Public opinions on disclosure of tobacco components
Results of a nationwide cross-sectional survey in Republic of Korea

E Hwa Yun (PhD)\textsuperscript{a,b}, Young-Ok Park (MS)\textsuperscript{b}, Min Kyung Lim (PhD)\textsuperscript{a,b,*}, Jin-Kyoun Oh (PhD)\textsuperscript{a,b}, Eun Young Park (MD)\textsuperscript{b}, Bo Yoon Jeong (PhD)\textsuperscript{b}, Soon-Yeol Hong (MS)\textsuperscript{b}, Do-Hoon Lee (MD, PhD)\textsuperscript{c}

Abstract
This study aimed to explore public views on disclosure of tobacco components in an effort to develop a comprehensive regulatory system facilitating implementation of the Framework Convention on Tobacco Control (FCTC) Articles 9 and 10 in Korea.

In all, 1200 representative Koreans 19 years old or older were enrolled and information on their general characteristics, smoking status, awareness of the effects of smoking on health, and views on the public disclosure of tobacco components was collected by telephone using a structured questionnaire. Factors associated with acceptance of the need for public disclosure of tobacco components were identified via multivariate analysis.

Most participants considered it necessary to publicly disclose tobacco components (95.9%) and were aware of the risk to health posed by smoking (76.0%). The prevalent view was that tobacco companies should be legally required to publicly disclose details of the components of cigarettes, their levels per cigarette, and their effects on health. The most effective means of disclosure were considered to be the mass media, printed materials, and labels on cigarette packs. Females and never-smokers (odds ratio [OR]: 4.39, 95% confidence interval [95% CI]: 1.76–10.94) more readily accepted the need for public disclosure, whereas those of lower educational level and/or who were less aware of the harm to health posed by smoking (OR: 0.05, 95% CI: 0.01–0.18) were less likely to be accepting.

The attitude of the general population ensures that FCTC Articles 9 and 10 will be successfully implemented in Korea. Further public consultation on the details of disclosure would be useful for the development of a comprehensive regulatory system.

Abbreviations: CI = confidence interval, FCTC = Framework Convention on Tobacco Control, OR = odds ratio, WHO = World Health Organization.

Keywords: awareness, components, disclosure, perception, products, regulation, tobacco

1. Introduction
Smoking and exposure to secondhand smoke have detrimental effects on health, triggering premature death, tobacco-related diseases such as cancer and cardiopulmonary dysfunction, and adverse reproductive health outcomes\textsuperscript{1,2}. These effects are caused by components of tobacco products. Tobacco contains approximately 7000 chemicals, including >69 carcinogens, as well as tar and nicotine\textsuperscript{3,4}.

Articles 9 and 10 of the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC) were developed to prevent the spread of the tobacco epidemic by increasing public awareness of the harmful effects of tobacco use and to encourage effective regulation of tobacco products\textsuperscript{5}. Article 9 regulates the components of tobacco products and smoke, and Article 10 requires disclosure of the components of both products and smoke.

Certain countries including the USA, Canada, Australia, New Zealand, and Brazil have adopted these Articles and have developed regulations and associated infrastructure facilitating implementation\textsuperscript{6,7}. However, the nature of the regulations and their detailed implementations vary among countries, reflecting differences in sociological structure, the infrastructure available for implementation, and political concerns. The fact that no standardized practical guidelines for implementation are available accentuates such differences\textsuperscript{8,9}. In the USA, the Family
Smoking Prevention and Tobacco Control Act (enacted in 2009) gave the US Food and Drug Administration authority to regulate the manufacture, distribution, and marketing of tobacco products. However, both the evaluation and the public disclosure of components of tobacco products and smoke are poorly enforced. In Canada, details are disclosed to the government only, thus not the public. Australia regulates the components of tobacco products and smoke, but no regulations have been promulgated. Most countries do not fund governmental laboratories assessing the components of tobacco products and smoke. Data from tobacco companies are subject to governmental review only in Canada.

Table 1 summarizes among-country differences in implementation of Articles 9 and 10. Although the Republic of Korea signed and ratified the WHO FCTC on May 16, 2005, the gap between actual and promised implementation remains extensive. In Korea, smoking prevalence is still high, even if it has been decreased from 30.2% in 2001 to 23.2% in 2013. Tobacco Business Act for promoting tobacco manufacturing and selling and the National Health Promotion Act including articles of tobacco control coexist and cause conflicts. Furthermore, movements for implementing the Articles 9 and 10 have not been fulfilled. Disclosure of the tar and nicotine concentrations (only) of tobacco products is required by regulations of the “Tobacco Business Act” and “Health Promotion Act.” However, not the Ministry of Health and Welfare but Ministry of Strategy and Finance has the rights for regulation of tobacco components and their disclosure as well as the disclosure could be exempted for other type of tobacco products except cigarettes by “Tobacco Business Act.” Disclosure of other components of tobacco products by tobacco companies and evaluation of components of tobacco products and smoke is not required by any law. In addition, the extent to which Koreans understand these Articles, and approve of them, has not been assessed.

Thus, to determine how Korea might fulfill the requirements of Articles 9 and 10, and to aid in the development of critical regulations and policies, we assessed the extent of awareness of the Articles among the general population, and the perceived need to implement them. We thus found factors associated with acceptance of the need to publicly disclose the components of tobacco and tobacco smoke.

2. Methods

2.1. Study participants and design

Our cross-sectional survey, conducted from July 23, 2012, to July 27, 2012, featured computer-assisted telephone interviews. Regarding the available resource, total sample size was fixed as 1200 participants and a specific number of participants were allocated to each stratum by the sex, age, and province of residence to ensure that the proportion of participants in each selected stratum matched that in the general Korean population based on the Korean population and housing census survey data. The random-digit-dial survey has been continued until the number of participants included in each strata reach the number allocated. Province of residence was identified with the area code in telephone number, and information on age and sex was asked of the participants who responded. In this process, non-respondents were replaced by others who were same in terms of age, sex, and province of residence.

A structured questionnaire was developed by an expert group, and trained personnel employed by a professional Korean research company conducted all interviews (http://links.lww.com/MD/B78).

Verbal informed consents were obtained from the study participants, and the Institutional Review Board of the National Cancer Center of Korea approved the study protocol.

2.2. Measurements

Identical questions on the public disclosure of tobacco and smoke components were asked of all participants. A structured questionnaire was used to evaluate public perceptions of the harmful effects of tobacco and smoke components and the need to disclose such data publicly. The questions explored the following: sociodemographic status, smoking status, awareness of the harm to health caused by smoking and tobacco components, and the perceived need for public disclosure of tobacco components.

Sex, educational level, occupation, household income, and area of residence were noted. Participants were divided into 3 groups: never-smokers, former smokers, and current smokers. Both never-smokers and former smokers were classified as nonsmokers. The extent of awareness of the harm to health caused by smoking was evaluated with 2 questions: “How harmful do you think cigarettes are?” and “What tobacco components do you know of?” Views on disclosure of the components of tobacco and smoke were explored with 6 questions: “Do you know how many of the components of tobacco products and smoke have been disclosed to the public?”; “Do you think public disclosure of tobacco components is necessary?”; “If yes, why?”; “How many components of tobacco products and smoke should be obligatorily disclosed to the public?”; “To what extent do you think public disclosure should be implemented?”; “Who should be responsible for public disclosure, and how should this be done?”; and “Which means of public disclosure would be most effective?”

2.3. Data analysis

Differences in sociodemographic characteristics, health awareness, and perceptions of Article 9 and 10, between smokers and nonsmokers, were compared using the Mantel–Haenszel χ² test.

Multiple logistic regression modeling adjusted for age, sex, and educational level was used to identify factors associated with acceptance of the need to publicly disclose the components of tobacco and smoke, and odds ratios (ORs) with 95% confidence intervals (CIs) were calculated. All analyses were performed with the aid of SAS software (version 9.2).

3. Results

A total of 20.2% of all participants were current smokers, and were more commonly male (92.2%), 30 to 39 years old (32.6%), educated to more than college level (64.8%), and blue collar (56.2%) (Table 2).

Most participants knew that smoking caused lung cancer and that tobacco was nothing but harmful (76%). A total of 61.8% of participants thought that tobacco and smoke contained thousands of toxic chemicals, as well as tar and nicotine, but 79%
# Table 1

Implementation of FCTC Articles 9 and 10 in various countries.

| Country/region | Regulatory measures | FCTC Article 9 | FCTC Article 10 | Administrative organization | Current status of testing | Current status of disclosure |
|----------------|---------------------|----------------|----------------|-----------------------------|--------------------------|-----------------------------|
|                |                     | Measurement of components | Regulations | Government disclosure | Public disclosure | Existence | Name | Test laboratories | Extent of testing | Test method | Inspection of tobacco company reports | Additives | Reporting method | Details of disclosure | Public disclosure |
|                |                     | In products | On products | On emission | Components of products | Components of emissions | Components of products | Components of emissions | Existence | Name | ISO | WHO | B | A | A | A | B |
| USA            | 0                    | 0           | 0           | 0           | 0                          | 0                          | 0                          | 0                          | FDA        | B | A | A | A | A | A | B |
| Canada         | 0                    | 0           | 0           | 0           | 0                          | 0                          | 0                          | 0                          | Health Canada Department of Health | B | B | ISO | WHO | Tdreg | ? | B | B | B |
| Australia      | 0                    | X           | X           | 0           | 0                          | 0                          | 0                          | 0                          | 0                      | B | B | ISO | WHO | Tdreg | — |
| New Zealand    | 0                    | 0           | 0           | X           | X                          | 0                          | 0                          | 0                          | 0                      | B | B | ISO | WHO | Tdreg | A | A | A | B |
| EU             | 0                    | X           | 0           | 0           | 0                          | 0                          | 0                          | 0                          | NA               | B | B | ISO | WHO | B | A | B | — |
| Brazil         | 0                    | 0           | 0           | 0           | 0                          | 0                          | 0                          | 0                          | ANVISA       | B | B | ISO | WHO | B | A | B | B |
| Republic of Korea | 0               | X           | X           | X           | X                          | X                          | X                          | X                          | B | C | ISO | C | C | C | C | B |

ANVISA = Agência Nacional de Vigilância Sanitária; FCTC = Framework Convention on Tobacco Control; FDA = Food and Drug Administration; INCA = Instituto Nacional de Câncer José Alencar Gomes da Silva; ISO = International Organization for Standardization; NA = not applicable; WHO = World Health Organization.

1. WHO FCTC signatory reports in the time since 2010 (except for the USA).
2. National laws.
3. A: governmental laboratory; B: accredited independent testing laboratory.
4. A: testing of all components (specific tobacco and smoke components restricted by national laws); B: testing of all components (nicotine, tar, and CO); C: nicotine and tar only.
5. A: addictive regulations exist (lists of prohibited or restrictive additives); B: additives reported; C: absence of additives regulations (reporting or prohibition).
6. A: existence of auditing or inspection systems; B: administrative review; C: absence of inspection systems.
7. A: compulsory reporting; B: voluntary reporting; C: absence of any reporting method.
8. A: components, emissions, additives, toxicological data, standard criteria (specific lists, quantities, functions); B: components, emissions, additives, toxicological data, standard criteria (nicotine, tar, and CO); C: nicotine, tar, some components.
9. A: complete disclosure; B: partial disclosure.
thought that the components have been partially disclosed to the public. A total of 95.9% of participants considered that public disclosure of tobacco components was necessary. The major reason was “consumer right to know” (46.4%), followed by “impact on smoking prevention” (40%). Most thought that disclosure should include the names of the components, the amounts per cigarette, and related health information. A total of 75.8% of participants considered that tobacco companies should be required by law to disclose these data. Mass media, including television, newspapers, and magazines (43.6%), and labels on cigarette packs (43.3%) were considered the most effective routes of disclosure. Both nonsmokers and smokers shared these views, although nonsmokers were more aware of the health hazards of smoking and were more in favor of disclosing tobacco components; both differences were significant (Table 3).

On multiple logistic regression adjusted for age, sex, and educational level, females (OR: 2.88, 95% CI: 1.49–5.54) and never-smokers (OR: 4.39, 95% CI: 1.76–10.94) were more convinced of the need for public disclosure of tobacco components, whereas those of lower educational levels (OR: 0.46, 95% CI: 0.23–0.90) and those who thought that smoking was not harmful (OR: 0.05, 95% CI: 0.01–0.18) were less convinced. The perceived level of current public disclosure was not associated with acceptance of the need for disclosure (Table 4).

4. Discussion

Articles 9 and 10 of the WHO FCTC reflect the need for mandatory public disclosure of tobacco and smoke components; this is an effective mode of tobacco control. However, practical guidelines on Article implementation remain under development, and the efforts to evaluate the public awareness and perception on Article implementation are in lack. Therefore, the need for disclosure may not be adequately recognized, although this is essential for successful implementation of the Articles. Some countries, including the USA, EU, Australia, New Zealand, and Brazil, have made the disclosure of the harmful components of tobacco and smoke by tobacco companies mandatory. Currently, regulatory bodies, test laboratories, and inspection systems are considered as comprehensive strategies for tobacco product regulation in some countries. [13–17]

Even the Korean government admits that Articles 9 and 10 have been but superficially implemented. The names of 6 carcinogens, and the amounts of nicotine and tar per cigarette, are disclosed on cigarette packs. However, comprehensive regulations on most tobacco components are lacking. [9] Furthermore, tobacco producers continually seek to circumvent Articles 9 and 10; after expansion of smoke-free areas and effective media presentations on the harm of cigarette to health, several modified or new tobacco products such as smokeless tobacco and e-cigarette have been introduced without any consideration of their components, labeling, harmful effects on health, or the need for disclosure.

The present study raises several issues to be considered when governments and experts plan to implement Articles 9 and 10 in countries unfamiliar with the Articles. Both global and national educational campaigns have created agreement that public disclosure of tobacco components is necessary; it is accepted that tobacco causes lung cancer and other health problems. However, about 10% of participants still claim to not know about the harm to health posed by smoking, or that smoking is harmful (Table 3). In addition, about 38% of participants know nothing about the harmful components of tobacco and smoke, except for tar and nicotine (Table 3), and are less ready to accept the need for more public disclosure (Table 4). These results are consistent with the data of previous studies that explored public
understanding of illnesses caused by smoking; some participants lack even a basic understanding of the nature and severity of the consequences of smoking, although the adverse health consequences of smoking are generally recognized. Thus, both the present study and prior works suggest that more specific information is required.

What are tobacco-related health risks? What harmful components are contained in tobacco and smoke? How carcinogenic or toxic are these components? The answers would encourage public awareness of the harm to health posed by smoking, and why Articles 9 and 10 should be implemented.

We also obtained useful information on the necessary extent of public disclosure, who should disclose, how disclosure should be effected, and the optimal channels of disclosure. Most interviewees suggested that disclosure should include a list of components, the amounts per cigarette, and information on health impacts. However, in Korea, complete disclosure on tobacco components by tobacco companies has not been mandatory (Table 1). International tobacco companies as well as domestic ones have provided the partial information on components of tobacco products and no information on their emission. Therefore, tobacco companies should be required to report the complete information to government by law, and disclose it to the public via mass media including internet website in Korea following other countries’ implementation.

### Table 3

| Variable                                      | Total (n=1200), % | Nonsmoker (n=958, 79.8%) | Smoker (n=242, 20.2%) | P*  |
|-----------------------------------------------|------------------|--------------------------|-----------------------|-----|
| Awareness of the health harms of smoking     |                  |                          |                       |     |
| Smoking causes lung cancer and various other health problems so I think tobacco is nothing but harmful | 912 (76.0)       | 774 (80.8)               | 138 (57.0)            | <0.0001 |
| I know smoking causes lung cancer             | 174 (14.5)       | 117 (12.2)               | 57 (23.6)             |     |
| I heard smoking is not good for health but don’t know the details | 101 (8.4)        | 62 (6.5)                 | 39 (16.1)             |     |
| I think smoking is not harmful at all         | 13 (1.1)         | 5 (0.5)                  | 8 (3.3)               |     |
| Awareness of components of tobacco and smoke |                  |                          |                       |     |
| I don’t know anything about them             | 3 (0.2)          | 31 (3.2)                 | 2 (0.8)               | 0.6475 |
| I know only that they contain tar and nicotine | 425 (35.4)      | 350 (36.5)               | 75 (31.0)             |     |
| I know they have dozens of carcinogens and thousands of toxic chemicals as well as tar and nicotine | 742 (61.8)      | 577 (60.2)               | 165 (68.2)            |     |
| Perceived level of current public disclosure of tobacco components |                  |                          |                       |     |
| Completely disclosed                          | 101 (8.4)        | 83 (8.7)                 | 18 (7.4)              | 0.9950 |
| Partially disclosed                           | 942 (78.5)       | 749 (78.2)               | 193 (79.8)            |     |
| Nothing disclosed                             | 115 (9.6)        | 89 (9.3)                 | 26 (10.7)             |     |
| Don’t know                                    | 42 (3.5)         | 37 (3.9)                 | 5 (2.1)               |     |
| Perception of the need for public disclosure of tobacco components |                  |                          |                       |     |
| It is not necessary                           | 49 (4.1)         | 28 (2.9)                 | 21 (8.7)              | 0.0009 |
| It is necessary                               | 1151 (95.9)      | 930 (97.1)               | 221 (91.3)            |     |
| Why should components be disclosed to the public? |                  |                          |                       |     |
| Consumer right to know                        | 534 (46.4)       | 407 (43.8)               | 127 (57.5)            | 0.0218 |
| Safe management of tobacco products           | 147 (12.8)       | 118 (12.7)               | 29 (13.1)             |     |
| Smoking prevention                            | 459 (40.0)       | 395 (42.5)               | 64 (29.0)             |     |
| Others                                        | 11 (0.9)         | 10 (1.1)                 | 1 (0.5)               |     |
| How many components should be disclosed to the public? |      |                          |                       |     |
| Current disclosure (only amount of tar and nicotine per cigarette) is enough | 46 (4.0)         | 25 (2.7)                 | 21 (9.5)              | 0.0333 |
| All components of tobacco products should be disclosed | 244 (21.2)      | 198 (21.3)               | 46 (20.9)             |     |
| All components of tobacco products and smoke should be disclosed | 854 (74.2)      | 702 (75.5)               | 152 (68.8)            |     |
| Don’t know                                    | 7 (0.6)          | 5 (0.5)                  | 2 (0.9)               |     |
| Should the public know?                      |                  |                          |                       |     |
| Only the names of components of tobacco and smoke | 38 (3.3)       | 29 (3.1)                 | 9 (4.1)               | 0.7058 |
| Names and levels of components per cigarette | 107 (9.3)        | 79 (8.5)                 | 28 (12.7)             |     |
| Names and levels of components per cigarette and their negative health impacts | 1006 (87.4)     | 822 (88.4)               | 184 (83.3)            |     |
| By whose hands, and how, should public disclosure be effected? |                  |                          |                       |     |
| Tobacco companies should disclose             | 52 (4.5)         | 45 (4.8)                 | 7 (3.2)               | 0.3268 |
| Governmental authorities should disclose       | 221 (19.2)       | 161 (17.3)               | 60 (27.2)             |     |
| Tobacco companies should disclose and governmental authorities should inspect and control them by law | 872 (75.8)      | 719 (77.3)               | 153 (69.2)            |     |
| Others                                        | 6 (0.5)          | 5 (0.5)                  | 1 (0.5)               |     |
| What is the most effective channel for public disclosure? |                |                          |                       |     |
| Tobacco company websites                      | 25 (2.2)         | 20 (2.2)                 | 5 (2.3)               | 0.5013 |
| Government websites                           | 87 (7.6)         | 67 (7.2)                 | 20 (8.1)              |     |
| Mass media or print materials (TV, newspapers, magazines) | 502 (43.6)     | 418 (45.0)               | 84 (38.0)             |     |
| On cigarette packs                            | 498 (43.3)       | 394 (42.4)               | 104 (47.1)            |     |
| Others                                        | 39 (3.4)         | 31 (3.3)                 | 8 (3.6)               |     |

* Mantel-Haenszel \(x^2\) test.
labels on cigarette pack to inform smokers about the risks of smoking could be in due course and promoted by such information. Similar findings have been reported in other studies.\(^{19,20}\) Finally, the major perceived needs for public disclosure were “consumer right to know” among smokers and “smoking prevention” among nonsmokers. Thus, detailed disclosure of tobacco and smoke components would aid quitting by smokers and encourage nonsmokers to continue to abstain, which are the desired outcomes of Articles 9 and 10.

Male sex, a lower educational level, and the notion that smoking is not harmful were significantly associated with opposition to public disclosure, after adjustment for age, sex, and educational level. The fact that males were less likely to support public disclosure may be explained by the fact that male smokers were more prevalent than female smokers, consistent with previous findings that current smokers were significantly less likely to recognize the health hazards of smoking and that nonsmokers were significantly more knowledgeable about smoking-related illnesses than were current smokers. Furthermore, differences in the extent of knowledge of the effects of smoking on health crucially influence smoking-related behaviors including commencing and ceasing smoking.\(^{21-24}\) As identified previously, a lower level of education might be linked to a lack of both knowledge and awareness of the harm to health caused by smoking. Erroneous “knowledge” and a lack of accurate information may trigger a negative attitude toward tobacco control and/or smoking cessation.\(^{25,26}\) This may explain why a low level of education and the notion that smoking is not harmful were associated with a negative attitude toward public disclosure in the present study. Thus, increased efforts such as tailored educational campaigns to improve knowledge of tobacco-related illness are required before implementation of Articles 9 and 10 at the national level. Barriers to implementation would thus be lowered, and acceptability would be maximized. Furthermore, multidimensional approach to promoting tobacco control policies and activities should be reinforced to denormalize tobacco use in our society and to form a new generation of tobacco-free individuals.\(^{27}\)

Although we explored how Korea might fulfill the requirements of Articles 9 and 10 by the development of essential regulations and policies from the evaluation of public opinion, several limitations of our work are apparent. First, a cross-sectional study such as ours explores only associations among variables; causality cannot be inferred. Second, the number of interviewees was too low to allow a subgroup analysis of adequate statistical power and the percentage of smokers was relatively low when compared with the national data, although the sample was randomly selected with the consideration of age, sex, and place of residence strata. Notably, the extent of awareness of harm to health, and acceptance of the need for public disclosure, did not greatly differ between smokers and nonsmokers.

---

### Table 4

Multiple logistic regression assessing the perceived need for public disclosure of data on tobacco products.

| Variable | Total (n=1200), % | Accept the need for public disclosure (n=1151, 95.9%) | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
|----------|------------------|-----------------------------------------------|----------------------|---------------------|
| Sex      |                  |                                               |                      |                     |
| Male     | 598 (49.8)       | 564 (94.3)                                    | 2.36 (1.27–4.38)     | 2.88 (1.49–5.54)    |
| Female   | 602 (50.2)       | 587 (97.5)                                    |                      |                     |
| Age, y   |                  |                                               |                      |                     |
| ≥60      | 244 (20.3)       | 232 (95.1)                                    |                      |                     |
| 50–59    | 226 (18.8)       | 215 (95.1)                                    | 1.01 (0.44–2.34)     | 0.94 (0.39–2.23)    |
| 40–49    | 265 (22.1)       | 260 (98.1)                                    | 2.69 (0.93–7.76)     | 2.15 (0.72–6.44)    |
| 30–39    | 246 (20.5)       | 238 (96.8)                                    | 1.54 (0.62–3.83)     | 1.05 (0.39–2.83)    |
| 19–29    | 219 (18.3)       | 206 (94.1)                                    | 0.82 (0.37–1.84)     | 0.59 (0.23–1.51)    |
| Educational level |      |                                               |                      |                     |
| ≥College | 665 (56.6)       | 645 (97.0)                                    |                      |                     |
| ≤High school | 509 (43.3) | 462 (94.7)                                    | 0.55 (0.31–1.00)     | 0.46 (0.23–0.90)    |
| Awareness of the health harms of smoking |      |                                               |                      |                     |
| Smoking causes lung cancer and various other health problems so I think tobacco is nothing but harmful | 912 (76.0) | 882 (96.7)                                    |                      |                     |
| I know smoking causes lung cancer | 174 (14.5) | 165 (94.8)                                    | 0.62 (0.29–1.34)     | 0.80 (0.35–1.79)    |
| I heard smoking is not good for health but I don’t know the details | 101 (8.4) | 96 (95.1)                                    | 0.62 (0.25–1.72)     | 0.73 (0.27–1.97)    |
| I think smoking is not harmful at all | 13 (1.1) | 8 (61.5)                                    | 0.05 (0.02–0.18)     | 0.05 (0.01–0.18)    |
| Perceived level of current public disclosure of tobacco components |      |                                               |                      |                     |
| Completely disclosed | 101 (8.4) | 99 (96.0)                                    | 0.80 (0.37–1.84)     | 0.80 (0.37–1.84)    |
| Partially disclosed | 343 (28.6) | 309 (90.8)                                    | 0.48 (0.11–2.02)     | 0.43 (0.10–1.84)    |
| Nothing disclosed | 115 (9.6) | 109 (94.8)                                    | 0.37 (0.07–1.86)     | 0.38 (0.07–2.02)    |
| Don’t know | 42 (3.5) | 39 (92.9)                                    | 0.26 (0.04–1.63)     | 0.31 (0.05–2.00)    |
| Smoking status |      |                                               |                      |                     |
| Current smokers | 242 (20.2) | 221 (91.3)                                    | 0.89 (0.38–2.06)     | 2.04 (0.93–4.49)    |
| Former smokers | 246 (20.5) | 234 (95.1)                                    | 1.85 (0.83–3.66)     | 2.04 (0.93–4.49)    |
| Never-smokers | 712 (59.3) | 606 (97.8)                                    | 4.13 (2.12–8.06)     | 4.39 (1.76–10.94)    |

CI = confidence interval, OR = odds ratio.

* Multiple logistic regression model adjusted for age, sex, and educational level.
Both smokers and nonsmokers accept that smoking harms the health; this assures the success of implementation of Articles 9 and 10 in Korea. We measured the desired extent of disclosure, determined who should disclose, explored how disclosure should be effected, and identified optimal channels of disclosure. Thus, these data would be helpful to develop a comprehensive regulatory system in Korea. Countries that have not yet implemented the Articles may find our data useful.

References

[1] World Health Organization. Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks. Geneva: World Health Organization; 2009.
[2] World Health Organization. WHO Report on the Global Tobacco Epidemic, 2011: Warning About the Dangers of Tobacco. Geneva: World Health Organization; 2011.
[3] International Agency for Research on CancerIARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Vol 83. 2004;Lyon:IARC, 1–1452.
[4] Hoffmann D, Hoffmann I, El-Bayoumy K. The less harmful cigarette: a controversial issue. A tribute to Ernst L. Wynder. Chem Res Toxicol 2001;14:767–790.
[5] World Health OrganizationWHO Framework Convention on Tobacco Control. Geneva:World Health Organization; 2003.
[6] World Health OrganizationGuidelines for Implementation of the WHO FCTC. Geneva:World Health Organization; 2013.
[7] World Health Organization. 2014 Global Progress Report on Implementation of the WHO Framework Convention on Tobacco Control. Geneva: WHO Framework Convention on Tobacco Control; 2014.
[8] O’Connor R, Kozlowski L, Borland R, et al. Relationship between constituent labelling and reporting of tar yields among smokers in four countries. J Public Health 2006;28:324–9.
[9] National Cancer Center. A Basic Study on the Development of Center for Tobacco Product Control in Korea. 2012;1–263. http://www.ncbi.nlm.nih.gov.proxy.ncc.re.kr:8080/pubmed/?term=US+Food+and+Drug+Administration+(FDA)+Reporting+Harmful+and+Potentially+Harmful+Components+in+Tobacco+Products+and+Tobacco+Smoke+Under+Sections+904(a)(3)+of+the+Federal+Food,+Drug,+and+Cosmetic+Act%2C+2012. Accessed July 19, 2013.
[10] US Food and Drug Administration (FDA). Family Smoking Prevention and Tobacco Control Act, MD: US Food and Drug Administration 2009. Maryland: US Food and Drug Administration; 2009.
[11] World Health OrganizationWHO Report on the Global Tobacco Epidemic, 2013: Enforcing Bans on Tobacco Advertising, Promotion and Sponsorship. Geneva:World Health Organization; 2013.
[12] Korea Centers for Disease Control and Prevention. The Fifth Korea National Health and Nutrition Examination Survey (KNHANES VI-1). Sejong City: Korea Centers for Disease Control and Prevention; 2014.
[13] Canada Minister of Justice. Tobacco Act. 1997. http://laws-lois.justice.gc.ca/PDF/T-11.5.pdf. Accessed August 10, 2012.
[14] Australian Government Department of HealthPublic Health Value of Disclosed Cigarette Ingredients and Emissions Data. Australia:Australi- an Government Department of Health; 2009.
[15] New Zealand Ministry of Health. A Report to the New Zealand Ministry of Health: The Chemical Components in Cigarettes and Cigarette Smoke: Priorities for Harm Reduction. New Zealand: Ministry of Health Epidemiology and Toxicology Group; 2000. http://www.health.govt.nz/system/files/documents/publications/chemicalcomponentscigarettespriori ties.pdf. Accessed October 5, 2012.
[16] Instituto Nacional de Câncer José Alencar Gomes da Silva (INCA). Tobacco and Other Cancer Risk Factors Control Program. INCA, Prevention and Surveillance Coordination Tobacco and Other Cancer Risk Factors Control Division; 2003. http://www.inca.gov.br/english/tobacco/programstate.pdf. Accessed October 10, 2012.
[17] US Food and Drug Administration (FDA). Reporting Harmful and Potentially Harmful Components in Tobacco Products and Tobacco Smoke Under Section 904(a)(3) of the Federal Food, Drug, and Cosmetic Act. Maryland: US Food and Drug Administration (FDA); 2012.
[18] Oncken C, McKee S, Krishnan-Sarin S, et al. Knowledge and perceived risk of smoking-related conditions: a survey of cigarette smokers. Prev Med 2005;40:779–84.
[19] Gray N, Borland R. Research required for the effective implementation of the Framework Convention on Tobacco Control, Articles 9 and 10. Tobacco Control 2013;1:154:777–88.
[20] Hammond D, Fong GT, McNeill A, et al. Effectiveness of cigarette warning labels in informing smokers about the risks of smoking: findings from the International Tobacco Control (ITC) Four Country Survey. Tob control 2006;15(suppl 3):ii19–25.
[21] Hyland A, Li Q, Bauer JE, et al. Predictors of cessation in a cohort of current and former smokers followed over 13 years. Nicotine Tob Res 2004/6(suppl 3):S363–9.
[22] Roberts B, Stickley A, Gilmore AB, et al. Knowledge of the health impacts of smoking and public attitudes towards tobacco control in the former Soviet Union. Tob Control 2013;2:2:e12.
[23] Minh An DT, Van Minh H, Huong le T, et al. Knowledge of the health consequences of tobacco smoking: a cross-sectional survey of Vietnamese adults. Global Health Action 2013;6:1–9.
[24] Sansone GC, Raute LJ, Fong GT, et al. Knowledge of health effects and intentions to quit among smokers in India: findings from the Tobacco Control Policy (TCP) India pilot survey. Int J Environ Res Public Health 2012;9:564–78.
[25] Weinstein N, Slovic P, Warters E, et al. Public understanding of the illnesses caused by cigarette smoking. Nicotine Tob Res 2004;6:349–55.
[26] Sharma I, Sarma PS, Thankappan KR. Awareness attitude and perceived barriers regarding implementation of the Cigarettes and Other Tobacco Products Act in Assam, India. Indian J Cancer 2010;47(suppl 1):63–8.
[27] Leischik R, Dworzak B, Strauss M, et al. Plasticity of health. German J Med 2016;1:1–7.