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Letter to the Editor

Re: Oral antiseptics against coronavirus: in-vitro and clinical evidence



Sir,

In a recent review of existing literature, Mateos-Moreno *et al.* found sufficient in-vitro but not in-vivo evidence for the use of oral antiseptics including hydrogen peroxide (HP) to inactivate or eradicate SARS-CoV-2 [1]. The need for use of oral antiseptics for the fight against COVID-19 cannot be overemphasized. Currently, it is uncertain how long neutralizing antibodies will last after vaccination, and there is uncertainty about the efficacy of the existing COVID-19 vaccines with the emergence of SARS-CoV-2 variants [2,3]. Furthermore, even at the current level of global vaccinations estimated at 6.7 million doses per day, it has been projected that herd immunity will be achieved in ~4.6 years, if 70–85% of the population receive a two-dose vaccine [4].

We had earlier proposed the use of HP as mouthwash and nasal rinse to prevent SARS-CoV-2 infection, thereby limiting transmission [5]. We share our observations of the impact of HP use on the occurrence of COVID-19 in two groups of healthcare workers (HCWs); those using HP for oral and nasal rinse (HP-HCWs) and those not using it (NHP-HCWs), at a district-level hospital and at a private hospital where inpatients also were given HP as topical prophylaxis. This situational analysis involved gross data collection with permission from the institutions who had willingly introduced voluntary use of HP, and did not involve any direct contact with patients or HCWs.

At the Emergency Department of the Shai OsuDoku District Hospital (SODH) in the Greater Accra Region in Ghana, eight nurses were using HP for mouthwash and gargle and for nasal lavage. These nurses, who are permanent and core staff at the Emergency Department, adopted this prophylactic measure from May 2020 when they heard about the efficacy of HP against coronaviruses. They daily mouth-washed and gargled with 1% solution of HP and rinsed their nasal cavities with a lower concentration (0.5%). They and all other nurses at the hospital wore standard scrubs, gloves, and boots, in addition to wearing face masks, and performed frequent handwashing under running water and hand-sanitizing. Since they were the first to receive such patients and triage them before a diagnosis of COVID-19 was made, they adopted measures they felt could protect them. At the time these eight emergency staff nurses adopted prophylactic use of HP, vaccines against COVID-19 were not available. In Ghana, vaccines were introduced in

the first week of March, 2021. By March 22nd, the first group of medical staff at SODH had received the first dose of the Oxford Astra-Zeneca vaccine. There was an incremental use of HP between the period January 2021 till early March 2021; details of observations made are included in Table I.

At the Mount Olives Hospital, Techiman, Bono East Region, Ghana, the Medical Specialist in charge of this hospital elected to introduce HP topical prophylaxis to the COVID-19 protection regimen beginning August 2020; in July 2020, the hospital had already recorded 22 confirmed cases of COVID-19, 17 being healthcare staff and five of 370 inpatients. His recommendation was based on information he had gained from our publication in the *BMJ* that HP could protect from SARS-CoV-2 infection [5]. None of the 3387 inpatients seen from August 2020 to March 2021 using HP topical prophylaxis had COVID-19. Also, none of 52 staff using HP and 30 not using it had COVID-19 during that period. Only two HCWs who were not using HP regularly had COVID-19 (Table I).

An interesting observation was that two of the NHP-HCWs at SODH who contracted COVID-19 in November 2020 became infected again in January 2021, a period of less than three months. Aside these, we found that in January 2021 when other staff at SODH began using HP, one person who used it in an office of five staff was the only one who did not contract COVID-19. The remaining four had COVID-19 and were not using HP.

At the Mount Olives Hospital where HP prophylaxis was introduced and involved 3378 inpatients, only two staff had COVID-19 within eight months (August 2020 to March 2021), compared with 17 staff infections between July 6th and early August 2020 and before HP was introduced to both staff and inpatients. Within that same period of July 6th to early August 2020, five inpatients also had COVID-19 (Table I). It was also observed that two cases of COVID-19 occurred in staff using HP infrequently, and not in those not using HP at all during the period (Table I).

No cases of COVID-19 were recorded in the MO hospital among patients, HP-HCWs, and NHP-HCWs with the novel introduction of HP prophylaxis for inpatients. We therefore believe that the daily use of HP was what protected the 3387 inpatients and 52 HP-HCWs from COVID-19, by inactivating SARS-CoV-2 that may have attached to ACE2 cells within the buccal cavity and upper respiratory tract. It is also possible that the HP prophylaxis policy adopted by Mount Olives Hospital benefited the 30 NHP-HCWs. It is noteworthy that a short-term inhibition of SARS-CoV-2 by HP has been shown in persistent nasopharyngeal carriers [6]. The need for prompt hospital-based and community studies is emphasized, since post-vaccination infections are occurring and the delta variant is currently spreading [7,8].

Table I
COVID-19 among healthcare workers using (HP) and not using (NHP) hydrogen peroxide at two healthcare facilities in Ghana

Hospital	Period	Healthcare worker COVID-19 status					
		NHP			HP		
		Positive	Negative	Total	Positive	Negative	Total
SODH ^a	May–Dec 2020	62 (13.5%) ^b	396 (86.5%)	458	0	8 (100%)	8
	Jan–Mar 2021	10 (2.7%)	362 (97.3%)	372	0	94 (100%)	94
MO ^c	Jul 2020	17 (20.2%)	67 (79.8%)	84	0	0	0
	Aug 2020–Mar 2021 ^d	0	30 (100%)	30	0	52 (100%)	52

SODH, Shai OsuDoku District Hospital, Dodowa, Greater Accra Region, Ghana; MO, Mount Olives Hospital, Techiman, Bono East Region, Ghana.

^a No deaths during the period used for the situational analysis.

^b Two NHP healthcare workers had COVID-19 twice (reinfections), each in the two periods under review, but they have been accounted for once in each time-period.

^c In all, 370 inpatients were seen in July 2020 with five having COVID-19; 3387 inpatients were seen from August 2020 to March 2021 but none had COVID-19. COVID-19 was confirmed with RT–PCR.

^d Two with occasional use of hydrogen peroxide had COVID-19 but have not been accounted for in the table.

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