

AWARENESS AND KNOWLEDGE OF HYDROXYCHLOROQUINE AMONG PUBLIC

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ABSTRACT:

The aim of the study is to create awareness and knowledge of Hydroxychloroquine among the general public. Hydroxychloroquine (CHQ) was first recognized as a potent antimalarial agent. It was used for the prevention and treatment of acute attacks of malaria. Hydroxychloroquine is FDA-approved to prevent and treat malaria and also to treat the autoimmune disease, rheumatoid arthritis and lupus. Quine advanced forms are chloroquine and hydroxychloroquine used for antimalarial treatment. Hydroxychloroquine has immunomodulatory effects and it may cause retinopathy. A survey was conducted among the general public during the pandemic COVID 19. The study setting was an online setting with a varied population. The sample size included 100 people and predominantly were South Indian population. The sampling method was a simple randomized method. Both the gender were included and the population was above 18 years. From the study, we come to know that 55% of people are aware of the drug hydroxychloroquine. 47% of the people were aware of the side effects of the drug hydroxychloroquine. 92% of people had knowledge about India exploring drugs to foreign nations. 91% of people agreed that hydroxychloroquine along with common antibiotics can be used for the treatment of COVID 19. 43% of people are aware of the contraindications of the drug. Hydroxychloroquine and chloroquine can cause abnormal heart rhythms such as QT interval prolongation and rapid heart rate called ventricular tachycardia. Patients with other health issues are at higher risk when receiving these medications. Hence from the study we can conclude that the study population has only minimum knowledge and awareness about the drug hydroxychloroquine. This study helps in improving the knowledge and creating awareness among the people.

KEYWORDS: Antimalarial; COVID 19; Contraindications; Hydroxychloroquine; Side effects; Ventricular Tachycardia

INTRODUCTION:

Hydroxychloroquine (CHQ) was first recognized as a potent antimalarial agent. It was used for the prevention and treatment of acute attacks of malaria (Agostini et al. 2018). Hydroxychloroquine is FDA-approved to prevent and treat malaria and also to treat the autoimmune disease, rheumatoid arthritis and lupus. Quine advanced forms are chloroquine and hydroxychloroquine used for antimalarial treatment (Ben-Zvi et al. 2012). Hydroxychloroquine has immunomodulatory effects and it may cause retinopathy. The structurally related hydroxychloroquine is less toxic than chloroquine owing to a lower tissue accumulation in melanin rich areas. Hydroxychloroquine was recognized as one of the Disease Modifying Antirheumatic Drugs (DMARDs) (Karie et al. 2008). It suppresses inflammatory responses and retards disease progression (Schiff and Whelton 2000). Hydroxychloroquine use in patients with rheumatoid

arthritis shows a significantly lower risk of incident CKD compared to non users (Wu et al. 2018). Hydroxychloroquine has been suggested as effective treatments for coronavirus Disease 2019 (COVID-19) based on both anti-inflammatory and antiviral effects (Fantini et al. 2020). Hydroxychloroquine are weak bases that are known to elevate the pH of acidic intracellular organelles, such as endosomes/lysosomes, essential for membrane fusion (Menon et al. 2018, Karthiga, Rajeshkumar, and Annadurai 2018).

Hydroxychloroquine as prophylaxis for COVID19 Contact's in India (Rathi et al. 2020). The Indian Council of Medical Research and Ministry Of Health and Family welfare has recommended chemoprophylaxis with Hydroxychloroquine for asymptomatic cases. Hydroxychloroquine clinical safety profile is better than that of chloroquine during a long term use and a higher dose daily (Melles and Marmor 2016) as it has only fewer concerns about drug-drug interactions (Yao et al. 2020). Chinese experts recommend that the patients diagnosed as mild, moderate and severe causes of COVID 19 pneumonia without any contraindications to be treated with 500 mg chloroquine twice a day for ten days (Sun et al. 2020). A small study reported faster nasopharyngeal viral clearance for treatment of diagnosed cases and no data of clinical improvement were given (Million et al. 2020) . Hydroxychloroquine treatment has been associated with viral load and disappearance in COVID 19 patients and its effects were reinforced by azithromycin (Lover n.d.). The FDA approved antibiotic azithromycin may benefit with COVID-19. A new antiviral remdesivir as well as chloroquine were found to be effective in preventing replication of this virus (Lai et al. 2020, Ezhilarasan et al. 2017a). The coronavirus isolated was evaluated regarding its sensitivity to already used drugs (Rolain, Colson, and Raoult 2007). The side effects of Hydroxychloroquine are deadly (Jaffe 2020). Exposure to the pathogenic microorganisms which are harboured in blood, body fluids and other potentially infectious material can lead to occupationally acquired infections among healthcare workers. Personal Protective equipment (PPE) plays a critical role in healthcare providers and understanding the levels of barrier protection (Swetha and Brundha 2017). There are many ways to improve and update the knowledge and skills of handling medical emergencies, such as continuing education programs with hands-on workshops followed by assessment of practical skills (Alshahrani et al. 2017). Infections can be transmitted through several ways, including direct or indirect contact with blood, oral fluids, droplet splatter, aerosols, etc (Pratha, Ashwatha Pratha, and Geetha 2017). siRNA mediated proinflammatory gene or miRNA targeting can be a useful approach in combating chronic respiratory inflammatory conditions and thus providing sustained drug delivery, reduced therapeutic dose, and improved patient compliance (Dua et al. 2019, Rajeshkumar et al. 2018b).

Due to the desperate situation during this pandemic it is important to create awareness among the public. This research will create awareness among the public about the adverse effects of Hydroxychloroquine. The aim of the study is to create awareness and knowledge of Hydroxychloroquine among the general public.

MATERIAL AND METHODS:

A survey was conducted among the general public during the pandemic COVID 19. The study setting was through online portals with a varied population. The sample size included 100 people and predominantly were South Indian population. The sampling method was a simple randomized method. Both the gender were included and the population above 18 years. Previous studies were done among healthcare workers through a questionnaire based survey among 1562 students and professionals in Mumbai (Modi et al. 2020). A review was also done about the cautions how hydroxychloroquine would be harmful treating Covid 19 patients in 42 COPD (Kapoor and Kapoor n.d.). The statistical software used was IBM-SPSS. Correlation and association type of analysis was used. Primary data collection was by asking and receiving

responses directly through online portals. P values less than 0.05 were considered as statistically significant.

RESULTS AND DISCUSSION:

Hydroxychloroquine for the treatment of COVID 19 is still at clinical trial. Reinforcing old drugs for COVID 19 is good because the knowledge on safety profile, side effects, posology and drug interaction are well known. 22% of the participants were of the age group between 18-30; 41% of them were between 30-50 and 37% of them were between 50 and above (Fig. 1). From the study we came to know that 53% of people are aware of the drug hydroxychloroquine and 47% of them are aware of the drug. The correlation between age group and awareness of the drug hydroxychloroquine shows that 18-30 age group participants had more awareness than the other age group participants (Fig. 2). Hydroxychloroquine is used for the treatment of malaria, rheumatoid arthritis and lupus erythematosus (Mvumbi n.d.). The drug is available in oral tablet form and sold in the brand name plaquenil. Plaquenil is indicated as the prophylaxis of malaria in geographic areas. 47% of the people were aware of the side effects of the drug hydroxychloroquine and 53% of them were not aware of the side effects. The correlation between age group and side effects of the drug hydroxychloroquine shows that the participants of age group 30-50 were more aware than other age groups (Fig. 3). The common side effects were nausea, diarrhea, headache, dizziness, stomach cramps, etc (Sharma et al. 2019). Some side effects can be serious like blurred vision, hearing loss, angioedema, bronchospasm, hypoglycemia (Anitha and Ashwini 2017) and also severe mental health effects (Ashwini, Ezhilarasan, and Anitha 2017). A retrospective study with 103 patients was demonstrated on hydroxychloroquine induced side effects on dermatology patients (Tétu et al. 2018). 92% of people had knowledge about India exporting drugs to foreign nations and 8% of them had no idea about it (Fig. 4). During this pandemic, the potential emergency of global drug supply is being a challenge for the drug hydroxychloroquine (Zhang and Zhong 2020). 43% of people are aware of the contraindications of the drug and 57% were not aware of the contraindications (Fig. 5). The contraindications are in case of retinopathy, hypersensitivity, renal and hepatic failure, (Ezhilarasan 2018, Ezhilarasan et al. 2017b) glucose-6 phosphate dehydrogenase deficiency and neuromuscular disease (Ezhilarasan, Sokal, and Najimi 2018). A study on safe usage of hydroxychloroquine was conducted (Blomquist and Chundru 2002). Hydroxychloroquine is contraindicated in patients with known hypersensitivity to aminoquinoline compounds. 91% of people agreed that hydroxychloroquine along with common antibiotics (Rajeshkumar et al. 2018) can be used for the treatment of COVID 19 and 9% of them were not aware about Hydroxychloroquine used for COVID 19 treatment (Fig. 6). Hydroxychloroquine potent drug for treatment of SARS-CoV-2 (COVID 19) (Pastick et al. 2020). 43% of the people were aware that the precautions should be taken when given to pregnant women and 57% of them were not aware about the precautions in case of pregnancy in taking the drug (Fig. 7). This drug should be avoided in pregnancy as this medication can be passed through the mother's bloodstream to the baby and may cause teratogenic effects. This drug should be used during pregnancy only in case potential benefit justifies the potential risk. Ascosta performed a study about the risk and benefit analysis before prescribing in case of pregnancy (Yao et al. 2016). 76% of people did not know that hydroxychloroquine may interact negatively with other drugs and 24% knew that Hydroxychloroquine may interact negatively with other drugs (Fig. 8). Drugs like amiodarone, methadone, tricyclic antidepressants and some other antiemetic may result in malignant arrhythmia (Surapaneni, Vishnu Priya, and Mallika 2015, Mehta et al. 2019). A research was conducted to guide the use of hydroxychloroquine for clinical use (Nicola et al. 2020). Taking hydroxychloroquine with other malarial drugs like mefloquine may increase the risk of seizures. Hydroxychloroquine can make anti seizure drugs such as phenytoin, carbamazepine less effective. The drugs like digoxin, insulin or other diabetes drugs and immunosuppressant drugs like methotrexate, cyclosporine may increase the side effects. 21% of people were aware that hydroxychloroquine may cause ventricular arrhythmia, 63% were not aware and 16% of them were not sure of it (Fig. 9).

Hydroxychloroquine was identified as a potential cause for renal (Gheena and Ezhilarasan 2019) and cardiac toxicity (Ruiz-Iratorza et al. 2007; Paramasivam, Vijayashree Priyadharsini, and Raghunandhakumar 2020). Hydroxychloroquine and chloroquine can cause abnormal heart rhythms such as QT interval prolongation and rapid heart rate called ventricular tachycardia (Paramasivam, Vijayashree Priyadharsini, and Raghunandhakumar 2020). These conditions may increase when combined with other drugs including antibiotics azithromycin. Patients with other health issues are at higher risk when receiving these medications (Perumalsamy et al. 2018). Other than its antiviral activity, Hydroxychloroquine is a safe and successful anti-inflammatory agent that has been used extensively in autoimmune diseases and can significantly decrease the production of cytokines and, in particular, pro-inflammatory factors (Lakshmi et al. 2015). Hydroxychloroquine is less toxic than chloroquine, prolonged and overdose usage may cause poisoning.

CONCLUSION:

This study states the importance of creating awareness to the public about hydroxychloroquine during this pandemic situation. As one can misuse the drugs using outpatients prescription. It is important to create awareness and communicate to the public about the risks associated with the use of hydroxychloroquine. This drug is also being used as a prophylaxis among health care workers, so the knowledge about this drug plays an important role. Hence from the study we can conclude that the study population has only minimum knowledge and awareness about the drug hydroxychloroquine. This study helps in improving the knowledge and creating awareness among the people.

AUTHOR CONTRIBUTIONS:

Idea was conceptualized by Lakshminarayanan Arivarasu, Statistics and manuscript was drafted by A.Sankari Niveditha.

CONFLICT OF INTERESTS:

The authors declare no conflict of interest.

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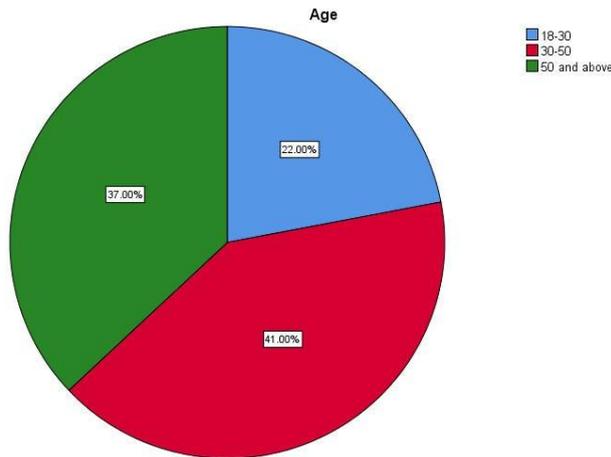


Figure 1: The pie chart represents the age group of the respondents. 22% of them were of the age group between 18-30 (blue); 41% of them were between 30-50 (red) and 37% of them were between 50 and above (green).

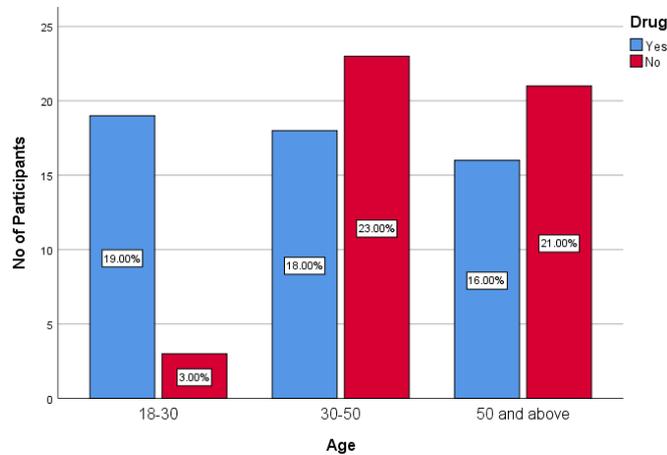


Figure 2: The bar chart showing the correlation between age group and awareness of the drug hydroxychloroquine. X axis represents the age group of participants and Y axis represents frequencies of participants. Yes-53% (blue) and No-47% (red). 18-30 age group had more awareness compared to other age groups. Chi square test was done, p value-0.002 ($p < 0.05$) hence it is statistically significant.

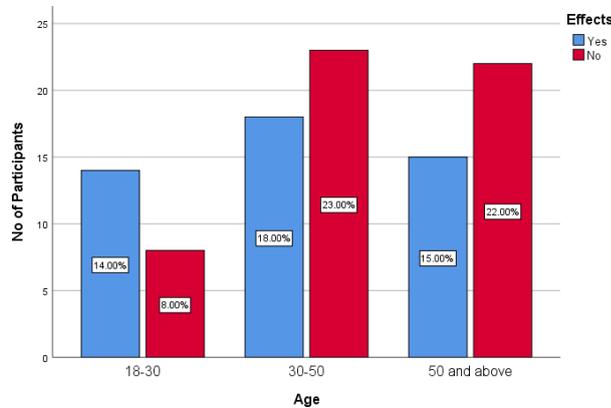


Figure 3: The bar chart showing the correlation between age group and side effects of the drug hydroxychloroquine. X axis represents the age group of participants and Y axis represents frequencies of participants. Yes-47% (blue) and No-53% (red). Participants of age group 30-50 were more aware of the side effects of the drug compared to other age groups. Chi square test is done, p value-0.200 ($p > 0.05$) hence it is statistically not significant.

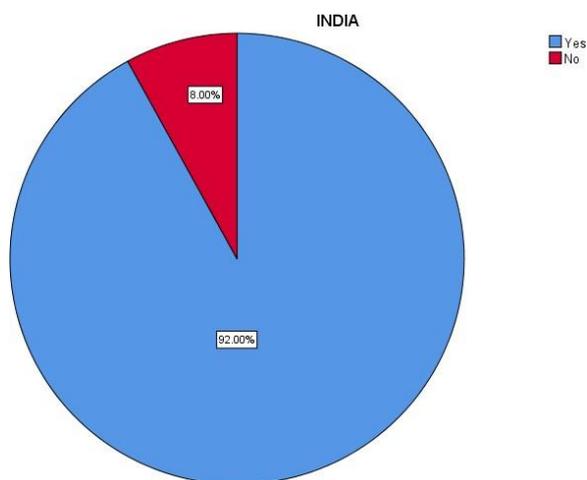


Figure 4: The pie chart represents the knowledge of the participants about India exporting drugs to foreign countries. 92% of the participants knew about India's exportation of the drug to foreign countries (blue) and 8% of the participants were not aware of it (red).

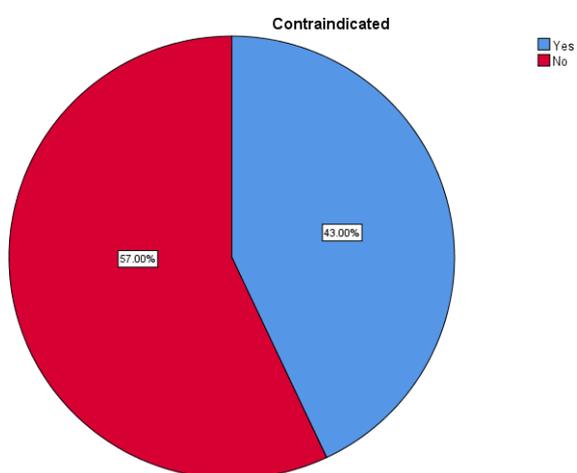


Figure 5: The pie chart showing the knowledge of the participants about the contraindications of the drug hydroxychloroquine. Only 43% of the participants were aware of the contraindications of the drug (blue) and 57% of the participants were not aware of the contraindications of the drug (red).

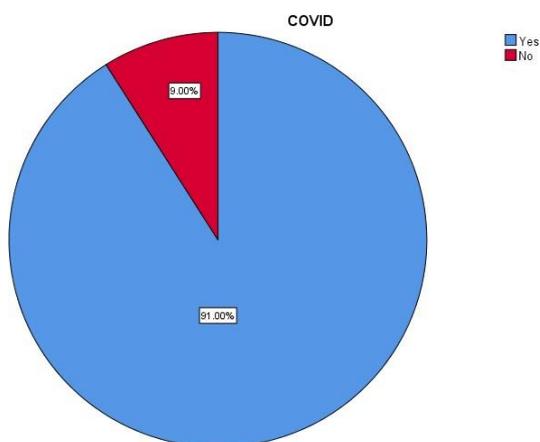


Figure 6: The pie chart represents knowledge of the participants of the usage of hydroxychloroquine along with common antibiotics for the treatment of COVID-19 . 91% of the participants were aware of the usage of the drug in COVID-19 treatment (blue) and 9% of the participants were not aware of it (red).

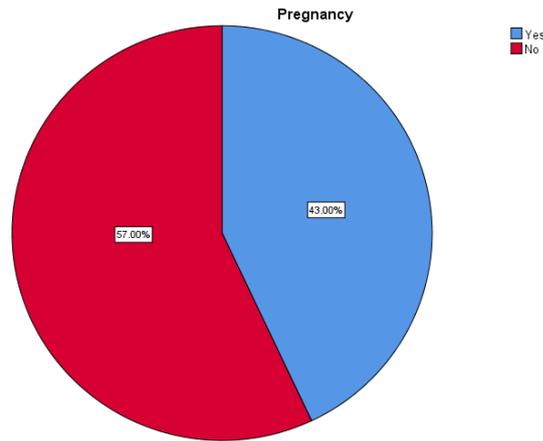


Figure 7: The pie chart represents the knowledge of the participants that precautions should be taken in usage of the drug in case of pregnancy. 43% of the people were aware about the precautions that should be taken when given to pregnant women (blue) and 57% of them were not aware about the precautions in case of pregnancy in taking the drug (red).

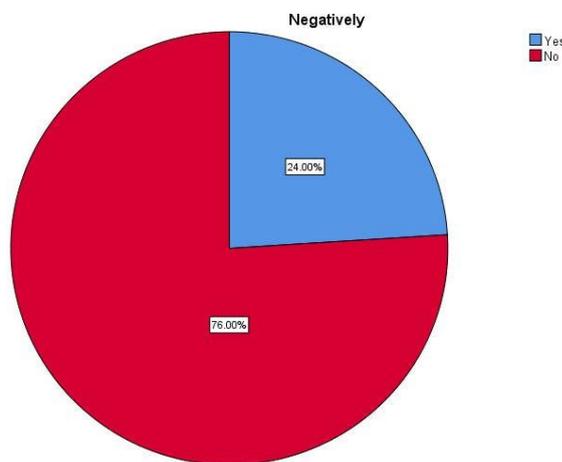


Figure 8: The pie chart represents the knowledge of the participants about the negative interaction of hydroxychloroquine with other drugs. 76% of the participants did not know that hydroxychloroquine may interact negatively with other drugs (red) and 24% of them knew that Hydroxychloroquine may interact negatively with other drugs (blue).

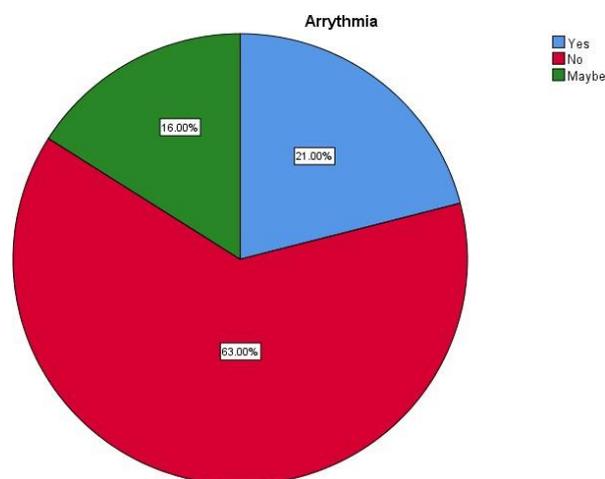


Figure 9: The pie chart represents the awareness among participants that hydroxychloroquine may cause ventricular arrhythmia. 21% of participants were aware that hydroxychloroquine may cause ventricular arrhythmia (blue) and 63% were not aware (red) and 16% of them were not sure of it (green).