

ORIGINAL ARTICLE

 OPEN ACCESS

Received: 05.07.2022

Accepted: 28.07.2022

Published: 22.12.2022

COVID 19 Vaccination Coverage among Village Residents — A Cross Sectional Study

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Citation: Pradeep TS, Abhishek SV, Vivek J, Anandu S, Sindhu S, Ramees MS. COVID 19 Vaccination Coverage among Village Residents — A Cross Sectional Study. J Clin Biomed Sci 2022; 12(4): 134-141. <https://doi.org/10.58739/jcbs/v12i4.109>

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Funding: None

Competing Interests: None

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Published By Sri Devaraj Urs Academy of Higher Education, Kolar, Karnataka

ISSN

Print: 2231-4180

Electronic: 2319-2453



Abstract

Background: The global Pandemic of COVID-19 has impacted all countries of the world. Spreading of infectious agent accomplished either by specific protection by a potent vaccine or active disease contraction. A safe and effective vaccine would help to protect all age groups. **Objectives:** To assess the COVID-19 vaccination coverage among adults (18+ years) and to enumerate the factors influencing the COVID-19 Vaccination coverage among them. **Methods and Material:** All persons above 18 year of age who were eligible for COVID vaccine immunization were included in the survey. Houses locked during survey were excluded. Data were collected by an interview method using a pretested semi structured questionnaire which lasted less than 5 minutes. **Results:** 22882(61%) were the age group of 18-45yrs, 19457(51.9%) were males, 28457(75.9%) belonged to nuclear family, 85.5% had received at least one dose and 22.2% had received both the dose of COVID 19 vaccination, those who were graduates are 1.17 times chance of getting vaccinated, when compared to postgraduates. Among the occupational groups, compared to semi-professionals, professionals have 3.4 times chance of getting vaccinated. Those participants surveyed having COPD has 70% less chance of getting vaccinated compared to those who don't having COPD. By using binary logistic regression, compare to nuclear family Joint family had 70% more chance and graduates had 64% of more chance of getting 2 dose of COVID vaccination. Professionals, Home makers, Diabetics, Hypertensive patients had higher odds of getting 2 dose of COVID vaccination. **Conclusions:** The effort to vaccinate hundreds of millions of people against COVID has been possible. There are very few reasons why the vaccination coverage could have been sluggish but most of them are easily addressable.

Keywords: COVID 19; Vaccination; Villages

Introduction

The recent global Pandemic of COVID-19 has been aggressive and has impacted all countries of the world.¹ Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) initially discovered in Wuhan had lesser fatality rate however morbidity was of great concern.² As there were no any control measures, all countries attempted to halt the disease from spreading by enforcing lockdowns and quarantines, community-wide use of facemasks at all hours, social distancing measures with travel ban. During pandemics, control of the disease spread can be achieved by Herd immunity when large population within a community becomes immune to a specific disease and the infectious agent subsequently stops spreading which could be accomplished either by specific protection by a potent vaccine or active disease contraction.³ A safe and effective vaccine would help to protect all age groups and those who were said to be high risk groups like Elderly and those with co-morbidities.⁴ the biggest hurdle faced because of this delay is poor acceptance or refusal of vaccines despite availability of vaccination services. The impact of vaccine hesitancy has become of greater concern, particularly with the use of social media to propagate misinformation. This had led to the realization that the success of immunization programs cannot be taken for granted. Thomson et al have summarized factors influencing vaccine uptake as the ability of individuals to reach recommended vaccines, to afford vaccination both financial and non-financial costs, the degree to which individuals have knowledge of the need of recommended vaccines and the degree to which individuals accept, question or refuse vaccination.⁵ The ultimate goal of the vaccination process is to immunize the population against SARS-CoV-2 which depends on the success of vaccine development and production and distribution very much depends on timely and efficient dispensing which requires extraordinary advance planning and preparation at different levels.⁶ So with this background, the study was started with the objective to find out the coverage of Covid Vaccine among village residents of Kolar.

Objectives

To assess the COVID-19 vaccination coverage among adults (18+ years) and to enumerate the factors influencing the COVID-19 Vaccination coverage among them.

Material and Methods

The present study was a cross sectional study carried out from June 2021 to January 2022 for 6 months carried out at SDUMC, SDUAHER, Kolar. COVID vaccination survey has been conducted in the P.H.C's of Kolar District in Karnataka. There are 6 taluks in Kolar district. Multistage Cluster Sampling was used to recruit the PHCs from Kolar District. They are Kolar, Mulbagal, Bangarapet, KGF, Malur

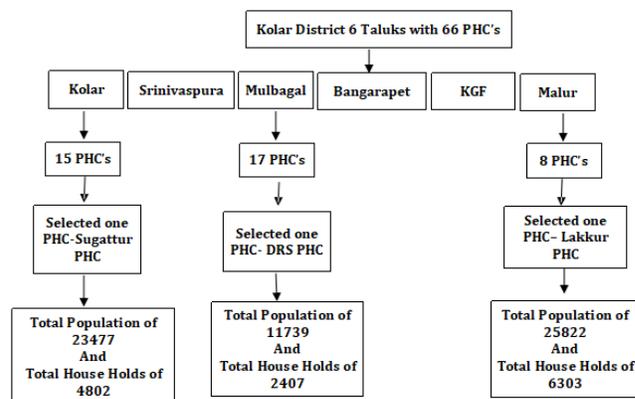


Fig 1. Selection of PHCs from Kolar District

and Srinivasapura. Out of these 6 taluks, 3 taluks selected randomly. Selected taluks were Kolar, Mulbagal and Malur. From each taluks one PHC were randomly selected Kolar taluk consists of total 15 PHC's and Out of which one PHC was selected-Sugattur PHC was selected. Malur taluk consists of total 8 PHC's and Out of which Lakkur PHC was selected. Mulbagal taluk consists of total 17 PHC's and Out of which one PHC was selected which is Devarayasamudra PHC.

Sugatur PHC belonging to the Kolar Taluk contains 27 villages, total population of 23477 and households of 4802. Lakkur PHC belonging to the Malur Taluk contains 32 villages with a total population of 25822 and households of 6303. DRS PHC belonging to the Mulbagal Taluk contains 13 villages, 11739 populations and total household of 2407. All households in selected clusters were part of survey. Sample size calculated based on vaccination coverage in the state which was 7.25% have received two doses of Covid vaccine.⁶ With p as 7.25% and error (d) of 1% the sample size calculated using Open epi software sample size was 3000. With cluster effect of 3, final sample size will be 9000. House to house survey was done in the villages under PHC's. The survey team comprised of 5 Post Graduates from the Department of Community Medicine. Each day about 2 or 3 villages were covered by the survey team with the help of pre tested semi structured questionnaire. All those who informed that they have been vaccinated were cross-checked with the vaccination certificate and then they were grouped in to First Dose group comprising people who were vaccinated with only one dose and in to Second Dose group comprising people who were fully vaccinated with both the doses. All persons above 18 year of age who were eligible for COVID vaccine immunization were included in the survey. Houses locked during survey were excluded. Head of the family or to the most senior member available in the family on the survey day were interviewed. Data were collected by an interview method using a pretested semi structured questionnaire which lasted less than 5 minutes. All data entered in Microsoft office

excel sheet, analysed using SPSS v 22(IBM Corp). Descriptive statistics applied. To check for association between factors Chi-square applied with level of significance defined as *p* value less than 0.05. Binary logistic regression analysis was done to estimate the odds ratio. The study was started after obtaining IEC clearance.

Results

Among the population surveyed, 22882 (61%) were the age group of 18-45yrs, 8071 (21.5%) were among 45-59yrs and 6537 (17.4%) belonged to elderly age group. 19457(51.9%) were males, 28457 (75.9%) of the population were of nuclear family type. In terms of education, only 13698(36.5%) of the population had finished high school and 10090 (26.9%) were illiterates. About 12783 (34.1%) of the population belongs to clerical class of work and 10495 (28%) were homemakers. According to BG Prasad classification, 15251 (40.7%) of population belongs to Class II of Socioeconomic status. 1506 (4%) has Diabetes Mellitus and 1586 (4.2%) are having hypertension. 32056(85.5 %) had received 1st dose of vaccine and only 8336 (22.2%) had received 2nd dose of vaccination Compared to the age group >60 years, age group 44-59 years has 71.9% more chance of Getting 1st dose of vaccination. Comparing between age group 18-44yrs and age group >60 years it is 51.9%. Compared to a joint family, nuclear family has 90.5% more chance in getting vaccinated.

By using binary logistic regression we found that, those who were graduates are 1.17 times chance of getting vaccinated, when compare to post graduates. Among the occupational groups, compared to semi-professionals, professionals have 3.4 times chance of getting vaccinated. Those participants surveyed having COPD has 70% less chance of getting vaccinated compared to those who don't having COPD. By using binary logistic regression, compare to nuclear family Joint family had 70% more chance and graduates had 64% of more chance of getting 2 dose of COVID vaccination. Professionals, Home makers, Diabetics, Hypertensive patients had higher odds of getting 2 dose of COVID vaccination.

Discussion

The present study was a cross-sectional study carried out for a period of 10 months among village residents of Kolar district regarding COVID 19 vaccine coverage and compliance. Three PHC were selected and all villages under PHC were part of the study. Among the population surveyed, 61% were the age group of 18-45yrs, 51.9% were males, 75.9% belonged to nuclear family, and 36.5% of the population had finished high school. About 12783 (34.1%) of the population belongs to clerical class of work and 10495 (28%) were homemakers. According to Modified BG Prasad classification 40.7% of population belongs to Class II of Socioeconomic status, 4% has Diabetes Mellitus and 4.2% are having hypertension.

Table 1. Distribution of study participants according to Clinico-socio-demographic profile

| | | Frequency | Percentage | |
|--------------------|--|-----------|------------|-------|
| Age | 18-45 years | 22882 | 61.0 | |
| | 45-59 years | 8071 | 21.5 | |
| | >60 years | 6537 | 17.4 | |
| Gender | Male | 19457 | 51.9 | |
| | Female | 18033 | 48.1 | |
| Type of family | Nuclear | 28457 | 75.9 | |
| | Joint | 9033 | 24.1 | |
| | Illiterate | 10090 | 26.9 | |
| Education | Primary school | 735 | 2.0 | |
| | Middle school | 3889 | 10.4 | |
| | High school | 13698 | 36.5 | |
| | Diploma | 2935 | 7.8 | |
| | Graduate | 3693 | 9.9 | |
| Occupation | Professional | 2450 | 6.5 | |
| | Unemployed | 1663 | 4.4 | |
| | Unskilled | 4039 | 10.8 | |
| | Skilled | 3334 | 8.9 | |
| | Clerical | 12783 | 34.1 | |
| | Semi-professional | 19 | 0.1 | |
| | Professional | 2235 | 6.0 | |
| | Homemaker | 10495 | 28.0 | |
| | Students | 2922 | 7.8 | |
| | Socioeconomic status (modified BG Prasad's classification) | Class i | 5575 | 14.9 |
| Class ii | | 15251 | 40.7 | |
| Class iii | | 9008 | 24.0 | |
| Class iv | | 5377 | 14.3 | |
| Class v | | 2279 | 6.1 | |
| Comorbidities | Diabetes Mellitus | Yes | 1506 | 4.0 |
| | | No | 35984 | 96.0 |
| Comorbidities | Hypertension | Yes | 1586 | 4.2 |
| | | No | 35904 | 95.8 |
| Comorbidities | Stroke | Yes | 10 | 0.01 |
| | | No | 37480 | 99.99 |
| Comorbidities | COPD | Yes | 63 | 0.2 |
| | | No | 37427 | 99.8 |
| Comorbidities | Asthma | Yes | 84 | 0.2 |
| | | No | 37406 | 99.8 |
| Vaccination status | 1 st dose | No | 5434 | 14.5 |
| | | Yes | 32056 | 85.5 |
| | 2 nd dose | No | 29154 | 77.8 |
| | Yes | 8336 | 22.2 | |

Table 2. Association of various socio demographic factors and co morbidities with the vaccination status

| Factors | | Vaccination Status | | | |
|---------------------------------------|------------------------|--------------------|--------------|--------------|-------------|
| | | 1st Dose | | 2nd Dose | |
| | | No | Yes | No | Yes |
| Age In Years | 18-45 Years | 3640(15.9%) | 19242(84.1%) | 20389(89.1%) | 2493(10.9%) |
| | 45-59 Years | 1010(12.5%) | 7061(87.5%) | 5602(69.4%) | 2469(30.6%) |
| | >60 Years | 784(12%) | 5753(88%) | 3163(48.4%) | 3374(51.6%) |
| | p value | 0.001 | | 0.001 | |
| Gender | Male | 2643(13.6%) | 16814(86.4%) | 15065(77.4%) | 4392(22.6%) |
| | Female | 2791(15.5%) | 15242(84.5%) | 14089(78.1%) | 3944(21.9%) |
| | p value | 0.001 | | 0.05 | |
| Education | Illiterate | 1577(15.6%) | 8513(84.4%) | 6745(66.8%) | 3345(33.2%) |
| | Primary School | 112(15.2%) | 623(84.8%) | 527(71.7%) | 208(28.3%) |
| | Middle School | 567(14.6%) | 3322(85.4%) | 3168(81.5%) | 721(18.5%) |
| | High School | 1804(13.2%) | 11894(86.8%) | 11184(81.6%) | 2514(18.4%) |
| | Diploma / Intermediate | 548(18.7%) | 2387(81.3%) | 2577(87.8%) | 358(12.2%) |
| | Graduate | 480(13.0%) | 3213(87.0%) | 3092(83.7%) | 601(16.3%) |
| | Professional | 346(14.1%) | 2104(85.9%) | 1861(76.0%) | 589(24.0%) |
| | p value | 0.003 | | 0.003 | |
| | Unemployed | 396(23.8%) | 1267(76.2%) | 1056(63.5%) | 607(36.5%) |
| | Unskilled | 659(16.3%) | 3380(83.7%) | 3302(81.8%) | 737(18.2%) |
| Occupation | Skilled | 458(13.7%) | 2876(86.3%) | 2763(82.9%) | 571(17.1%) |
| | Clerical | 1487(11.6%) | 11296(88.4%) | 9405(73.6%) | 3378(26.4%) |
| | Semi-professional | 5(26.3%) | 14(73.7%) | 16(84.2%) | 3(15.8%) |
| | Professional | 155(6.9%) | 2080(93.1%) | 1631(73.0%) | 604(27.0%) |
| | Homemaker | 1634(15.6%) | 8861(84.4%) | 8367(79.7%) | 2128(20.3%) |
| | Students | 640(21.9%) | 2282(78.1%) | 2614(89.5%) | 308(10.5%) |
| | p value | 0.032 | | 0.003 | |
| | Nuclear | 4200(14.8%) | 24257(85.2%) | 22607(79.4%) | 5850(20.6%) |
| | Joint | 1234(13.7%) | 7799(86.3%) | 6547(72.5%) | 2486(27.5%) |
| | p value | 0.005 | | 0.005 | |
| Modified B.G.Prasad's Classification | Class I | 632(11.3%) | 4943(88.7%) | 4233(75.9%) | 1342(24.1%) |
| | Class II | 2085(13.7%) | 13166(86.3%) | 11739(77.0%) | 3512(23.0%) |
| | Class III | 1330(14.8%) | 7678(85.2%) | 7133(79.2%) | 1875(20.8%) |
| | Class IV | 898(16.7%) | 4479(83.3%) | 4401(81.8%) | 976(18.2%) |
| | Class V | 489(21.5%) | 1790(78.5%) | 1648(72.3%) | 631(27.7%) |
| | p value | 0.005 | | 0.001 | |
| Diabetes Mellitus | Yes | 176(11.7%) | 1330(88.3%) | 856(56.8%) | 650(43.2%) |
| | No | 5258(14.6%) | 30726(85.4%) | 28298(78.6%) | 7686(21.4%) |
| | p value | 0.001 | | 0.001 | |
| Hypertension | Yes | 174(11.0%) | 1412(89.0%) | 827(52.1%) | 759(47.9%) |
| | No | 5260(14.7%) | 30644(85.3%) | 28327(78.9%) | 7577(21.1%) |
| | p value | 0.001 | | 0.001 | |
| Stroke | Yes | 2(20.0%) | 8(80.0%) | 5(50.0%) | 5(50.0%) |
| | No | 5432(14.5%) | 32048(85.5%) | 29149(77.8%) | 8331(22.2%) |
| | p value | 0.4 | | 0.05 | |
| Chronic obstructive pulmonary disease | Yes | 23(36.5%) | 40(63.5%) | 47(74.6%) | 16(25.4%) |
| | No | 5411(14.5%) | 32016(85.5%) | 29107(77.8%) | 8320(22.2%) |
| | p value | 0.001 | | 0.3 | |
| Asthma | Yes | 12(14.3%) | 72(85.7%) | 49(58.3%) | 35(41.7%) |
| | No | 5422(14.5%) | 31984(85.5%) | 29105(77.8%) | 8301(22.2%) |
| | p value | 0.5 | | 0.001 | |

Table 3. Logistic regression model showing the relationship between various variable with the COVID vaccination status (1st dose)

| Variables | B | S.E. | df | P value | Adjusted Odds ratio | 95% C.I.for EXP(B) | |
|--------------------|--------|------|----|---------|---------------------|--------------------|-------|
| | | | | | | Lower | Upper |
| Above 60 | | | 2 | .000 | | | |
| 18-45 years | -.655 | .054 | 1 | .000 | .519 | .467 | .577 |
| 45-59 years | -.330 | .055 | 1 | .000 | .719 | .645 | .801 |
| Male | -.011 | .039 | 1 | .770 | .989 | .916 | 1.067 |
| Nuclear | -.100 | .036 | 1 | .005 | .905 | .844 | .970 |
| Professionals | | | 6 | .000 | | | |
| Illiterates | -.346 | .080 | 1 | .000 | .708 | .605 | .827 |
| Primary schools | -.267 | .126 | 1 | .035 | .766 | .598 | .981 |
| Middle schools | -.156 | .085 | 1 | .065 | .855 | .725 | 1.010 |
| High schools | -.009 | .074 | 1 | .900 | .991 | .858 | 1.144 |
| Diploma | -.294 | .080 | 1 | .000 | .745 | .637 | .872 |
| Graduates | .160 | .077 | 1 | .038 | 1.174 | 1.009 | 1.366 |
| Students | | | 7 | .000 | | | |
| Unemployed | -.310 | .088 | 1 | .000 | .734 | .618 | .871 |
| Unskilled | .373 | .074 | 1 | .000 | 1.453 | 1.257 | 1.679 |
| Skilled | .564 | .076 | 1 | .000 | 1.758 | 1.514 | 2.042 |
| Clerical | .671 | .064 | 1 | .000 | 1.956 | 1.725 | 2.218 |
| Semi-professionals | -.160 | .527 | 1 | .761 | .852 | .303 | 2.394 |
| Professionals | 1.225 | .096 | 1 | .000 | 3.405 | 2.823 | 4.107 |
| Home maker | .411 | .066 | 1 | .000 | 1.508 | 1.325 | 1.717 |
| DM | .103 | .091 | 1 | .255 | 1.109 | .928 | 1.324 |
| HTN | .109 | .092 | 1 | .232 | 1.116 | .932 | 1.335 |
| STROKE | -.571 | .831 | 1 | .492 | .565 | .111 | 2.879 |
| COPD | -1.182 | .275 | 1 | .000 | .307 | .179 | .525 |
| ASTHMA | -.377 | .316 | 1 | .232 | .686 | .369 | 1.274 |

Table 4. Logistic regression model showing the relationship between various variable with the vaccination status (Second dose)

| Variable | Binary logistic regression | | | | | | | |
|-----------------------|----------------------------|------|----------|----|---------|---------------|--------------------|-------|
| | B | S.E. | Wald | df | P value | Adjusted Odds | 95% C.I.for EXP(B) | |
| | | | | | | | Lower | Upper |
| Male | -.074 | .035 | 4.358 | 1 | .037 | .929 | .867 | .996 |
| Nuclear Professionals | -.351 | .031 | 129.935 | 1 | .000 | .704 | .663 | .748 |
| Illiterates | -.843 | .071 | 184.354 | 6 | .000 | .430 | .375 | .495 |
| Primary schools | -.621 | .111 | 140.913 | 1 | .000 | .537 | .432 | .668 |
| Middle schools | -.970 | .078 | 31.354 | 1 | .000 | .379 | .325 | .442 |
| High schools | -.662 | .065 | 154.956 | 1 | .000 | .516 | .454 | .586 |
| Diploma | -.808 | .081 | 102.707 | 1 | .000 | .446 | .380 | .523 |
| Graduates | -.444 | .068 | 42.214 | 1 | .000 | .642 | .561 | .734 |
| Students | | | 284.609 | 7 | .000 | | | |
| Unemployed | -.009 | .093 | .010 | 1 | .922 | .991 | .826 | 1.190 |
| Unskilled | -.080 | .085 | .869 | 1 | .351 | .924 | .781 | 1.092 |
| Skilled | .518 | .085 | 36.877 | 1 | .000 | 1.679 | 1.420 | 1.985 |
| Clerical | .435 | .075 | 33.912 | 1 | .000 | 1.545 | 1.335 | 1.789 |
| Semi-professionals | .685 | .638 | 1.152 | 1 | .283 | 1.983 | .568 | 6.922 |
| Professionals | .917 | .079 | 133.672 | 1 | .000 | 2.501 | 2.141 | 2.921 |
| Home maker | .316 | .077 | 16.817 | 1 | .000 | 1.372 | 1.180 | 1.596 |
| DM | .192 | .064 | 9.039 | 1 | .003 | 1.212 | 1.069 | 1.373 |
| HTN | .371 | .061 | 36.676 | 1 | .000 | 1.450 | 1.286 | 1.635 |
| Stroke | -.157 | .689 | .052 | 1 | .819 | .854 | .221 | 3.298 |
| COPD | -.654 | .309 | 4.489 | 1 | .034 | .520 | .284 | .952 |
| Asthma | .612 | .239 | 6.574 | 1 | .010 | 1.844 | 1.155 | 2.944 |
| Age above 60 years | | | 3116.527 | 2 | .000 | | | |
| 18-44 years | -2.320 | .043 | 2977.438 | 1 | .000 | .098 | .090 | .107 |
| 45-59 years | -.897 | .040 | 507.311 | 1 | .000 | .408 | .377 | .441 |

Our study revealed that 85.5 % had received at least one dose of COVID 19 vaccination and only 22.2% had received two doses of Vaccination. Clericals, graduates , Home makers had higher odds of taking First Dose COVID Vaccine and Professionals , Home makers, Diabetics and People in Joint family had higher odds of getting vaccinated.

India had mass experience in conducting vaccination campaigns. COVID-19 adult vaccination movement started with a positive note all over the world. In India, although safety concerns on COVID-19 vaccines were raised, a large number of health workers who underwent vaccination at the initial stages welcomed the programme and dispelled rumours through social and electronic media and various other ways. In the present study, Out of various reasons elicited, most common reason for not taking vaccine was fear of side effects followed by shortage of vaccines faced during initial days of vaccination. Few also expressed Primary health centre being far from the residence, there was difficulty to travel during lock down. Even after extensive health education activities and propaganda regarding advantages of vaccine by the medical officers, there was a huge gap between those receiving First dose and those with second. Laxity of not taking the COVID pandemic wave seriously and claiming that there is no COVID once the wave comes down needs to be addressed early as this also is one the prime reasons for not taking second dose in the present study. With COVID 19 showing incessant trends and newer variants emerging, this pandemic is not still under control.⁷ Vaccinations can be only effective tool for today as many new drugs emerge to be lifesaving and fade away very quickly without a huge impact. Adult vaccination drive in India is new but India has a huge and immense experience in vaccinating infants and have lot of success story in regards to immunization.⁸ Vaccine hesitancy and resistance have shown to be consistently high across the globe during the COVID-19 pandemic. The factors are categorized into demographic, socio-economic, attainment of educational qualification, and then the actual rational reasons for vaccine denial.⁹ By choosing to be vaccinated, an individual protects not only them self but also protects their community by preventing disease transmission. At initial stages of mass vaccination among adults, the actual vaccination levels tend to fall short of epidemiological goals due to vaccine hesitancy and refusal in spite of regular information, education and information.^{10,11} Vaccination programs in India has had tremendous impact in past and on world, has taught lessons how well to plan for dynamic actions and adopt to the changing strategies of vaccination initiative with epidemiological shift and changing trends.¹² Compared to any health intervention, better immunization coverage is always preferred and best possible way to break the chain of transmission in matters of communicable disease as better coverage means better herd immunity.

Strengths of the present study being its first of type survey regarding COVID 19 adult vaccination coverage in India. Limitations of the study being vaccination process being an ongoing phenomenon, it's never static. Health education sessions by local leaders, medical officers can break the shackles of vaccine hesitancy and with no vaccine shortage in last few months, the coverage might had improved. In spite of all these, present study shows that vaccine coverage was lagging behind the national standards.⁸ Recommendations from the study would be few. Efforts must be made in contemplation to address vaccine hesitancy through local tailored health propaganda especially at village level, regular well planned and phased surveillance based on National guidelines, promoting different types of COVID vaccines with better safety and efficacy can be very skilful and opportune act against this diabolical pandemic.

Conclusion

Fortunately, the effort to vaccinate hundreds of millions of people against COVID while the pandemic was still on going in India was possible and factors responsible for not vaccinating were very few like vaccine hesitancy, speed of vaccination drive along with very question the need of COVID vaccination itself as COVID waves started to wean. Shortages of the Covid vaccines were next big hurdle, however it was addressed efficiently later. All these factors could have led to poor compliance and poor coverage of vaccination among villagers in the present study. Propaganda and strategies should be in place by the government and healthcare sector in identifying vaccine-resistant individuals to avoid the spread of misinformation among the public.

Recommendation

The study would be few. Efforts must be made in contemplation to address vaccine hesitancy through local tailored health propaganda especially at village level, regular well planned and phased surveillance based on National guidelines, promoting different types of COVID vaccines with better safety and efficacy can be very skilful and opportune act against this diabolical pandemic.

Limitation of the study

The study being vaccination process being an ongoing phenomenon, it's never static. Health education sessions by local leaders, medical officers can break the shackles of vaccine hesitancy and with no vaccine shortage in last few months, the coverage might had improved. In spite of all these, present study shows that vaccine coverage was lagging behind the national standards and not incorporating the Booster dose of COVID 19 vaccination.

Relevance of the study

Strengths of the present study being its first of type survey regarding COVID 19 adult vaccination coverage in India.

Acknowledgement

Honourable DC Dr Selvamani IAS (KOLAR), Dr Jagadish DHO Ministry of Health and Family Welfare Kolar.

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