

# Knowledge And Perception Of Nicotine, Nicotine Replacement Therapy And E-Cigarettes Among Health Care Workers In Chengdu

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## Abstract

The purpose of this study was to evaluate the cognition of healthcare workers and clinical medical students on nicotine and its replacement therapy in Chengdu. Questionnaires were distributed to the medical students at Chengdu University Medical College and the medical staff in the Affiliated Hospital of Chengdu University as the basis of the project research. Then the statistical analysis of the data was used to give a specific research evaluation of nicotine and its replacement therapy. A total of 217 medical staff and 332 medical students were included in the analysis. In our study, overall awareness of nicotine replacement therapy was low, with only 3.6 percent of smokers using it. 54.2 percent of quitters would not recommend e-cigarettes to long-term smokers who refuse to take medication. The domestic understanding of nicotine replacement therapy and the e-cigarette was not also comprehensive. Only 45.8% of healthcare workers recommend nicotine replacement therapy and e-cigarettes to patients who want to quit smoking. In conclusion, healthcare workers have insufficient awareness about nicotine, nicotine replacement therapy and e-cigarettes. Accurate and comprehensive information about these substances should be provided to healthcare professionals to provide effective patient care and advice.

**Keywords:** Knowledge, Perception, Nicotine, Nicotine Replacement Therapy and E-cigarettes among Health care workers in Chengdu

## INTRODUCTION

Smoking has many harmful effects. Studies have shown that smoking can cause tumors of the lungs, throat, kidney, bladder, stomach, colon, mouth, and esophagus, as well as leukemia, chronic bronchitis, chronic obstructive pulmonary disease, ischemic heart disease, stroke, miscarriage, premature delivery, congenital disabilities, infertility and other diseases [1]. Tobacco acts on a variety of brain neurotransmitters and neural activities, among which nicotine is the primary substance leading to addiction [2]. However, in the early years, people have always had a wrong understanding of nicotine, believing that the harm of smoking is mainly caused by nicotine. However, with the development of science and technology, more and more medical workers realize that the tar and harmful gases in cigarettes mainly cause the primary harm of

smoking. And because nicotine is the leading cause of tobacco addiction. So, nicotine replacement therapy is getting more and more attention from medical workers. At present, there are several forms of smoking cessation therapy in the world: psychological intervention therapy, drug therapy, e-cigarette replacement therapy, nicotine replacement therapy, and so on [3,4]. According to relevant data, in western regions of China, such as Xizang, 30% of doctors often advise patients to quit smoking when they know they smoke, 60% sometimes recommend patients to quit smoking, and 10% never advise [5]. In eastern coastal China, the proportion of doctors advising patients to quit smoking was higher. In a survey of general practitioners' attitudes towards tobacco control in Shanghai community hospitals, 78.2% of medical staff agreed that doctors should routinely ask patients about their smoking status, and 86.1% agreed that doctors should routinely exhort smokers to quit [6]. Studies have shown that simple advice from clinicians can help smokers quit, and high-intensity dissuasion can be more meaningful. According to China Clinical Smoking Cessation Guidelines (2015 edition), nicotine replacement therapy is recommended for clinical smoking cessation treatment. However, at present, domestic doctors do not have enough understanding of smoking cessation, and some medical workers still do not have relevant knowledge of nicotine therapy for smoking cessation.

E-cigarettes and other nicotine replacement therapies are becoming more common in Europe. There has been a growing body of research into alternative therapies, most of which have looked at the advantages and disadvantages of e-cigarettes as alternative therapies. In an interview with registrants at the 2016 National Cancer Institute Tobacco Alert Award Conference, they agreed on the need to communicate the relative risks of cigarettes or e-cigarettes. In general, more research is needed on tobacco warnings for non-cigarette products, including message content, placement, implementation, and the potential impact on product knowledge, risk perception, and use intent of the audience. This is especially necessary for products such as e-cigarettes, which may be less harmful than cigarettes and require special considerations [7]. Due to the advantage of nicotine replacement therapy gradually revealed, nicotine replacement therapy research and related reports continuously increased but about citizens' cognition on its appropriate therapy is rare, so some foreign scientists research human health captured the pain points and related to medical personnel in the first place (including medical students), and other health workers. In a Greek relevant health care personnel of nicotine, nicotine replacement therapy, and electronic cigarettes research in the article the author knowledge and views invite the private and public health departments in Athens, Greece doctors and nurses to participate in found that more than 30% of people think that smoking nicotine replacement therapy with the same or more addictive, 76.7% of people overestimate their smoking effect, only 21.0% of people recommend nicotine replacement therapy as the long-term substitute for smoking. Regarding e-cigarettes, 45.0% of respondents thought e-cigarettes were as addictive or more severe than smoking cigarettes, and 24.4% thought e-cigarettes were as harmful or more stringent than cigarettes. The bottom line: Greek health professionals seem to overestimate the adverse effects of nicotine, and many would not recommend any product containing nicotine as an alternative to long-term smoking. In addition, they know less about the functions and characteristics of e-cigarettes [8]. Health care workers in Greece are not objectively and comprehensively aware of emerging nicotine replacement therapies such as e-cigarettes. We turn our attention to more developed Europe, where MRPH residents are less knowledgeable about e-cigarettes and tobacco harm reduction (THR) [9]. These studies cannot help but make us reflect on: while the awareness level of related medical and health workers in European and American countries with a high range of e-cigarette use is still not high, how will the awareness level of relevant personnel in China be

The knowledge and perception of nicotine, nicotine replacement therapy and e-cigarettes among health care workers in China is relatively slow. Therefore, the current domestic understanding of nicotine replacement therapy and the e-cigarette is not comprehensive enough. According to recent data, most medical workers will not recommend nicotine replacement therapy and e-cigarette to patients to quit smoking. Hence, we had chosen to conduct this research to increase the knowledge and perception of nicotine, nicotine replacement therapy and e-cigarettes among health care workers in China.

## MATERIALS AND METHODS

Using paper questionnaires as a template, the research team created an electronic questionnaire and

uploaded it to an online survey tool (<https://www.wenjuan.com>). The questionnaire was divided into five main sections asking for information: (1) Demographic data of the participants; (2) Smoking status of participants; (3) Cognition and recognition of the contribution of nicotine to smoking-related diseases; (4) To understand the efficacy and dependency potential of nicotine replacement therapy; (5) E-cigarette knowledge. About nicotine the main objective

was to assess the relative risk of exposure to nicotine and its impact on smoking-related diseases as compared to exposure to other smoking-related toxins. For nicotine replacement therapies, questions have focused on the willingness to recommend long-term use as an alternative to smoking, their dependency potential compared to smoking, and the understanding of their effectiveness in quitting smoking. Since e-cigarettes are a novel product, we aimed to assess knowledge about their function and design characteristics, the sources of nicotine in e-cigarettes, and EU regulations and to assess whether medical professionals would recommend them as an alternative to smoking for those who are unable or unwilling to quit smoking by other means.

The participation invitation was sent to the medical workers of the Affiliated Hospital of Chengdu University and the students at the Basic Medical College of Chengdu University, respectively, through E-mail and QQ message, and the link to the electronic questionnaire was provided. The survey of the essential medical college of Chengdu University mainly involved first-year students to juniors (2020-2018), covering clinical medicine, nursing, and stomatology technology.

Results were reported for the entire sample, with categorical variables expressed as numbers (%) and continuous variables as averages (SD). Independent-sample t-test, one-way analysis of variance, and X<sup>2</sup> test were used to compare groups. A "knowledge score" was calculated for each participant, and in some questions, participants were awarded one point for each correct answer. Univariate and multivariate linear regression analysis was used to explore the relationship between the knowledge scores of participants and their various characteristics. All variables with P <0.05 for univariate analysis were included in the multivariate model. P <0.05 was considered statistically significant, and Excel and SPSS were used for all comments [8].

## RESULTS

**Table 1 shows demographic characteristics of participants.**

| Gender           | Number (percentage) |
|------------------|---------------------|
| Male             | 219 (39.9%)         |
| Female           | 330 (60.1%)         |
| Profession       |                     |
| Medical staff    | 217 (39.5%)         |
| Medical students | 332 (60.5%)         |

**Table 2 shows participant responses about awareness about smoking.**

| Level of awareness about smoking |             |
|----------------------------------|-------------|
| Very high                        | 122 (22.2%) |
| High                             | 137 (24.9%) |
| Moderate                         | 243 (44.2%) |
| Low                              | 47 (8.5%).  |

|   |              |
|---|--------------|
| <b>How often do you encounter patients who smoke</b>      |              |
| Every day   | 222 (40.4%)  |
| More than three days a week                               | 136 (24.7%)  |
| One or two days a week                                    | 121 (22.0)   |
| Less than a day   | 70 (12.7%)   |
| <b>Do you smoke now</b>                                   |              |
| Yes   | 78 (14.2%)   |
| No  | 471 (85.7%)  |
| <b>A way for smokers to quit smoking</b>                  |              |
| No secondary  | 31 (5.6%)    |
| Nicotine replacement therapy                              | 20 (3.6%)    |
| Oral drug   | 13 (2.3%)    |
| Psychological intervention                                | 20 (3.6%)    |
| Other   | 51 (9.2%)    |
| <b>Product risk score</b>                                 |              |
| Cigarettes  | 7.7 (2.2)    |
| Electronic cigarettes                                     | 6.2 (2.2)    |
| Snuff   | 6.9 (2.0)    |
| Nicotine replacement therapy                              | 5.9 (2.2)    |
| Oral drug   | 5.7 (2.3)    |
| <b>Risk score for smoking ingredients</b>                 |              |
| Nicotine inhales the smoke.                               | 7.3 (2.0)    |
| Carbon monoxide tar tobacco                               | 6.6 (2.1)    |
| <b>The effect of nicotine on smoking-related diseases</b> |              |
| It is essential.  | 254 (46.2%)  |
| It is essential.  | 178 (32.4%)  |
| Important   | 100 (18.2%)  |
| Less important  | 11 (2.0%).   |
| The minimum   | 6 (1.0%)     |
| <b>The effect of nicotine on lung cancer</b>              |              |
| It is essential.  | 272 (49.5%)  |
| It is essential.  | 174 (31.6%)  |
| Important   | 83 (15.1%)   |
| Less important  | 16 (2.9%)    |
| The minimum   | 4 (0.7%)     |
| <b>Nicotine can cause cancer in other organs</b>          |              |
| It is essential.  | 196 (35.7%)  |
| It is essential.  | 173 (31.5%)  |
| Important   | 138 (25.1%)  |
| Less important  | 40 (7.2%)    |
| The minimum   | 2 (0.3%).    |
| <b>The effect of nicotine on atherosclerosis</b>          |              |
| It is essential.  | 230 (41.9%)  |
| It is essential.  | 153 (27.9%)  |
| Important   | 128 (23.3%), |
| Less important  | 29 (5.3%)    |
| The minimum   | 9 (1.6%)     |

Table 3 shows participant responses about awareness about nicotine replacement therapy.

| <b>Risks of nicotine replacement therapy</b>  | <b>Mean (SD) or n %</b> |
|---|-------------------------|
| A little low  | 218 (39.7%)             |
| Equality  | 143 (26.0%)             |
| Higher  | 102 (18.6%)             |
| I don't know  | 86 (15.7%)              |
| <b>Smoking compared to nicotine therapy dependence</b>  |                         |
| A little low  | 169 (30.8%)             |
| Equality  | 175 (31.8%)             |
| Higher  | 110 (20.0%)             |
| I don't know  | 95 (17.4%)              |
| <b>The success rate of nicotine therapy</b>   |                         |
| Less than ten   | 70 (12.8%)              |
| 10-30   | 144 (26.2%)             |
| 30-50   | 235 (42.8%)             |
| More than 50  | 100 (18.2%)             |
| <b>The nicotine in nicotine replacement therapy is</b>  |                         |
| Extract from Tobacco  | 202 (36.8%)             |
| Synthetic   | 347 (63.2%)             |
| <b>Is long-term use of therapy to reduce smoking relatively safe?</b>   |                         |
| Yes   | 249 (45.4%)             |
| No  | 300 (54.6%)             |
| <b>Will the long-term use of alternative therapies be recommended?</b>  |                         |
| Yes   | 234 (42.6%)             |
| No  | 315 (57.4%)             |
| <b>Compared to smoking, e-cigarettes are risky</b>  |                         |
| A little low  | 274 (49.9%)             |
| Equality  | 138 (25.1%)             |
| Higher  | 83 (15.1%)              |
| I don't know  | 54 (9.9%).              |
| <b>Nicotine in e-cigarettes</b>   |                         |
| It's extracted from tobacco.  | 177 (32.4%)             |
| Synthetic production  | 372.(67.6%)             |
| <b>Would you recommend e-cigarettes as an alternative to smoking for smokers who have quit smoking for a long time and refuse to take medication?</b> |                         |
| Yes   | 251 (45.8%)             |
| No  | 298 (54.2%)             |
| <b>Would you recommend e-cigarettes to smokers who have failed to quit using other methods?</b>   |                         |
| Yes   | 309 (56.2%)             |
| No  | 240 (43.8%)             |
| <b>Which of the following is true about e-cigarettes</b>  |                         |
| They contain tobacco.   | 8716%)                  |
| There are burning.  | 67 (12.2%)              |
| Electronic liquid components are allowed to be inhaled.   | 122 (22.2%)             |
| E-cigarettes work at lower temperatures than tobacco cigarettes.  | 113 (20.5%)             |
| They have an official certificate of quality.   | 99 (18%)                |
| There are nicotine-free electronic cigarettes.  | 56 (10.1%).             |
| <b>Do you think e-cigarettes are effective as a replacement for smoking?</b>  |                         |

|  |             |
|--|-------------|
| Yes  | 337 (61.5%) |
| No   | 212 (38.5%) |
| <b>What do you think should be included in the regulation of e-cigarettes</b>      |             |
| It's only available by prescription.   | 162 (29.5%) |
| The smoking ban.   | 183 (33.5%) |
| Ban taste.   | 96 (17.5%)  |
| Sales to young people are prohibited.  | 302 (54.9%) |
| It is forbidden to be used in public places.                                       | 225 (40.9%) |
| Obtain a drug license.   | 206 (37.5%) |
| It can only be sold in drugstores.   | 128 (23.3)  |
| Reduce product variability in the marketplace.                                     | 182 (33.1)  |
| No advertising or promotion of e-cigarettes as alternatives to smoking is allowed. | 179 (32.5%) |
| <b>Do you know the European union's treaty regulating e-cigarettes?</b>            |             |
| Yes  | 147(26.7%)  |
| No   | 402 (73.3%) |

## DISCUSSION

Through a questionnaire survey of students at Chengdu University and students and professionals in the Affiliated Hospital of Chengdu University, our team found that medical professionals lack knowledge about nicotine, nicotine replacement therapy, and e-cigarettes. In the data analysis, men and women were roughly equally divided, and overall awareness of nicotine replacement therapy was low, with only 3.6 percent of smokers using it. 54.2 percent of quitters would not recommend e-cigarettes to long-term smokers who refuse to take medication. The domestic understanding of nicotine replacement therapy and the e-cigarette was not also comprehensive. Only 45.8% of healthcare workers recommend nicotine replacement therapy and e-cigarettes to patients who want to quit smoking. Similar result like our finding was reported by China Clinical Smoking Cessation Guidelines (2015 edition). They said that domestic doctors do not have enough understanding of smoking cessation, and some medical workers still do not have relevant knowledge of nicotine therapy for smoking cessation. Similar result like our finding was also reported in Greece [8].

Our above survey was not only targeted at the Chengdu area but also represents the cognitive results of professionals at Chengdu University and the Affiliated Hospital of Chengdu University; it can also mean the mental consequences of people in Sichuan Province and even Southwest China; it can also be a trend of the cognitive effects of people in the whole country in this aspect. As smokers over the use of electronic cigarettes and constantly improve, relevant staff needs to understand better and master the electronic cigarettes and related information of these products as well as the scientific basis to provide accurate, reasonable suggestions for smokers; some professionals need to accept the appropriate related knowledge education, this part of the professional education with other professionals and knowledge on the masses.

Many foreign research institutions are still conducting in-depth studies on this topic. However, there still needs to be a gap in the cognition and development of nicotine replacement therapy in China. Given this blind spot, our team designed this survey, hoping to contribute a little to promote the understanding and rational use of nicotine replacement therapy among Chinese citizens and provide a reference for designing relevant training programs for public health students and the preventive medical team will expect to will conduct further investigations for more people in the future, analyze more accurate information, and lay a more solid foundation for future work.

## CONCLUSION

In conclusion, healthcare workers have insufficient awareness about nicotine, nicotine replacement therapy and e-cigarettes. Accurate and comprehensive information about these substances should be provided to healthcare professionals to provide effective patient care and advice.

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## CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest

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