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*RESEARCH ARTICLE*

# "A PROSPECTIVE STUDY ON AWARENESS OF COVID-19 VACCINATION AMONG PATIENTS WITH DIFFERENT TYPES OF CANCER"

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## Abstract

**Background:** Cancer is the major leading cause of death. People with cancer haveweakened immune system hence they are more vulnerable to Covid-19 infection. Vaccination is the best way to prevent Covid-19 infection and it mainly prevents community transmission.Covishield, Covaxin& Sputnik-V are type of vaccines available to produce immunity againstSARS-COV-2virus.

**Objective:** Toassesstheawarenessofcovid-19vaccinationamongpatientswithdifferenttypes ofcancer.

**Method:** It was prospective, Observational study conducted in Total 200 cancer patients from single tertiary care hospital were asked to complete a questionnaire designed to assess their knowledge about the vaccine, their readiness to be vaccinated and the determinants of their decision. Based onType of cancer the study population was categorized. The study population was interviewedafter obtaining Informed Consent Form for information about their awareness on Covid-19Vaccination.

**Results and Discussion:** In our study population, it was observed that Femalepatients (67%) were higher than Male patients (33%). A total of 86% patients considered themselvesmore vulnerable to Covid-19 than the general population. Television, radio, Newspaper were major sources of information about the vaccine. A total of 65% of the patients were ready to be vaccinated and 9% refused the vaccine.The main reason for refusal was incompatibility with patients disease or treatment.

**Conclusion:** In the present study it is observed most of the patients have accepted theCovid-19vaccination.Inthisstudymorethanhalfwerevaccinatedwithongoingactive cancertreatment.TheVulnerabilitytoCovid-19infectioninthesepatientsarealsopredominance.



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## Introduction:-

An outbreak of pneumonia cases in Wuhan, China, in the end of 2019 was brought on by a new coronavirus known as coronavirus disease 2019 (COVID-19) or severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus spread quickly around the world, prompting the WHO to first designate it a pandemic on March 30, 2020, and then a public health emergency of international concern on January 30, 2020 [1].Since then, it has been challenging to manage cancer patients during the pandemic [2].

As the 2020 comes to an end, there was a hope in fighting against the coronavirus disease 2019 (COVID-19) pandemic with promising safety and efficacy results from clinical trials using several vaccines that target the COVID-19 causative virus, SARS-CoV-2 [3-7].The FDA has thus authorized BNT162b2 and mRNA-1273, two lipid nanoparticle-formulated, nucleoside-modified mRNA-based vaccines that encode the prefusion spike glycoprotein of SARS-CoV-2, as well as Ad26.COV2.S, a replication-incompetent adenovirus type 26 (Ad26) vector vaccine that encodes a stabilized variant of the SARS-CoV-2 spike protein. In accordance with multiple studies, those who have cancer are at higher risk for COVID-19 complications and mortality, with 30-day mortality in hospitalized patients with COVID-19 and cancer being 30% compared to 21% in people without cancer[8–15]

Despite the fact that we lack fully representative data, we advise cancer patients to get the COVID-19 vaccine as soon as it is made available because the advantages almost certainly outweigh the risks. COVID-19 vaccine recommendations have been made by the National Comprehensive Cancer Network (NCCN) COVID-19 immunization advisory committee. Therefore, it is critical that cancer patients receive vaccinations as soon as possible given the ongoing increase in community transmission of the disease. Cancer patients, who are more susceptible than the general population to fatal COVID-19 disease, might benefit greatly from a vaccine.

Unlike live or attenuated virus vaccines, mRNA vaccines work through the conversion of the viral RNA into a spike protein generated by the virus [16]. It leads to an immunological response.

In countries with high incomes, mRNA vaccines (BNT162b2 and mRNA-1273) and adenovirus-vectored vaccines (ChAdOx1 nCoV19, Ad26.COV2-S, and Gam-COVID Vac) are the most widely used COVID-19 vaccines. Both the vaccines induce endogenous expression of modified versions of the viral spike protein to elicit immune responses.

## Objectives:-

Toassesstheirknowledgeaboutthevaccination, to determinetheirreadinesstobevaccinated, toassessthedeterminantsoftheirdecision, toestimateabouttypeofvaccineandnumberofdosesofvaccination in differenttypes ofcancer.

## Methodology:-

**Study Design:**

Our study was a prospective hospital observational study conducted at the Department of Oncology, Malla Reddy Cancer Hospital and Research Institute,a tertiary hospital inHyderabad, Telangana, India. The study enrolled 200 consecutive patients, they were interviewed between August 2021 and February 2022.Patients included in the study were adults (>18yrs) with Breast,Gynecologicalcancer,GIcancers,Lung,Osteosarcoma, non-Hodgkin's Lymphoma& Leukemia receiving chemotherapy, Immunotherapy. Patientnotexpectedtocooperate andcomplywiththetreatment were excluded. Every patient consent for his/her agreement to participate in the survey were taken. After accepting, the patient signed a form in English, declaring informed consent. The interview was conducted privately and without interruption from staff or family members. All questions were carefully read to the participants by the investigator. The questionnaire was completed orally by the patients.

**Statistical Analysis:**

Statistical analysis was performed using the SPSS software package (version 22.0, SPSS Inc.). All continuous variables were expressed as mean + standard deviation (SD), and categorical variables were expressed as frequency and percentage. The chi-square test was used for one-tailed analysis of categorical variables.

**Study Period**

Six months (August 2021 - February 2022)

**Sample Size:**
200 Patients.

**Study Criteria:**
**Inclusion Criteria:**
Patientonchemotherapy
Patientonradiotherapy
Patients greaterthan18yearsofage
Patientswithdifferenttypesofcancers(Breast,Gynecologicalcancer,GIcancers,Lung,Osteosarcoma, non-Hodgkin's Lymphoma& Leukemia).

Patients ofboththegenders

**Exclusion Criteria:**
Patients withlessthan18yearsofage.

Patientsnotexpectedtocooperate andcomplywiththetreatment.

Patientswhodevelopedseverereactionswithvaccination.

**Questionnaire**
The questionnaire consisted of three major parts. The first concerned the patients and their disease and included one question related to their performance status. The second part was dedicated to assessing patients sources of information on the COVID-19 vaccine. The first question was multiple choice with the following options: "friends, family members or neighbors," "television, radio or newspapers," "social media" and "scientific journals." The following question was identical to the previous one, but patients chose the major source of information from the above-mentioned options. In the third part, patients were asked if they feel more vulnerable to a COVID-19 infection than the general population due to their malignancy and was a dichotomous (yes/no) question. In the last and most important part, patients answered questions about their readiness to receive an approved COVID-19 vaccine, provided that it becomes available, by choosing one of three options: (yes, no or wait). For each option, patients selected one or more answers from a multiple-choice question asking the reason behind their decision:

- If the answer was yes, patients were directed to choose between one or more of the following choices: "yes because I need the vaccine more than other people do," "yes, similarly to other people according to international recommendations," "yes because I am fully confident that the vaccine is effective," "yes because I think it is well tolerated" and "yes because it does not interfere with my treatment."
- If patients preferred to wait, they were directed to choose between one or more of the following choices: "II wait because more data are needed to verify the vaccine's efficacy," "I wait because more data are needed to verify the vaccine's tolerance" and "I wait because I need to know more about the consequences of the vaccine in other patients who have the same illness as mine."

## Results:-

A total of 200 patients were approached for recruitment in the study between August 2021 andFebruary 2022. All patients who were approached consented to participate in the survey. Among all patients included, there were twice more females (67%) than males (33%). The most common malignancy in this sample was breast cancer (25%) followed by Cervical cancer (15%) and Lung cancer (10.5%). Out of 100%, majority of patients received chemotherapy (67%) followed by combination therapy of chemotherapy and radiation therapy (24.5%) and radiation therapy (8.5%). Analysis showed that most of the patients included learned about the vaccine from television (32.5), friends &family (31.5%) and newspapers (20.5%) followed by social media (15.5%). A majority of patients were ready to be vaccinated (65.5%) and 9% refused to get the vaccine. The remainder (25%) hesitated and stated that they would wait and rethink before making their decision. 85.5% of the population who self-evaluated as more vulnerable to COVID-19 and 14.5% of the population that did not consider themselves more vulnerable. Out of 100% ,38.5% received Covisheld,22.0% received Covaxin,5% received Sputnik-V.

**Table 1:-** Distribution of patients based on Gender.

| **Sex** | Frequency | Percent |
|---|---|---|
| Male | 66 | 33.0 |
| Female | 134 | 67.0 |

| | | |
|---|---|---|
| Total | 200 | 100.0 |

**Table 2:-** Distribution of Patients based on Type of Cancer.

| **Type of Cancer** | Frequency | Percent |
|---|---|---|
| Ca Anal | 2 | 1.0 |
| Ca Buccal Mucosa | 12 | 6.0 |
| Ca Cervix | 31 | 15.5 |
| Ca Colon | 5 | 2.5 |
| Ca Endometrium | 2 | 1.0 |
| Ca Esophagus | 10 | 5.0 |
| Ca Gallbladder | 3 | 1.5 |
| Ca Hypopharynx | 6 | 3.0 |
| Ca Intestine | 1 | .5 |
| Ca Liver | 1 | .5 |
| Ca Lung | 21 | 10.5 |
| Ca Ovary | 13 | 6.5 |
| Ca Pancreas | 4 | 2.0 |
| Ca Rectum | 3 | 1.5 |
| Ca Renal | 1 | .5 |
| Ca Spleen | 1 | .5 |
| Ca Stomach | 5 | 2.5 |
| Ca Testis | 3 | 1.5 |
| Ca Tongue | 7 | 3.5 |
| Ca Vagina | 2 | 1.0 |
| Ca Vulva | 1 | .5 |
| Glioma | 3 | 1.5 |
| Leukemia | 1 | .5 |
| Lt breast Carcinoma | 17 | 8.5 |
| Non-Hodgkin's Lymphoma | 9 | 4.5 |
| Osteo Sarcoma | 3 | 1.5 |
| Rt Breast Carcinoma | 33 | 16.5 |
| Total | 200 | 100.0 |

**Table 3:-** Distribution of Patients Based on Treatment.

| **TREATMENT** | Frequency | Percent |
|---|---|---|
| Chemotherapy | 134 | 67.0 |
| Chemotherapy & Radiation | 49 | 24.5 |
| Radiation | 17 | 8.5 |
| Total | 200 | 100.0 |

**Table 4:-** Distribution of Patients based on Knowledge about Vaccination.

| **SOURCE OF INFORMATION** | Frequency | Percent |
|---|---|---|
| Friends & Family | 63 | 31.5 |
| News Paper | 41 | 20.5 |
| Social media | 31 | 15.5 |
| TV | 65 | 32.5 |
| Total | 200 | 100.0 |

**Table 5:-** Distribution of Patients based on Decision about vulnerable to Covid-19 infection than general population.

| **DECISION** | Frequency | Percent |
|---|---|---|
| Yes | 171 | 85.5 |
| No | 29 | 14.5 |
| Total | 200 | 100.0 |

**Table 6:-** Distribution of Patients based on Readiness to get Vaccinated.

| **READINESS** | Frequency | Percent |
|---|---|---|
| Yes | 131 | 65.5 |
| No | 18 | 9.0 |
| Wait | 51 | 25.5 |
| Total | 200 | 100.0 |

**Table 7:-** Distribution ofpatients based on Type of Vaccination.

| **TYPE OF VACCINE** | Frequency | Percent |
|---|---|---|
| Covaxin | 44 | 22.0 |
| Covishield | 77 | 38.5 |
| Sputnik | 10 | 5.0 |
| None | 69 | 34.5 |
| Total | 200 | 100.0 |

**Table 8:-** Distribution ofCovishield vaccination among different types of cancer patients.

| **COVISHIELD[1/2]** | Frequency | Percent |
|---|---|---|
| Not Vaccinated | 123 | 61.5 |
| 1st Dose | 37 | 18.5 |
| 2nd Dose | 40 | 20.0 |
| Total | 200 | 100.0 |

**Table 9:-** DistributionofCovaxin vaccination among different types of cancer patients.

| **COVAXIN[1/2]** | Frequency | Percent |
|---|---|---|
| Not Vaccinated | 156 | 78.0 |
| 1st Dose | 15 | 7.5 |
| 2nd Dose | 29 | 14.5 |
| Total | 200 | 100.0 |

**Table 10:-** Distribution ofSputnik-V vaccination among different types of cancer patients.

| **SPUTNIK[1/2]** | Frequency | Percent |
|---|---|---|
| Not Vaccinated | 190 | 95.0 |
| 1st Dose | 6 | 3.0 |
| 2nd Dose | 4 | 2.0 |
| Total | 200 | 100.0 |

## Discussion:-

Vaccine hesitancy in the time of COVID-19 has been identified as a major concern limiting healthcare professionals and authorities in their efforts to contain the pandemic [17,18].In the present study,higher proportion of patients had an intention to vaccinate (65.5%), of whom only 18 patients (9% of all patients) refused the vaccine outright.

The current study assessed patients' readiness to receive the vaccine against COVID-19 in aIndian population. To our knowledge, this is the survey of its kind conducted on patients with cancer. This is important to highlight due to the vulnerability of this population along with its exclusion from the phase III clinical trials that lead to the EUA for COVID-19 vaccines. Since patients with cancer have specific physical and psychological health considerations, the results cannot be compared with those of other studies conducted in the general population. Other limitations of this study restrain its results to our population and prevent generalized conclusions. The survey was conducted in a single tertiary hospital where patients with cancer was addressed and not restrictedto the general population. Almost a year after declaring COVID-19 a pandemic, we have sufficient data to support the vulnerability of patients with cancer to the virus and the high risk of severe complications, especially in those with hematologic malignancies. Therefore, these patients must be included in the group of people with high-risk conditions and prioritized for vaccination [19].

## Conclusion:-

A survey was conducted in an oncology ward among patients with different malignancies; 200 patients were asked to complete a questionnaire assessing their knowledge about the vaccine, their acceptance of vaccination and the reasons for their decision. A total of 66% opted for vaccination, reason for vaccination was that patients with cancer felt they needed the vaccine more than other patient because of their health condition. Only 34% refused the vaccination.Although the acceptance rate of the COVID-19 vaccine was satisfactory in our center, better communication of information is needed to decrease vaccine hesitancy

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