

## Original Research Article

# Pattern of use of hydroxychloroquine as prophylaxis among health care workers against COVID-19: a KAP study

Madhusudan Singh<sup>1</sup>, Sushant Saurabh<sup>2</sup>, Obaid Ali<sup>2</sup>, Saparya Tripathi<sup>3</sup>, Vineet Kumar Pathak<sup>4</sup>, Ekta Krishna<sup>4\*</sup>

<sup>1</sup>Department of Pharmacology, <sup>4</sup>Department of Community and Family Medicine, All India Institute of Medical Sciences, Raipur, India

<sup>2</sup>Department of Medicine, JLNMCH Bhagalpur, India

<sup>3</sup>Department of Psychiatry Dr. Bhim Rao Ambedkar Memorial Hospital, Raipur, India

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### \*Correspondence:

Dr. Ekta Krishna,

E-mail: [ektas057@gmail.com](mailto:ektas057@gmail.com)

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## ABSTRACT

**Background:** Hydroxychloroquine (HCQs) was one of the first chemoprophylaxis that received the recommendation for coronavirus disease 2019 (COVID-19). ICMR also time to time revised the guidelines for the use of HCQs as a prophylactic agent against COVID-19. But its mechanism of action for the same and duration of use was not much supported by available evidence. Hence, we conducted a web-based survey among Health Care Workers (HCWs) to know their Knowledge attitude practice (KAP) on HCQs use.

**Methods:** We used a web-based questionnaire through google form which was circulated through snowball technique among health care worker working in a various hospital set up through various social media over a period of 1-month.

**Results:** In our study total 159 HCWs responded to questionnaire. 37.1% (59/159) HCWs had taken HCQs, out of which 13.2% (21/59) participants acquired SARS-CoV-2 infection. Out of suffered HCWs, 38% (8/21) had taken full 7 weeks regime. Also, 84.7% (50/59) participants responded that they were confused whether to continue further taking HCQ after completing 7 weeks HCQ regimen or before every turn of their COVID duty.

**Conclusions:** ICMR recommended its use in early phase of COVID-19 when there was not sufficient data available about its treatment and prophylaxis. But with the coming evidences we now know that there is limited role of HCQ in terms of prophylactic agent against SARS-CoV-2.

**Keywords:** COVID-19, Hydroxychloroquine, Pre-exposure prophylaxis, Healthcare workers

## INTRODUCTION

The day since coronavirus disease 2019 (COVID-19) outbreak came into the news, the scientific community is working tirelessly searching for various ways for modes of prevention, treatment strategies, chemoprophylaxis, vaccines, etc. The spectrum of signs and symptoms varying among individuals from being asymptomatic to fatal respiratory failure and high infectivity rate has increased concern among the global population.<sup>1</sup> In India,

the first case of COVID-19 came on 30th January 2020 in Kerala state.<sup>2</sup> Since then, medical fraternity and various researchers are constantly working towards providing affected people better and holistic care, a new drug or vaccine development, and mechanisms for prevention from this disease.

Indian council of medical research (ICMR) played a pivotal role in making policies and guiding authorities to take necessary actions for the prevention and treatment of

disease based on their research findings in context of Indian population.<sup>3</sup> In this regard, ICMR released an advisory dated 22nd May 2020 for healthcare and other front-line workers deployed in non-COVID and COVID areas to take hydroxychloroquine as prophylaxis for prevention.<sup>3</sup> They quoted one in vitro study of HCQ showing antiviral efficacy resulting in a reduction of infectivity /log reduction in viral RNA copy of SARS-CoV-2.<sup>3</sup> They recommended HCQ to be given to these three major populations: Firstly, All asymptomatic healthcare workers involved in containment and treatment of COVID-19 working in non-COVID hospitals/non-COVID areas of COVID hospitals/blocks, Secondly all asymptomatic frontline workers, such as surveillance workers deployed in containment zones and paramilitary/police personnel involved in COVID-19 related activities and lastly all asymptomatic household contacts of laboratory-confirmed cases. There was a mixed type of reaction in the healthcare community regarding this advisory because of the absence of proper and enough evidence at that time about HCQ as an agent for chemoprophylaxis, and also various adverse reactions and contraindications were limiting its use. Still, many healthcare workers took HCQ doses at that time for chemoprophylaxis.

It's been 10 months since the last advisory came regarding treatment and prophylaxis by ICMR for COVID-19. So, we did this cross-sectional study in the form of a survey intending to find out the proportion and drug usage pattern of hydroxychloroquine and also its effectiveness as a prophylactic agent among Health care workers against COVID-19.

## METHODS

We conducted a descriptive cross-sectional study among healthcare workers in various hospitals across India using a web-based questionnaire in the form of pre-designed and pre-tested google form. This google form was randomly circulated to maximum number of health workers through various social medias like WhatsApp, Facebook, Messenger, Instagram, Email etc during the period of over one month i.e., from 1st September 2020 to 30th September 2020. And hence, we used convenient sampling method for this study. The google form consisted of total of 17-point questionnaire (5 general questions, 10 questions to elicit the usage pattern and effectiveness of HCQs among health care workers (HCWs) and 2 other questions added to know the what other prophylactic drugs were common among HCWs). Inclusion criteria was all health care workers such as doctors, nurses, paramedics and other hospital staff.

The study was conducted after obtaining approval from the Institutional Ethical Committee. Participants were able to give responses only after giving consent for participation. Full confidentiality about identity and specifics of study participants have been maintained.

**Table 1: Demographic distribution and KAP on HCQs prophylaxis of the study participants.**

Variables	N (%)
<b>Gender (n=159)</b>	
Male	91 (57.2)
Female	68 (42.8)
<b>Knowledge about ICMR recommendation on HCQs prophylaxis (n=159)</b>	
Gone through themselves	136 (85.5)
Heard from someone else	19 (12)
Unaware about the recommendations	4 (2.5)
<b>HCQs protection against COVID-19 (n=159)</b>	
Not sure about the prophylactic protection	89 (55.9)
Does not give protection	41 (29.9)
Gives protection	29 (18.2)
<b>Use of HCQs as prophylaxis even a single dose (n=159)</b>	
Yes	59 (37)
No	100 (63)
<b>Completed full 7 weeks regime of HCQs (n=59)</b>	
Yes	27 (45.7)
No	32 (54.3)
<b>Reasons for not completing the full 7 weeks regime (n=32)</b>	
Heard in between the course that it is not effective	13 (40.7)
Missed/ forgot one or more dose	11 (34.3)
Experienced adverse drug reactions	8 (25)

## RESULTS

A total of 159 HCWs responded to the questionnaire of which 57.2% (91/159) participants were male, 42.8% (68/159) were females. Mean (SD) age of study participants was 28.2 (5.1) years. Nearly, 85.5% (136/159) of participants responded that they had themselves gone through ICMR recommendation on use of Hydroxychloroquine (HCQ) as prophylaxis for Health care workers (HCWs), 12% (19/159) participants heard it from someone, 2.5% (4/159) were unaware about this ICMR recommendation. In spite of ICMR guidelines, 55.9% (89/159) participants were not sure about the prophylactic protection of HCQs, 25.9% (41/159) responded that HCQ does not give protection and only 18.2% (29/159) believed that it gives protection from acquiring the disease.

On asking about the use of drug, 37% (59/159) responded they had taken HCQ as a prophylactic agent, out of which only 45.7% (27/59) participants completed full 7-weeks regimen as recommended by ICMR and 54.3% (32/59) did not complete the full 7-week regimen who had started taking HCQs as a prophylaxis. About 7.5% (12/159) participants had not taken the drug because they were having one or more contraindication for HCQ as described in the ICMR document. The reasons for not completing

full regimen also varied. About, 40.7% (13/32) people stopped in between because they heard that HCQs have no role as a prophylactic agent against SARS-CoV-2, 34.3% (11/32) HCWs responded that they missed or forgot to take one or more doses, 25% (8/32) stopped taking because they experienced some kind of adverse drug reactions (Table 1).

On asking about the disease status, confirmed through a positive RT-PCR test, 13.2% (21/159) HCWs responded that they had acquired COVID-19. Out of suffered HCWs 38% (8/21) were taken full 7 weeks regime and 62% (13/21) were not taken full 7 weeks regime. As ICMR recommendation was to take HCQ as prophylactic drug only for 7 weeks, so in our study, 84.7% (50/59) participants responded that they were confused whether to continue further taking HCQ after completing 7 weeks

HCQ regimen or before every turn of your COVID duty. On asking participants about what other options they find as more appropriate to be used as prophylactic agent against SARS-CoV-2, 54.7% (87/159) participants responded that they don't think any of the prophylactic drugs can be helpful against COVID-19, 29.6% (47/159) people responded for Ivermectin, 7.5% (12/159) for doxycycline, 7% (11/159) for AYUSH remedies, and 1.2% (2/159) responded that Coronil by Patanjali can be effective. We also asked, do they think these HCQs should be sold as Over-the-counter (OTC) medications without need of prescriptions, for which 68% (108/159) participants were against it and 32% (51/159) were in favour of it (Table 2 and 3).

**Table 2: COVID-19 status and other prophylactic agent use among study participants.**

	N (%)
<b>Have you ever acquired COVID-19 (n=159)</b>	
Yes	21 (13.2)
No	138 (86.8)
<b>Full regime status among COVID-19 HCWs (n=21)</b>	
Have taken full 7 weeks regime	8 (38)
Have not taken full 7 weeks regime	13 (62)
<b>Confusion whether to continue further taking HCQ after completing 7 weeks HCQ regimen (n=59)</b>	
Yes	50 (84.7)
No	9 (15.3)
<b>Use of other prophylactic agents against COVID-19 (n=159)</b>	
No agent is protective	87 (54.7)
Ivermectin	47 (29.6)
Doxycycline	12 (7.5)
AYUSH remedies	11 (7)
Coronil	2 (1.2)
<b>Should HCQs be available as Over the Counter Drug (OTC) (n=159)</b>	
Yes	108 (68)
No	51 (32)

**Table 3: Bivariate logistic regression analysis between predictors of infection with COVID positive and negative status of the study participants.**

Variable	COVID positive HCWs	COVID negative HCWs	OR (95% CI)	p value
<b>Gender</b>				
Male	14	77	Ref	
Female	7	61	1.5 (0.6-4.1)	0.38
<b>Knowledge about ICMR recommendation on HCQs prophylaxis</b>				
Gone through themselves	20	116	Ref	
Unaware and heard from someone else	1	22	3.7 (0.5-29)	0.38
<b>Do you think HCQs protection against COVID-19</b>				
Yes	3	26	Ref	
No	18	112	0.7 (0.2-2.6)	0.61
<b>Any contraindications to use of HCQs as prophylaxis</b>				
Yes	3	9	Ref	
No	18	129	2.3 (0.6-9.6)	0.22
<b>Full course of HCQs prophylaxis for 7 weeks</b>				
Yes	8	19	Ref	
No	13	119	3.8 (1.4-10)	0.009
<b>Confusion whether to continue further taking HCQ after completing 7 weeks HCQ regimen (n=59)</b>				

Continued.

Variable	COVID positive HCWs	COVID negative HCWs	OR (95% CI)	p value
Yes	12	38	Ref	
No	2	7	1.1 (0.2-6)	0.9
<b>Use of other prophylactic agents against COVID-19</b>				
None	9	78	Ref	
Any (ivermectin/ doxycycline/ AYUSH medication)	12	60	1.7 (0.4-4.3)	0.45
<b>Should HCQs be available as Over the Counter Drug (OTC)</b>				
Yes	6	45	Ref	
No	15	93	0.8 (0.3-2.2)	0.7

## DISCUSSION

In our study survey, total of 159 HCWs responded to questionnaire. Out of 37.1% (59/159) HCWs who had taken HCQs, 16.9% (10/59) participants became positive, 10.1% (6/59) in between and 6.7% (4/59) after completion of HCQs prophylactic regimen. HCWs who didn't take any dose of HCQs as prophylaxis, 6.9% (11/ 159) became positive for SAR-CoV-2.

Bhattacharya et al in their study on health workers found that incidence of SARS-CoV-2 infection was less in HCQ users. ( $X^2=14.59$ ,  $p<0.001$ ).<sup>5</sup> In our study also, incidence of SARS-CoV-2 infection among HCWs who had taken HCQs was 16%, 95% CI: 0.088-0.29 compared to those who had not taken HCQs, incidence of SARS-CoV-2 infection was 11.0%, 95% CI: 0.059-0.192.

In our study, odds of getting infected in those who had taken HCQs where 1.65 (95% CI; 0.655-4.162), which was statistically insignificant while in a study conducted by Chatterjee et al, it was seen that consumption of four or more maintenance doses of HCQ was associated with a significant decline in the odds of getting infected (AOR: 0.44; 95% CI: 0.22-0.88).<sup>4</sup> In an open-label, cluster-randomized trial conducted in Spain which included 2485 contacts of individuals with documented COVID-19, rates of symptomatic COVID-19 by day 14 were similar with HCQ compared with usual care.<sup>9</sup> There was also no difference detected in the rate of SARS-CoV-2 infection among the subset of participants who had a negative test at baseline. Rates of adverse events were higher in the hydroxychloroquine group of which most frequent events were gastrointestinal symptoms, headache and drowsiness. Out of 59 HCWs who had taken HCQs, 8 HCWs experienced any kind of adverse reactions because of which they were not able to complete full dose regimen.

Initially, hydroxychloroquine (HCQ) was said to be one candidate agent for either pre- or post-exposure prophylaxis mainly because of its immunomodulatory action, but available placebo-controlled trial data suggests that it is not effective in preventing infection.<sup>6-10</sup>

In a double-blind, placebo-controlled trial among 'at-risk hospital workers', HCQ failed as a pre-exposure prophylactic agent.<sup>7</sup> The trial was stopped early for futility by the Data and safety monitoring board after two-thirds of

the final participants had been enrolled. Among 125 participants, there was no difference in infection rate with HCQ versus placebo.

## CONCLUSION

ICMR recommended its use in early phase of COVID-19 when there was not sufficient data available about its treatment and prophylaxis. But with the coming evidences we now know that there is limited role of HCQ in terms of prophylactic agent against SARS-CoV-2. Apart from it, the adverse event profile also limits its use in patients in whom, it is not absolutely indicated.

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