

Research Article

# Prevalence of positive COVID-19 among health care workers who care patients infected with the novel corona virus: A retrospective study

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## ABSTRACT

**Background:** Limited information is available about COVID-19 infections among health care workers (HCW). Detection of COVID-19 cases in health care workers is important for hospital infection control and prevention policy in Palestine. The aim of this study is to describe the prevalence of positive COVID-19 among health care workers who contacted the patients during the pandemic.

**Methods:** This retrospective study included all health care workers who contact patients infected with COVID-19 patients from March 2020 to mid of August 2020. They were tested by use of real time reverse-transcriptase PCR on samples from nasopharyngeal swabs.

**Results:** A total number of (1452) health care workers were screened. Most positive cases were nurses followed by physicians and other personnel. This study also showed that most cases were from Hebron,

**Conclusion:** the prevalence of positive COVID-19 among health care workers who take care of patients infected of corona virus was (18) %. Further studies are needed to find effective strategy for safer working environment.

**Keywords:** COVID-19; SARS-CoV-2; Novel corona virus; Health care workers, Palestine.

## Introduction

COVID-19 is a serious illness that currently has no known treatment or vaccine and is spreading in an immune naive population. Deaths are rising steeply, and health systems are under strain since the first reported case of COVID-19 in Wuhan, China, at the end of 2019, COVID-19 has rapidly spread throughout the world and has also involved many other countries despite global efforts to prevent its spread [1].

Based on the earlier experience in China, it is found that a significant correlation between mortality and healthcare resource availability [2]. Health care workers are essential workers defined as paid and unpaid persons serving in health care settings who have the potential for direct or indirect exposure to patients or infectious materials and it is critical to ensure the health and safety, both at work and in the community [1].

They are at increased risk of contracting communicable diseases, including droplet-spread respiratory viruses, because of their high level of exposure at work. It has been estimated that 10% or more of all those infected with COVID-19 in some European countries are healthcare workers. The incidence of previous corona virus outbreaks, such as Severe Acute Respiratory Syndrome (SARS) was also high among healthcare workers too, in mild cases, viral clearance of SARS-CoV-2 takes around ten days, but this may be two weeks in more severe cases [3]. Hand hygiene and PPE may be particularly important to break the transmission cycle considering the SARS-CoV-2 virus, which causes COVID-19, has been shown to survive for over 24 hours on clothing, three days on glass and six days on plastic. Whether SARS-CoV-2 is airborne remains disputed at this time of writing [3].

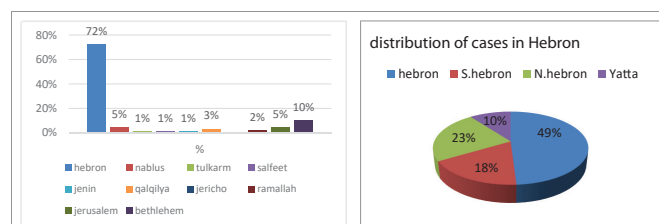
COVID-19 is highly contagious with a certain mortality rate; it was classified as a class B infectious disease and managed as a class A infectious disease in China in January 2020 [4] Healthcare workers can therefore reduce the risk of transmission to family members at home by wearing single-use PPE at work, washing their hands, wiping down contact surfaces when entering the house and wearing different clothes to work that are washed separately to other household laundry.

## Methodology

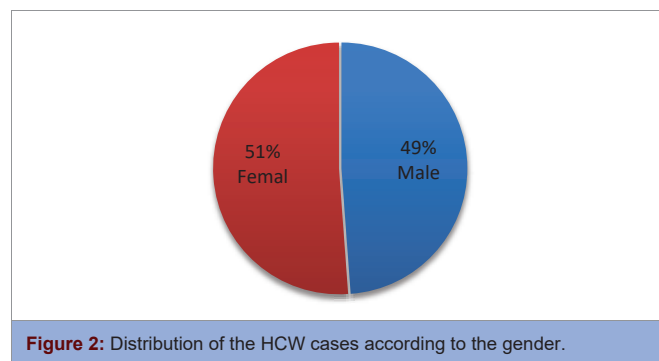
Retrospective single center study. Inclusion criterion were all health care workers including physicians, nurses and other personnel (housekeepers, porters and administrative staff ,pharmacy ,radiologist and lab technicians) who were assigned to deal with COVID-19 patients in the period between March till August/ 2020. A total number of 1452 HCWs were tested, all HCW who deal with COVID19 suspected patients are included, and the HCW whom handling data and files are excluded from the study. Health care workers with co morbidities (uncontrolled diabetes, uncontrolled hypertension, respiratory diseases, and other chronic medial illness) and pregnant ladies were not included because they were already excluded from work during this period. Trained team and the swabs were tested for COVID-19 RNA using real-time reverse-transcriptase rRT-PCR. Data on gender, geographical distribution and occupational categories were also analyzed.

## Results

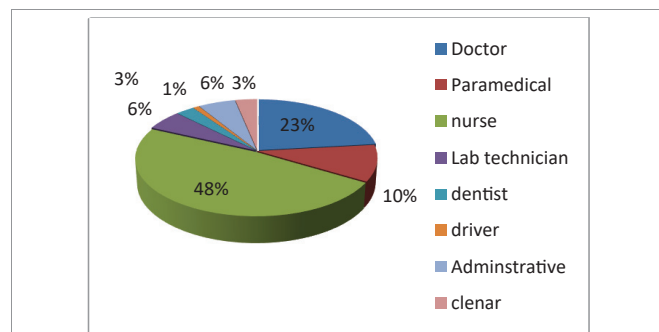
It seems that majority of HCW cases are from Hebron 72% ,10% are from Bethlehem , Nablus and Jerusalem represent in 5% , and then the other areas are less than 3% , Hebron represent the largest distribution geographical area in Palestine and so the more HCW density. According to Hebron it is divided to four areas (Hebron city, North Hebron, South Hebron and Yatta) and the cases in them are divided as 49%, 23%, 17% and 10% (Figure 1-3).



**Figure 1:** The distribution of HCW cases according to the geographical areas.



**Figure 2:** Distribution of the HCW cases according to the gender.



**Figure 3:** Distribution of HCW cases according to the occupation.

It is shown that 51% of cases are female HCW, while 49% are male HCW

Most cases 48% were nurses, followed by 23% of cases were medical doctor, the paramedic (pharmacy, radiologist, nutritionist, social workers, public health, and environment workers) shows 10% of cases. The dentist was 3% of cases and the cleaner too, both lab technicians and administrative employee were 6% of cases and the drivers showed the lowest percent 1% of all cases.

## Discussion

The prevalence of HCW s COVID 19 positive cases is (23) %,

although of, the presence of poor economic, political, and social Palestinian situation. In a prospective cohort study of high-risk front-line health care workers (HCWs) in a UK hospitals, 44% showed evidence of SARS-CoV-2 infection either by reverse transcription polymerase chain reaction (RT-PCR) or serology, (45%) were seropositive after one month and (20%) seroconverted during the study and (25%) were already seropositive at study entry. Meanwhile, (21%) of HCWs tested positive for SARS-CoV-2 by RT-PCR in at least one swab. Twenty (48%) reported symptoms within seven days of the positive test, which were consistent with Public Health England's COVID-19 case definition, and (38%) did not report any symptoms in the same time frame [10].

Most cases were nurses that are the number of nurses is more than all other HCW; they are giving care and handling patients for longer period than others. In a Chinese study, random screening of HCWs, and sampling of hospital surfaces to identify a COVID-19 infection (71.8%) were women, Even nurses who weren't first-line caregivers were more likely to be infected than first-line doctors [5]. A second study, involving 9,684 HCWs at Tongji Hospital in Wuhan, found that (1.1%) tested positive for the virus. Of 3,110 HCWs dispatched to high-contagion fever clinics and wards to care for 10,830 patients with confirmed or suspected corona virus [5]. HCWs working even in low-risk areas must routinely screening, including those who are asymptomatic [5].

In a Dutch study ,Only (3%) of the HCWs identified through the screening had a history of travel, and (3%) reported having been exposed to an inpatient with a known diagnosis of COVID-19 before the onset of symptoms [6]. The International Council of Nurses (ICN) said that it believes at least 90,000 healthcare workers had been infected and more than 260 nurses had died in the novel corona virus pandemic and In April 2020, ICN had reported that more than 100 nurses from around the world had died after contracting COVID-19. In addition; World Health Organization (WHO) had reported 23,000 infections among healthcare workers and by gathering further information from its member National Nursing Associations (NNAs, some official government figures, and media reports), which suggest that at least 90,000 healthcare workers have been infected, and more than 260 nurses have died [7].

During the containment phase and within 2 weeks after the first Dutch case was detected, a substantial proportion of HCWs were infected with SARS-CoV-2, likely as the result of acquisition of the virus in the community during the early phase of local spread<sup>6</sup>. Healthcare workers are at increased risk of being exposed to viruses within hospitals but can also be a source of transmission by introducing a virus into their hospital. SARS-CoV-2 infections in health-care workers can have a substantial effect, because pathogens are introduced into settings with high numbers of individuals with co morbidities, potentially causing high morbidity and mortality among patients [7-10].

The genomic diversity recorded in our study is consistent with multiple introductions through community-acquired infections, and some local amplification related to specific social events in the community, rather than widespread within-hospital transmission. Although direct transmission in hospitals cannot be ruled out, our data do not support wide spread nosocomial transmiss

ion as the source of infection in patients or health-care workers [7],

SARS-CoV-2 was concluded to have already spread in the population in a way that led to a change of policy, in which containment measures were complemented by targeted physical distance measures, starting in the south of the Netherlands initially and later comprising the whole country [7].

## Conclusion

Healthcare workers are at increased risk of contracting communicable diseases, including droplet-spread respiratory viruses, because of their high level of exposure at work. Current evidence supports hand hygiene, facemasks (both at home and work) and adequate PPE as well as potentially efforts to reduce the number and spread of patient contacts at work to end the risk of onward COVID-19 transmission. The 2019-nCoV infection caused clusters of severe respiratory illness similar to severe acute respiratory syndrome corona virus and was associated with ICU admission and high mortality [8]. The HCW are important to be protected, major gaps in our knowledge of the origin, epidemiology, duration of human transmission, and clinical spectrum of disease need fulfillment by future studies.

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