A Qualitative Study on the Impact of COVID-19 on the Behavior and Attitudes of Smokers and Non-smokers in South Korea

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Research Article

Keywords: smoking, COVID-19, attitudes, tobacco products, Korea

DOI: https://doi.org/10.21203/rs.3.rs-478285/v1

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Abstract

Background

The COVID-19 pandemic has affected all aspects of human society, including education, culture, and economy, and has also brought changes in health behaviors such as drinking alcohol, nutrition intake, and practicing healthy living. This study conducted a qualitative research in the Korean context to examine the changes in the smoking behavior of smokers and secondhand smoke exposure of non-smokers during the COVID-19 pandemic.

Methods

Focus group interviews were conducted with 36 Korean participants (18 men and 18 women): groups were composed of cigarette smokers, e-cigarette users, heated tobacco products users, or non-smokers.

Results

During the COVID-19 pandemic, regardless tobacco products, in the case of users who were not participating in engaging in social interaction, such as working from home or online classes, the frequency of using increased, and for users who continued engaging in social interactions, the amount of using increased each time they used. Smokers showed a tendency to avoid smoking rooms and to smoke alone in places where there were no people. In addition, non-smokers’ exposure to secondhand smoke did not decrease, but since non-smokers used masks, they reported more relief about the risk of exposure to secondhand smoke than before.

Conclusions

Smokers being a high-risk group for COVID-19 did not result in smoking cessation among smokers. Therefore, policy and educational campaigns to raise awareness about the dangers of smoking and to encourage smoking cessation are needed in the future.

Background

Coronavirus disease 2019 (COVID-19), which originated in China, began to spread to other countries from January 2020 onwards, it had spread to most countries, excluding some countries and regions[1]. Accordingly, the World Health Organization declared a public health emergency of international concern on January 31, 2020 and a pandemic on March 11, 2020, particularly. As of March 17, 2021, there were 121,464,666 confirmed cases and 2,684,093 deaths worldwide[2].

The COVID-19 pandemic has resulted in the isolation of nations and people, and brought about profound changes in societies, economies, and cultures around the world. The pandemic has negatively affected the educational system, such as shutting down of schools and moving classes online; the tourism
industry; and face-to-face service industries, such as restaurants and lodging[3, 4]. Some industries such as the video conferencing service industry and delivery services have benefitted[5, 6].

The pandemic has also affected health behaviors. Since the outbreak, alcohol intake has increased or decreased, physical activity has decreased due to increased sitting time, and food consumption and eating patterns have become unhealthy[7, 8]. Furthermore, the pandemic has led to an increase in mental health problems such as stress, anxiety, depressive symptoms, insomnia, denial, anger, and fear[9].

Smoking behaviors have also changed. Both smoking initiation and the amount of smoking have increased. According to Cancello's study, after the lockdown, 38% of habitual smokers reported an increase in tobacco consumption[10]. In Ren's study, 30.1% of smokers increased their cigarette use, and in Chen's study, 25% of smokers increased their smoking amount[11, 12]. Moreover, Dogaš reported that the number of cigarette increased significantly[13]. Even past smokers thought about smoking or started smoking again during the pandemic[14]. However, in some studies, an increase in the intent to quit smoking, an attempt to quit smoking, or a decrease in the smoking amount were reported[14].

It was reported that the behavior changes were due to boredom, lack of social access, and disruption of daily life during the pandemic[15]. Specifically, as the pandemic caused stress, smoking amount increased to relieve stress[16]. Consequently, the changes in smoking behavior can be attributable to the psychological changes experienced by smokers in the COVID-19 pandemic situation[12].

However, very few studies have examined the relationship between the psychological factors caused by the pandemic and the changes in smoking behavior. Studies have examined the stress, anxiety, and depression of smokers after the pandemic, but specifically how these psychological factors work and affect the smoking behavior of smokers has not been proved. Additionally, as with most quantitative studies, interpretations of the reasons for changes in smokers’ behavior were limited. In particular, whether the majority of non-smokers whether exposure to secondhand smoke changed, and whether these factors changed their perceptions or attitudes toward existing smoking or secondhand smoke has not been determined.

Therefore, this study conducted qualitative research to examine the changes in the smoking behavior of smokers during the COVID-19 pandemic. Moreover, it explored whether changes in exposure to secondhand smoke were experienced by non-smokers and whether their attitudes toward smoking and secondhand smoke changed. Based on the study findings, we propose an effective tobacco control policy for the pandemic, and further suggest the direction of research for promoting policies based on scientific research.

Since the first confirmed cases of COVID-19 on January 20, 2020, South Korea has experienced three waves of COVID-19[17]. Korea ranked second in the world for the number of confirmed cases, with approximately 5,000 confirmed cases 43 days after the first COVID-19 patient. Despite the situation, Korea succeeded in reducing the new cases through the efforts of the Ministry of Health and Welfare and the Korea Disease Control and Prevention Agency, and advanced quarantine systems[17]. This study
makes an academic contribution to the existing body of literature as it shares interview data from Koreans who have experienced such a dynamic pandemic, and is expected to contribute to promoting effective policies.

Methods

Sample and recruitment

Focus group interviews were conducted for this study. Through a survey agency, a total of 36 Korean participants, including male and female students (ages 16–19) and office workers (ages 20–49) who have been working for more than 1 year, were recruited. At the time of recruitment, the participants provided information about the current smoking status and types of tobacco products they used. Current smokers were limited to those who had used each type of tobacco product for six months or more. Those who engaged in tobacco manufacturing, distribution, sales, medical field, and media/advertising/marketing businesses were excluded. The recruited participants were divided into six groups according to gender, age, and smoking status; adult tobacco user men, adult tobacco user women, adult tobacco non-user men and women, tobacco user boys, tobacco user girls or tobacco non-user boys and girls.

Interview protocol and data collection

The interview explored the participants’ current and past smoking behaviors, smoking perceptions, subjective health status, and changes during the pandemic. Interviews were conducted by one male moderator from November 16–21, 2020 based on a semi-structured questionnaire, and interviews per group lasted about an hour. With the consent of the participants, the interviews were recorded, and after the interview, all the interview contents were transcribed. In the case of students, parental consent was obtained before participation in the interview. All participants received 70,000 won (about 62 US$) in cash. Ethical issues in the study were reviewed and approved by the Institutional Review Board of the Seoul National University (IRB No. 2010/001-018).

Data analysis

The first author coded the six transcripts using MAXQDA software. Coding was performed using a line-by-line open coding approach. The second author coded using the same method. The two codes were compared and refined to create categories, and the final code was completed. The relevant transcripts extracts in the final code was finalized through discussion and agreement between the three authors.

Result

Participant characteristics
The total number of participants was 36 (18 men and 18 women) (Table 1). There were 18 teenagers (9 male and 9 female students), with one high school freshman student, four second-grade students, and 13 third-grade students. A total of 15 adult office workers who were in their 20s or older (9 males and 6 females) were included, with an average age of 33.4 years. Of the 36 participants, 25 were smokers and 11 were non-smokers. In terms of tobacco product in use, 13 were using cigarettes, 5 were using electronic cigarettes (e-cigarettes), and 7 were using Heated Tobacco Products (HTPs). Nine participants were dual or multiple tobacco product users.
| Group     | No. | Age | Sex | Type of tobacco products               |
|-----------|-----|-----|-----|----------------------------------------|
| Group 1   | 1   | 33  | Male| Cigarette                              |
|           | 2   | 30  | Male| Cigarette                              |
|           | 3   | 27  | Male| Heated tobacco product                 |
|           | 4   | 43  | Male| Heated tobacco product /Cigarette       |
|           | 5   | 32  | Male| e-cigarette/Cigarette                  |
|           | 6   | 43  | Male| Heated tobacco product /Cigarette       |
| Group 2   | 7   | 36  | Female| Heated tobacco product /Cigarette   |
|           | 8   | 44  | Female| Heated tobacco product /Cigarette   |
|           | 9   | 29  | Female| Cigarette                           |
|           | 10  | 27  | Female| Cigarette                           |
|           | 11  | 38  | Female| e-cigarette/Cigarette                 |
|           | 12  | 33  | Female| e-cigarette (CSV)                     |
| Group 3   | 13  | 33  | Female| -                                    |
|           | 14  | 32  | Female| -                                    |
|           | 15  | 47  | Female| -                                    |
|           | 16  | 44  | Male | -                                    |
|           | 17  | 29  | Male | -                                    |
|           | 18  | 22  | Male | -                                    |
| Group 4   | 19  | 19  | Male| e-cigarette (CSV)                     |
|           | 20  | 19  | Male| Cigarette/ e-cigarette                |
|           | 21  | 19  | Male| e-cigarette (CSV)                     |
|           | 22  | 18  | Male| Heated tobacco product /Cigarette       |
|           | 23  | 18  | Male| Cigarette                              |
|           | 24  | 18  | Male| Cigarette                              |
| Group 5   | 25  | 19  | Female| Cigarette                           |
|           | 26  | 19  | Female| Heated tobacco product /Cigarette       |
|           | 27  | 19  | Female| Cigarette                           |
| Group    | No. | Age | Sex   | Type of tobacco products                |
|----------|-----|-----|-------|----------------------------------------|
|          | 28  | 19  | Female| Cigarette/ Heated tobacco product      |
|          | 29  | 19  | Female| Cigarette                              |
|          | 30  | 18  | Female| Cigarette                              |
|          | 31  | 19  | Female| Cigarette                              |
|          |     |     |       |                                        |
| Group 6  | 32  | 19  | Female| -                                      |
|          | 33  | 19  | Female| -                                      |
|          | 34  | 19  | Male  | -                                      |
|          | 35  | 17  | Male  | -                                      |
|          | 36  | 19  | Male  | -                                      |

**Themes and categories**

The classification of themes and categories classified that emerged from the interview is shown in Table 2. Themes were divided into five categories: changes in daily life; changes in smoking behavior (smoking place, smoking amount and frequency, products used); changes in smoking perception; subjective mental health; and exposure to secondhand smoke.

**Table 2**
Themes and categories

| Themes                        | Categories                                      |
|-------------------------------|------------------------------------------------|
| Changes in daily life         | Changes in daily lives among students           |
|                               | Changes in daily lives among adults             |
|                               | Changes in daily lives both students and adults |
| Changes in smoking behavior   | No change                                       |
|                               | Smoking place                                   |
|                               | Smoking amount and frequency                    |
|                               | Products used                                   |
| Changes in smoking perception | Smoking room                                    |
|                               | Smoking                                         |
| Subjective mental health      | Stress                                          |
| Exposure to secondhand smoke  | Continuous exposure to secondhand smoke         |
Changes in daily life

COVID-19 changed the daily lives of both students and adults. Most schools were shut, but classes were taught online. Group activities such as drama circle were also stopped, and leisure activities became restricted due to the closure of places such as study cafes and PC rooms. Among adults, some isolated from others were cut off due to a business failure, and there were cases where the form of work changed due to telecommuting. Similar to the changes experienced by students, social and outside activities such as social gatherings and sports almost completely disappeared.

“During the pandemic, there were days when I used to go to school, but now I rarely go (M 18, HTP and cigarette user).”

“I worked at the airport, but now I’m resting because the company is closed after COVID-19 (W 27, cigarette user).”

“I had been in business for about 13 years; due to the pandemic, it closed on the 15th of May (W 38, e-cigarette and cigarette user).”

“Gatherings with friends have decreased a lot (W 33, non-smoker).”

Changes in smoking behavior

Most smokers responded that there was no change after the COVID-19 pandemic. They recognized that the behavior had not changed since there had been no smoking cessation or discontinuation of tobacco products.

“Nothing has changed in particular about smoking (M 18, cigarette user).”

“There is no change. The smoking habit is similar, and it all just seems the same. Only wearing masks? That’s all (F 19, cigarette user).”

Changes in smoking place

After COVID-19, smokers’ attitudes toward smoking places became very different. Smokers avoided smoking areas and smoking rooms where many people gathered, and smoking alone to avoid people increased. Some companies recommended not to smoke in groups and to refrain from talking with others when smoking. Additionally, spacing policies between smoking spots were implemented in companies.

“I don’t go to places with a lot of people; instead, I find a corner (W 38, e-cigarette and cigarette user).”

Existing smoking rooms and smoking areas were avoided due to the psychological factor of being bothered by smoking with others in an enclosed space and feeling anxiety and fear. Additionally, those
who had confirmed cases around them tended to be more careful not to be infected, resulting in the change in smoking places.

“When there is no one, I smoke quickly and come out. That's what I care about after COVID-19 (M 33, cigarette user).”

These changes in places showed different patterns depending on the tobacco product use. HTP or e-cigarette users smoked regardless of places compared to cigarette smokers. However, cigarette smokers mostly smoked outdoors with no people around, and they did not complain of any discomfort about this despite the difference in smoking place. Some users tended to select products according to the smoking place, but they mainly used HTPs or e-cigarettes indoors and cigarettes outside.

“I want to smoke at home during the pandemic, so I started using e-cigarettes (M 19, cigarette and e-cigarette user).”

Considerable rejection and anxiety were also shown regardless of the type of tobacco product. This was explained by reluctance; anxiety; and fear about the characteristics of the smoking room, such as being confined and dense and people taking off masks.

“I never go into a box-shaped smoking area. But box type is a little worrying (W 36, HTP and cigarette user).”

Changes in smoking amount and frequency

Changes in work and study environments due to COVID-19 affected changes in smoking frequency and smoking amount. In case of working from home or taking online classes, there was no observer, and it was possible to go out frequently. However, in case of office workers, due to unsuitable smoking places or time constraints, the amount of smoking increased due to smoking a lot at once. There also were opinions that smoking frequency decreased after going to work due to the presence of co-workers, in many cases, the overall smoking amount or smoking frequency did not change or increased after the pandemic.

“I don't go to work, so my smoking amount increased. I smoke anytime at home, right on the roof (W 27, smoker).”

“We are taking online classes and just smoke freely. Because parents are at work. I don't have to worry about being scolded by the teacher, so I think the frequency is increasing (W 19, smoker).”

“I smoke three or four cigarettes (W 44, HTP and cigarette user).”

Change in tobacco product

Most smokers did not see any changes in tobacco products. However, in the case of dual users, there were cases of considering or attempting to stop smoking during the pandemic. The reason for trying to
quit smoking was that the odor caused by smoking soaked into the face mask. Smokers showed a
negative attitude toward the smell of cigarettes on the mask and expressed it by saying that they disliked
it or found it to be nasty and disgusting, and frequently changed their masks. Nevertheless, the reasons
for continuing cigarette use included the feeling of getting a hit, taste, satisfaction, or the inconvenience
of using HTPs and e-cigarettes.

“After smoking, the face mask also smells like cigarette (F 19, cigarette user).”

Changes in smoking perception

Some participants said they would switch from cigarettes to HTPs or e-cigarettes, but most m said that
they would continue to use the current tobacco products. They planned to quit smoking for their health in
the future, but the current status and future situation of the COVID-19 pandemic did not affect their
current attempts to quit smoking. However, there was an attitude of being careful about health. Non-
smokers tended to reinforce their thoughts of not smoking in the future as a result of COVID-19. Unlike
smokers, non-smokers were sensitive about health. Smokers mostly defined that they were at high risk for
COVID-19. However, non-smokers agreed or did not care.

“I haven't thought about it at all, so I don't think it has any relation (M 30, br).”

“Maybe because of COVID-19 stress, it is annoying when I smell it, and because of that, I thought I should
stay away from cigarettes (M 19, non-smoker).”

Subjective mental health changes

Changes in daily life were expressed as more stressful for non-smokers than for smokers. Non-smokers
responded that they relieved daily stress by drinking, traveling, food, friends, etc. However, pandemic had
limited the way in which n they relieved stress. Smokers explained the reasons for smoking as stress
relief, habits, mental and physical stability, and maintaining interpersonal relationships. They responded
that COVID-19 changed the smoking place and amount of smoking. However, they did not think that this
affected their stress and explained that this is because they could smoke when stressed in daily life.

“I get more stressed. I need something for relief, but my routine is company and home, so there's no way
to refresh myself (F 44, HTP and cigarette user).”

“There is no space to relieve stress. It disappeared even more because of COVID-19. So it seems that more
friends smoke (M 19, non-smoker).”

Changes in exposure to secondhand smoke

Non-smokers who were exposed to secondhand smoke before COVID-19 were exposed to secondhand
smoke continuously. Non-smokers continued relationships with family, friends, and coworkers, even
though they believe that exposure to secondhand smoke harmed their health. Since COVID-19, non-
smokers recognized that face masks block secondhand smoke and were more relieved about the
exposure than before. During the pandemic, they were tolerant of secondhand smoke by acquaintances and felt reassured about masks, but were sensitive to the secondhand smoke by others (passengers who smoke on the street).

“This (face mask) is a protective film for me. I don't know if I'll breathe the same or not; the filter operates well, and I'm a lot more psychologically stable anyway. Since it filters out the smell first, it's just a little more psychologically comfortable than when I'm not wearing it (M 22, non-smoker).”

Discussion

In this study, we found that modifications in daily life patterns such as school and work affected the changes in smoking place, amount, and frequency. Additionally, in some cases, the main tobacco products used were different. Moreover, for non-smokers, exposure to secondhand smoke did not change after COVID-19, but they felt more tolerant about smoking.

In earlier studies, smoking amount or frequency was found to increase or decrease due to COVID-19[10–14]; however, there are no consistent finding so far. However, in this study, smokers perceived no difference in their smoking behavior because they did not try to quit smoking or did not quit smoking successfully. COVID-19 did, however, significantly affect changes in smoking place and frequency.

Working from home and taking online classes due to COVID-19 meant not having to engage in social interactions and surveillance, and created environments that were conducive to smoking more freely. These results suggest that the change in environment was the most influential factor in smoking behavior modification.

Smoking is interpreted as nicotine addiction, but also as an addiction to behavioral habits[18]. The meaning of smoking in one's behavioral patterns, such as the beginning or end of an activity, and the interval between behaviors, is significant. The place could have a lot of influence on these behavioral changes[19]. The behavior of not smoking in specific places, such as schools and hospitals, could be due to the pressure imposed by the place[19]. As a result, the expansion of non-smoking areas could have effect on trying to or successfully quitting smoking.

The expansion of non-smoking areas is known to have a positive effect on smoking amount reduction and cessation, and secondhand smoke exposure also significantly decreases[20]. Smoking is reduced even in a non-smoking area mark[21]. A significant correlation exists between the continuous decrease in smoking rates in Korea and other parts of the world and the constant expansion of non-smoking areas[20]. However, HTPs tobacco and e-cigarettes can pose a challenge in the future, given that they are used regardless of place. Therefore, there is a need to prepare measures such as expanding non-smoking areas that do not lead to a shift in tobacco products.

Smokers changed their smoking place due to COVID-19, but they were able to bear the discomfort. This is because pleasure, satisfaction, and stress relief from smoking have a greater effect[22, 23].
denial of the high risk of COVID-19 could be interpreted as a justification for their actions[24]. Smokers tend to justify smoking behavior, and COVID-19 seems to have solidified and reinforced these behaviors. However, the reluctance to use the smoking room or refraining from smoking in a crowded place cannot be interpreted to mean that smokers do not care about COVID-19 at all. These changes are because of the awareness of the risk of infection when smoking in a confined place with a mask removed. Eventually, the behavior change of avoiding dangerous places occurred, but smoking appeared to continue because the satisfaction from smoking acts as a greater reward than the risk burden.

The reasons for smoking are stress relief and habit[25]. In this study, smokers cited stress relief, stability, satisfaction, and psychological stability as the reasons for smoking maintenance, and the results were consistent with previous studies. However, changes in daily life caused by COVID-19 could act as a stress factor for both smokers and non-smokers, and the stress response to the pandemic was weaker among the former. According to previous studies, smokers have higher levels of daily stress than non-smokers[26], but the results of this study were contrary. Although smokers explained smoking for stress relief, it should be noted that the difference in the level of stress is caused by changes in daily life in the event of a special situation such as a pandemic, and the way to relieve it depends on smoking status.

Differences were observed in smoking behaviors and health attitudes between smokers and non-smokers. Smokers were proud of their health and showed no concern about the risk of smoking. Non-smokers, however, were more sensitive to health than smokers. In terms of the health effects of smoking, the basic common sense level and the choice to smoke depend on an individual’s personal preferences[27]. This suggests that attitudes and beliefs about health can influence the initiation and maintenance of smoking.

Non-smokers who are exposed to constant secondhand smoke tended to value their relationships more than their health. Despite the constant exposure, they wanted to maintain a relationship with friends and co-workers. Thus, the biggest advantage during COVID-19 to non-smokers is the use of face masks. Forced mask-wearing due to implemented policies protected non-smokers from exposure to secondhand smoke.

Attitudes toward masks showed different patterns. Smokers found wearing a mask to be disgusting due to the soaked smell of cigarettes. Therefore, the mask was frequently replaced or cigarettes were replaced with e-cigarettes. The recognition that e-cigarettes are less bad than cigarettes was the most important factor influencing the use of e-cigarettes. This could be because they are free from the unique smell of cigarettes[28, 29]. The negative reactions to cigarette odors were common to both smokers and non-smokers. They were satisfied with the reduced smell due to switching to the e-cigarette. As a result, to prevent the use of e-cigarettes, it is important to properly communicate the reduced risk and the danger hidden in the reduced odor to the public.

Finally, our research results show that COVID-19 is not reason enough to make smokers quit smoking. Rather, this confirmed the possibility of a transition to the use of new types of tobacco. There is a need to rethink publicity and education, which are currently not equipped to persuade smokers at high risk of
COVID-19 to quit smoking. It will be possible to change smoking behaviors, attract the interest of those who are not interested in smoking, and spread smoking de-normalization throughout society only when effective public messages and educational content are delivered[30].

Declarations

Ethics approval and consent to participate

All study participants provided informed consent, and the study design was approved by the Institutional Review Board of the Seoul National University (IRB No. 2010/001-018). Also, all protocols are carried out in accordance with relevant guidelines and regulations by the Institutional Review Board of the Seoul National University.

Consent for publish

Not applicable

Availability of data and materials

The data are not publicly available due to the risk of identifying participants but are available from the corresponding author upon reasonable request.

Competing Interests

None declared

Funding

This study was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea Government (MSIT) (No. 2020R1C1C1012562).

Author Contributions

JH designed the study, analyzed and interpreted the data, and wrote the manuscript. HC and EC contributed to the study design and interpretation of the results.

Acknowledgements

The authors thank the National Research Foundation of Korea.

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