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Research Paper

Knowledge, Attitude and Practice Towards Covid-19 Vaccine Among The Common People Of West Bengal: A Cross Sectional Study

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ABSTRACT: *The purpose of this cross-sectional study is to examine the knowledge, attitude, and practice (KAP) of the general public in West Bengal, India, with reference to the COVID-19 vaccination. Understanding the elements influencing vaccination acceptability and uptake is essential given the pandemic's ongoing impact on public health. The study focused on participants' knowledge and comprehension of the COVID-19 vaccine, their opinions of its safety and efficacy, and their actual immunization behavior. It used a structured questionnaire to gather data from a representative sample of the population.*

KEYWORDS: *COVID-19 vaccine, common people, West Bengal, knowledge, attitude, practice, cross-sectional study, vaccine acceptance, vaccination behavior, pandemic, vaccine safety, vaccine efficacy.*

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I. INTRODUCTION

Coronaviruses are a broad category of viruses that may cause anything from the common cold to more serious conditions like Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) [1]. 2019 saw the first discovery of the New Corona Virus (Covid-19) in Wuhan, China. This brand-new corona virus has never been discovered in humans [1]. The WHO declared the covid-19 a pandemic illness on March 11, 2020[2].

As of June 12th, 2021, 3800767 fatalities, 176049319 confirmed cases, and 159626807 recovered cases worldwide [3] have been reported from 220 nations. On January 27, 2020, Kerala announced the first Covid-19 case in India [4]. As of June 11, 2021[5], India now has the most instances in Asia and the second-highest number of cases globally. India has 1080690 active cases and 367081 domestic fatalities as of June 12, 2021 [6].

The development of the coronavirus disease 2019 (Covid-19), caused by the spread of the unknown severe acute respiratory syndrome coronavirus 2 (SARS-COV-2), has devastated the worldwide economy and faced unprecedented healthcare issues. [7].

Due to the lockdown, billions of people over the world have remained at home, and as of March 2021, close to 3 million people have died[7]. During the Covid-19 epidemic, emerging psychiatric condition and mental health were ranked as the ninth most popular study topic[8]. Hundreds of thousands of people have died and millions have been rendered unable to move around the world as a result of the Covid-19 pandemic , which is having a tremendously negative economic and social impact on the entire world. This impact is primarily being caused by the involvement of healthcare professionals, doctors, researchers, and students in training and educational programmes, research, and low- and middle-income countries [9].

The impact of COVID-19 on the Indian economy has been described as a "unusual shock," which has caused the GDP growth rate to be lower (4.2% growth) than in prior years[10]. Anxiety, despair, stress, sleeplessness, and terror were the main mental health issues mentioned in the emergency scenario. Youngsters, the elderly, frontline workers, and individuals who already have mental health issues were all vulnerable in this scenario [11].

According to a mixed-method study, during the lockdowns in India, 83% of respondents had trouble accessing healthcare, 17% had trouble getting medicine, 59% had lost money, 38% had lost their jobs, 28% had reduced their consumption of fruits and vegetables, and the population with economic disease, particularly the poor, marginalised, and rural population, had trouble accessing health services and were mostly negatively

impacted socially and financially.

Vaccination is one of the most significant COVID-19 protection. Currently, 16 vaccines (Oxford-AstraZeneca, Pfizer-BioNTech, Sputnik V, Sinopharm-BBIBP, Moderna, Johnson & Johnson, CoronavVac, Covaxin, Sputnik Light, Convidecia, Sinopharm-WIBP, EpiVacCorona, RBD-Dimer, CoviVac, QazCovid-in, Minhai) against covid-19 have been approved for use worldwide, 13]

Moreover, despite covid-19's supremacy in terms of health, it has a significant economic burden that cannot be quantified, and this disparate effect has prompted pharmaceutical firms to expedite the development of a vaccine [14]. Several vaccinations to guard against the Covid-19 infectious disease were licenced in December 2020, allowing numerous nations to begin their immunisation programmes globally [15].

India began administering the Covid-19 vaccine on January 16, 2021[16]. India has finished 2496000304 doses as of June 11th, 2021, including the first and second doses of the vaccinations that are currently licenced [16]. The second dosage of covisheild was first advised to be given 4-6 weeks after the first dose, while the second dose of covaxin was initially advised to be administered 28 days after the first dose [17]. The time between doses was further increased to 4–8 weeks for Covisheild and 4-6 weeks for Covaxin [17]. Yet the second Covisheild dosage might be given after a short interval.

6–8 weeks after the first dosage, which the government revealed in April [17]. The National Technical Advisory Group on Immunization (NTAGI) of the government made a recommendation about the dosage interval for Covisheild on May 13th, stating that the time between two doses should be 12–16 weeks, while the panel did not alter the interval for Covaxin[17].

Nevertheless, given the high number of instances of reported reinfection, people are still uncertain regarding the immunity, effectiveness, and durability of safe defence against COVID-19 [14].

Vaccinations have been an effective method of illness prevention for many years[14]. Yet, vaccination scepticism and carelessness are major worldwide concerns. It is provocative of the WHO to include this uncertainty among the top 10 health hazards for 2019[14].

The three concepts of head (knowledge), heart (attitude), and hand (practise) that Shulman developed in 2005 and in his book Pedagogical content knowledge (PCK) are the foundation of the current study[18]. The KAP analysis of the covid-19 vaccine in the general public will provide them with a comprehension learning experience that will enable them to learn about and practise using the corona vaccination [18].

In India, very few research analysing Covid-19 using KAP have been published. Regrettably, there haven't been enough research done in West Bengal to determine how vaccination views among the populace there are. We are aware of no evaluation of previously published material on the population of West Bengal.

An earlier KAP research with 1342 participants was conducted in Mumbai, West India. According to the age distribution established in this research, there is a link between sociodemographic traits or factors and awareness of the Covid-19 vaccination According to the gender distribution, 64.4% of women have no awareness compared to the male population, while 25.5% of people between the ages of 18 and 40 are aware that the covid-19 vaccination is available, compared to 43.6% of those between the ages of 40 and 60. According to the study's findings, the availability of the COVID-19 vaccination differs significantly by gender and age [19].

Another cross-sectional research demonstrates that there is a considerable variation in data on how Covid-19 is experienced according to educational status as a demographic variable[20] and recognised severities of symptoms.

According to a study on the acceptance of the Covid-19 vaccine in Northern Italy, vaccine hesitancy towards the vaccination is related to the socio-demographic characteristics of the respondents. The study's findings also show that this hesitancy is higher in the age group of 35 to 44 years as compared to people 55 and older [21].

Males make up 51.4% of respondents in an online cross-sectional survey about public awareness and acceptance of the Covid-19 vaccine, which also found a significant difference in knowledge based on educational status, with respondents with higher levels of education (95.5%) having more knowledge than those with school-level education [22]. Another study examines the connections between these three variables and understands how socio-demographic factors relate to them [18].

As a consequence, certain findings from the numerous studies show a substantial difference between socio-demographic variables and knowledge & attitude of the Covid-19 vaccination. Despite the level of knowledge about the COVID-19 vaccination accounts for some notable differences.

On the other hand, other studies indicate that a considerable gender variable mismatch is being caused by knowledge and attitude towards the covid-19 vaccination.

Our research is being undertaken with the goals to evaluate the current level of knowledge about Covid-19 vaccination and their opinion about vaccine living in West Bengal based on the earlier studies concerning KAP analysis of Covid-19 vaccine. We are doing this study to see if there are any significant differences in West Bengal's residents' knowledge, attitudes, and practices about the Covid-19 immunization.

A) Problem Statement:

Many studies have shown that the KAP score varies depending on the age group. Hence, it is impossible to determine from previous research studies whether or not the same tendencies apply to the population of our study. In a similar vein, other researches have shown that the KAP score varies depending on factors such as gender, socioeconomic position, educational background, religion, family income, and marital status. So, it is impossible to determine from previous research studies whether or not the tendency is followed in the case of our investigation.

B) Research Questions: -

1. Is KAP score influenced by age?
2. Is KAP score influenced by gender?
3. Is KAP score influenced by educational status?
4. Is KAP score influenced by religion?
5. Is KAP score influenced by monthly family income according to their socio-economic status?
6. Is KAP score influenced by marital status?
7. Is KAP score influenced by area of residence?

II. RESEARCH OBJECTIVES

A. Broad Objectives:

O To find out how KAP score is influenced by different socio-demographic factors.

B. Specific Objectives:

1. To find out how KAP score is influenced by age.
2. To find out how KAP score is influenced by gender.
3. To find out how KAP score is influenced by educational status.
4. To find out how KAP score is influenced by religion
5. To find out how KAP score is influenced by monthly family income according to their socio-economic status.
6. To find out how KAP score is influenced by marital status.
7. To find out how KAP score is influenced by area of residence.

III. LITERATURE REVIEW:

Review of knowledge and attitude linked to Covid-19 immunization. We will now examine the association between KAP scores and other socio-demographic statuses of individuals from a variety of study publications to determine whether or not there is a major gap in the relationship.

A community-based cross-sectional survey on the KAP analysis in relation to the Covid-19 vaccine in Bangladesh in February 2021. A semi-structured, self-reported questionnaire was used to conduct the survey of 1658 general population members. As a consequence, the research convinced roughly 25% of participants that Bangladeshi Covid-19 vaccinations are safe. Just 60% of people will get the immunization, and around 2/3 will tell their relatives and friends to do the same. Sixty-one percent of participants said that health personnel should be vaccinated first on a priority basis, while just over half agreed that everyone should be immunized. About 90% of respondents thought the Covid-19 vaccine used in Bangladesh would have negative effects, and 95% agreed that vaccinations should be provided without charge in that country. According to this research, females had considerably higher perceptions of the Covid-19 vaccination than males did (56.9% vs. 47.9%), with a p value of 0.004[2].

On February 10, 2021, a cross-sectional web-based research was conducted on the adoption of the Covid-19 immunization and its contributing elements among a community in the Middle East. In all, 1144 people signed up for the research. In which 27.5% of subjects had a medium risk of Covid-19 and 30.4% had a high risk. Concerns about the use of vaccinations and a lack of faith in them were the key factors in the participants' vaccination rejection or reluctance. This investigation also shown that not. The research also shown that, at a p-value of 0.01, the probabilities of not knowing someone who is infected with COVID-19 are much lower than those who do. Being single, with a p-value of 0.03, was the sole significant predictor of poor protective behaviors in the case of marital status [14].

An analysis of knowledge, attitudes, and behavior about Covid-19 higher education students on April 14, 2021 in India. Using a practical sample technique, participants were chosen for this research from 22 different Indian states' worth of higher education institutions. Self-administered, closed-ended Google forms were used to

gather the data. According to the study's findings, 65.5% of students had a high degree of understanding regarding the illness. It was notable that 66.7% of them demonstrated preferable actions to minimize COVID-19, and 71.0% of them had a good attitude regarding COVID-19. The results of this research, with a p-value of 0.038, demonstrate a significant difference between marital status and Covid-19 knowledge and attitude [18].

A cross-sectional investigation of the impact of KAP analysis on the acceptability of the COVID-19 vaccine in Mumbai, West India, in the month of March 2021. 1342 people were given an observational questionnaire to complete (above18 years). The study's findings revealed that the majority (64.5%) of young people between the ages of 18 and 40 were not aware that the COVID-19 vaccination was available. 56.4% of those between the ages of 40 and 60 were next, while 46.2% of people over 60 did not know that vaccines were available. In addition, this research discovered that participant vaccination resistance (2.2% only) was lower than that identified in studies conducted in Brazil (12%), Australia (12%), Malaysia (15%), and Saudi Arabia (16%). According to the study's findings, there is a substantial difference between male and female KAP scores for the Covid-19 vaccination, with a p-value of 0.152 indicating that the difference is numerical but not statistically significant [19].

Six nations throughout the world conducted a worldwide cross-sectional research on the KAP analysis of the Covid-19 vaccination. Almost 26852 respondents were selected from the 6 nations in the year 2020. The survey's findings include details on public awareness during the early stages of the COVID-19 outbreak. The majority of respondents expressed at least some degree of concern about the potential for a widespread epidemic. The findings also shed light on people' sources of information about COVID-19 and their degree of familiarity with the virus and its spread. The majority of responders (81.5%) strongly agreed that being vaccinated is necessary to protect individuals against COVID-19. 52.1% of respondents who were polled said they would refuse to get the Covid-19 vaccine once it was approved because to negative effects. According to the study's findings, there is no statistically significant difference between knowledge score and level of schooling. [20].

On April 13, 2021, a cross-sectional survey was done in Northern Italy to learn more about individuals aged 19 to 70 and their acceptance and reluctance to get the COVID-19 vaccination. 1011 participants were given a structured questionnaire to fill out. The findings showed that 31.1% of respondents expressed reluctance and that 51.2% of respondents said they would be very likely to get the COVID-19 vaccination. The findings show a significant difference between the age factors with a KAP score at a p-value of 0.002[21].

An online cross-sectional poll was done in the first stage of the immunization push in India in the year 2021 to determine public knowledge of and acceptance of the Covid-19 vaccine. In India, 358 participants who took part in an online questionnaire-based survey participated in the study. Almost all of the study's participants saw the findings. 97.7% were aware that the first round of vaccinations began on January 16, 2021. The Indian vaccine candidate, the attribute of voluntary/non-mandatory participation in the vaccination campaign, and the free-of-cost availability-provisions of the vaccinations in India, however, were unknown to one-third of the respondents. Roughly a quarter of the participants (22.9%) were unaware that the immunization regimen required a second injection to be given four weeks after the first dose. The research also revealed that there is no statistically or numerically significant difference in knowledge score according to the gender variable. [22].

WHO training materials for the identification, prevention, responses, and control of Covid-19 have been produced and subsequently pilot tested based on a cross-sectional web-based research that included 8000 individuals in Iran and was released on March 30, 2020. According to the study's findings, the majority of the general people understood a fair amount about disease: 56.2% knew about the disease's transmission routes and 46.5% knew about the disease's features and its risk categories. When it came to covid-19, the majority of participants (60.8%) had a moderate attitude, and the majority of participants (71.3%) had a moderate practice. At the p-value (p0.01), the findings also revealed a significant discrepancy between lower levels of education and knowledge and attitude scores [23].

On knowledge, attitude, perception, and practice about Covid-19 in the year of 2020, a systematic review and meta-analysis was conducted. The findings were derived from 19 studies, of which 16 were included in the met analysis and a systematic review. Cross-sectional studies employing online self-administered or telephone-administered questionnaires were included for the systematic reviews. According to the study's findings, general community awareness of Covid-19 transmission was high (91.8%), whereas understanding of Covid-19 systems was high among healthcare professionals (HCWs) and medical students (82.9%). According to attitude study findings, participants avoided crowded areas to avoid the Covid-19 in terms of perception of the Covid-19. Just 46% of the public, according to the report, thinks well of Covid-19. Moreover, HCWs had a higher favorable impression of this than the general public (31.5%) (58.9%) [24].

Using a quick KAP analysis, the Community Opinion on Vaccine Issues and Decision Survey will be conducted in 2021 at Leeds Grand Mosque and Leeds Makkah Mosque in the United Kingdom. In order to conduct a brief knowledge and attitude survey among 151 participants aged between 31 and 50, the study's author employed an internet survey (Google forms). At Leeds Grand Mosque, the average knowledge score is 67%, the average attitude score is 69%, and the average practice score for Leeds Makkah Mosque is 67%. During the

research, they want to further information and solve issues with vaccination uptake and concern.

[25].

Among the young Lebanese population, a research study regarding KAP analysis of Covid-19 was undertaken. This research was based on a cross-sectional survey carried out in Lebanon from April 10 to May 5, 2020. For this investigation, a structured questionnaire was created. Social media was used to spread the survey among the 1861 participants. Just 15.4% of participants in the study were aware of the virus' incubation time, but 77% were able to distinguish between Covid-19 and ordinary influenza in terms of symptoms and the efficacy of the vaccination. The vast majority of participants believed that Covid-19 infection was harmful. The p-value for the substantial link between married participants' knowledge and attitude scores is 0.001, whereas the association between the higher knowledge scores of female participants and the association were not statistically significant. [26].

An online cross-sectional research on the impact of the Covid-19 epidemic on Syrians. Participants in this research had to be at least 16 years old. Of the 706 participants, more than 85% of responses knew the primary signs and symptoms of Covid-19 infection. And 56.2% were aware that the virus may spread from sick to healthy people even when there are no feverish symptoms. The illness knowledge that has been obtained overall is roughly 60%, while attitude and practice have higher scores, coming in at 63.5% and 73.5%, respectively. This research demonstrated that, at a p-value of 0.05, there is no statistically significant difference between genders in terms of knowledge score. Although there is a 0.001[27] difference between education and knowledge, it is not statistically significant.

In the year 2021, a cross-sectional research on KAP analysis towards Covid-19 was carried out in South Korea. The research contained 970 individuals' responses. According to the survey's findings, 93.3% of respondents are now aware that infection spreads by respiratory droplets from infected individuals. On a knowledge item, a high rate of misunderstanding was found. Using a common medical mask, according to around half of the respondents (48.8%), may help avoid covid-19 infection. The study's findings indicate that there is no such significant variation in knowledge score according to income level, with a p-value of 0.61 [28].

A questionnaire-based poll of medical professionals about Covid-19 vaccine in 2020 in France, Belgium's French-speaking regions, and Canada. 2678 healthcare professionals participated in this poll to get their opinion on the potential Covid-19 vaccination. Of those who participated, 79.6% would definitely or probably advise their patients to get the upcoming Covid-19 vaccination. They discovered that the second factor most closely linked to reduced Covid-19 adoption was mistrust in the health ministry's ability to guarantee vaccination safety. The study's findings indicate that there is a significant difference between the age of the participants and their knowledge scores, with p-values of 0.001 [29].

A poll of people's willingness to get the Covid-19 vaccination in the US in 2020, both with and without emerging use authorization. The purpose of this research, which included 788 US adults, was to investigate the association between demographic and psychological determinants of desire to get a future dose of the COVID-19 vaccination as well as willingness to receive such a dose under the EUA. A future COVID-19 vaccination would be received by 30.7% of respondents in the whole sample, 29.2% of whom were probably planning, 18.8% of whom were neutral, 9.4% of whom were probably not intending, and 11.9% of whom would certainly not be planning to do so. When asked whether they would get the vaccination under the EUA, 10.4% said they would, 14.2% said they would, 22.3% said they somewhat would, 14.3% said they somewhat wouldn't, 16.4% said they probably wouldn't, and 22.3% said they certainly wouldn't. Age and attitude score vary significantly, as shown by the research, with a p-value of 0.001[30].

An evaluation of individuals living in New Delhi, India's knowledge, desires, and concerns about the upcoming Covid-19 vaccination will be conducted as part of a cross-sectional research in the year 2021. During July to October 2020, this survey was done among residents of New Delhi, India. 513 individuals from different occupational strata were interviewed using both offline and online methods to gather data. According to the findings, 79.5% of the population stated they would get the vaccination, 8.8% said they would not, and 11.7% had not yet made up their minds. The majority of them (78.8%) thought that the vaccination would be

Accessible to the public next year, but half (50.1%) of them thought there would not be enough for everyone to acquire it. More over 50% said they would be ready to pay for the vaccine, and 72% agreed that high-risk individuals and healthcare personnel should get it first. The findings also revealed a substantial discrepancy with the religious factors, with a KAP score at a P-value of 0.003[31].

Coronavirus illness 2019 vaccine acceptance among medical staff in India: a cross-sectional study conducted during the first round of vaccination. Healthcare professionals (HCPs) were asked to complete a web-based survey as part of an observational, cross-sectional study. A total of 721 HCPs from 26 Indian states were included. According to the survey, 80% of HCPs favour the Covid-19 vaccination. They also depend on others' approval and first testing. Worries regarding vaccine efficacy for illness prevention, worries about unfavorable effects, and low perceptions of disease severity were the three factors that were strongly associated with non-

acceptance. Cross-sectional tabulation and X2 test analysis were used to examine the influence of socio-demographic characteristics, exposure risk, and self-reported knowledge and belief of vaccination acceptance. Statistical significance was defined at a p-value of 0.05.

A cross-sectional research on perceptions of the Covid-19 vaccine, related variables, and awareness in Ethiopia on June 14, 2021. A population-based cross-sectional research with 425 participants was carried out between March 13 and April 10, 2021. The results of this study, which used a structured and self-reported questionnaire, showed that overall knowledge of the Covid-19 vaccine was 40.8%, overall attitudes were 24.2%, and education level was substantially higher than the national average. [33].

Vaccine acceptance in Southwest Asia: a cross-sectional research conducted in Indonesia in 2020. 1359 people participated in an online survey that was performed. As a consequence, 93.8% of respondents said they would be willing to have a vaccination for a 95% effective vaccine, whereas 67.0% said they would accept a vaccination for a 50% effective vaccine. Being a healthcare professional and having a greater risk of Covid-19 infection were adjusted with higher acceptability for a 95% effective vaccination. The study's p-value of 0.046 indicates that there is now a significant difference between gender and knowledge score. [34].

IV. METHODOLOGY

The methodical approach to solving a research issue is known as research methodology. Every research study's methodology, which allows the researcher to work from the moment the issue is first identified through its eventual resolution, is its most crucial component.

A review of the literature reveals that the KAP score varies depending on several socio-demographic factors. It is thus impossible to determine from previous research publications whether or not the same tendencies apply to the population of our study. and how those socio-demographic factors affected KAP score.

Review of knowledge and attitude linked to Covid-19 immunisation. We will now examine the association between KAP scores and other socio-demographic statuses of individuals from a variety of study publications to determine whether or not there is a major gap in the relationship. Several literature reviews have led to distinct research questions. As an example, one concern is whether ageing affects KAP score. On the other side, is the KAP score impacted by other socio-demographic parameters like gender, marital status, educational attainment, and so forth?

The following topics are covered in this chapter: research design, selecting a study population, sampling strategy, how to create a questionnaire, sampling criteria, hypothesis, technique for gathering data, and data analysis.

A) Research Design : -

A research design is a plan for carrying out a study that includes information on the research methodology, study site, sample size, sampling technique, instruments, and methods for gathering and analyzing data to address certain research questions or to test research hypotheses.

- Sharma S.K., 2018

The plan arrangement of a particular study is referred to as the research design. The entire strategy for solving the research challenge is referred to as the research design. In this work, we evaluate the KAP score in relation to several sociodemographic parameters. We performed our research utilizing a self-structured questionnaire that we distributed over social media and printed on paper to the whole population of West Bengal.

Essentially, this study is an analysis. We chose the convenience sample method among West Bengal's population above the age of 18 for the sampling process. Considering that all the quantitative facts are being evaluated. Many statistical methods, including the t-test and one-way ANOVA, will be utilized after the data collection.

B) Delamination/ Determining the Study Population:

According to Polit & Hungler, "Setting is the physical location and condition in which data collection takes place in the study."

The population of West Bengal was the subject of the current investigation. Adults are the accessible population for this investigation (above 18 years old common people). For this group, we have taken into account a variety of socio-demographic characteristics, including age, gender, educational attainment, religion, marital status, and place of residence.

C) Sampling Method:

Our present study is done using the **convenience sampling** procedure.

Sample size: The estimated sample size was 426.

Sampling Criteria: -
Inclusion criteria:

- Above 18 years old common people who are able to access to mobile phone.
- People who are able to read, write and understand English language or Bengali language.
- People who are willing to participate in this study.

D) Way of Designing the Questionnaire:

We have read out several questionnaires on the KAP of Covid-19 and Covid-19 Vaccine from various study papers. As a consequence, we created a self-structured questionnaire and used additional tools. For example, an Excel spreadsheet and SPSS.

Tools Consists of Two Sections: -

SECTION A: Data tool for sociodemographics (age, gender, educational status, religion, monthly family income, marital status and area of residence)

SETION B: A standardized questionnaire with 20 questions was created to assess the West Bengal population's knowledge, attitudes, and practices about the covid-19 immunization. Originally, we attempted to utilize a 5-point Liker scale for questions on attitudes and practices, but after conducting a pilot test, some trivial issues emerged, leading us to adopt a 3-point Liker scale instead, with the options of Agree, Disagree, and Neutral. A three-point Likert scale with the options Yeah, No, and don't know was used for the knowledge questions.

E) Scoring Criteria:

All of the MCQs in Sections B, C, and D had two incorrect answers and were multiple-choice questions. Each perfect accurate response receives a mark of 1, and each incorrect response receives a mark of 0. The proportion of some received was used to classify the degree of knowledge, attitude, and practise. This organised questioning schedule allowed for a maximum score of 20.

F) Ethical Consideration: -

1. The departmental research committee must approve the study question and goals.
2. Getting Kolkata's Director of the NSHM College of Management & Technology's prior approval.
3. The competent authorities shall be consulted on ethical consideration, and subjects' agreement will be sought.
4. The research was disclosed to all responders, and only healthy individuals were chosen for inclusion.

G) Method of Data Collection:

On June 2 through June 28, 2021, we began collecting data utilising a hybrid approach that included both online and offline platforms. During the online procedure, we distributed the questionnaire over WhatsApp, and we also distributed some printed hard copies in our neighbourhood.

H) Hypothesis:

1. (H_1): There is no significant gap existing among people of different age.
2. (H_2) There is no significant gap existing among people of different gender.
3. (H_3): There is no significant gap existing among people of different education qualification.
4. (H_4): There is no significant gap existing among people of different religion.
5. (H_5): There is no significant gap existing among people of different monthly family income according to their socio-economic status.
6. (H_6): There is no significant gap existing among people of different marital status.
7. (H_7) : There is no significant gap existing among people of different area of residence
8.

I) Data Analysis:

SPSS version 21 and Microsoft Excel 2019 were used for the data analysis. The data was edited, sorted, and cleaned using Microsoft Excel. SPSS software was used to import the data after modification.

One-way ANOVA will be used in descriptive statistics to evaluate the first, third, fourth, fifth, sixth, and seventh hypotheses, which claim that there is no discernible difference between individuals of various ages, educational levels, religions, marital statuses, and areas of residence. A significant association between socio-demographic status and KAP for the Covid-19 vaccination will be found using an independent sample t-test to test the second hypothesis, which claims that there is no discernible difference between individuals of various genders. At a 95% confidence level, all statistical tests were deemed significant.

J) Content Validity: -
The prepared instrument along with the objectives and questionnaires was submitted to the research guide. The prepared tool along with a request letter, validation certificate, statement of problem, objectives, assumptions, questionnaire for validation and guideline were submitted to experts.

5) DATA ANALYSIS
Analysis is the process of organizing and synthesizing data in such a way that research question can be answered and hypothesis is tested.

Sharma S. k., 2015

Data analysis is the procedure for analyzing data, techniques for interpreting the results of such procedure, ways of planning the gathering of data to make its analysis easier, more precise or more accurate and all the machinery and results of statistics which apply to analyzing data.

John Turkey, 1961

In order to study and evaluate the research topic, this analysis aims to condense the data into a format that is manageable and easy to read. The data used for this study's analysis and interpretation were gathered using both an online Google form and a printed hard copy, and they pertain to West Bengal's common citizens' knowledge, attitudes, and practices about the COVID-19 vaccination. Based on the study's goals and hypotheses, the obtained data were coded, arranged, tabulated, analysed, and interpreted using descriptive and inferential statistics.
Reliability: In the first phase the reliability is to be calculated for every survey. The Cronbach's Alpha was used. It is a value was which can be estimated by using SPSS. In this research SPSS 21 was used to measure the Cronbach's alpha. It measures the internal consistency which is ranging between 0 and 1. The closer Cronbach's alpha coefficient is to 1, the internal consistency of the items in the scale is considered greater. According to Cortina in the year 1993, when the value of alpha reaches anything more than .70, then it will be considered as a satisfactory number. The Cronbach's Alpha of expectation, perception is calculated the results are given below:

Cronbach's Alpha	N of Items
.740	20

Table 1: Value of Cronbach's Alpha

The value of Cronbach's Alpha of KAP is .740 so it proves that the data is reliable. So, the instruments met the acceptable level of reliability and it is suitable for the study.
A) Testing the level of KAP among people of different age:
HYPOTHESIS - There is no significant gap existing among people of different age.

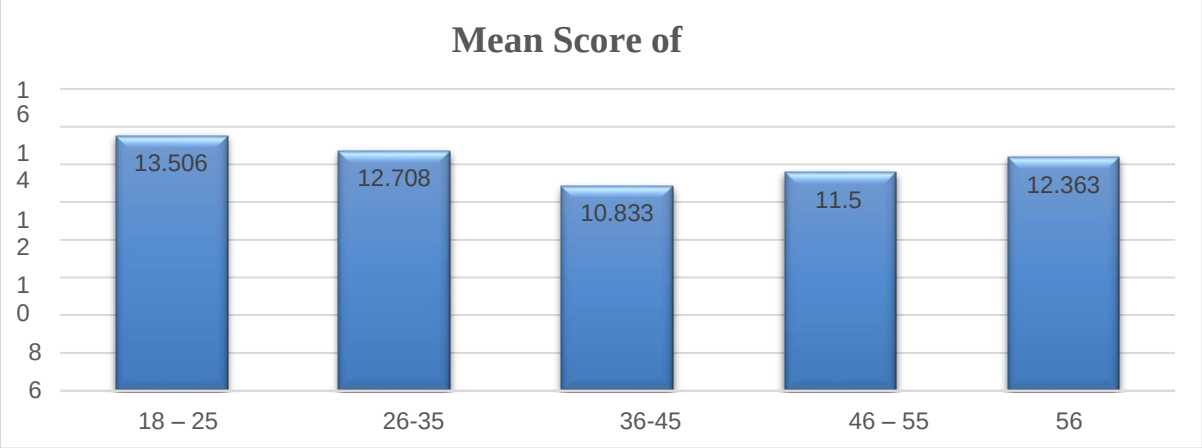

Fig 1: Bar graph of descriptive Analysis of KAP of people of different age.

	N	Mean	Std. Deviation
18 – 25	312	13.5064	2.88582
26-35	48	12.7083	3.64930
36-45	30	10.8333	3.93992
46 – 55	25	11.5600	3.61801
56 and above	11	12.3636	3.32484
Total	426	13.0845	3.20623

Table 2: Descriptive Analysis of KAP of people of different age.

The table above and figure 1 both provide the descriptive statistic related to the KAP score for each of the five age groups. It is clear that respondents who are between the ages of 18 and 25 have the highest mean KAP scores (13.5064), followed by those who are between the ages of 26 and 35 (12.7083), those who are 56 and older (12.3636), those who are between the ages of 46 and 55 (11.5600), and those who are between the ages of 36 and 45 (10.8333).
Standard deviations for the age ranges of 18 to 25, 26 to 35, 36 to 45, 46 to 55, and 56 and beyond are, respectively, 2.88582, 3.64930, 3.93992, 3.61801, and 3.32484.

It demonstrated that KAP scores vary numerically across age groups, but to determine whether the variation is statistically significant, we must run a one-way ANOVA. This allows us to test the first null hypothesis, which holds that there is no discernible difference between age groups. The homogeneity of variance assumption was checked before to the one-way ANOVA, however the findings are unsatisfactory according to Levene's F Test, F(4,421)=3.450, p=0.009.

Levene's Statistic	df 1	df 2	Sig
3.450	4	421	.009

Table 3: Levene's Statistics to test the homogeneity of 5 age groups

The p value or sig value of Levene's statistic is 0.009, which is less than 0.05, as seen in the above table. That implies that groups are not homogeneous, and homogeneity of variance is likewise broken. We still need to do a one-way ANOVA in order to plot the current level of KAP across all respondents of all ages in SPSS, but because the homogeneity of variance is broken, we cannot just depend on the one-way ANOVA result.
As a result, we must run other tests that can handle the breach of homogeneity. The test is known as Brown-Forsythe. Below is the outcome of the one-way ANOVA and Brown-Forsythe tests:

Range	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	278.182	4	69.545	7.157	<.001
Within Groups	4090.776	421	9.717		
Total	4368.958	425			

Table 4: Result of one-Way ANOVA to test the level difference among people of different age

Test	Statistic	df1	df2	Sig.
Brown-Forsythe	5.395	4	94.661	.001

Table 5: Result of Brown- Forsythe to test the level difference among people of different age:

From the both ANOVA table and Brown-Forsythe table, it can be concluded that the difference among people of different age is statistically significant of the existing level of KAP. In case of one-way ANOVA **F (4,421) =7.157**as the p value is less than **0.001** at 95% confidence level and it lower than 0.05 and in case of Brown-Forsythe, **F (4, 94.661) =5.395** as the p value is **0.001.**Also, the descriptive study shows that the five groups are numerically different from each other in terms of KAP. Hence, p value is **0.001** , we may conclude that **there is significant gap existing among people of different age**.

B) Testing the level of KAP among people of different gender:
HYPOTHESIS - There is no significant gap existing among people of different gender.

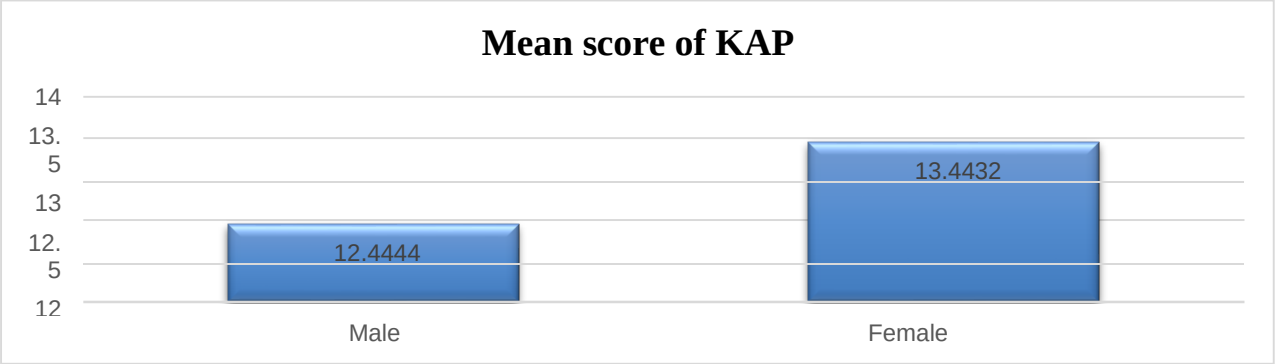

Fig 2: Bar graph of descriptive Analysis of KAP of people of different gender:

	Gender	N	Mean	Std. Deviation
KAP	Male	153	12.4444	3.26039
	Female	273	13.4432	3.12448

Table 6 ; Descriptive Analysis of KAP of people of different gender:

Figure 2 shows that the male group (N=153) was related with a KAP score of M=12.4444 (SD=3.26039) above the table. Comparatively, the KAP score for the Female group (N=273) was statistically higher: M=13.4432 (SD=3.12448). This demonstrates that, in terms of the KAP score, the female population has a numerically greater score than the male population. An independent t test was used to determine if the male and female populations had statistically substantially different mean KAP scores.

Table 7: Independent sample t test and Levene's Test for Equality of variance for the people of different gender.

Independent samples Statistics						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig	T	df	sig- (2 tailed)
KAP Score	Equal variances assumed	.765	.382	-3.116	424	.002
	Equal variances not assumed			-3.079	303.764	.002

The KAP score is substantially associated to the peoples' gender, according to the independent sample t test, which has a P value of.002 at a 95% confidence level. Additionally, Levene's F (424) =.765, P =.382 was used to test and confirm that the homogeneity of variance assumption was true. We may now do the independent sample t test because the Levene's test has established that the groups are homogeneous. A statistically significant impact was found in the independent sample t test: t (424) = -3.116, P =.002. Therefore, compared to the male population, the female population had a statistically higher KAP score. Given that the p value is 0.002, we may infer that there is a sizable gender discrepancy in the population.

C) Testing the level of KAP among people of different educational qualification:

- **HYPOTHESIS -** There is no significant gap existing among people of different education qualification.

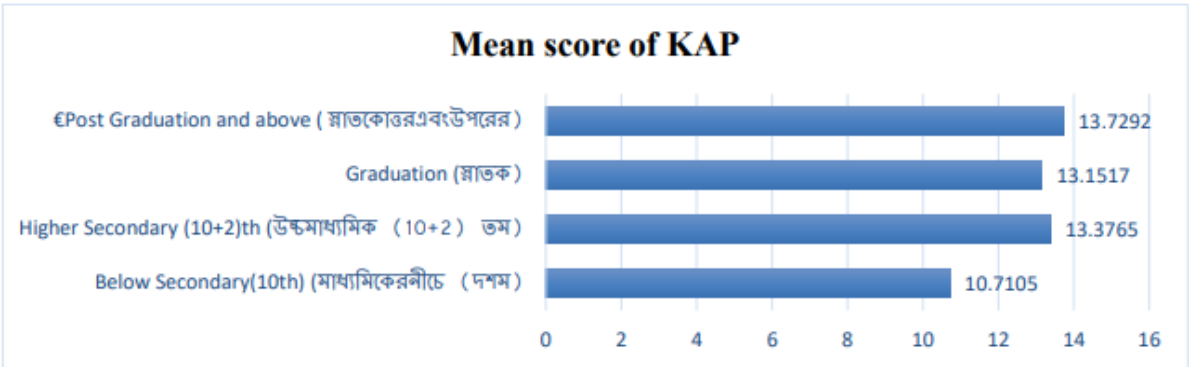

Fig 3: Bar graph of descriptive Analysis of KAP of people of different educational background.

	N	Mean	Std. Deviation
Below Secondary(10th) (মাধ্যমিকেরনীচে (দশম)	38	10.7105	4.54353
Higher Secondary (10+2)th (উচ্চমাধ্যমিক (10+2) তম)	162	13.3765	2.87421
Graduation (স্নাতক)	178	13.1517	3.11811
€Post Graduation and above (স্নাতকোত্তরএবংউপরের)	48	13.7292	2.54942
Total	426	13.0845	3.20623

Table 8: Descriptive Analysis of KAP of people of different educational background

The table above and figure 3 both show the descriptive statistic related to the KAP score for each of the four education categories. It is clear that respondents in the Post-Graduation and Above group have the highest mean KAP scores (13.7292), followed by respondents in the Higher Secondary (10+2)th group (13.3765), Graduation group (13.1517), and Below Secondary (10th) group (10.7105). Below Secondary (10th), Higher Secondary (10+2), Graduation, and Post-Graduation & Above groups' respective standard deviations are 4.54353, 2.87421, 3.11811, and 2.54942.

It was established that people with different educational backgrounds have numerically different KAP scores, but before we can determine whether or not this difference is statistically significant, we must run a one-way ANOVA. This will allow us to test the third null hypothesis, which states that there is no statistically significant gap between individuals with different educational backgrounds. The assumption of homogeneity of variance was checked before to doing the one-way ANOVA, however the findings are unsatisfactory according to Levene's F Test, F (3,422)=7.287, p0.001.

Levene Statistic	df 1	df 2	Sig
7.287	3	422	<.001

Table 9: Levene's Statistics to test the homogeneity of people of four different educational background:

The p value or sig value of Levene's statistic is then.001, which is less than 0.05, as seen in the above table. That implies that groups are not homogeneous, and homogeneity of variance is likewise broken. We must still use one-way ANOVA to plot the overall KAP level of respondents across all educational categories in SPSS, but because this will violate homogeneity of variance, we cannot only depend on the one-way ANOVA result. As a result, we must undertake other tests that can handle homogeneity's violence. The test is known as Brown-Forsythe. The one-way ANOVA and Brown-Forsythe results are shown below.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	248.727	3	82.909	8.492	<.001
Within Groups	4120.230	422	9.764		
Total	4368.958	425			

Table 10: One Way ANOVA to test the level difference among people of different educational Background

	Statistic	df1	df2	Sig.
Brown-Forsythe	7.036	3	117.814	<.001

Table 11: Brown-Forsythe to test the level difference among people of different educational Background

From the both ANOVA table and Brown-Forsythe table, it can be concluded that the difference among people of different educational qualification is statistically significant of the existing level of KAP. In case of one-way ANOVA **F (3,422) =8.492** as the p value is **<.001** at 95% confidence level and it lower than **0.05**. And in case of Brown-Forsythe, **F (3, 117.814) =7.036** as the p value is <.001**.**
Also, the descriptive study shows that the four groups are numerically different from each other in terms of KAP. Since the p value is less than **0.05** we may conclude that **there is significant gap existing among people of different educational qualification.**

D) Testing the level of KAP among people of different religion:

HYPOTHESIS - There is no significant gap existing among people of different religion.

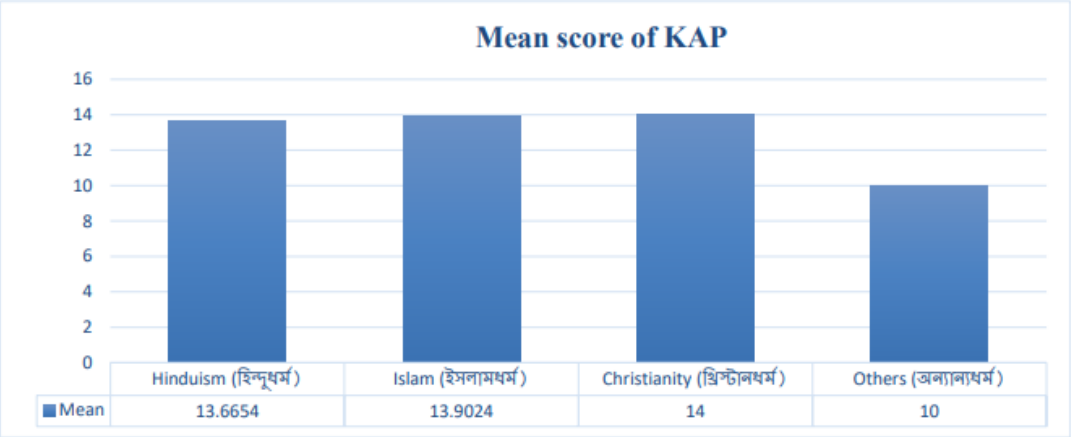

Fig 4: Bar graph of descriptive Analysis of KAP of people of different religion.

	N	Mean	Std. Deviation
Hinduism (হিন্দুধর্ম)	272	13.6654	2.95636
Islam (ইসলামধর্ম)	41	13.9024	2.20006
Christianity (খ্রিস্টানধর্ম)	1	14.0000	.
Others (অন্যান্যধর্ম)	1	10.0000	.
Total	315	13.6857	2.86528

Table 12: Descriptive Analysis of KAP of people of different religion

In figure 4 and the table above, the descriptive statistic related to the KAP score for each of the four religious groups is presented. It is clear that respondents who identify as Christians have the highest mean KAP scores (14.0000), followed by Muslims (13.9024), Hindus (13.6654), and respondents who identify as other religions (10.0000). Hinduism and Islam both have a standard deviation of 2.95636 and 2.20006 respectively.
It demonstrated that KAP scores vary numerically across age groups, but to determine whether the variation is statistically significant, we must run a one-way ANOVA. By doing so, we can test the fourth null hypothesis, which states that there is no statistically significant difference between people of different religions.
Therefore, we are going to conduct one-way ANOVA as below:

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	248.727	3	82.909	8.492	<.001
Within Groups	4120.230	422	9.764		
Total	4368.958	425			

Table 13: One Way ANOVA to test the level difference among people of different religion:

From the ANOVA table, it can be concluded that people of different religion is statistically significant different in terms of the existing level of KAP. In case of one-way ANOVA **F (3,422) =8.492**as the p value is **<.001** at 95% confidence level and it lower than **0.05**.

Also, the descriptive study shows that the four religion groups are numerically different from each other in terms of KAP. Since the p value is lower than **0.05** so we may conclude that **there is significant gap existing among people of different religion.**

E) **Testing the level of KAP among people of different socio-economic status.**

HYPOTHESIS - There is no significant gap existing among people of different monthly family income according to their socio-economic status.

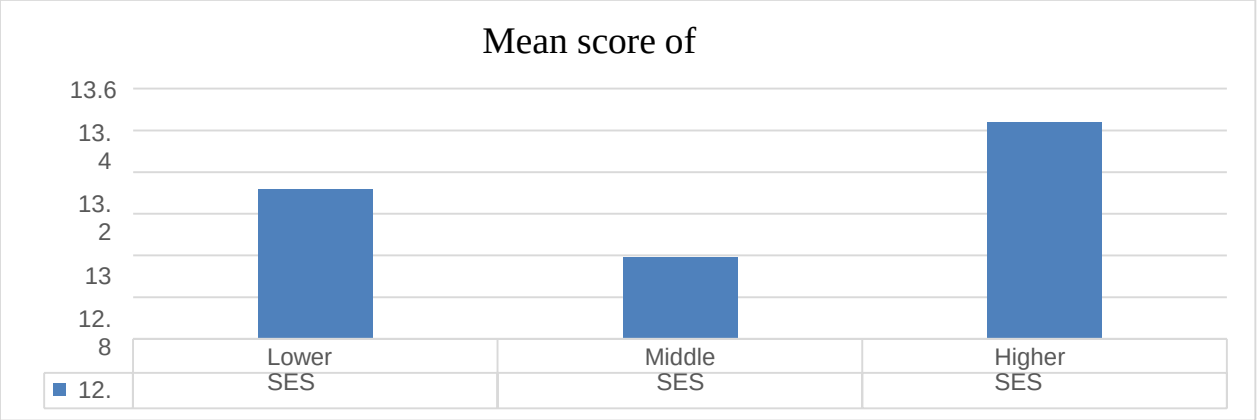

Fig 5: Bar graph of descriptive Analysis of KAP of people of different socio-economic status.

	N	Mean	Std. Deviation
Lower SES	179	13.1173	3.12703
Middle SES	144	12.7917	3.34262
Higher SES	103	13.4369	3.13947
Total	426	13.0845	3.20623

Table 14: Descriptive Analysis of KAP of people of different socio-economic status.

In figure 5 and the table above, the descriptive statistic related to the KAP score for each of the three income categories is presented. As can be shown, respondents with higher SES have respondents with mean KAP scores that are higher (13.4369) than those with lower SES (13.1173) and medium SES (12.7917). Lower SES, middle SES, and higher SES had standard deviations of 3.12703, 3.34262, and 3.13947, respectively.

It demonstrated that KAP scores vary numerically among individuals with different SES levels, but to determine whether the variation is statistically significant, one-way ANOVA must be performed. Only then can the fifth null hypothesis, which claims that there is no significant gap between individuals with different SES levels, be tested. Before conducting the one-way ANOVA, the assumption of homogeneity of variance was tested and satisfied based on Levene's F test, **F (2, 423) =0.587, p=0.556.**

Table 15: Levene's Statistic to test the homogeneity of people of 3 different socio-economic statuses

Levene Statistic	df 1	df 2	Sig
.587	2	423	.556

The p value or sig value of Levene's statistic is 0.556, as seen in the above table. As a result, we may conclude that groups are homogeneous and that the homogeneity of variance is not being broken. So, using SPSS, we can visualise the overall KAP level of respondents across all income classes. We may also use one-way ANOVA.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25.332	2	12.666	1.233	.292
Within Groups	4343.626	423	10.269		
Total	4368.958	425			

Table 16: One-way ANOVA to test the level difference among people of different socio- economic status:

From the above ANOVA table, it can be concluded that the difference among people of different Socio- economic status is not statistically significant on the existing level of KAP. **F (2, 423) = 1.233** as the p value is **0.292** at 95% confidence level and it is higher than **0.05;** though the descriptive study shows that the three groups are numerically different from each other in terms of KAP. Hence, we may conclude that **there is no significant gap existing among people of different monthly family income according to their Socio- economic status**.

F. Testing the level of KAP among people of different marital status.

HYPOTHESIS - There is no significant gap existing among people of different marital status.

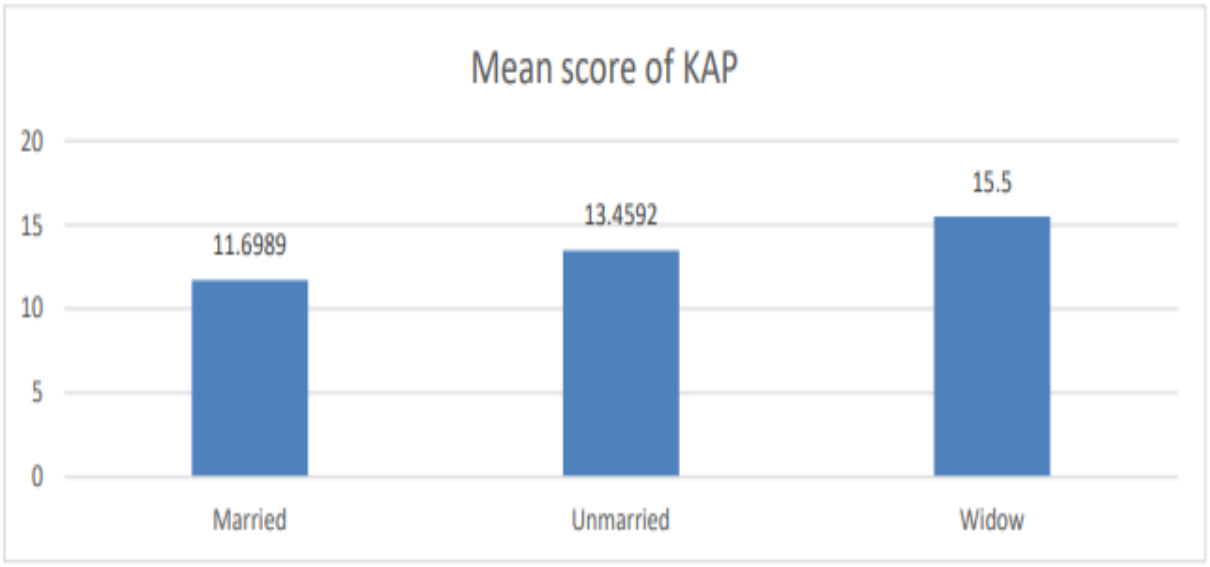

Fig: 6: Bar graph of descriptive Analysis of KAP of people of different marital status.

	N	Mean	Std. Deviation
Married	93	11.6989	3.69131
Unmarried	331	13.4592	2.95122
Widow	2	15.5000	2.12132
Total	426	13.0845	3.20623

Table 17: Descriptive Analysis of KAP of people of different marital status.

In figure 6 and the table above, the descriptive statistics for the KAP score across the three categories of marital status are presented. It is obvious that respondents who are widows had the highest mean KAP scores (15.5000), followed by singles (13.4592) and marrieds (11.6989). The average standard deviation for groups that are married, single, and widowed is 3.69131, 2.95122, and 2.12132, respectively.

It proved that KAP score is numerically different among people of different groups of marital status but whether or not the difference is statistically significant, we need to conduct one way ANOVA and by that we can test the 6^{th} null hypothesis which states that there is no significant gap existing among people of different marital status The homogeneity of variance assumption was checked before one-way ANOVA, however, the findings are unsatisfactory according to Levene's F Test, F (2,423) =5.770, p=0.003.

Levene's Statistic	df 1	df 2	Sig
5.770	2	423	.003

Table 18: Levene's Statistic to test the homogeneity of people of 3 different marital status.

The above table is showing that the p value or sig value of Levene's statistic is **0.003** which is lower than That means groups are not homogenous, also we can say homogeneity of variance is violated. Still we are going to plot the existing level of KAP as a whole of the respondents of all age in the SPSS and we need to perform one-way ANOVA but as then homogeneity of variance is violated, we cannot rely on the result of one-way ANOVA alone.

Hence, we need to conduct other kind of test which can manage the violence of homogeneity. The name of the test is Brown-Forsythe. The result of the one-way ANOVA and Brown-Forsythe as below:

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	236.688	2	118.344	12.114	<.001
Within Groups	4132.269	423	9.769		
Total	4368.958	425			

Table 19: One-way ANOVA to test the level difference among people of different marital status.

	Statistic	df1	df2	Sig.
Brown-Forsythe	13.864	2	13.681	.001

Table 20: Brown – Forsythe to test the level difference among people of different marital status.

From the both ANOVA table and Brown-Forsythe table, it can be concluded that the difference among people of different marital status is statistically significant of the existing level of KAP. In case of one-way ANOVA **F (2,423) =12.114** as the p value is less than **0.001** at 95% confidence level and it lower than **0.05**. And in case of Brown-Forsythe, **F (2, 13.681) =13.864** as the p value is **0.001.**

Also, the descriptive study shows that the three groups are numerically different from each other in terms of KAP. Hence, the p value is **0.001 ,** we may conclude that **there is significant gap existing among people of different marital status.**

G. Testing the level of KAP among people from different areas.

HYPOTHESIS - There is no significant gap existing among people of different area of residence

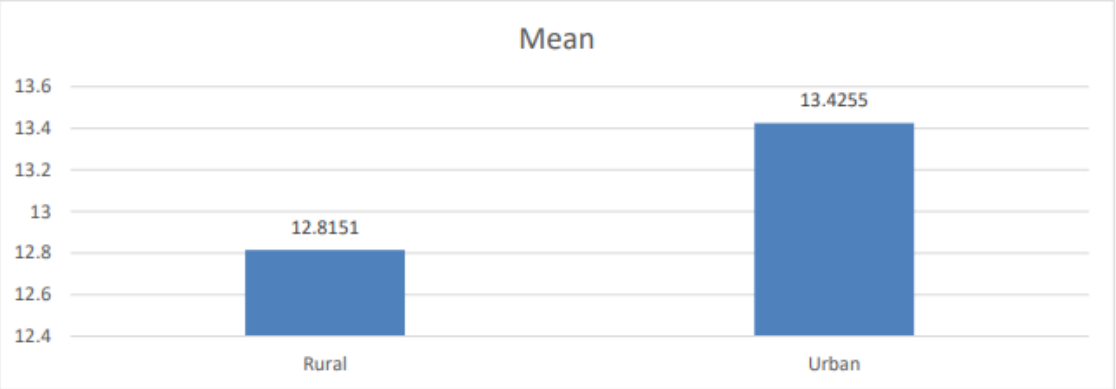

Fig: 7: Bar graph of descriptive Analysis of KAP of people from different areas.

	Area	N	Mean	Std. Deviation
KAP	Rural	238	12.8151	3.32607
	Urban	188	13.4255	3.02216

Table 21: Descriptive Analysis of KAP of people from different areas.

We can see in **figure 2** and above table the Rural people **(N=**238**)** was associated with KAP score **M=**12.8151 **(SD=**3.32607**)**. By comparison Urban people **(N=**188**)** was associated with a numerically higher KAP score **M=**13.4255 **(SD=**3.02216**)**. So it proves that the urban people have score numerically higher than rural people in respect to the KAP score. To see whether rural and urban population were associated with statistically significantly different mean KAP score an independent t test was performed.

Independent samples Statistics						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig	t	df	sig- (2 tailed)
KAP Score	Equal variances assumed	1.392	.239	-1.958	424	.051
	Equal variances not assumed			-1.980	415.735	.048

Table 22: Independent sample t test and Levene's Test for Equality of variance for the people from different areas

The KAP score is not substantially associated to persons from various areas, according to the independent sample t test, which has a P value of.051 at a 95% confidence level. Levene's F (424) = 1.392, P =.239 tested and supported the hypothesis of homogeneity of variance. Now that the Levene's test has shown that the groups are homogeneous, we can do the independent sample t test. This test revealed an effect that was statistically insignificant, with the value of t (424) = -1.958 and a P value of.051 for the independent sample t test. As a result, there was no statistically significant difference between the KAP scores of urban and rural people. Since 0.051 is more than 0.05, the p value is bigger than 0.05. Hence, we may conclude that **there is no significant gap existing among people of different area of residence**.

V. DISCUSSION

Hypothesis state that there is no significant gap existing among people of different age. To test the hypothesis, one-way ANOVA has been used and it shows that groups are statistically and significantly different from each other whereas the p value is less than **0.001** at 95% confidence level. So that we have accepted the alternative hypothesis with state that there is significant gap existing among people of different age. A cross-sectional survey about KAP of Covid-19 vaccine in Northern Italy, shows same kind of result as there is a significant gap between the age variable with KAP score at the p value is **0.002**[21]. Young age people are more aware about the current situation that reason they are significantly different from older age group.

To test the hypothesis that there is no significant gap existing among people of different gender, Independent sample t test is being conducted which shows that the KAP score is significantly related with the gender of the people as the P value is **.002** at 95% confidence level. Hence, we have accepted the alternative hypothesis with state that there is significant gap existing among people of different gender. Same kind of findings, result can be found in a cross-sectional community-based survey about KAP analysis towards the Covid-19 vaccination in Bangladesh which shows that perception towards the covid-19 vaccine was among female as compared to male (56.9% vs 47.9%) , where the p value is **0.004** [2] . Various research shows that females are more responsible and conscious as compared to male which statement is supported by our research study as there is a significant gap is existing with regards of KAP about the awareness of covid-19 vaccination.

Hypothesis state that there is no significant gap existing among people of different educational qualification. To test the hypothesis, "One-way ANOVA is being conducted which shows that there is difference among people of different educational qualification is statistically significant of the existing level of KAP whereas the p value is **<.001** at 95% confidence level. Hence, we have accepted the alternative hypothesis with state that there is significant gap existing among people of different educational qualification. A cross-sectional web-based study in Iran shows same kind of result that there is a significant gap is existing in between lower level of education with KAP score at the p value is less than **0.01**[23].

Also, a global cross-sectional study in 6 countries about KAP analysis of covid-19 vaccine which is opposing the finding of our study with state that no significant gap between educational status with knowledge score but numerically significant is exist[20]. From our study we have got significant different is exists in between of higher level of education and lower level of education. People who are higher educated, have more knowledge and clear perception about covid-19 vaccine as compared to lower educated people.

Hypothesis state that there is no significant gap existing among the people of different religion. To test the hypothesis, One-way ANOVA is being conducted which shows that the four religion groups are numerically different from each other in terms of KAP whereas the p value is **<.001** at 95% confidence level and it lower than

0.05. So that we accepted the 4th alternative hypothesis with state the there is significant gap among people of different religion. Another assessment of the KAP about covid-19 vaccine in New Delhi shows that same kind of result with state that there is a significant gap is present with the religion variable and the KAP score at the p value is **0.003**[31] . We have found that no such variety or no discrimination according to religion. KAP score is not merely dependence upon religion.

There is no discernible divide between persons of different socioeconomic statuses, according to socioeconomic status hypothesis. One-way ANOVA was used to test the hypothesis, and the results demonstrate that while the groups do not vary statistically or substantially, they do differ numerically in terms of KAP, with a p value of 0.292 at a 95% confidence level. We have rejected the alternative hypothesis, which states that there is a substantial difference between individuals of various socioeconomic level, and accepted the null hypothesis, which states that there is no significant gap between people of different socioeconomic status. a cross-sectional investigation on Covid-19 and KAP in South Korea. With same kind of result as there is no such significant gap is existing according to income level with regards of knowledge score at the p value is 0.61[28]. Higher income group of people are generally belonging to higher education level. They are more conscious to their society and they are keener to learn and more opportunistic to get the societal factor. Fortunately, we have also got the numerical and statically data which shows that there is a significant gap is exists among people of different socio-economic status.

Hypothesis was about to marital status which state that there is no significant gap existing among people of different marital status. To test hypothesis, One-way ANOVA test is being conducted , which shows that that the difference among people of different marital status is statistically significant of the existing level of KAP whereas the p value is less than **0.001** at 95% confidence level. So that we have accepted the alternative hypothesis with states that there is significant gap existing among people of different marital status. Another same kind of result can be found in a cross-sectional study about KAP towards covid-19 among higher education student in India which shows that there is a significant gap between marital status with regards of KAP of covid-19 where the p value is **0.038** [18] . Another cross-sectional study shows that in case of marital status only significant predictor of low protective practices was being unmarried at p-value is **0.03** [14].

Our final hypothesis was there is no significant gap existing among people of different area of residence. To test hypothesis, Independent sample t-test is being conducted which shows that the KAP score is not significantly related with the people from different area as the P value is **.051** at 95% confidence level. Hence, we accept the seventh null hypothesis which states that there is no significant gap existing among people of different area of residence .

VI. LIMITATIONS

- India covers a huge geographical area where people having different demography, lifestyle are living. Due to financial and timings constraints, this study is limited to a particular area of West Bengal. If we could cover wider area, the result would have different. Coverage of wider area is necessary for a big country like India because by that we can draw a perfect conclusion by considering the vast diversity.

- Timing is also an important issue. Because it is evident that knowledge, attitude and perception people on something is not constant, it changes time to time. To know the situation better, we need to analyse the population for a longer period of time. Our study is limited time constraint only for only 30 days and the research is cross sectional in Nature. Longitudinal research is necessary in this situation.

- Research which covers vast area, huge population and long-time requires plenty amount of resources but here financial constraint is also present in our study.

- Our study is limited to a fixed sample size (426). Large sample size can yield more accurate results and that we can have better idea about population.

- Due to covid-19 pandemic situation, we have used only quantitative data, as result we couldn't able to use qualitative data such as face to face interview. Interview to people is very useful. It can dig out hidden factors which are socio demographic specific.

VII. CONCLUSION

The current study was undertaken in a specific location of West Bengal among 426 ordinary people to assess their knowledge, attitude, and practise regarding the covid-19 vaccination. The covid-19 pandemic has destroyed our usual everyday lives and neighbourhoods, but the covid-19 vaccination has provided some hope for the future. The current study revealed information on the knowledge and attitude status of covid-19 vaccination in West Bengal, namely in the Tamluk, Nandigram, Mahishadal, Haldia, Bankura, and Kolkata areas.

At the ground level health authorities should arrange some awareness campaign to provide the information about covid-19 vaccine. In order to reduce the vaccine hesitancy and mis-information about covid-19 vaccine, local authorities should arrange some door-step survey for the common people to make them knowledgeable about the utility of the vaccine.

Young age people are more aware about the current situation that reason they are significantly different from older age group. Various research shows that females are more responsible and conscious as compared to male which statement is supported by our research study as there is a significant gap is existing with regards of KAP about the awareness of covid-19 vaccination. From our study we have got significant different is exists in between of higher level of education and lower level of education. People who are higher educated, have more knowledge and clear perception about covid-19 vaccine as compared to lower educated people.

We have found no such variety or no discrimination according to religion. KAP score is not merely dependence upon religion. Higher income group of people are generally belonging to higher education level. They are more conscious to their society and they are keener to learn and more opportunistic to get the societal factor. Fortunately, we have also got the numerical and statically data which shows that there is a significant gap is exists among people of different socio-economic status.

We have gained huge knowledge through this survey with regards of covid-19 vaccination. It was not only for us; the people are also gained some knowledge by our study. Hopefully their level of awareness has increased through this study. Last but not the least we can say, our study may create some impact in our society for near future.

9) RECOMMENDATION

1. The study can be replicated on larger sample in different setting to have a wider applicability by generalization.

2. The results suggest for health education program and proper, accurate and crystal-clear information should be provided by health authorities.

3. There should not be discrimination in respect of gender, age, educational qualification to provide the accurate data/information about covid-19 vaccination. Health Policy makers should more focus among rural people in West Bengal.

10) FUTURE SCOPE OF RESEARCH

1. The study could be better if the qualitative data was used to find out the hidden factor. For example, we can measure the KAP score in respect of their occupational factor.
2. Long prospective study can be done for better result.

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12) ANNEXURE

Letter for tool validation

APPLICATION TO REQUEST FOR VALIDATION OF RESEARCH TOOL FOR DATA COLLECTION

From
Asgar Ali Khan and Rabin Singha
MSc in Public Health Final Year
NSHM College of Management & Technology, Kolkata
Maulana Abul Kalam University of Technology, WB
Kolkata, West Bengal

To
Dr. Subhasis Maity
Director
NSHM College of Management & Technology, Kolkata
Maulana Abul Kalam University of Technology, WB
Subject: Validation of research tool.

Respected Sir,

We (Asgar Ali Khan and Rabin Singha) are students of MSc in Public Health Final Year in your institution are going to conduct a research project on the population of West Bengal. The problem statement is "**knowledge, attitude and practice towards covid-19 vaccine among the common people of West Bengal: a cross sectional study**" under supervision of Asst. Prof. Dr. Reeti Debnath, HOD of Public Health, NSHM College of Management and Technology, Kolkata.

For that we made one self-structured tool for our study and sent to you. Kindly validate our tool and give us suggestions for improvement of our tool as early as possible, we will be grateful to you.

Thanking you.

Yours faithfully,
Asgar Ali Khan
Rabin Singha

Letter for tool validation

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MSc in Public Health Final Year
NSHM College of Management & Technology, Kolkata
Maulana Abul Kalam University of Technology, WB
Kolkata, West Bengal

To
Dr. Reeti Debnath
HOD
Department of Public Health
NSHM College of Management & Technology, Kolkata
Maulana Abul Kalam University of Technology, WB
Subject: Validation of research tool

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Rabin Singha

.....
SIGNATURE OF THE TEACHER

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Asgar Ali Khan and Rabin Singha
MSc in Public Health Final Year
NSHM College of Management & Technology, Kolkata
Maulana Abul Kalam University of Technology, WB
Kolkata, West Bengal

To
Dr. Reeti Debnath
Internal Guide
HOD of Public Health
NSHM College of Management & Technology, Kolkata
Maulana Abul Kalam University of Technology, WB
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Asgar Ali Khan
Rabin Singha

.....
SIGNATURE OF THE TEACHER

A. Socio-demographic Characteristics (আর্থ-জনসংখ্যার বৈশিষ্ট্য):

1. Name of the respondent (উত্তরদাতার নাম):

2. Age Group (বয়স গ্রুপ):

a) 18-25

b) 26-35

c) 36-45

d) 46 – 55

e) 56 and above

3.Gender (লিঙ্গ):

a) Male (পুরুষ) b) Female (মহিলা)

4. Education (শিক্ষা):

a) Below Secondary(10th) (মাধ্যমিকের নীচে (দশম)

b) Higher Secondary (10+2)th (উচ্চ মাধ্যমিক (10+2) তম)

c) Graduation (স্নাতক)

d) Post Graduation and above (স্নাতকোত্তর এবং উপরের)

5. Religion (ধর্ম):

a) Hinduism (হিন্দু ধর্ম)

b) Islam (ইসলাম ধর্ম)

c) Christianity (খ্রিস্টান ধর্ম)

d) Sikhism (শিখ ধর্ম)

e) Others (অন্যান্য ধর্ম)

6. Socio Economic Status (SES) according to their monthly family income / (পরিবারের মাসিক আয়):

a) Lower SES (Rs 5,000/- to 15,000/- Per Month) /(প্রতি মাসে 5000/-থেকে 15,000/-)

b) Middle SES (Rs 16,000/- to 29,000/- Per Month) (প্রতি মাসে 16000/-থেকে 29,000/-)

c) Higher SES (Above 30,000/- Per Month) /(প্রতি মাসে 30, 000/- এবং তার উপরের আয়)

7. Marital Status (বৈবাহিক অবস্থা):

a) Married (বিবাহিত)

b) Unmarried (অবিবাহিত)

c) Widow (বিধবা)

d) Divorced (বিবাহবিচ্ছেদ)

8. Area of Residence (আবাসের অঞ্চল):

a) Urban (Municipality) / নগর (পৌরসভা)

b) Rural (Panchayat) / পল্লী (পঞ্চায়েত)

B. Respondents Knowledge of Covid-19 Vaccination (উত্তরদাতা কোভিড -১৯ টিকা সম্পর্কে জ্ঞান):

9. Do you know about the Covid-19 vaccine? (আপনি কোভিড -19 টিকা সম্পর্কে জানেন?)

a) Yes (হ্যাঁ)

b) No (না)

c) Don't know (জানি না)

10. Do you think that co-morbid patients should get vaccine first? (আপনি কি মনে করেন যে যা আগে থেকে অন্যান্য রোগ-এ আক্রান্ত তাদের প্রথমে ভ্যাকসিন পাওয়া উচিত?)

a) Yes (হ্যাঁ)

b) No (না)

c) Don't know (জানি না)

11. Does the vaccination increase allergic reaction? (টিকা কি অ্যালার্জির প্রতিক্রিয়া বাড়ায়?)

a) Yes (হ্যাঁ)

b) No (না)

c) Don't know (জানি না)

12. Is there an effective medicine available for treatment of Covid-19? (কোভিড -19-এর চিকিৎসার জন্য কি কোনও কার্যকর ওষুধ পাওয়া যায়?)

a) Yes (হ্যাঁ)

b) No (না)

c) Don't know (জানি না)

13. Will the ordinary flu vaccine protect you from Covid-19? (সাধারণ ফ্লু ভ্যাকসিন কি কোভিড -১৯ থেকে আপনাকে রক্ষা করবে?)

a) Yes (হ্যাঁ)

b) No (না)

c) Don't know (জানি না)

14. Do you think, antibiotics are an effective treatment for Covid-19? (আপনি কি ভাবেন, অ্যান্টিবায়োটিকগুলি কোভিড -19 এর কার্যকর চিকিত্সা?)

a) Yes (হ্যাঁ)

b) No (না)

c) Don't know (জানি না)

15. Do you think, taking vitamin C or other vitamins will protect you from the Covid-19? (আপনি কি মনে করেন, ভিটামিন সি বা অন্যান্য ভিটামিন গ্রহণ আপনাকে কোভিড -১৯ থেকে রক্ষা করবে?)

a) Yes (হ্যাঁ)

b) No (না)

c) Don't know (জানি না)

16. Does the Covid-19 Vaccine affect fertility? (কোভিড -19 ভ্যাকসিন কি গর্ভাবস্থা- এর উপর প্রভাব ফেলে?)

a) Yes (হ্যাঁ)

b) No (না)

c) Don't know (জানি না)

C. Respondent Attitude Towards Covid-19 Vaccination (কোভিড -১৯ টিকার প্রতি প্রতিক্রিয়াশীল মনোভাব):

Qs. No.	Questionnaires	Agree (একমত)	Disagree (অসমত)	Neutral (নিরপেক্ষ)
17.	I don't feel I'm at risk to put foreign objects in my body. (আমি মনে করি না যে আমি যদি ভ্যাকসিন গ্রহণ করি তবে আমার কোনও			

	অসুবিধা হবে.)			
18.	I will take the Covid-19 vaccine without any hesitation, if it is available in our area. (যদি কোভিড -১৯ ভ্যাকসিনটি আমাদের এলাকায় পাওয়া যায়, কোনও সংকোচ ছাড়াই নেব.)			
19.	I will also encourage my family/friends/ relatives to be vaccinated. (আমি আমার পরিবার / বন্ধুবান্ধব / আত্মীয়দেরও টিকা গ্রহণ করা জন্য উৎসাহিত করব.)			
20.	The Covid-19 vaccine should be distributed fairly to all of us. (কোভিড -১৯ ভ্যাকসিনটি আমাদের সকলের মাঝে সুষ্ঠুভাবে বিতরণ করা উচিত।)			
21.	Most people will refuse to take the Covid-19 vaccine. (বেশিরভাগ লোক কোভিড -১৯ টি ভ্যাকসিন নিতে অস্বীকার করবে।)			
22.	It is important to get a vaccine to protect the people from Covid-19. (মানুষকে করোনার ভাইরাস থেকে রক্ষা পাওয়ার জন্য টিকা নেওয়া জরুরী.)			
23.	Newly discovered Covid-19 vaccines are more safe than previous ones. (নতুন আবিষ্কৃত কোভিড -১৯ টি ভ্যাকসিনগুলি পূর্বেরগুলির চেয়ে বেশি নিরাপদ.)			
24.	The government of our country will make the vaccine available for all citizen for free. (আমাদের দেশের সরকার সকল নাগরিকের জন্য বিনামূল্যে এই ভ্যাকসিন সরবরাহ করবে।)			

D. <u>Respondent Perception Towards Covid-19 Vaccination (কোভিড -১৯ টিকার প্রতি প্রতিক্রিয়াশীল ধারণা):</u>

25. I am afraid to take the vaccine, in huge gathered queue/ crowd. (আমি দীর্ঘ এবং ভিড়ের লাইনে ভ্যাকসিন নিতে ভয় পাই)

a) Agree (একমত)

b) Disagree (অসমত)

c) Neutral (নিরপেক্ষ)

26. I am afraid of getting 2nd time corona positive, though I am vaccinated already /(আমি দ্বিতীয়বারের করোনার পজিটিভ পাওয়ার ভয় পাচ্ছি, যদিও আমি ইতিমধ্যে টিকা নিয়েছি।)

a) Agree (একমত)

b) Disagree (অসমত)

c) Neutral (নিরপেক্ষ)

27. I think teenagers (age between 2-18 years old) should be vaccinated immediately in my state (WB). /(আমি মনে করি, আমার রাজ্যে কিশোর-কিশোরীদের অবিলম্বে টিকা দেওয়া উচিত)

a) Agree (একমত)

b) Disagree (অসমত)

c) Neutral (নিরপেক্ষ)

28. Willingness to take Covid-19 Vaccine. (কোভিড -১৯ ভ্যাকসিন নেওয়ার ইচ্ছা.)

a) Agree (একমত)

b) Disagree (অসমত)

c) Neutral (নিরপেক্ষ)

Output of SPSS:

Reliability Statistics

Cronbach's Alpha	N of Items
.740	20

Descriptives

KAP

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
18 to 25	312	13.5064	2.88582	.16338	13.1849	13.8279	1.00	19.00
26 to 35	48	12.7083	3.64930	.52673	11.6487	13.7680	2.00	19.00
36 to 45	30	10.8333	3.93992	.71933	9.3621	12.3045	4.00	17.00
46 to 55	25	11.5600	3.61801	.72360	10.0666	13.0534	4.00	17.00
56 and above	11	12.3636	3.32484	1.00248	10.1300	14.5973	7.00	17.00
Total	426	13.0845	3.20623	.15534	12.7792	13.3898	1.00	19.00

Test of Homogeneity of Variances

KAP

Levene Statistic	df1	df2	Sig.
3.450	4	421	.009

ANOVA

KAP

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	278.182	4	69.545	7.157	.000
Within Groups	4090.776	421	9.717		
Total	4368.958	425			

Robust Tests of Equality of Means

KAP

	Statistic[a]	df1	df2	Sig.
Brown-Forsythe	5.395	4	94.661	.001

a. Asymptotically F distributed.

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
KAP	Male	153	12.4444	3.26039	.26359
	Female	273	13.4432	3.12448	.18910

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
KAP	Equal variances assumed	.765	.382	-3.116	424	.002	-.99878	.32053	-1.62880	-.36876
	Equal variances not assumed			-3.079	303.764	.002	-.99878	.32440	-1.63714	-.36042

Descriptives

KAP

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Below Secondary	38	10.7105	4.54353	.73706	9.2171	12.2039	1.00	17.00
Higher Secondary	162	13.3765	2.87421	.22582	12.9306	13.8225	6.00	19.00
Graduation	178	13.1517	3.11811	.23371	12.6905	13.6129	2.00	19.00
Post Graduation	48	13.7292	2.54942	.36798	12.9889	14.4694	5.00	18.00
Total	426	13.0845	3.20623	.15534	12.7792	13.3898	1.00	19.00

Test of Homogeneity of Variances

KAP

Levene Statistic	df1	df2	Sig.
7.287	3	422	.000

ANOVA

KAP

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	248.727	3	82.909	8.492	.000
Within Groups	4120.230	422	9.764		
Total	4368.958	425			

Robust Tests of Equality of Means

KAP

	Statistic[a]	df1	df2	Sig.
Brown-Forsythe	7.036	3	117.814	.000

a. Asymptotically F distributed.

Descriptives

KAP

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Hindu	380	13.4026	3.00105	.15395	13.0999	13.7053	1.00	19.00
Muslim	44	10.1818	3.48600	.52553	9.1220	11.2417	4.00	17.00
Christian	1	16.0000	.	.	.	.	16.00	16.00
Others	1	17.0000	.	.	.	.	17.00	17.00
Total	426	13.0845	3.20623	.15534	12.7792	13.3898	1.00	19.00

ANOVA

KAP

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	433.015	3	144.338	15.476	.000
Within Groups	3935.943	422	9.327		
Total	4368.958	425			

Descriptives

KAP

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		

High SES	103	13.4369	3.13947	.30934	12.8233	14.0505	2.00	19.00
Middle SES	144	12.7917	3.34262	.27855	12.2411	13.3423	2.00	19.00
Lower SES	179	13.1173	3.12703	.23372	12.6561	13.5785	1.00	19.00
Total	426	13.0845	3.20623	.15534	12.7792	13.3898	1.00	19.00

Test of Homogeneity of Variances

KAP

Levene Statistic	df1	df2	Sig.
.587	2	423	.556

ANOVA

KAP

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25.332	2	12.666	1.233	.292
Within Groups	4343.626	423	10.269		
Total	4368.958	425			

Descriptive

KAP

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Married	93	11.6989	3.69131	.38277	10.9387	12.4591	2.00	18.00
Unmarried	331	13.4592	2.95122	.16221	13.1401	13.7783	1.00	19.00
Widow	2	15.5000	2.12132	1.50000	-3.5593	34.5593	14.00	17.00
Total	426	13.0845	3.20623	.15534	12.7792	13.3898	1.00	19.00

Test of Homogeneity of Variances

KAP

Levene Statistic	df1	df2	Sig.
5.770	2	423	.003

ANOVA

KAP

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	236.688	2	118.344	12.114	.000
Within Groups	4132.269	423	9.769		
Total	4368.958	425			

Robust Tests of Equality of Means

KAP

	Statistic[a]	df1	df2	Sig.
Brown-Forsythe	13.864	2	13.681	.001

a. Asymptotically F distributed.

Group Statistics

	Area	N	Mean	Std. Deviation	Std. Error Mean
KAP	Rural	238	12.8151	3.32607	.21560
	Urban	188	13.4255	3.02216	.22041

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means					
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference

									Lower	Upper
KAP	Equal variances assumed	1.392	.239	-1.958	424	.051	-.61041	.31181	-1.22329	.00248
	Equal variances not assumed			-1.980	415.735	.048	-.61041	.30832	-1.21648	-.00434