College student willingness to vaccinate COVID-19 Vaccine and its Evaluation

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Abstract: The purpose of this survey is to investigate college students' cognition, vaccination willingness and influencing factors of COVID-19 vaccine, and to provide theoretical basis and suggestions for the promotion of COVID-19 vaccine in college students. A simple random sampling method was used to conduct online questionnaires and face-to-face interviews among college students. Results A total of 352 valid questionnaires were collected, and the data were analyzed by Logistic regression analysis and cross-contingency analysis. And draw a relevant conclusion, at present, most of the college students in COVID-19 vaccination work maintain a positive and cooperative attitude, but they still need to improve their understanding.

1. Introduction

Looking back on the development of COVID-19 epidemic in China, we can probably summarize its process into four stages. From the case of "unexplained pneumonia" to the neglect of medical treatment of ordinary pneumonia in Wuhan, it developed to novel coronavirus wreaking havoc in Hubei and even the whole country. The second is to gradually achieve the resumption of production and work through epidemic prevention and control measures, and finally the regular prevention and control of the epidemic situation of COVID-19 [1]. Most of the existing studies focus on the analysis that the group is all the people in a certain urban area, and the scope is too wide to explore the specific situation of a certain group in depth.

Therefore, according to the above analysis, this paper uses a variety of survey methods such as questionnaires and interviews, and uses multi-stage sampling methods to describe statistics, regression analysis, correlation analysis and other operations. To analyze the factors affecting COVID-19 vaccine vaccination and predict the vaccination situation in the future.

2. Survey scheme design

2.1 Research object

This paper takes college students as the most important subject of investigation. In terms of vaccine publicity, counselors of various departments and relevant leaders of various colleges play a role in publicizing COVID-19 vaccine knowledge to students and advocating students to actively participate
in COVID-19 vaccine vaccination. In terms of vaccination, vaccination workers [2], as real zero-
distance contact vaccination staff, they can more effectively understand and grasp the vaccination
information of COVID-19 vaccine. In terms of management, as the arrangers and managers of all
kinds of student activities and work, the leaders of each school have the relevant information about
student vaccination [3].

Finally, combined with the actual situation of investigation and research and vaccination, the
survey selected students, vaccination workers and relevant responsible persons and leaders of various
departments and colleges as the objects of our traditional survey methods.

2.2 Data collection method

First of all, we visited the school Hospital of Chengdu University of Technology to interview the
vaccination staff, and then conducted a face-to-face interview with the students within the University
Of Chengdu University Of Technology. Through the form of network questionnaire survey with
computer as the medium. Upload the QR code of the questionnaire on social media such as QQzone,
QQ group, Wechat moments, Weibo and other social media, and deliver the questionnaire to college
students in universities in Chengdu [4].

2.3 Investigate the organizational process framework

1. Establish the research goal: collect real-time news about COVID-19 vaccine and crawl related
articles on net.
2. Formulate a research plan: conduct a questionnaire survey on college students, and conduct in-
depth interviews with some insightful college students to understand the current situation of COVID-
19 vaccine research and development and vaccination in an all-round way.
3. Specific research process: in the stage of data analysis, we will comprehensively analyze the
factors that affect college students' COVID-19 vaccination willingness by using the methods of
descriptive statistics, logical regression, decision tree, factor analysis and so on.
4. Research results and their feedback: we write a report based on the results of data analysis and
case analysis, give the corresponding result analysis and predict the future development trend.

3. The questionnaire design

Two questionnaires were used to investigate college students' willingness to vaccinate against
COVID-19 and their understanding of the vaccine, as well as their opinions and understanding of the
vaccine. The first questionnaire mainly investigated college students' willingness and general
cognition of inoculation. The second questionnaire is to carefully understand college students'
cognition level of COVID-19 vaccine, and to make an estimate of the understanding level of the
questionnaire results.

4. Evaluation of the results of the questionnaire

There are two questionnaires in this survey, 178 questionnaires are distributed, 174 questionnaires
are sent out, a total of 352 questionnaires are collected, and a total of 352 questionnaires are collected.
The two questionnaires of this group investigate different contents respectively. The first
questionnaire mainly investigates the vaccination situation and vaccination willingness of college
students, as well as their views and evaluation on COVID-19 vaccine. The second questionnaire
adopts the form of examination questionnaire, by designing test questions about vaccine-related
knowledge with different degrees of difficulty, through the correct rate to investigate the degree of
college students' understanding of COVID-19 vaccine-related knowledge. Using SPSS software to analyze the differentiation degree, the method of distinguishing degree is as follows:

Data-case sorting: first, the total scores of all students are sorted from high to low (or from low to high), and then the scores of the top 27% and the bottom 27% are taken as the critical points of high and low grouping. Conversion-recode to different variables. New value and old value-assign, old value and new value options encode the new value 1 from the highest to the top 27% threshold (i.e., 27 to 65) and the new value 2 from the lowest to the bottom 27% threshold, then form a new variable "high and low discriminating grouping". Establish sample T test, set "high and low classification group" as group variable, code by 1, 2, and then set "total score" as test variable.

<table>
<thead>
<tr>
<th>Table 1: Group statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>High and low grouping</td>
</tr>
<tr>
<td>Number of cases</td>
</tr>
<tr>
<td>Average value</td>
</tr>
<tr>
<td>Standard deviation</td>
</tr>
<tr>
<td>Average standard error</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2: Independent sample test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>F Significance</td>
</tr>
<tr>
<td>t Degree of freedom Sig.( Double tail)</td>
</tr>
<tr>
<td>Mean deviation</td>
</tr>
<tr>
<td>Standard error difference The lower limit of the difference of 0.95</td>
</tr>
<tr>
<td>The upper limit of the difference of 0.95</td>
</tr>
<tr>
<td>Assume equal variance 21.446 0.000 13.594 172 0.000 13.333 0.981 11.397 15.269</td>
</tr>
<tr>
<td>No assume equal variance 12.109 91.403 0.000 13.333 1.101 11.146 15.520</td>
</tr>
</tbody>
</table>

It is seen in the table that the significance of the three columns is 0.000. Under the condition of the significance level, the significance is less than the significance level, that is, it is assumed to be equal variance. And in the sixth column of the peer Sig. (double tail), we get the Sig value of 0, which is less than 0.05. We reject the original hypothesis, and think that the high and low of this questionnaire has a distinguishing degree, that is, it can be proved that this questionnaire can distinguish the depth of the situation.

5. Sampling and data analysis

5.1 Sampling

This paper uses the stage-by-stage sampling method, first carries on the stratified stage for the first stage, collects the colleges and universities in Chengdu, Sichuan Province, and distributes the questionnaire and divides the results according to the proportion of the number of colleges and universities. Then carry on the second stage, stratified sampling of men and women. In order to reduce the error caused by the ratio of male to female and the cognitive difference between male and female, we decided to divide the college students of Chengdu University of Technology and Sichuan Communication University into two layers of male and female, and carry on the stratified sampling. According to official data, the male-to-female ratio at Chengdu University of Technology is about 2:3. The male-to-female ratio of Sichuan Communication University is about 1:3.
5.2 Data analysis

In this survey, various forms of pie charts and bar charts were used to analyze the basic information, vaccination and wishes of the respondents. The Alpha reliability coefficient method was used to analyze the reliability of the questionnaire. According to the KMO value to judge whether the number of common factors between variables is appropriate, that is, the correlation between variables. The influence of inoculator gender on vaccination was analyzed by cross-contingency table analysis and chi-square test, and the college students were subdivided by mean clustering.

![Figure 1: Histogram of cross-analysis of vaccination intention of different genders](image)

Females accounted for more than half of the vaccinated and unvaccinated population. SPSS was used to test the P-value.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Have been vaccinated</th>
<th>Have not been vaccinated</th>
<th>Total</th>
<th>P-value</th>
<th>0.363</th>
<th>0.547</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>46</td>
<td>32</td>
<td>78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>57</td>
<td>45</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test P-value, accept the original hypothesis, that is, there is no significant difference in vaccination willingness between different genders, that gender does not affect their vaccination decisions, according to roughly the same proportion can also be seen.

6. Conclusion

In this paper, a simple random sampling method is used to analyze the network questionnaire survey and face-to-face interview of college students. A total of 352 valid questionnaires are collected, and the data are analyzed by Logistic regression analysis and cross-contingency analysis. Then it is found that most of the college students in COVID-19's vaccination work maintain an active and cooperative attitude, and think that vaccination is an effective regular epidemic prevention and control work. However, some college students choose not to be vaccinated, mainly have the following objective willingness, such as physical discomfort, have been vaccinated with other vaccines within 28 days, and think that the safety of COVID-19 vaccine has not been guaranteed. Most of the college students' comments on COVID-19 vaccine are positive.
References


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