Scientific Research Publishing

Open Journal of Internal Medicine, 2022, 12, 29-37
https://www.scirp.org/journal/ojim
ISSN Online: 2162-5980
ISSN Print: 2162-5972

Compliance with Hand Hygiene among Health Professionals in the Medical-Surgical Emergency Department of the Donka National Hospital

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How to cite this paper: Djibril, S., Amadou, K., Toumin, C., Mamadou, D., Filany, K.M. and Bangaly, S.F. (2022) Compliance with Hand Hygiene among Health Professionals in the Medical-Surgical Emergency Department of the Donka National Hospital. *Open Journal of Internal Medicine*, **12**, 29-37.
https://doi.org/10.4236/ojim.2022.121004

Received: November 18, 2021
Accepted: February 7, 2022
Published: February 10, 2022

Abstract

Introduction: The transmission of infectious agents through the hands of nursing staff during care is the main cause of nosocomial infections. Hand hygiene has been recognized for over a century as an effective measure to prevent healthcare associated infections in healthcare settings, the objective of this study was to appreciate the practice of hand hygiene during care by health professionals in the medical-surgical emergency department of the Donka National Hospital. **Methods:** It was a cross-sectional, analytical study. Data collection took place from March 1 to April 30, 2021. The study covered all health professionals, namely doctors, nurses, laboratory technicians, radiography technicians, pharmacists, students, stretcher bearers, surfactants who were present at the time of the study period. **Results:** During the study period, out of a total of 104 registered health professionals, we surveyed 99, which is a rate of 95%. The most represented age group was [30 - 39 years] with an average of 37.17 ± 10.34 years, and extremes of 22 years to 65 years. The male sex was the most dominant or 59.60% compared to the female sex or 40.40% with a sex ratio of 1.47. The hand hygiene compliance rate was low at 21%. The practice of hand hygiene during care for 100% of health professionals was very low, at 8.08%. No factors influence the observance of the practice of hand hygiene and the socio-professional characteristics of the conditions of provision of care activities. **Conclusion:** Hand hygiene during care is an essential aspect that must be considered as an essential measure in the prevention of infections in this period of the COVID-19 pandemic.

Keywords

Hand Hygiene, Compliance, Health Professionals, Donka Emergencies

1. Introduction

Hand hygiene compliance in healthcare is the world's number one patient safety challenge "clean care is safer care" [1]. Contaminated hands have been reported to have the potential to spread infections [2]. Several measures exist to prevent the transmission of this type of infection such as wearing masks, gowns or gloves, but also hand hygiene [3]. Hand hygiene practices have been shown to be effective in reducing gastrointestinal and respiratory diseases caused by a non-specific pathogen and the transmission of pathogens associated with care in health care settings [4].

According to the WHO, the rate of compliance with hand hygiene during care for all health professionals would be around 38.7% [5]. In Canada, hand hygiene adherence in human hospitals was 95% in Ontario in 2016 [6]. In Congo, a study carried out by Eugène Basandja Longembe *et al.* On Hand hygiene compliance in General Hospitals in 2020 reported that the overall hand hygiene compliance rate is 39% with a predominance of washing with soap and water (34%) on hand rubbing using hydroalcoholic solution (5%) [7].

In Guinea, little data is available on the observance of hand hygiene. Sophie Alice Müller *et al.* [8] on the implementation of the WHO hand hygiene action plan at the Faranah Regional Hospital (HRF) showed that the basic adherence to hand hygiene was 23.7% and experienced a significant increase to 71.5% from December 2018 to March 2019, this compliance increased in all professional groups, strong awareness and monitoring were important factors in hygiene compliance hands [8]. Access to hand hygiene facilities is often sub-optimal in health facilities, especially in low and middle-income countries. In the past, Guinea experienced the advent of the Lassa fever and Ebola virus epidemic and we are witnessing the COVID-19 pandemic which continues to spread around the world with its different variants, en this period of the COVID-19 pandemic and the resurgence of the EBOLA virus disease in our country, do health personnel observe the practice of hand hygiene when providing services? We undertook this study which had for objective to appreciate the practice of hand hygiene during care by health professionals in the medico-surgical emergency department of the Donka National Hospital.

2. Methods

This was a cross-sectional, analytical study, carried out from March 1 to April 30, 2021. We surveyed 99 health professionals out of 104 registered. We included in this study all health professionals regardless of age, sex, professional experience and exercising in the medico-surgical emergency department of the Don-

ka National Hospital who were present at the time of the survey. And who agreed to participate in the study (complete the general information sheet). The data was collected by direct survey which included two (2) components namely:

The 1st part, after obtaining the consent of each health professional, the general information was filled in by the health professionals.

The 2nd part, the survey on compliance: each health professional was observed 10 min to 15 min during their care provision, the number of opportunities for hand hygiene and the number of hand hygiene practices were recorded during the observation times according to the 5 indications for hand hygiene from the WHO: before touching a patient, before an aseptic procedure, after a risk of exposure to a biological liquid, after having touched a patient, after having touched the environment of a patient.

During each care service, a medical gesture corresponded to an indication of hand hygiene, the number of medical gestures and the number of hand hygiene indications, allowed us to determine the compliance rate hand hygiene.

Hand hygiene compliance rate: hand hygiene compliance or compliance rate was expressed by the following formula:

$$\text{Observance} = \frac{\text{Sum of actions carried out}}{\text{Sum of opportunities}} \times 100$$

The data were entered manually from a database which was created using the Epi info software in its version 7.2.2.6, then analyzed with this same software. The chi-square test was used for the comparison of proportions and a confidence interval (with an accuracy of 95%) was determined on each calculated value. The number 1 (no risk) was used as a reference in OR to determine whether there was a link between the factors influencing the observance of hand hygiene and socio-professional characteristics.

Ethical consideration

Before any questionnaire was administered, the informed consent of each health professional was requested, the rationale for the work was explained beforehand, and we reassured them that the data would be anonymous.

3. Results

See Tables 1-5 and Figure 1.

4. Discussion

Despite the main difficulty encountered in carrying out the study, in particular the non-collaboration of certain health professionals in the emergency department during the study period, we surveyed 99 health professionals in the medico-surgical emergency department of the Donka National Hospital.

The hand hygiene compliance rate in our study was low or 21% (Table 2). Longembe *et al.* in (2020) [7] had reported that the overall compliance rate of hand hygiene found in this study is 39% and Muller *et al.* [8] in (2020) had reported that the overall baseline compliance was 23.7%. This low rate can be

Table 1. Distribution by age group of the 99 health professionals in the medical-surgical emergency department of the Donka National Hospital: the most represented age groups of [20 - 29 years] and [30 - 39 years] with respective compliance rates of 26% and 20%. The average age of 37.17 ± 10.34 years, with extremes of 22 years to 65 years.

age range	observation	opportunities	acts	compliance	OR (IC)	P-value
20 - 29 years	**30**	**98**	**25**	**26%**	**1**	
30 - 39 years	**31**	**102**	**20**	**20%**	**0.71 (0.37 - 1.39)**	**0.32**
40 - 49 years	25	77	13	17%	0.59 (0.28 - 1.26)	0.17
50 and over	13	34	7	21%	0.77 (0.29 - 1.96)	0.56
Total	99	311	65	21%		

Table 2. Distribution according to the care delivery units of the 99 health professionals in the medico-surgical emergency department of the Donka National Hospital: doctors (38) and nurses (31) were in the majority in our study with respective compliance rates of 18% and 16%.

Profession	observation	opportunities	acts	compliance	OR (IC)	P-value
Doctor	**38**	**126**	**23**	**18%**	**1**	
Nurse	**31**	**102**	**16**	**16%**	**0.86 (0.41 - 1.68)**	**0.7**
Laboratory assistant	8	22	8	36%	2.56 (0.96 - 6.81)	0.54
Radiologist	5	12	10	83%	22.39 (4.59 - 109.15)	0.0001
Stretcher bearer	4	10	0	0%	ind	0.21
Surfactants	4	15	4	27%	1.63 (0.48 - 5.57)	0.49
receivers	4	12	3	25%	1.49 (0.37 - 5.95)	0.7
Pharmacist	4	9	0	0%	ind	0.18
Student	1	3	1	33%	2.24 (1.19 - 25.76)	0.46
Total	99	311	65	21%		

Table 3. Distribution according to the care provided by the 99 health professionals in the medical-surgical emergency department of the Donka National Hospital: The consultation was the most performed gesture either 40.40%, followed by injections either 29.29%.

Actions performed	Frequency	Proportion	95% confidence interval	
Consultation	**40**	**40.40**	**30.66**	**50.74**
Injection	**29**	**29.29**	**20.57**	**39.29**
Surgical care	15	15.15	8.74	23.76
Laboratory practices	8	8.08	3.55	15.30
Radiography practices	6	6.06	2.26	12.73
Other acts*	19	19.19	11.97	28.34

*nurseries, cleaning, transport of patients.

explained by the lack of training of health professionals on hand hygiene compliance and also the frequent use of gloves during medical procedures.

Table 4. Health distribution according to the observance of hand hygiene of the 99 professionals in the medico-surgical emergency department of the Donka National Hospital: 50% hand hygiene adherence practice with an adherence rate of 17.17%, 100% hand hygiene adherence practice with an adherence rate of 8.08%.

Hand hygiene compliance	Frequency	Proportion	95% confidence interval	
0%	44	44.44	34.45	54.78
17%	1	1.01	0.03	5.50
20%	5	5.05	1.66	11.39
25%	12	12.12	6.42	20.22
33%	10	10.10	4.95	17.79
50%	**17**	**17.17**	**10.33**	**26.06**
67%	2	2.02	0.25	7.11
100%	**8**	**8.08**	**3.55**	**15.30**

Table 5. Distribution according to socio-professional characteristics and hand hygiene practice of 99 health professionals in the medical-surgical emergency department of the Donka National Hospital: After analysis of the various tables, there were no factors influencing the observance of hand hygiene with socio-professional characteristics in the emergency department.

Socio-professional characteristics	**Practice hand Hygiene at least once**		**95% confidence level**		
	Yes	**No**	**OR (IC)**	**X^2**	**P-value**
1. Gender					
Female	24	16	1.4 (0.6 - 3.0)	0.3	0.6
Male	31	28			
2. Age range					
20 - 29 years old	22	8	1		
30 - 39 years old	16	15	0.4 (0.1 - 1.1)	2.2	0.1
40 - 49 years old	11	14	0.3 (0.1 - 0.9)	3.7	0.05
50 years and older	6	7	0.3 (0.1 - 1.2)	1.2	0.2
3. Time of care					
Day	43	37	1.5 (0.5 - 4.1)	0.2	0.6
Night	12	7			
4. Level of education in French					
Not in school	4	2	1.6 (0.3 - 9.2)	0.3	0.7
Primary	4	3	1.6 (0.2 - 5.0)	0.6	1.0
Secondary	4	5	0.6 (0.2 - 2.5)	0.3	0.7
Superior	43	34	1		

Continued

5. Type of gestures practiced					
Care practices					
Consultation	22	18	1		
Injection	14	15	0.8 (0.3 - 2.0)	0.9	0.8
Surgical care	2	13	0.13 (0.02 - 0.63)	6.1	0.013
Laboratory practices	8	0	-	4	0.045
Radiography practices	6	0	-	2.7	0.097
Other practices	6	13	0.4 (0.1 - 1.2)	2.00	0.16
6. Type hand hygiene kit					
Hydroalcoholic gel	11	5	1		
Water and soap	23	6	1.7 (0.4 - 7.0)	0.2	0.7
Water and chlorine	45	13	1.6 (0.4 - 5.4)	0.2	0.7

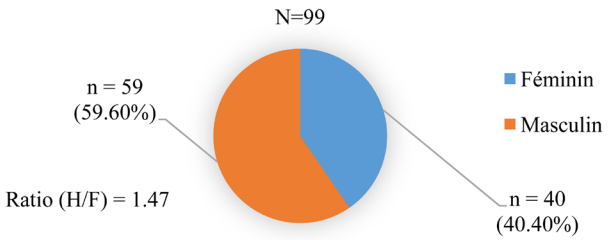

Figure 1. Distribution by sex of the 99 health professionals in the medical-surgical emergency department of the Donka National Hospital: the male sex was the majority in our study, is 59.60% with a sex ratio of 1.47.

Male sex was the most dominant in our study or 59.60% compared to female sex or 40.40% with a sex ratio of 1.47 (**Figure 1**). Salim *et al.* [9] in Marseille (2019) had found that the participants in the quantitative study were predominantly male (86%) and Roucoules [10] in Paris (2015), had reported a predominance of male sex (58%). This result would be justified by the predominance of the male gender in the medical profession in our context.

The most represented age group was [30 - 39 years] with a compliance rate of 20% [OR = 1], followed by [20 - 29 years] with a compliance rate of 26% OR = 0.71 (0.37 - 1.39), mean age was 37.17 ± 10.34 years and extremes from 22 years to 65 years (**Table 1**). Rashidian [11] in Egypt (2017) had found in his study that the study population was very young with 79.7% having age between 20 - 30 years. The predominance of this age group would be justified by the fact that the teams are constituted by young doctors acting as interns under the supervision of team leaders.

In our study, the majority of health professionals were doctors or 38 with an adherence rate of 18% OR = 1, followed by nurses or 31 with an adherence rate 16% OR = 0.86 (0.41 - 1.68) (**Table 2**). Rashidian [11] in Egypt (2017) had re-

ported that all professional categories are represented, with relatively higher rate among doctors (58.17%) than nurses (53.11%) and other categories (37.76%) and Longembe *et al.* [7] in (2020) had found that majority of the respondents were nurses (65%).

Most of the procedures performed were consultation or 40.40%, followed by injection or 29.29% (**Table 3**). Salim *et al.* [9] in Marseille (2019) had reported during the compliance of hand washing before injection: 38% of the participants indicated always washing their hands while 14% indicated never washing their hands.

We note that as the number of indications for hand hygiene increases, the number of hand hygiene practices decreases. These different results can be explained by the neglect of hand hygiene by health professionals.

Concerning 50% of the practice of hand hygiene compliance, 17 health professionals respected hand hygiene compliance or 17.17%, and out of 100% of the practice of hand hygiene compliance, 8 health professionals respected hand hygiene compliance or 8.08% (**Table 4**). The finding was made by others including, Dicko *et al.* [12] in (2011) had reported that 20.3% of the staff observed did not wash their hands either before or after the procedure performed. Longembe *et al.* in (2020) [7] reported that the overall compliance rate of hand hygiene found in this study is 39%. Carine *et al.* [13] in Benin (2019) had found that the overall hand hygiene compliance was 12%. Muller *et al.* [8] in (2020) had reported that the overall baseline compliance was 23.7%.

After analysis of the different tables with OR and P-value, there were no factors influencing hand hygiene compliance with socio-professional characteristics in the emergency department (**Table 5**).

Limitations: the main limitation was the reluctance of some health care personnel to participate in the study.

5. Conclusion

This low rate of hand hygiene compliance can be explained by the lack of training of health professionals on the practice of hand hygiene compliance and also by the frequent use of gloves during care. Hand hygiene during care is an essential aspect that must be considered as an essential measure in the prevention of infections in this period of pandemic in COVID-19. A similar study on a national scale could help to further assess the practice of hand hygiene during care among health professionals in the different services during this pandemic period.

Conflicts of Interest

We declare that we have no conflict of interest in relation to this article.

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Appendix

Survey sheet 1: general information

N°: ……..

Q1: Age: ……..

Q2: Gender: MF

Q3: Marital status: Single ☐ Married ☐ Divorced ☐ Widowed ☐

Q4: Level of education: no ☐ primary education ☐ Upper secondary ☐

Q5: Profession: ……..

Q6: Professional experience: ……..

Q7: Service: ……..

Sheet 2: Observation during treatment

N°: ……..

1) Observation time:

2) Type of treatment performed:

Surgical care consultation, ☐

Injection laboratory practices ☐

3) Existence of a hand hygiene kit at the point of care:

YES ☐ NO ☐

4) Type hand hygiene kit:

Water + soap ☐ hydroalcoholic gel ☐ chlorinated water ☐

5) Hand hygiene observation

Opportunity	Indication	Gel	Chlorine	Soap	Nothing
1					
2					
3					
4					
5					
6					
7					
8					
9					