every person involved in patient care, medical or otherwise, should be able to accurately perform hand hygiene at the right time. **Aim**: The aim of the study was to assess the level of knowledge about hand hygiene practices among Iasi medical students. **Material and methods:** A cross-sectional study was carried out using a questionnaire based on a set of 25 questions to evaluate the hand hygiene knowledge practiced between general medical students of V and VI years of study who practice in hospitals in Iasi. Results: 98 medical students of V and VI year from UMPh Grigore T.Popa from Iasi were de study participants. The mean age was 23.2 years ± 1.26 years. More than half of the participants were female. 60.3% believed that the main sources of infection is the patient exposure to colonized surfaces (beds, chairs, tables, floor) and air circulation in the hospital(22.1%). 72.5% agreed that hand rubbing is faster for cleaning than hand washing. 80.2% agreed that hand rubbing does not cause skin drying more than hand washing. 68.1% knew that hand rubbing was more effective against germs than hand washing and 78.6% of participants were aware that washing and rubbing of hands is not recommended to be performed in that sequence. **Conclusions:** it is necessary to improve the level of knowledge and attitudes regarding hand hygiene throughinternships and workshops, organizing annual seminars and putting them into practice for the assessment of clinical skills.

Keywords: medical students, hand hygiene

INTRODUCTION

Infections gained while receiving healthcare have significantly increased the mortality rate worldwide. Hands have been identified as the main source of germ transmission during medical care. Every person involved in patient care, medical or otherwise, should be able to accurately perform hand hygiene at the right time. The World Health Organization (WHO) has defined some guidelines on how to achieve hand hygiene. The alcohol-based formula is preferred for routine hygiene disinfection if the hands are not dirty visible. Compared to washing hands with soap and water, it is not only faster and more effective, but also better hand-tolerated. When hands are dirty, contaminated with blood or other body fluids, use of soap and water is recommended. In case of exposure to spore-forming pathogens, including Clostridium difficile, washing hands with soap and water is recommended.[1]

The precise use of hand hygiene techniques can reduce the transversal

transmission of micro-organisms, nosocomial infections and the risk of occupational exposure to infectious diseases. Klebsiella spp, Staphylococcus aureus, Clostridium difficile, Staphylococcus aureus resistant to methicillin (MRSA) and gram-negative bacteria are some of the organisms that can be found in the hands of health workers. However, direct patient contact is not the only method of transmitting pathogens. Also, bacteria can be purchased on workers' hands by touching contaminated areas of the patient[2,3]. The aim of the study was to assess the level of knowledge about hand hygiene practices among Iasi medical students.

Material and methods

A cross-sectional study was carried out using a questionnaire based on a set of questions to evaluate the hand hygiene knowledge practiced between general medical students of V and VI years of study who practice in hospitals in Iasi. All participants had to fill in a WHO (World Health Organization) questionnaire for healthcare staff, which consists of 25 questions. Consent was obtained from all participants, and participation was voluntary.

The convenient sampling method has been used to collect data from medical students in V and VI years of Grigore T.Popa University of Medicine and Pharmacy in Iasi. Data was analyzed using frequencies. The correct answers were scored by one point, while the incorrect answers received zero. The maximum score for knowledge was 25 points. The level of knowledge on hand hygiene was calculated by dividing the responses into three groups based on a score higher than 75% considered good, 50-74% moderate and less than 50% considered to be low. Only filled-in questionnaires were considered. After the distribution of 100 questionnaires, the response rate was 98%.Data collected through the questionnaire was statistically analyzed using SPSS 20.0 for Windows.

RESULTS

The study group consisted of 98 students of V and VI year of the Faculty of General Medicine, UFM Grigore T.Popa from Iasi, who performs the practical internships in different hospitals in Iasi (fig.1). The mean age was 23.2 years ± 1.26 years. More than half of the participants were female (Fig. 2).

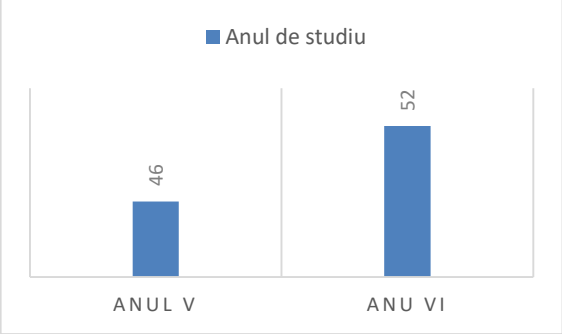

Figure 1. Distribution of participants by year of study

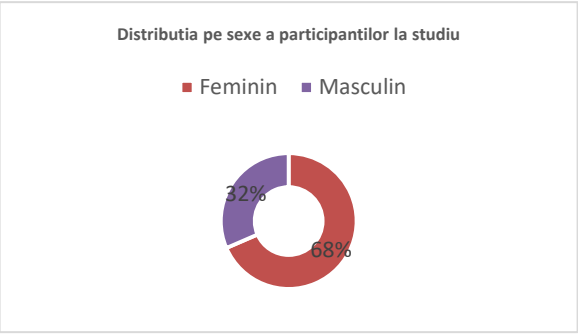

Figure 2. Distribution of participants by sex

Based on the answers provided by the participants, only 39.7% of the general medical students received formal training in hand hygiene during the years of study and only 47.3% use an alcohol-based disinfectant daily to decontaminate the skin.

Tabel 1. The questionnaire used to evaluate the hand hygiene knowledge practiced

Questions	%	Distribution of participants by sex		Distribution of participants by year of study	
		Female	Male	V	VI
"Have you been taking courses on primary hygiene for the last three years?"					
No	60.3	67.1%	47.8%	58.2%	62.5%
Yes	39.7	32.9%	52.2%	41.8%	37.5%
"Do you frequently use alcohol-based products for hand hygiene? "					
No	52.7	58.8%	41.3%	55.2%	50.0%
Yes	47.3	41.2%	58.7%	44.8%	50.0%
"Do you consider patients to be a source of infection?"					
No	29.8	30.6%	26.7%	24.2%	34.4%
Yes	70.2	69.4%	73.3%	75.8%	65.6%
"What are the other possible sources of infection?"					
surfaces in the environment	60.3	56.5%	67.4%	62.7%	57.8%
contaminated air	22.1	22.4%	21.7%	17.9%	26.6%
contaminated objects	17.6	21.2%	10.9%	19.4%	15.6%
"Do you consider that rubbing your hands with alcohol-based solutions ensures faster sanitation than hand washing?"					
No	27.5	23.5%	34.8%	25.4%	29.7%
Yes	72.5	76.5%	65.2%	74.6%	70.3%
"Do you consider that rubbing your hands with alcohol-based solutions dries the skin more than washing your hands?"					
No	19.8	17.6%	23.9%	22.4%	17.2%
Yes	80.2	82.4%	76.1%	77.6%	82.8%
"Do you consider that hand washing should be followed by rubbing hands with alcohol products?"					
No	21.4	25.9%	13.0%	20.9%	21.9%
Yes	78.6	74.1%	87.0%	79.1%	78.1%
"What is the minimum duration of rubbing of the hands with alcohol-based products to have antibacterial efficacy?"					
20 sec	59.5	58.8%	60.9%	56.7%	62.5%
30 sec	32.8	32.9%	32.6%	34.3%	31.3%
60 sec	7.6	8.2%	6.5%	9.0%	6.3%
"When is it necessary to wash our hands? "					
Before applying gloves	41.2	49.4%	26.1%	44.8%	37.5%
After removing the gloves	20.6	11.8%	37.0%	19.4%	21.9%
After accidental exposure to patients' blood and saliva	22.1	24.7%	17.4%	20.9%	23.4%
When i touched dirty surfaces	16.0	14.1%	19.6%	14.9%	17.2%
"How long does simple hand washing take? "					
10 sec	57.3	61.2%	50.0%	58.2%	56.3%
15 sec	34.4	30.6%	41.3%	34.3%	34.4%
30 sec	8.4	8.2%	8.7%	7.5%	9.4%
"How often do you wash your hands every day? "					
never	14.5	11.8%	19.6%	16.4%	12.5%
1-2 times / day	13.0	7.1%	23.9%	11.9%	14.1%
3-5 times / day	25.2	25.9%	23.9%	22.4%	28.1%
6-10 times / day	22.1	25.9%	15.2%	22.4%	21.9%
more than 11 times / day	25.2	29.4%	17.4%	26.9%	23.4%
"How do you wash your hands? "					
Simple soap and water	51.9	56.5%	43.5%	47.8%	56.3%

Water and antimicrobial soap	35.9	24.7%	56.5%	40.3%	31.3%
Only with water	12.2	18.8%		11.9%	12.5%
"Do you think wearing gloves is more important than washing hands? "					
No	21.1	24.4%	15.2%	15.4%	27.0%
Yes	78.9	75.6%	84.8%	84.6%	73.0%
"Do you always follow the rules of hygiene? "					
No	9.2	9.4%	8.7%	7.5%	10.9%
Yes	90.8	90.6%	91.3%	92.5%	89.1%

When asked about the most common source of germs responsible for health-related infections, 60.3% believed that the main sources of infection is the patient exposure to colonized surfaces (beds, chairs, tables, floor), air circulation in the hospital(22.1%), sharing noninvasive objects between patients (stethoscope, pressure cuffs, etc.)(17.6%).(tab.1)

In terms of hand hygiene, a better awareness of hand hygiene before reaching a patient (94.3%) was seen in the risk of exposure to body fluids (86.6%). Only 24.3% of the students knew that hand hygiene after exposure to the patient's immediate surroundings did not prevent the transmission of germs to the patient.

Awareness was gained on actions such as: hand hygiene of healthcare professionals after reaching a patient (91.4%), hand hygiene immediately after exposure to the risk of exposure to body fluids (90.2%), hand hygiene after exposure to the things that surround the patient (82.2%). Only 22.6% knew that hand hygiene before a clean / aseptic procedure did not prevent the transmission of germs to the health care professional.

When the level of knowledge regarding hand washing with soap and water and hand rubbing with alcohol-based hand rubbing were tested, 72.5% agreed that hand rubbing is faster for cleaning than hand washing. 80.2% agreed that hand rubbing does not cause skin drying more than hand washing (tab.1).

Of all participants, 68.1% knew that hand rubbing was more effective against germs than hand washing and 78.6% of participants were aware that washing and rubbing of hands is not recommended to be performed in that sequence. (tab.1).

When asked about the hygiene methods required in the given situations, 41.2% of the participants agreed that manual scrubbing was required before the examination gloves were applied and 20.6% of the participants agreed that a hand wash after removing the gloves is necessary. Students were also aware of the need for hand washing after visible blood exposure (22.1%) but did not consider washing if they reached dirty surfaces (16%) (tab.1).

Frequency of answers related to the question about the washing time of the hands was as follows: 36.4 % of the students participating in the study replied that they perform simple hand washing for 15 seconds, followed by those who wash 30 seconds (8.4%). Regarding the frequency of hand washing per day, 25.2% of the participants stated that they performed 3-5 washes / day, followed by those who wash more than 11 times / day (25.2%). More than half of the participants cleanse their

hands with water and plain soap (51.9%)(tab.1).

Wearing gloves does not replace hand washing due to defects that gloves pose, with an increased risk of transmission of infection from the medical team to the patient and vice versa. Only 21.1% of participants are aware that wearing gloves is not more important than hand washing.

There are, however, students motivating the lack of time (63.7%), forgetting to wash (19.2%) or even the need for hand hygiene (0.6%).

The overall score for the level of knowledge on hand hygiene indicates that 80.9% of the participants in the study have demonstrated an average level of knowledge and attitudes regarding hand hygiene.

Almost all participants in the study believe that they always comply with hygiene rules to reduce the risk of transmission of the infection (90.8). In the same proportion, the participants consider that they have sufficient information on hand hygiene.

Discuții

In order to get rid of the infections caused by the lack of hand hygiene, WHO has designed "my five moments of hand hygiene" in a very simplified way that has helped health workers understand, train, monitor and report hand hygiene more efficiently during the day. According to this project, health workers should clean their hands before touching a patient, before clean / aseptic procedures, exposure to / risk of body fluids, after reaching a patient and after touching the environment.[4].

Another initiative taken by the Centers for Disease Control and Prevention (CDC) was called "My Clean Hands". 5 May is celebrated as the "International Day of Hand Hygiene" and they also started a campaign called "Clean Hands Count", which will provide a new training course for healthcare providers. The "Clean Hands Count" campaign aims to improve CDC care hygiene providers' compliance, addressing myths and misperceptions of hand hygiene, and empowering patients to play a role in their care by asking or reminding healthcare providers to wash their hands.[5]

All these measures that are taken to improve awareness of hand hygiene and prevent the spread of infections will only be useful if physicians comply with these hand hygiene practices. This can be done by setting performance indicators to check worker health compliance and improve hand hygiene. Indicators include periodic checking of the number of hand hygiene episodes performed by the health worker, monitoring the volume of alcohol-based hand disinfection, monitoring compliance with artificial nails, or jewelry that can provide space for germ colonization. In order to encourage hand hygiene practices, some rewarding policies for health workers should be introduced.

Maheshwari et al., Ariyaratne et al., Nair SS et al have shown that the knowledge about this problem among both medical students and nurses was more than 70%. This reflects poor knowledge among nurses, despite more frequent hands-on training sessions for them. Transversal transmission of pathogens already present on or inside the

patient (especially in intensive care units) has been responsible for most cases of catheter-related infections, urinary catheter septicemia and ventilator-associated pneumonia.[6]

From a historical point of view, many different antiseptic agents such as chlorhexidine (2%, 4%), iodine compounds, phenol derivatives have been tried as hand disinfectants. But they have had several limitations, including skin irritation, inappropriate bactericidal and fungal action, and the slow occurrence of the action[7]. Alcohol-based hand disinfectant with a fast onset of action, excellent bactericidal properties and fungicides and minimal skin irritation proved to be far superior to the above mentioned alternative chemicals. In our study, most of the participants had false knowledge that friction causes more dryness and irritation of the skin than washing hands with soap and water. Thus, there is a need to raise awareness of the effectiveness and profile of reduced side effects among people with disabilities.

Washing hands with soap and water has failed to effectively control of infection transsmision. This is because washing hands with soap and water was a tedious and time-consuming procedure that proved to be effective only when done in the recommended way and for a recommended time. Thus, compliance has always been poor. Also, antimicrobial efficacy was low if the hands were heavily contaminated. Thus, compared to the use of soap and pure water; manual contamination with any transient organism was significantly less likely after using an alcohol-based hand disinfectant.

The knowledge of the study group on hand disinfection with alcohol-based disinfectant being more effective against germs than hand washing was good, which contrasts with other studies. Most participants had a false perception that hand washing and hand disinfection are required to be done in order.

The knowledge about the type of hand hygiene method to be used after various procedures among students was good, except for the knowledge of hand hygiene methods adopted before emptying the bed and building a patient's bed. Nurses responded to the same questions better (80% and 84% respectively), probably because these procedures are part of their daily duties. Doctors and students have had good knowledge of things to avoid because they have increased body colonization in their hands (wearing jewelery, damaged skin and long nails). However, doctors have incorrectly responded that the use of hand creams increases the chances of colonization.[8]

Conclusions

There is a lack of attention paid to learning about hand hygiene practices in curricula for medical training. To prevent the spread of infections in the medical environment, general medical students should be adequately trained in hand hygiene practices from the first year of college, which could be achieved by organizing internships and workshops, organizing annual seminars and putting them into practice for the assessment of clinical skills. The results of the study provide insight into the awareness and

knowledge of hand hygiene practices among the general medical students from Iasi.

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