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AWARENESS AND IMPACT OF HYDROXYCHLOROQUINE PROPHYLAXIS AMONG THE HEALTHCARE WORKERS OF A TERTIARY CARE HOSPITAL DURING THE COVID-19 PANDEMIC

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ABSTRACT

Background: Several therapeutic agents are under study for prevention and treatment of novel coronavirus. One such agent is Hydroxychloroquine (HCQ). The objective of this study was to understand the awareness and impact of HCQ prophylaxis among the health care workers (HCWs), caring for patients with COVID-19. **Methods**: A cross-sectional study was conducted on HCWs working at a tertiary care hospital of Goa Medical College. A semi structured questionnaire comprising of 22 questions was used. Data was tabulated in MS excel and descriptive statistics were performed. **Results:** 250 HCWs participated in the study. 100% participants had heard about the use of HCQ prophylaxis against COVID-19 infection. 60% participants agreed that there is no adequate research done on its use. 235 HCWs knew about the side effects of HCQ. 145 participants took HCQ prophylaxis, out of which only 81 participants completed the course. 38% were given medication without baseline investigations. 60% participants developed side effects. 19 participants tested positive for COVID-19, even after completing HCQ prophylaxis. **Conclusion:** The drug was taken by HCWs was without adequate evidence, supervision and follow up. Most of the participants were prescribed the drug by the hospital authorities without any baseline investigations. Many HCWs were not even briefed about the drug. No separate guidelines were stated for people with comorbid conditions. These are some serious concerns as HCQ is associated with serious adverse events.

KEYWORDS: COVID-19, Hydroxychloroquine, prophylaxis, questionnaire-based study.

INTRODUCTION

SARS-CoV-2 is a novel coronavirus responsible for the global outbreak of COVID-19 pandemic. It was first discovered in China in 2019 and is believed to have originated from bats. COVID-19 is an infectious disease and is associated with symptoms like fever, dry cough, breathlessness and lethargy.[1] Globally, there have been 200 million confirmed cases of COVID-19 and over 4 million deaths.[2] The virus is undergoing rapid mutation and The World Health Organization (WHO) has identified four variants of SARS-CoV-2 which are of global concern.[3] Older people, and those with comorbidities like hypertension, diabetes, heart disease, immunocompromised status etc. are at a greater risk of developing serious illness.

In the current global scenario, every healthcare system is busy finding cure. Even with the advent of vaccination, the only definitive management is prevention. Prevention by social distancing, wearing masks, hand hygiene and avoiding crowded gatherings.

Healthcare workers are at a greater risk of getting infected as they are directly exposed to patients with COVID-19 infection. Therefore, the Indian Council of Medical Research (ICMR) recommended hydroxychloroquine (HCQ) for adults in a dosage of 400 mg twice a day on first day followed by 400 mg once a week for 7 weeks for chemoprophylaxis for COVID-19 for all health care workers (HCWs) involved in the care of suspected or confirmed cases of COVID-19, and also for household contacts of laboratory confirmed cases.[4]

Hydroxychloroquine (HCQ) is a well-established drug and is used in conditions like malaria, rheumatoid arthritis and SLE. Yao et al showed in vitro effect of hydroxychloroquine on SARS-CoV-2 infected Vero-cells using physiologically based pharmacokinetic models.[6] Liu et al in the in vitro study on Vero-cells showed inhibitory effect of hydroxychloroquine on entry and post-entry steps of viral replication.[7] The objective of this study was to understand the awareness and impact of HCQ prophylaxis among the health care workers (HCWs), caring for patients with COVID-19.

MATERIALS AND METHOD

This cross sectional, questionnaire-based study was conducted at a tertiary care hospital of Goa Medical College. A semi structured questionnaire comprising of 22 questions was generated on google forms and the link was mailed to all healthcare workers using social networking platforms. The questionnaire was divided into 3 categories to assess the 1) Sociodemographic details; 2) Awareness and 3) Impact of Hydroxychloroquine. Data collected was analyzed using MS Excel and results were expressed as counts and percentages.

RESULTS

A total of 250 healthcare workers completed the study. Out of these 250 participants, 183 (73.2%) were females and 67 (26.8%) were males [Fig. 1]. Majority of the participants belonged to the age group of 18-40 years of age. 137 (54.8%) were doctors and 113 (45.2%) were nurses [Fig. 1]. The co-morbidities included hypertension (7.6%), diabetes mellitus (3.6%), bronchial asthma (1.6%), hypo/hyperthyroidism (1.6%) and migraine (0.4%) [Table 1]. Majority of the participants (88.4%) did not have any underlying condition. 90.2% of the participants were involved directly in caring for suspected or confirmed cases of COVID-19 patients.

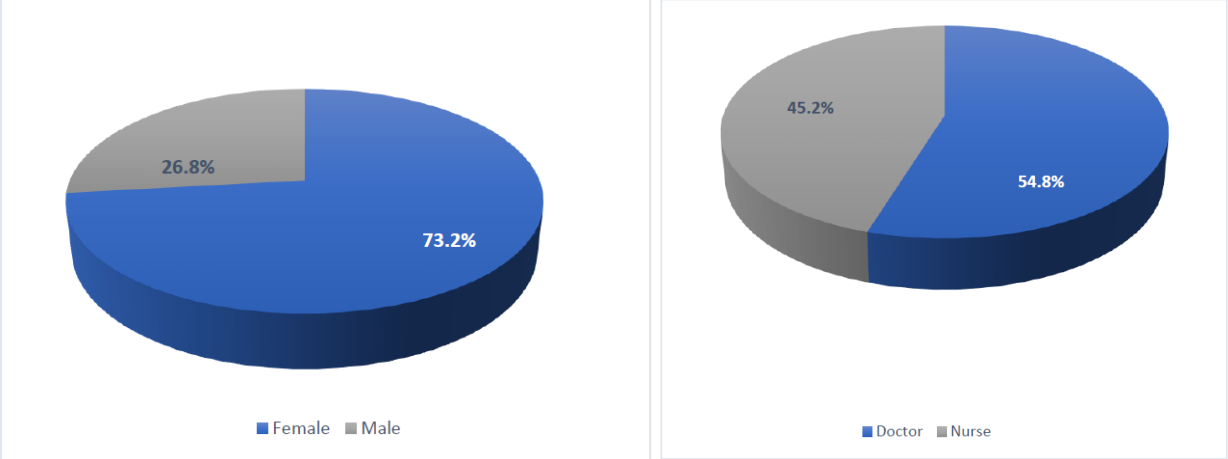

Fig 1: Demographic details.

Table 1: Demographic details and patient characteristics.

Age	Number of participants N	Percentage (%)
18-40	202	80.80%
40-60	48	19.2%
Sex		
Male	67	26.8%
Female	183	73.2%
Designation		
Doctor	137	54.8%
Nurse	113	45.2%
Coexisting conditions		
Hypertension	19	7.6%
Diabetes mellitus	9	3.6%
Bronchial asthma	4	1.6%
Hyperthyroidism	2	0.8%
Hypothyroidism	2	0.8%
Migraine	1	0.4%

The participants were questioned about their knowledge of the drug. 100% participants had heard about the use of HCQ prophylaxis against COVID-19 infection. However, only 54.8% of the participants were aware of the correct dose used. The most common medium of awareness was through hospital protocol followed by National/ State guidelines [fig 2]

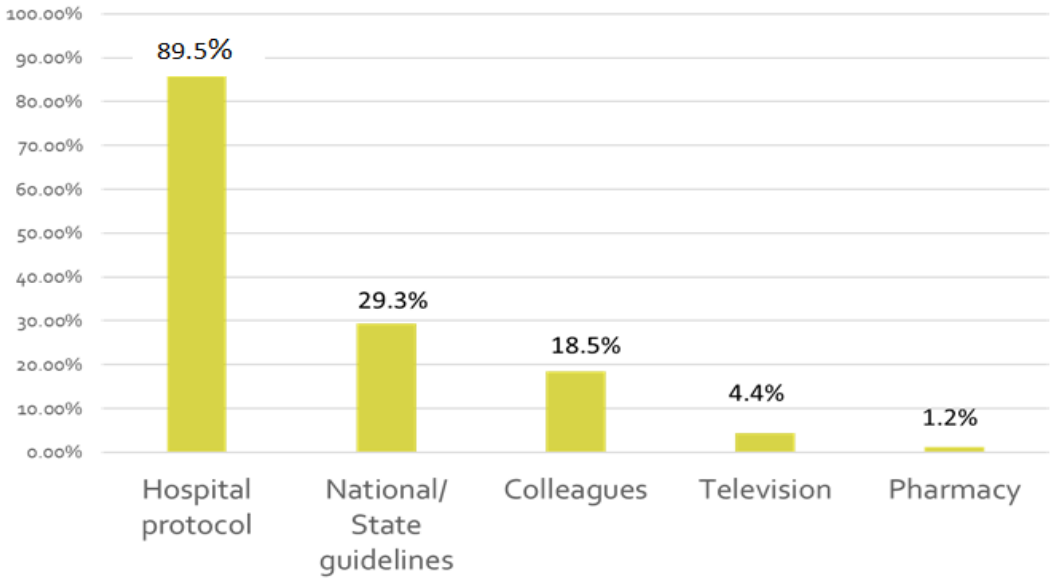

Fig 2: Medium of awareness.

Although, 94% of the participants were aware of the various adverse effects associated with the use of hydroxychloroquine, 38% participants revealed that they were not briefed about the use and adverse effects of the drug by the hospital authorities before taking the drug.

A total of 145 (58%) participants took HCQ prophylaxis, 137 (94.48%) of which were advised by the heads of their respective departments and 4 participants (2.75%) self-prescribed the drug. The regimen followed by all was 800mg on day 1, followed by 400 mg once a week for the next 6 weeks. Only 21 participants did baseline investigations like electrocardiogram (12.9%), blood routine/ liver/ kidney function tests (0.6%). 105 (42%) participants did not take the drug because of the known side effects (72.9%), inadequate literature available supporting its use (49.5%) and some also found literature suggesting its ineffectiveness against COVID-19.

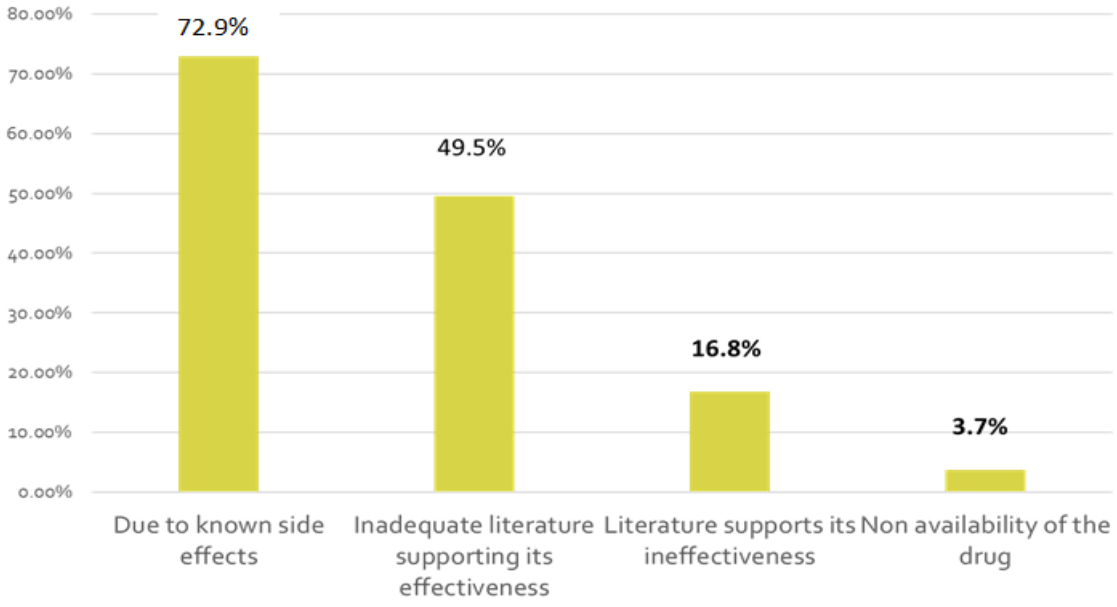

Fig 3: Reasons for not taking the prophylaxis.

69 (44.2%) participants discontinued the drug before the completion of the course. Most common reason was [fig 4] the adverse events encountered with the drug like headache (22.9%), abdominal pain (20.9%), nausea/ vomiting (19%). 7.2% participants also complained of chest pain [Table 2]. 62 (61.4%) participants firmly believed that these symptoms were due to the drug while 5% were not sure. Out of the 145 participants started on HCQ prophylaxis 47 participants tested positive for COVID-19. 19 out of these 47 participants had completed the full prophylactic course.

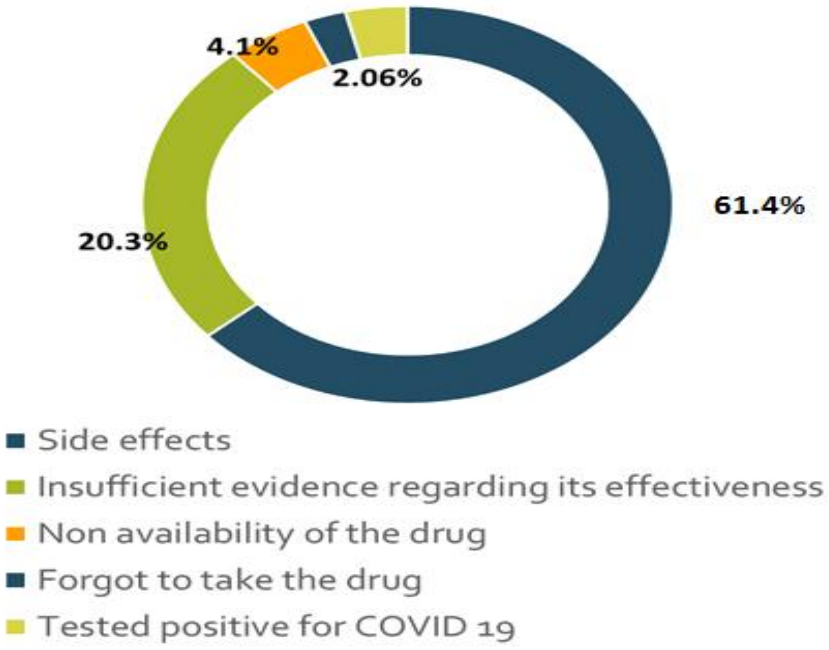

Fig 4: Reasons for discontinuation of the drug.

Table 2: Adverse event profile associated with HCQ.

Adverse events	Frequency	Percentage (%)
Headache	35	41.6
Giddiness	3	3.4
Drowsiness	1	1.1
GI adverse events		
Anorexia	3	3.4
Nausea/ vomiting	29	33.3
Abdominal pain	33	37.9
Diarrhoea	4	4.5
CVS adverse events		
Chest pain/ discomfort	12	13.7
Palpitations	6	6.8
Bradycardia	1	1.1
Blurring of vision	3	3.4
Hypoglycemia	2	2.3
Skin changes		
Itching	1	1.1
Rash	2	2.3
Discoloration of lips	1	1.1

DISCUSSION

In this study, all healthcare workers were aware about HCQ use for prophylaxis against COVID-19. Although majority of the participants had heard about HCQ through reliable channels, 22.9% of the participants received their information through colleagues and television. 38% of HCWs were not briefed about HCQ use and adverse effects by the hospital authorities before taking the drug. 62% participants agreed there is inadequate research done on use of HCQ prophylaxis against COVID-19 but they still took the prophylaxis. Reasons could be bold statements made in media and panic among the healthcare workers of acquiring the infection as they were directly exposed to COVID-19 positive patients. We observed that 34. 8% participants who took the prophylaxis developed at least one side effect which was similar to *HyPE* study.[10] The *Boulware et al* study also showed similar results.[11] It was also appalling that a drug with some serious side effects was taken by HCWs without prior investigations, supervision and follow-up. Almost all HCWs who took HCQ prophylaxis were aware of the side effects; but only 17.2% of them did baseline investigation like ECG. Also, there were no separate guidelines for elderly people or those with co-morbid conditions.

CONCLUSION

It was premature to recommend HCQ for prophylaxis of COVID-19 in absence of successful in vivo and clinical trials. Systematic review on this novel topic

demonstrated that hydroxychloroquine prophylaxis increased adverse events without reducing the risks of developing COVID-19, hospitalization, or mortality.[12,13] Furthermore, on 17 June 2020, WHO announced that the hydroxychloroquine (HCQ) arm of the Solidarity Trial to find an effective COVID-19 treatment was being stopped.[14]

Since there is no definitive drug therapy; vaccination, social distancing and personal hygiene seems to be the only proven preventative measures. Additionally, the pandemic panic caused misuse of HCQ by common people leading to shortage of the drug to other genuine patients and health care workers.

LIMITATIONS

This study included only 250 healthcare workers, more studies involving large number of HCWs are needed. The study population was restricted to doctors and nurses.

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