

The African Regional Efforts of The Pasteur Network to Guide Control Measures Against the Coronavirus Disease 2019 (COVID-19) Pandemic Among Healthcare Workers in Africa

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Abstract

Healthcare workers (HCWs) play a critical role in preventing the spread of infectious diseases. The studies in the different African countries (Cameroon, CAR, Niger, Madagascar) showed a high infection rate early during the pandemic. Despite high rates of infection, HCWs have had mild or asymptomatic COVID-19 infections in Africa. For future, implementation of cohort studies can help in identifying risks of infection and track their medium-term effects on HCW health. HCW cohort studies should be recommended in all the countries and on all times.

Keywords: Healthcare workers; COVID-19; Madagascar; Cameroon; Niger

Abbreviations: HCWs: Healthcare Workers; CAR: Central African Republic

Introduction

Healthcare workers (HCWs) play a critical role in preventing the spread of infectious diseases, as they worked in closed contact with infected patients, they can sometimes transmit these pathogens to community if they do not care. There are numerous control measures to prevent infectious diseases. Some are based on standard precautions and other concern the transmission. Both must be regularly presented to HCWs for a better preparedness. During the COVID-19, HCWs worldwide have been on the frontline, providing care to infected patients and facing an increased risk of becoming infected. The supply of protective equipment in Africa has been a hurdle to best practices implementation. The Pasteur Network in Africa [1] carried out studies targeting HCWs in line with international recommendations and aiming to assess the risks in HCWs in order to inform about control strategies. This paper based on the

respective results of each team in Madagascar, Cameroon, Niger and Central African Republic presents and discuss the lessons for the future crisis in the framework of the preparedness and response programs.

Main Published Results

The studies showed a high infection rate early during the pandemic. In Madagascar [2] 36% of HCWs seronegative at inclusion were seropositive after 3 months of follow-up during 2020 first wave, the incidence rate was 100 per 1000 person*month after 7 months. In the Central African Republic (CAR) [3], where the first case was confirmed on March 2020, two cross sectional studies were carried out in April 2021 and in May 2022. The seroprevalence was 32% and 96% respectively. In Cameroun [4], the study carried out from August 2020 to March

2021, after the first wave showed a high level of antibodies at inclusion (54%); 79% of negative were positive after six months, the incidence rate was 230 per 1000 person*month.

In Niger [5], the inclusion took place from March 2020 to May 2020 and the follow up was just one month, during 2020 first wave. At inclusion, 35% of the HCWs were seropositive. Among the HCWs seronegative, the incidence rate was 440 per 1000 person*month. In the four studies, HCWS were younger and therefore less at risk to be admitted in hospital with a severe clinical form. In Madagascar [2], the median age was 32 years; none were hospitalized during the 7-month survey, 48% were asymptomatic. In Cameroon [4], the median age was 31 years, The proportion of asymptomatic infections was great, around 75% of seropositive. In CAR [3], the median age was 43 years for HCW populations. In Niger [5], the median age was 35 years, no difference was observed according to infection status, 70 % of infected HCWs were asymptomatic. No death declared among the HCW studies in the different countries.

Regarding the occupation, in CAR [3] HCWs with close contacts were more likely to have a positive serology compared with support staff (OR = 2.3). Neither gender, nor age had any effect on the positive status in the two surveys. In Cameroon, physicians were less at risk; in Madagascar and in Niger, no statistical difference was found according with the occupation. In CAR, vaccination was implemented after the first transversal study, the vaccine coverage was 82% among the HCWs before the second study. In Madagascar, 75% of the HCWs reported training, more than 90% reported using alcohol-based solutions, and all HCWs had worn masks. In Cameroon, no infection prevention process and no control practices were associated with seropositivity. In Niger, using of alcohol-based solution for hand cleaning had a protective effect (OR: 0.28).

Discussion

Worldwide, the burden of COVID-19 on HCWs has been significant. Our African studies shown HCWs have been at a higher risk of contracting COVID-19 than the general population, due to close contact with infected patients. Our studies and ones from other African countries [6,7] showed a high prevalence level in the first months in South Africa (61%) and in Nigeria (70%). In Africa, SARS-CoV-2 infection rates were higher than in high-income countries. Because of frequent exposure, the HCWs are more at risk to infection such as demonstrated by CAR study. In all the countries, the HCWs assigned to care for patients are considered such as the first frontline soldiers. Fighting against infections, they are more frequently exposed to infectious risks than any people. So, they may serve as vectors for transmission in hospital but also in community where they return after their work time.

Despite high rates of infection, HCWs have had mild or asymptomatic COVID-19 infections in our cohort studies.

However, COVID-19 among HCWs have probably put a significant load on the already fragile healthcare systems, as in many African countries. Although our cohort studies did not take this dimension into account, this has probably led to shortages of staff, reduced capacity to treat patients, and delays in care. Infection prevention and control measures are in place in hospital involved to studies; it remains critical that HCWs need to improve their knowledge about the risk, the issue of the protective measures must be addressed both at the hospital and at home. The challenge for HCWs is to maintain a high level of protection all the time.

An international survey [8] report widespread shortages and reuse of single-use PPE items. The limitation in medical supply chains in Africa and the lack of production for medical supplies lead to a high reliance on imports for health systems. Identification of risk factor among HCWs was also a goal of the HCW cohorts. Our studies, except in CAR, are not designed to compare the risk among HCWs and non HCWs. In CAR, close contact with infected patient was a risk factor; also show by Nunes et al. [6] in South Africa. In Madagascar, younger HCWS were more at risk, this result is showed by Kim R et al. [9], infected HCWs were younger (43 vs 53 yrs, $P < 0.001$), In Malawi [10] as in our studies, infected HCWs have been less likely to experience severe illness. Tlotleng et al. [11] show that Case Fatality Rate is twice lower than in general population (9.7% versus 18.7%). Our studies did not allow to study long-term health consequences. However, a paper about four African countries [12] showed that around 60% HCWs who have mild infections may experience long-term consequences.

Conclusion

Both during pandemics and in non-outbreak periods, healthcare workers (HCWs) face an elevated risk of exposure to various infectious diseases. Given the early and high rates of seropositivity observed among them during last pandemic, HCWs are particularly vulnerable due to both occupational activities and community interactions. To mitigate these occupational hazards, policymakers should prioritize strengthening preventive training programs and ensuring consistent access to personal protective equipment (PPE). Implementing cohort studies to investigate community transmission can play a crucial role in identifying infection risks and monitoring their impact on HCW health. Such studies are essential for providing health authorities with the data needed to implement effective control measures, thereby enhancing the health and safety of HCWs and safeguarding communities. Additionally, HCW cohort studies can serve as a valuable tool for assessing the efficacy of new interventions, such as vaccinations. Therefore, conducting HCW cohort studies should be universally recommended across all countries and at all times.

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