



Barriers in Infection Control Practice against COVID-19: A Survey of Healthcare Workers in Benghazi Medical Centre

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Abstract:

Background: COVID-19 Pandemic represents a public health emergency all over the world. The only way to fight this novel virus is by following the standard prevention precautions. Healthcare workers in Libya face considerable challenges during the ongoing COVID-19. Barriers in infection control practice of infectious diseases are determined by many factors. **Aim:** This study aimed to explore attitudes of health care workers in Benghazi Medical Centre (BMC) regarding barriers in infection control practice against COVID-19 outbreak. **Methods:** a cross-sectional survey was conducted from July 1st to July 25th, 2020, involving a total of 400 HCWs across medical and allied medical professions in Benghazi Medical Centre. **Results:** Of those surveyed, 40.6% were in the frontline, only half of them (51.3%) attended hand hygiene formal training in the last 3 years. the presence of all the mentioned barriers in the work environment was perceived by 37.20% of participants. limitation of PPE as a barrier was perceived by 16.30% of participants. **Conclusion:** Attendance of formal hand hygiene training was limited in many medical and allied medical professions. For effective implementation of infection prevention practice in health care settings, barriers should be considered by the ministry of health and health care workers.

Keywords: COVID-19, Infection Prevention and Control, Barriers, Health care workers, Libya

Introduction:

The novel coronavirus is also named SARS-CoV-2, which causes coronavirus disease (COVID-19). It is a zoonotic pathogen and has an incubation period of 2-14 days. It spreads rapidly by human-to-human transmission through droplet, feco-oral, and direct contact.¹ This Pandemic disease represents a public health emergency over the world and causes great negative drawbacks on economic and education and other life aspects both in developed and developing countries². Uncertainty and the limited scientific knowledge about the virus have made great challenges to developing a vaccine against the virus and the appropriate antiviral treatment³

Yet, the only way to fight this novel virus is by following the standard prevention precautions recommended by the world health organisation⁴ (WHO) and the center for diseases control and prevention (CDC)⁵ as being the international authorities concerned with these global health issues. Also, the national center for disease control (NCDC) in Libya.

Healthcare workers in Libya face considerable challenges during the ongoing COVID-19 pandemic. They are among the highest risk of being infected, especially those in the front line. Therefore, it is a crucial obligation to follow the prevention and control procedures against COVID 19 to prevent themselves, intrahospital transmission, and community transmission.

There have been several measures recommended to reduce transmission of COVID-19 include individual and environmental measures, detecting and isolating cases, contact- tracing and quarantine, social and physical distancing measures^{6,7}.

Implementation of infection prevention and control (IPC) practices in a health care setting can contribute to significant reductions in COVID 19. However, in Libya, where COVID-19 is escalating, there are major gaps in response capacity, especially in human resources and protective equipment. According to the WHO report in 2017, the health system in Libya deteriorates due to limited financial resources, and a shortage of machines and basic equipment including personal protective equipments⁸ (PPE). Besides, the limited financial recourses, numerous research studies have highlighted other factors that lead to barriers in infection control practice of infectious diseases including High patient flow, Emergencies, Overflow of families and visitors, Experience, Behaviour of healthcare workers^{9,10,11}

The aim of this study, therefore, was to explore attitudes of health care workers in Benghazi Medical Centre (BMC) regarding barriers in infection control practice against COVID-19

Materials and Methods

Study design: A cross-sectional was conducted from 1st to 25th July 2020.

Study participants: The total number of health care workers at the BMC according to the administrative records is 1610. They were classified into the medical profession and allied medical professions. The former, include medicine, public health, pharmacy, and the latter include, technician, the nursing. However, under a highly restricted work environment due to the current pandemic, we planned to use the convenient non-probability sampling method by including all health care workers who are present at their work during the time of data collection. The intended sample size was 400.

Study tool and data collection:

Data were collected from respondents using a self-administered questionnaire distributed as hard copies by trained research assistants followed the preventive precaution and distancing during the data collection.

The questionnaire was divided into 2 sections, the first section on the demographic and occupational characteristics of study participants including a question of whether he/ she on the

frontline of being directly involved in COVID-19 prevention and treatment and having direct contact with confirmed or suspected cases. With additional (1 item) whether they receive formal training on hand hygiene in the last 3 years or not. The second, contain one item to examine their attitudes regarding barriers in infection control practice against COVID-19.

Ethical consideration: Ethics approval was obtained from the respective medical board of the BMC. Personal consent was taken to participate in this survey. The responses of study participants were treated confidentially and anonymously. **Statistical analysis:** the obtained data were coded, validated, and analyzed using SPSS version 24. Descriptive analysis was applied to calculate the frequencies and proportions.

Results:

A total of 400 health care workers participated, 320 of whom completed the study questionnaire (80% response rate). As (Table1) shows, the majority of participants 232(72.5%) were females, and 88 (27.5%) were males. Most of the participants 220 (68.8%) were 30-49 years of age. Regarding occupation, the majority of participants were public health (n=93, 29.1%) and medicine (n=66, 20.6%) and 40.6% (n=130) were in frontline.

Table 1: Demographic characteristics of healthcare workers respondents (n=320)

Characteristics	Sub-Group	No.	(%)
Gender	Female	232	72.5 %
	Male	88	27.5 %
Age	18-29	86	26.9 %
	30-49	220	68.8 %
	50-59	12	3.8 %
	More than 60	2	0.6 %
Place of residence	Benghazi	314	98.1 %
	Out of Benghazi	6	1.8 %
Education	Intermediate Diploma	26	8.1 %
	High Diploma	73	22.8 %
	Bachelor's degree	175	54.7(%)
	Master or PhD	46	14.4 %
Occupation (Medical Professions)	Medicine	66	20.6 %
	Public Health	93	29.1 %
	Pharmacy	24	7.5 %
Occupation (Allied Medical Professions)	Nursing	57	17.8 %
	Technician	80	25 %
Years of Experience	1-5	116	36.3 %
	6-10	83	25.9%
	More than 10	105	32.8 %
Whether frontline	Yes	130	40.6 %
	No	171	53.4 %
Total		320	100 %

Furthermore, (Figure 1) provides the distribution of participants based on profession and illustrates their response regarding hand hygiene formal training in the last 3 years. In total, (51.3%) said yes. As the figure shows, public health professionals attended training on hand hygiene more than the other professions.

Figure 1. Response regarding hand hygiene formal training in the last 3 years

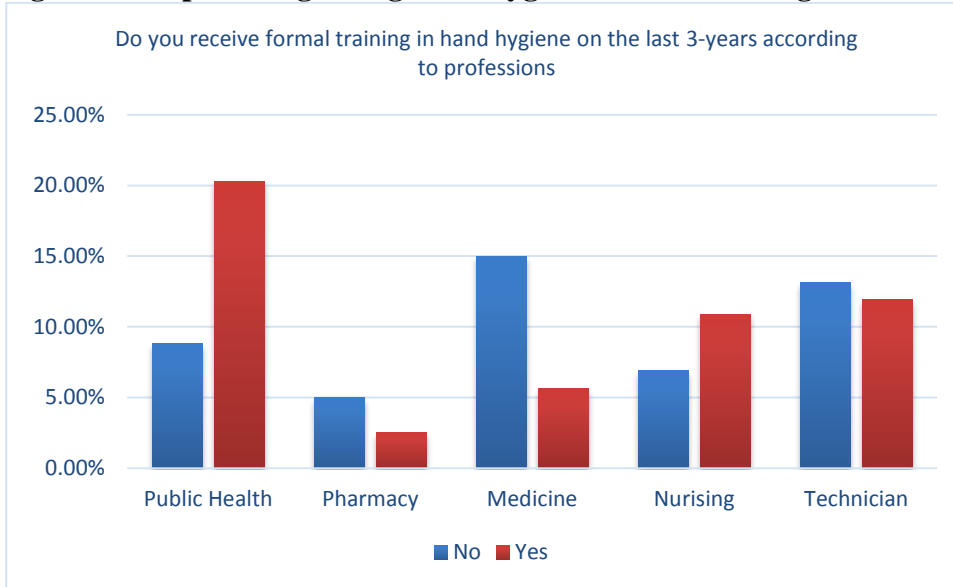


Figure 2. Responses regarding barriers of IPC practice in the work environment

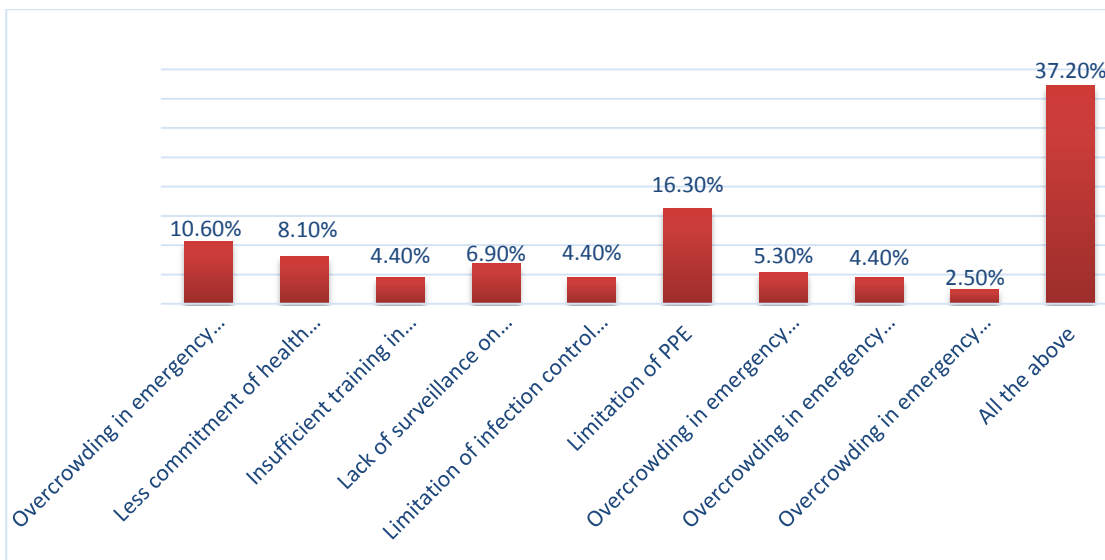


Figure (2) demonstrates their responses, as the presence of all the mentioned barriers in the work environment was perceived by 37.20% of participants. On the other hand, 16.30% of participants believed that the limitation of PPE is the barrier.

Discussion:

The focus of this study was to explore the barriers of infection prevention and control (IPC) practice in the work environment of health care workers in the BMC from different medical and allied medical professions. The reason for this purpose is to identify the barriers of infection prevention and control (IPC) practice in the BMC and recommend solutions to overcome the additional challenges caused by the COVID19 outbreak

Health care workers with different job titles need to apply correct hand hygiene practices to prevent nosocomial infections and save their health. Unexpectedly, this study reported a smaller number of HCWs in medical and technicians, pharmacy, and nursing attended a training program for hand hygiene practice. This finding was comparable with a previous study ^[12] from India demonstrated that 83% of health care workers regularly attend and apply hand hygiene practice. The WHO has recommended ^[13] “Five Moments of hand hygiene” strategy which plays a crucial role in preventing the spread of COVID19. Therefore, the ministry of health authorities is recommended to promote all precautionary and preventive measures of COVID- with a comprehensive training program on hand hygiene consisting of better structured targeting all health care workers.

Regarding barriers in infection control practice against COVID-19, we asked the respondents which of the barriers do you think is/are present in your work environment including:

- 1) Overcrowding in the emergency room is a barrier in infection control practice
- 2) Less commitment of health care workers to the policies and procedures
- 3) Insufficient training in infection control measurement
- 4) Lack of surveillance on the application of policy and procedures of infection control practice
- 5) Limitation of infection control material
- 6) Limitation of PPE
- 7) All of the above

Our participants reported limitation of PPE as a barrier, this situation is in accordance with findings reported by a recent national study^[14] was conducted in 21 hospitals in Libya found that healthcare workers have to purchase PPE themselves, as they are not provided by the hospitals in adequate amounts. Additionally, Poor hand hygiene training and practice was also documented^[14] In contrast, a study from Pakistan ^[15] found that Overcrowding in the emergency room was perceived as a barrier by the majority (52.9%) of HCWs. Egyptian study^[16] found that Patients' overcrowding and limited infection control material have been reported as perceived barriers to infection control by the majority (90%) of HCWs, It is well established that factors such as overcrowding, absence of isolation room facilities, and environmental contamination contribute to in proper practice among HCWs and enhance disease transmission ^{[17][18][19]}.

As discussed above, our results were broadly in line with previous studies in terms of the type of barriers, however, our study reported a higher number of health care workers believes that their work environment is complicated by a variety of barriers to infection prevention and control (IPC) practice in the BMC. The concern emerging in the presence of all these barriers together poses a higher occupational risk of HCW and leads to poor management of patients^[20]. These findings are important and should be addressed by the government and policymakers to establish effective policies focusing on the barriers mentioned in this study to alleviate these challenges during the COVID-19 outbreak.

Despite the availability of relevant studies abroad, to the best of our knowledge, this study is the first study undertaken in the BMC that tried to address challenges in infection prevention and control (IPC) practice during the current COVID19 pandemic. Considering the fact that the only way to control this outbreak is by (IPC). However, the main limitation is the Lack of presentation of all health care

workers has interfered with the generalization of our results. Further alternative epidemiological studies design at multicentre are recommended. Assessment of knowledge and practice of health care works was beyond the scope of this study in the meantime. In parallel, we are reporting the finding of another study to identify whether IPC barriers are further compounded by inadequate awareness of infection prevention practices among health care workers in the BMC during the current pandemic.

Conclusion: This study provides an overview of barriers to infection prevention and control practice during the current pandemic. The majority of the participants had perceived many factors as barriers to infection control practices. Attendance of formal hand hygiene training was limited in many medical and allied medical professions. For effective implementation of infection prevention practice in health care settings, barriers should be considered by the ministry of health and health care workers.

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