




# Factors influencing public health nurses' ethical sensitivity during the pandemic

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## Abstract

**Background:** Ethical sensitivity is a prerequisite for ethical nursing practices. Efforts to improve nurses' ethical sensitivity are required to correctly recognise ethical conflicts and for sound decision-making. Because an emerging infectious disease response involves complex ethical issues, it is important to understand the factors that influence public health nurses' ethical sensitivity while caring for patients with COVID-19, an emerging infectious disease.

**Objectives:** This study aims to identify the relationship between nursing professionalism, the organisation's ethical climate, and the ethical sensitivity of nurses who care for emerging infectious disease patients in Korean public health centres. Further, it sought to identify factors influencing ethical sensitivity and the mediating effect of the organisational ethical climate to inform guidelines and improve ethical sensitivity.

**Research design:** This was a cross-sectional descriptive study.

**Participants and research context:** Data were collected from February 3 to 8 March 2021. Participants included 167 nurses caring for patients with COVID-19 in public health centres in South Korea.

**Ethical consideration:** This study was approved by the Institutional Review Board of the Chung-Ang University and followed the principles of research ethics.

**Results:** The factors influencing ethical sensitivity were working at a COVID-19 disease direct response department, nursing professionalism, and organisation's ethical climate. The organisation's ethical climate showed a partial mediating effect on the influence of nursing professionalism on ethical sensitivity.

**Conclusion:** Our findings show that nurses' ethical sensitivity can be improved by refining the organisation's ethical climate and nursing professionalism.

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## Keywords

Emerging infectious diseases, public health nurses, nursing professionalism, organisation, ethical climate, ethical sensitivity

## Introduction

The world is currently facing the coronavirus disease 2019 (COVID-19) pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).<sup>1</sup> An emerging disease spreads quickly and is a social disaster that can damage the life, body and property of citizens and the nation. Therefore, a response must be made at the local government level.<sup>2</sup>

At the municipal level, Korean public health centres (PHCs) are representative public institutions that promote residents' health. PHC nurses engage in various activities such as health policy development, vaccination, chronic disease management, smoking cessation activities, maternal and child health management, and older adult dementia management for national health promotion and disease control.<sup>3</sup> However, since February 2020, their function has been completely reorganised, and now their focus is on COVID-19 prevention and management. This includes isolation and screening and confirmed case management. Nevertheless, most of the quarantine-related activities are difficult to perform in private medical institutions. At those institutions, nurses account for the highest proportion of the total workforce.<sup>4</sup> Nurses must be existential advocates for their patients, but they are experiencing ethical anguish during the pandemic because they cannot practice the ethics of care.<sup>5</sup> This issue was also raised in a study on the 2016 MERS (Middle East Respiratory Syndrome) outbreak.<sup>6</sup> Public health professionals face difficulties making choices, such as a forced sense of social responsibility and allocating scarce resources due to a demand surge.<sup>7</sup>

## Background

In its treatment, medical professionals face serious ethical issues that negatively affect professionalism.<sup>8,9</sup> In an ethical conflict, a high level of ethical sensitivity is required to recognise the problem correctly and make the best decision.<sup>10</sup> Through ethical sensitivity, nurses perceive the ethical problem and patient requirements.<sup>11</sup> However, nurses with low ethical sensitivity are insensitive to ethical problems and focus on daily nursing tasks without recognising ethical nursing behaviour.<sup>12</sup> Ethical sensitivity is expressed when the nurse's professional responsibility is emphasised.<sup>11</sup> Nursing professionalism – the standard for nurses' professional behaviour – is a key factor that enables them to make the best decisions in ethical conflict situations.<sup>13</sup> Additionally, professional nursing intuition is essential when responding to emerging infectious diseases.<sup>14</sup>

Factors influencing ethical sensitivity include personal ones, such as age, educational background, clinical experience, ethical education and training, ethical values, attitude towards the nursing profession<sup>15–17</sup> and environmental factors, such as an organisation's ethical climate, code of ethics, work characteristics, relationship with colleagues or managers and ethical leadership.<sup>7,12,18–21</sup>

However, limited resources due to the pandemic of infectious diseases causes public health care providers to make unethical choices.<sup>22</sup> Accordingly, it is important to investigate the ethical sensitivity factors that increase ethical behaviour among medical practitioners at PHCs and increase their willingness to practice them. However, no study has examined factors affecting the ethical sensitivity of PHC nurses treating emerging infectious disease patients.

In public organisations, individual autonomy is limited due to the strict bureaucracy, and a closed atmosphere is formed.<sup>23</sup> In that context, an organisation's ethical climate affects public officials' motives.<sup>24</sup> The

stronger the perceived ethical climate, the more likely organisation members are aware of ethics-related decision-making.<sup>25</sup> and this improves their willingness to practice ethical behaviour.<sup>26</sup>

The organisation's ethical climate has a mediating effect on the relationship between ethical leadership, organisational effectiveness, job satisfaction, and employee misconduct.<sup>27-30</sup> It has a positive correlation with professionalism<sup>31</sup> and ethical sensitivity.<sup>19</sup> However, there is a lack of research on the organisational ethical climate and the relationship between nursing professionalism and ethical sensitivity.

## Research aim

This study aimed to assess the relationship between nursing professionalism, the organisation's ethical climate, and the ethical sensitivity of nurses who cared for emerging infectious diseases, specifically COVID-19 patients in PHCs. It also aimed to identify factors influencing ethical sensitivity and the mediating effect of an organisation's ethical climate to prepare educational material and guidelines for improving ethical sensitivity.

## Research design

This was a cross-sectional descriptive study.

## Participants and research context

The inclusion criteria for participation in this study were PHC nurses who had worked with COVID-19 patients at PHCs, and those with experience working in a screening centre for COVID-19 or experience with confirmed patient transfer and quarantine at living treatment centres, among others. Owing to the COVID-19 pandemic, most South Korean PHCs selected some individuals from each department to work in shifts in direct response departments, to decrease the work burden on other departments. The departments are divided into direct and indirect response departments based on their current status. Although there are some differences between PHCs, the infectious disease control team, daily life quarantine team and visiting health team were classified as direct response departments. The health administration team, maternal and child health team, drug management team and health promotion team were classified as indirect response departments.

The number of participants was calculated using the G\*Power 3.1.9.7 programme, based on the median effect size of 0.15 (multiple regression), significance level 0.05, power 0.80 and 16 predictors; the minimum number of samples required was 143. The survey was conducted with 180 people considering the 20% dropout rate. A total of 167 responses were used for the final analysis, excluding 13 respondents who had no experience nursing patients with COVID-19.

## Instruments

*General and ethical characteristics.* The general and ethical characteristics consisted of a total of 13 items based on previous studies. The general characteristics consisted of gender, age, religion, the highest level of education, marital status, work area/department, experience, position, work type and direct/indirect nursing of COVID-19 patients. The ethical characteristics consisted of experience in ethical education and the nursing code of ethics. The latter was measured with three questions: whether you are aware of it, and whether you have experienced ethical conflict in response to COVID-19.

*Nursing professionalism.* This study used the nursing professionalism tool developed by Yeun et al.<sup>32</sup> and the Korean Nursing Professional Value (K-NPV). The tool comprises 29 questions: nine on the self-concept of

the profession, eight on social awareness, five on nursing professionalism, four on nursing service roles and three on the originality of nursing. Responses are marked on a five-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*), and negative questions are reverse scored. The higher the average score, the higher the nursing professionalism. Cronbach's alpha at the time of tool development was 0.92, and in this study, it was 0.91. The internal consistency of the subdomains ranged from 0.40 to 0.86.

**Organisation's ethical climate.** Based on the Ethical Climate Questionnaire (ECQ) presented by Victor and Cullen,<sup>33,34</sup> Noh<sup>35</sup> translated the original questionnaire and modified it into a Korean-language version for Korean nursing institutions, which was used in this study.

The tool consists of 36 questions: four each on self-interest, company profit, efficiency, friendship, team interest, social responsibility, personal morality, rules and standard operating procedures, and law and professional codes. The higher the average score, measured on the five-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*), the stronger the perception of the organisation's ethical climate. In Victor and Cullen's<sup>34</sup> study, the Cronbach's alpha coefficients for subscales were 0.69–85; in Noh's<sup>35</sup> study, they were 0.74–88; in this study, they were 0.53–0.89, and, for the total scale, alpha was 0.90.

**Ethical sensitivity.** Ethical sensitivity was assessed using a clinical nurse's ethical sensitivity measurement tool developed by Joung.<sup>36</sup> The tool consists of a total of 34 questions, five on patient respect, six on professional ethics, six on nursing practice responsibilities, three on empathy, three on perception of ethical situations, three on ethical burdens, three on ethical contemplation and five on willingness to do good. Each question is marked on a five-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*); the higher the average score, the higher the ethical sensitivity. At the time of tool development, Cronbach's alpha coefficient was 0.92, and in this study, the internal consistency of the subdomains ranged from 0.80 to 0.91 and was 0.96 for the total scale.

### Data collection

Data were collected online between February 3 and March 8, 2021. Considering the COVID-19 pandemic, the cooperation of 25 PHCs in Seoul and each branch of the Public Health Nurses Association was requested via telephone and e-mail. After explaining the study purpose and seeking consent and cooperation for data collection, the online questionnaire was delivered, and responses were collected. There are 256 PHCs in South Korea,<sup>4</sup> and one researcher contacted 25 PHCs in a metropolitan city (Seoul) and 16 regional PHC associations. Among them, nurses who work in 23 metropolitan city health centres and in 21 local PHCs responded to the questionnaire.

The survey URL (Google survey) was announced on each PHC's bulletin board and internet community with the permission of the department in charge and IRB approval from the researcher's institution. The online questionnaire was set up so that only those who selected 'agree' on the research participation consent page could participate and move to the next survey page.

### Data analysis

The collected data were analysed using the SPSS 25.0 software (for Windows). The following analyses were carried out:

- Frequency analysis was conducted to identify participants' general and professional characteristics;
- A technical statistical analysis was conducted to identify participants' nursing professionalism, the organisation's ethical climate and ethical sensitivity level;

- To verify differences in nursing professionalism, the organisation's ethical climate, and ethical sensitivity according to participants' general and ethical characteristics, *t*-test and ANOVA analyses were conducted. Scheffé test was conducted as a post-test for variables showing significant differences;
- Pearson's correlation analysis was conducted to identify the correlation between participants' nursing professionalism, the organisation's ethical climate and ethical sensitivity;
- Multiple regression analyses were performed to verify factors influencing participants' ethical sensitivity;
- The mediating effect of organisational ethical climate in the relationship between nursing professionalism and ethical sensitivity was assessed using Baron and Kenny's proposed hierarchical regression analysis. The significance of the mediating effect was verified through the Sobel test. In verifying the mediating effect of Baron and Kenny,<sup>37</sup> the influence of the independent variable on the parameter in Step 1 should be significant, and the effect of the independent variable on the dependent variable in Step 2 should be significant. Finally, in Step 3, the independent variable and the parameter are simultaneously input. At that time, if the parameter's effect on the dependent variable is significant, and if that of the independent variable is not, the parameter is judged to have a complete mediating effect. However, independent variable and parameter were found to be significant for the dependent variables. If the independent variable value of Step 3 is smaller than the independent variable value of Step 2, a partial mediating effect is said to be present.<sup>37</sup>

### *Ethical considerations*

This study was approved by the Institutional Review Board of the [omitted for peer review] University and followed the principles of research ethics (IRB approval number: [omitted for peer review]). All participants provided written informed consent to participate in the study before responding. One researcher downloaded the data in a Google Spreadsheet form generated by the Google Survey tool. The information was anonymised and was sent as an Excel file to a data analysis expert for analysis. Additionally, after sending the data analysis results to the researcher, the spreadsheet was destroyed. The used data is stored in password-protected storage by the researchers for 5 years following the institution's IRB guidelines, after which it will be destroyed.

## **Results**

### *Participant characteristics*

The general and ethical characteristics of the participants are shown in [Table 1](#). There were 167 participants; most were women (97.6%), in their 30s (38.9%), and were non-religious (58.7%). The most common academic qualification was a bachelor's degree (83.8%), and most were unmarried (60.5%). In terms of the working area, 72.5% worked in a metropolitan area, and 43.7% worked in a COVID-19 direct response department, such as an infectious disease management team or health management team; 56.3% worked for other indirect response departments. The clinical career of most participants (43.7%) ranged between 1 and 5 years, and most (45.5%) had been working at the PHC for less than 1 year. Most participants worked as practitioners (81.4%), and 90.4% had permanent positions. Overall, 67.7% had completed an ethics education, and 92.2% reported recognising the code of ethics. When caring for patients with COVID-19, 44.9% had experienced ethical conflicts.

**Table 1.** Differences in research variables according to general and ethical characteristics (N = 167).

| Characteristics                    | Categories              | n(%)      | Nursing professionalism |                | Organization's ethical climate |                | Ethical sensitivity |               |
|------------------------------------|-------------------------|-----------|-------------------------|----------------|--------------------------------|----------------|---------------------|---------------|
|                                    |                         |           | M ± SD                  | t/F(p)         | M ± SD                         | t/F(p)         | M ± SD              | t/F(p)        |
| Sex                                | Male                    | 4(2.4)    | 2.64 ± 0.63             | -3.56 (<0.001) | 2.76 ± 0.79                    | -2.48 (0.014)  | 3.85±0.33           | -1.39 (0.167) |
|                                    | Female                  | 163(97.6) | 3.49 ± 0.47             |                | 3.27 ± 0.39                    |                | 4.22±0.52           |               |
| Age(year)                          | 20-29 <sup>a</sup>      | 58(34.7)  | 3.32 ± 0.49             | 6.25 (<0.001)  | 3.17 ± 0.39                    | 4.92 (0.003) a | 4.19±0.48           | 2.39 (0.071)  |
|                                    | 30-39 <sup>b</sup>      | 65(38.9)  | 3.48 ± 0.45             |                | 3.30 ± 0.36                    |                | 4.18 ± 0.51         |               |
|                                    | 40-49 <sup>c</sup>      | 24(14.4)  | 3.52 ± 0.39             |                | 3.13 ± 0.47                    |                | 4.09 ± 0.66         |               |
|                                    | 50-59 <sup>d</sup>      | 20(12.0)  | 3.84 ± 0.55             |                | 3.52 ± 0.45                    |                | 4.48 ± 0.44         |               |
| Religion                           | Yes                     | 69(41.3)  | 3.57 ± 0.50             | 2.26 (0.025)   | 3.31 ± 0.43                    | 1.40 (0.164)   | 4.25 ± 0.56         | 0.79 (0.430)  |
|                                    | No                      | 98(58.7)  | 3.40 ± 0.48             |                | 3.22 ± 0.39                    |                | 4.18 ± 0.49         |               |
| Education level                    | College <sup>a</sup>    | 18(10.8)  | 3.48 ± 0.38             | 2.03 (0.134)   | 3.37 ± 0.36                    | 4.05 (0.019)   | 4.31 ± 0.40         | 2.49 (0.086)  |
|                                    | University <sup>b</sup> | 140(83.8) | 3.45 ± 0.48             |                | 3.22 ± 0.40                    |                | 4.17 ± 0.54         |               |
|                                    | Master <sup>c</sup>     | 9(5.4)    | 3.79 ± 0.75             |                | 3.58 ± 0.45                    |                | 4.54 ± 0.34         |               |
| Spouse status                      | Yes                     | 66(39.5)  | 3.60 ± 0.52             | 2.77 (0.006)   | 3.32 ± 0.46                    | 1.45 (0.150)   | 4.28 ± 0.50         | 1.55 (0.123)  |
|                                    | No                      | 101(60.5) | 3.39 ± 0.46             |                | 3.22 ± 0.37                    |                | 4.16 ± 0.53         |               |
| Working area                       | Metropolitan area       | 121(72.5) | 3.48 ± 0.51             | 0.24 (0.812)   | 3.25 ± 0.43                    | -0.38 (0.701)  | 4.21 ± 0.57         | 0.08 (0.940)  |
|                                    | Non-metropolitan area   | 46(27.5)  | 3.46 ± 0.43             |                | 3.28 ± 0.36                    |                | 4.20 ± 0.35         |               |
| Occupational department            | Direct response         | 73(43.7)  | 3.49 ± 0.54             | 0.48 (0.634)   | 3.24 ± 0.44                    | -0.47 (0.640)  | 4.31 ± 0.42         | 2.24 (0.026)  |
|                                    | Indirect response       | 94(56.3)  | 3.46 ± 0.45             |                | 3.27 ± 0.38                    |                | 4.13 ± 0.58         |               |
| Clinical career (year)             | <1 <sup>a</sup>         | 26(15.6)  | 3.38 ± 0.55             | 4.64 (0.004)   | 3.18 ± 0.35                    | 1.47 (0.224)   | 4.15 ± 0.51         | 0.93 (0.429)  |
|                                    | 1-5 <sup>b</sup>        | 73(43.7)  | 3.38 ± 0.46             |                | 3.21 ± 0.42                    |                | 4.19 ± 0.50         |               |
|                                    | 5-10 <sup>c</sup>       | 49(29.3)  | 3.52 ± 0.45             |                | 3.33 ± 0.41                    |                | 4.20 ± 0.45         |               |
|                                    | ≥10 <sup>d</sup>        | 19(11.4)  | 3.81 ± 0.50             |                | 3.36 ± 0.44                    |                | 4.39 ± 0.75         |               |
| Public health centre career (year) | <1 <sup>a</sup>         | 76(45.5)  | 3.44 ± 0.41             | 5.53 (0.005)   | 3.27 ± 0.35                    | 2.32 (0.101)   | 4.26 ± 0.48         | 1.98 (0.141)  |
|                                    | 1-5 <sup>b</sup>        | 46(27.5)  | 3.34 ± 0.50             |                | 3.16 ± 0.40                    |                | 4.08 ± 0.51         |               |
|                                    | ≥5 <sup>c</sup>         | 45(26.9)  | 3.66 ± 0.56             |                | 3.34 ± 0.50                    |                | 4.25 ± 0.58         |               |
| Position                           | Manager                 | 31(18.6)  | 3.61 ± 0.51             | 1.80 (0.074)   | 3.37 ± 0.43                    | 1.62 (0.106)   | 4.08 ± 0.67         | -1.22 (0.231) |
|                                    | Practitioners           | 136(81.4) | 3.44 ± 0.48             |                | 3.23 ± 0.40                    |                | 4.24 ± 0.48         |               |
| Working type                       | Permanent position      | 151(90.4) | 3.47 ± 0.48             | 0.20 (0.840)   | 3.27 ± 0.42                    | 0.73 (0.467)   | 4.21 ± 0.54         | -0.09 (0.931) |
|                                    | Temporary position      | 16(9.6)   | 3.45 ± 0.57             |                | 3.19 ± 0.34                    |                | 4.22 ± 0.34         |               |
| Ethical education                  | Yes                     | 113(67.7) | 3.45 ± 0.49             | -0.91 (0.362)  | 3.28 ± 0.40                    | 0.81 (0.417)   | 4.18 ± 0.54         | -1.11 (0.270) |
|                                    | No                      | 54(32.3)  | 3.52 ± 0.50             |                | 3.22 ± 0.42                    |                | 4.27 ± 0.47         |               |
| Recognising the code of ethics     | Cognition               | 154(92.2) | 3.47 ± 0.50             | -0.31 (0.756)  | 3.27 ± 0.41                    | 0.98 (0.329)   | 4.20 ± 0.53         | -0.52 (0.602) |
|                                    | Ignorant                | 13(7.8)   | 3.51 ± 0.46             |                | 3.15 ± 0.44                    |                | 4.28 ± 0.42         |               |
| Ethical conflict experience        | Yes                     | 75(44.9)  | 3.45 ± 0.44             | -0.41 (0.685)  | 3.29 ± 0.34                    | 0.78 (0.437)   | 4.15 ± 0.61         | -1.31 (0.192) |
|                                    | No                      | 92(55.1)  | 3.49 ± 0.53             |                | 3.24 ± 0.46                    |                | 4.26 ± 0.44         |               |

### Variable differences according to general and ethical characteristics

The mean and standard deviation of nursing professionalism, organisation's ethical climate and ethical sensitivity of the participants were  $3.47 \pm 0.49$  out of 5,  $3.26 \pm 0.41$  out of 5 and  $4.21 \pm 0.52$  out of 5, respectively.

The differences in research variables according to the general and ethical characteristics of the participants are shown in [Table 1](#). Nursing professionalism showed significant differences according to gender ( $t = -3.56$ ,  $p < .001$ ), age ( $F = 6.25$ ,  $p < .001$ ), religion ( $t = 2.26$ ,  $p = .025$ ), spouse status ( $t = 2.77$ ,  $p = .006$ ), clinical career ( $F = 4.64$ ,  $p = .004$ ) and PHC career ( $F = 5.53$ ,  $p = .005$ ). The average comparison and post-test results showed that the nursing professionalism average of women was higher than men. Similarly, it was higher among those in their 50s than those in their 20s. Nursing professionalism was also higher among those who were religious and those who had spouses. In terms of clinical experience, nursing professionalism was higher in those with more than 10 years of experience than those with less than 5 years of experience. In terms of a PHC career, nursing professionalism was higher for those who had more than 5 years of experience than for those who had 1–5 years. The organisation's ethical climate significantly differed based on gender ( $t = -2.48$ ,  $p = .014$ ), age ( $F = 4.92$ ,  $p = .003$ ) and education level ( $F = 4.05$ ,  $p = .019$ ). The average comparison and post-test results showed that women had higher scores of the organisation's ethical climate than men. Those in their 50s more strongly recognised the organisation's ethical climate than those in their 20s and 40s. Regarding the education level, it was found that the organisation's ethical climate was higher in those with a master's degree than those with a bachelor's degree. As a result of examining the difference in ethical sensitivity, only the working department ( $t = 2.24$ ,  $p = .026$ ) showed a significant difference; the direct response department for infectious diseases showed higher ethical sensitivity than the indirect response department.

### Correlations among nursing professionalism, organisation's ethical climate and ethical sensitivity

Nursing professionalism showed a significant positive correlation with the organisation's ethical climate ( $r = 0.542$ ,  $p < .001$ ) and ethical sensitivity ( $r = 0.356$ ,  $p < .001$ ). The organisation's ethical climate also showed a significant positive correlation with ethical sensitivity ( $r = 0.339$ ,  $p < .001$ ).

### Influencing factors to ethical sensitivity of participants

Factors affecting participants' ethical sensitivity are as shown in [Table 2](#).

**Table 2.** Factors influencing participants' ethical sensitivity ( $N = 167$ ).

| Variables                            | Ethical sensitivity |       |         |       |        |
|--------------------------------------|---------------------|-------|---------|-------|--------|
|                                      | B                   | SE    | $\beta$ | t     | p      |
| (Constant)                           | 2.373               | 0.320 | —       | 7.416 | <0.001 |
| Occupational department              | —                   | —     | —       | —     | —      |
| Indirect response                    | (ref.)              | —     | —       | —     | —      |
| Direct response                      | 0.179               | 0.074 | 0.171   | 2.418 | 0.017  |
| Nursing professionalism              | 0.243               | 0.089 | 0.230   | 2.726 | 0.007  |
| Organisation's ethical climate       | 0.280               | 0.107 | 0.221   | 2.620 | 0.010  |
| F (p)                                | 12.41 (<0.001)      |       |         |       |        |
| R <sup>2</sup> (Adj R <sup>2</sup> ) | 0.186 (0.171)       |       |         |       |        |

Before performing multiple regression analysis, tolerance (TOL) and variance inflation factor (VIF) were checked to determine whether a problem of multicollinearity between independent variables occurred. The TOL was 0.703–0.994 with 0.1 or higher, and the VIF was 1.006–1.422, which does not exceed 10, indicating that all variables had no problem with multicollinearity.

The Durbin–Watson statistic was 1.832, which was close to the reference value of 2 and was not close to 0 or 4, indicating no correlation between the residuals; therefore, it was confirmed to be independent.

Multiple regression analysis showed that the direct response department of infectious diseases among the working departments influenced ethical sensitivity ( $\beta = 0.171, p = .017$ ). In addition, nursing professionalism ( $\beta = 0.230, p = .007$ ) and the organisation's ethical climate had statistically significant effects on ethical sensitivity ( $\beta = 0.221, p = .010$ ). The F value of the regression model was appropriate ( $F = 12.41, p < .001$ ) and the explanatory power by the  $R^2$  value was 17.1%.

### *Mediating effect of organisational ethical climate on the effect of nursing professionalism on ethical sensitivity*

The results of verifying the mediating effect of an organisation's ethical climate in the relationship between nursing professionalism and ethical sensitivity are shown in Table 3 and Figure 1. The results of the hypothesis of regression analysis before testing the mediating effect showed that the Durbin–Watson statistic was 1.832, which was close to 2; therefore, there was no correlation with the residuals. The TOL was 0.703–0.999 with 0.1 or higher, and the VIF was 1.001–1.422, which does not exceed 10, indicating that there was no problem with multicollinearity.

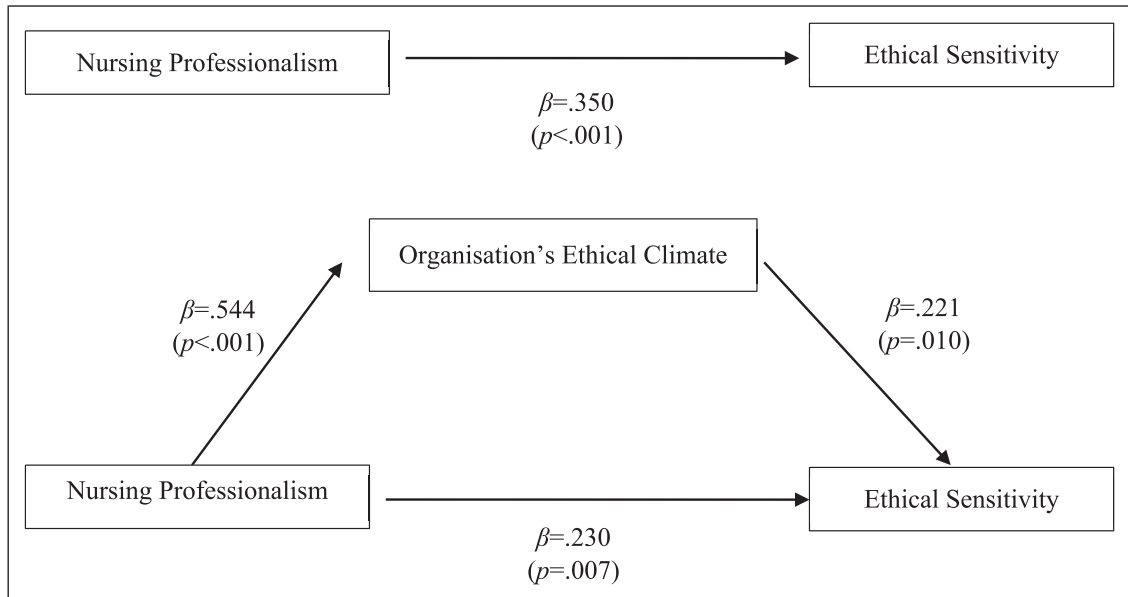
Based on the method of Baron and Kenny,<sup>37</sup> in Step 1, nursing professionalism had a statistically significant effect on organisation's ethical climate ( $\beta = 0.544, p < .001$ ), and in Step 2, nursing professionalism had a statistically significant effect on ethical sensitivity ( $\beta = 0.350, p < .001$ ). In Step 3, when nursing professionalism and the organisation's ethical climates were combined, the organisation's ethical climate had a statistically significant effect on ethical sensitivity ( $\beta = 0.221, p = .010$ ).

At this time, the influence of nursing professionalism on ethical sensitivity was reduced compared to Step 2 ( $\beta = 0.350 \rightarrow 0.230$ ). It was confirmed that the organisation's ethical climate plays a mediating role between nursing professionalism and ethical sensitivity. The explanatory power of Step 3 increased by 3.0% to 17.1% compared to the explanatory power of Step 2; the direct effect of nursing professionalism on ethical sensitivity

**Table 3.** Mediating effect of an Organisation's ethical climate on the effect of nursing professionalism on ethical sensitivity ( $N = 167$ ).

| Variable  | B     | SE    | $\beta$ | t     | p      | $R^2$ | Adj $R^2$ | F      | p      |
|---|-------|-------|---------|-------|--------|-------|-----------|--------|--------|
| 1. Nursing professionalism<br>→ Organisation's ethical climate    | 0.454 | 0.055 | 0.544   | 8.300 | <0.001 | 0.297 | 0.288     | 34.598 | <0.001 |
| 2. Nursing professionalism<br>→ ethical sensitivity               | 0.370 | 0.076 | 0.350   | 4.860 | <0.001 | 0.152 | 0.141     | 14.663 | <0.001 |
| 3. Step 1<br>Nursing professionalism<br>→ ethical sensitivity     | 0.243 | 0.089 | 0.230   | 2.726 | 0.007  | 0.186 | 0.171     | 12.413 | <0.001 |
| Step 2<br>Organisation's ethical climate<br>→ ethical sensitivity | 0.280 | 0.107 | 0.221   | 2.620 | 0.010  |       |           |        |        |
| Sobel test: $Z = 2.494, p = .013$                                 |       |       |         |       |        |       |           |        |        |





**Figure 1.** Mediating effect of an organisation's ethical climate on the effect of nursing professionalism on ethical sensitivity.

also showed significant results ( $\beta = 0.230, p = .007$ ). This indicated the organisation's ethical climate played a partial mediating role.

Nursing professionalism had a direct effect on ethical sensitivity and, simultaneously, an indirect effect through the organisation's ethical climate.

The results of the Sobel test<sup>38</sup> to verify the significance of the organisational ethical climate's mediating effect showed that  $Z = 2.494 (p = .013)$ , which was larger than 1.96. Thus, the model was statistically significant.

## Discussion

Nursing professionalism showed statistically significant differences based on gender, age, religion, spouse presence, clinical experience and PHC experience. Consequently, those who identified as religious, were 41 years or older, and with more than 15 years of experience had higher nursing professionalism, similar to the results of previous studies.<sup>39,40</sup>

The organisation's ethical climate showed statistically significant differences in gender, age and education level. Participants' organisational ethical climate score was higher when participants were in their 50s compared to when they were in their 20s. Our results were consistent with previous studies that showed that the organisation's ethical climate was strongly recognised when the education level was higher than the master's level.<sup>41,42</sup> However, they differed from other studies that showed statistically significant differences in clinical career and position.<sup>18,43</sup> This is because most participants in this study were practitioners.

Ethical sensitivity showed statistically significant differences only in the working department among general characteristics, and ethical sensitivity was higher in the direct response department than in the case of the department for indirect responses to infectious. All participants had experience caring for COVID-19 patients, and many directly cared for COVID-19 patients due to the circulating nature of duties at PHCs.

However, in the case of nurses currently affiliated with direct response teams, relatively frequent contact with COVID-19 patients and ethical issues can be considered. Additionally, ethical issues are becoming a social issue in Korea, in part because of the increasing rates of PHC nurses committing suicide due to excessive quarantine work and ethical conflicts.<sup>44</sup> There is also a presidential petition to improve the social atmosphere that demands nurses to make sacrifices. To avoid adverse situations, PHC nurses are increasingly resigning or taking leave in response to COVID-19.<sup>45</sup> In such an environment, ethical conflicts and the stresses of PHC nurses increase, and a high level of ethical sensitivity is required.<sup>10</sup>

However, ethical sensitivity did not show a statistically significant difference based on participants' ethical characteristics of the participants, which was different from previous studies that showed a statistically significant difference in the ethical education experience of clinical nurses.<sup>15,46</sup> This could be because there are few opportunities to continue or complete education due to the frequent rotation of PHC officials,<sup>47</sup> which suggests the necessity of a follow-up study to provide opportunities for PHC nurses to participate in education interventions and verify their effects.

Additionally, ethical sensitivity did not show a significant difference in the presence or absence of an ethical conflict experience while nursing patients with emerging infectious diseases. This was consistent with the results of a study conducted on nursing students where the experience of ethical dilemmas during a nursing practice did not show any difference in moral sensitivity.<sup>48</sup> However, unlike nursing students' practice, nurses in the clinical field often have complex ethical conflicts related to patient care.<sup>49</sup> At such a time, high ethical sensitivity is required to correctly recognise ethical issues and make the best decision,<sup>10</sup> therefore, repeated research with nurses who directly perform patient care is required.

The nursing professionalism of study participants showed a significant positive correlation with the organisation's ethical climate and ethical sensitivity. The organisation's ethical climate also showed a significant positive correlation with ethical sensitivity. This was consistent with the results of a study conducted on nurses at general hospitals and national and public hospitals,<sup>31,43,50</sup> showing a significant positive correlation between nursing professionalism and the hospital's ethical climate. Additionally, the results of a study conducted on nurses at small and medium-sized hospitals and those at the national mental hospitals were consistent with our results, showing a significant positive correlation between the organisation's ethical climate and ethical sensitivity.<sup>18,19</sup> These results supported the idea that morality should be understood as an individual aspect and environmental and organisational factors are important.<sup>51</sup> The results suggested it is necessary to develop interventions to improve the organisation's ethical climate, which is an environmental factor.

An analysis of the factors affecting the participants' ethical sensitivity found that working in an infectious disease direct response department, nursing professionalism and the organisation's ethical climate had a significant effect on the ethical sensitivity, and the explanatory power was 17.1%. This could be because the department was facing various ethical issues related to infectious diseases in its direct response to them; specific examples are 'Will a health care worker fulfil their duty of care when faced with high risk?' and 'Are health care managers willing to make difficult resource allocation decisions?'<sup>8</sup> Ethical sensitivity is necessary to properly recognise a problem and practice ethical behaviours. This ethical sensitivity is expressed when nurses' professional responsibility is emphasised,<sup>11</sup> and the organisation's ethical climate supports<sup>26</sup> them to improve and practice ethical behaviour.

Meanwhile, the organisation's ethical climate has been shown to play a partial mediating role between nursing professionalism and ethical sensitivity. The creation of an organisation's ethical climate plays an important role in understanding and managing ethical behaviours similar to the results of previous studies that showed that it plays a mediating role in the relationship between ethical leadership, organisational effectiveness, job satisfaction and employee misconduct.<sup>27-30</sup>

Ethical sensitivity is a must-be-preceded factor for ethical behaviour.<sup>11</sup> This study was significant because it confirmed the mediating effect of the organisation's ethical climate on the influence of nursing

professionalism on ethical sensitivity. Improving the organisation's ethical climate will efficiently improve nurses' ethical sensitivity and will be a beneficial arbitration to increase ethical behaviour, leading to correct ethical decisions in various issues and conflict-based situations faced by nurses.

So far, many studies have been conducted on the relationship between various nursing issues and an organisation's ethical climate, such as nurses' job satisfaction, moral distress and turnover intentions.<sup>52</sup> Notably moral distress is inevitable in an ethically uncertain climate where the organisation is prioritised over patient safety and treatment.<sup>53</sup> Therefore, improving the organisation's ethical climate is important.

The improvement of ethical leadership leads to creating an ethical climate in the nursing environment and the development of nursing professionalism;<sup>54–56</sup> therefore, various interventions and organisational efforts for the cultivation of ethical leadership of organisational members will be required.

This study had limitations. It was conducted during the COVID-19 pandemic, which is a new infectious disease. Therefore, there is a limit to its generalisability as a factor influencing ethical sensitivity for other infectious diseases. Additionally, there was a limit to the comprehensiveness and representation of the sample because it did not follow a constant regional distribution. The explanatory power of the values identified in the ethical sensitivity influencing factors was somewhat low, resulting in restrictions on result interpretation.

However, prior studies on nursing professionalism, the organisation's ethical climate, and ethical sensitivity for PHC nurses were insufficient. In particular, as there is an absence of studies on factors influencing the ethical sensitivity of PHC nurses during emerging infectious diseases, this study adds important insight to the field.

A follow-up study is proposed to identify variables with high explanatory power on the factors influencing ethical sensitivity and replication studies on nursing professionalism, organisation's ethical climate and ethical sensitivity targeting PHC nurses. Additionally, it is necessary to introduce an intervention and verify the effects of the conceptual relationship confirmed in this study to improve ethical sensitivity. As PHC nurses are responsible for nursing emerging infectious disease patients at the forefront of the community, it is necessary to improve the system and policy, including education, through additional research on nurses' burden, not just the nurses' sense of duty.

## Conclusion

Participants' nursing professionalism and the organisation's ethical climate had a significant positive correlation with ethical sensitivity. Factors influencing ethical sensitivity were working in an infectious disease direct response department, nursing professionalism and ethical climate. Nursing professionalism also affected ethical sensitivity through the mediating effect of the organisation's ethical climate. Based on this conceptual relationship, efforts to improve ethical sensitivity are recommended. These include developing and providing relevant systems and policies, cultivating ethical leadership and introducing different departmental education programmes that can simultaneously enhance nursing professionalism and the organisation's ethical climate.

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**References**

1. WHO. *Coronavirus Disease (COVID-19) Pandemic*, <https://www.who.int/emergencies/diseases/novel-coronavirus-2019> (2020, accessed 10 June 2021).
2. *Basic Act on Disaster and Safety Management*. Korea Ministry of Government Legislation, <http://www.moleg.go.kr> (2020, accessed 04 May 2021).
3. *Korea Regional Public Health Act*. Korea Ministry of Government Legislation, <http://www.moleg.go.kr> (2020, accessed 02 February 2021).
4. Statistics Korea. Health center manpower status in 2019, [http://kosis.kr/statHtml/statHtml.do?orgId=117&tblId=DT\\_11719N\\_001](http://kosis.kr/statHtml/statHtml.do?orgId=117&tblId=DT_11719N_001) (2020a, accessed 19 December 2020).
5. Kong BH. Nursing ethics during COVID-19 pandemic: focusing on the ethics of care. *Korean J Med Ethics* 2021; 24: 303–315.
6. Choi E. Ethical responses to public health emergencies: the 2015 MERS outbreak in South Korea. *Korean J Med Ethics* 2016; 19: 358–374.
7. Kooli C. COVID-19: public health issues and ethical dilemmas. *Ethics Med Public Health* 2021; 17: 100635.
8. Iserson KV. Healthcare ethics during a pandemic. *West J Emerg Med* 2020; 21(3): 477–483.
9. Mert S, Sayilan AA, Karatoprak AP, et al. The effect of Covid-19 on ethical sensitivity. *Nurs Ethics* 2021; 28: 1124–1136. DOI: [10.1177/09697330211003231](https://doi.org/10.1177/09697330211003231).
10. Palazoğlu CA and Koç Z. Ethical sensitivity, burnout, and job satisfaction in emergency nurses. *Nurs Ethics* 2019; 26(3): 809–822.
11. Milliken A. Nurse ethical sensitivity: an integrative review. *Nurs Ethics* 2018; 25(3): 278–303.
12. Weaver K, Morse J and Mitcham C. Ethical sensitivity in professional practice: concept analysis. *J Adv Nurs* 2008; 62(5): 607–618.
13. Lim MY. Converged study of influencing factors on perceived ethical confidence in nurses. *Journal of the Korea Convergence Society* 2017; 8(6): 75–84.
14. Oh N, Hong N, Ryu DH, et al. Exploring nursing intention, stress, and professionalism in response to infectious disease emergencies: the experience of local public hospital nurses during the 2015 MERS outbreak in South Korea. *Asian Nurs Res* 2017; 11(3): 230–236.
15. Ertug N, Aktas D, Faydali A, et al. Ethical sensitivity and related factors of nurses working in the hospital settings. *Acta Bioethica* 2014; 20(2): 265–270.
16. Yeom HA, Ahn SH and Kim SJ. Effects of ethics education on moral sensitivity of nursing students. *Nurs Ethics* 2017; 24(6): 644–652.
17. Kim YK and Joung MY. Influence of nursing professionalism and campus environment on the perception of ethical sensitivity among nursing students. *J Korean Acad Soc Nurs Edu* 2019; 25(1): 115–124.
18. Jo HK and Kim SA. Moral sensitivity, empathy and perceived ethical climate of psychiatric nurses working in the national mental hospitals. *J Korean Acad Psychiatr Ment Health Nurs* 2015; 26(2): 204–215.
19. Kang IS and Kim WK. The Effects of ethical climate and ethical sensitivity on organizational effectiveness of small and middle-sized hospital nurses. *J Korea Contents Assoc* 2019; 19(1): 24–36.
20. Kang MJ. Factors affecting ethical sensitivity and job satisfaction of medical social workers. Dissertation. South Korea: The Graduate School of Public Administration, Pusan National University, 2019.
21. Mohammadi MM and Hosseinpour E. The Relationship between managers' ethical leadership style with professional commitment and ethical sensitivity among physicians of a military hospital. *Military Caring Sciences* 2020; 6(4): 295–304.

22. Kim JY. The effects of ethical leadership on organization effectiveness: The role of ethical sensitivity and ethical idealism as a mediator. Dissertation, South Korea: Department of Business Administration, Sungkyunkwan University, 2020.
23. Son JM. The Impact of Public Officials' Organizational Communication on Job Attitude: A Focus on Mediating Effects of Positive Psychological Capital. *Korean J Public Adm* 2019; 57(4): 349–382.
24. Park CK. Job characteristics and public service motivation (PSM) A study on the effect of job characteristics on PSM: The moderating effect of ethical climate. *Korea Local Adm Rev* 2013; 27(3): 203–230.
25. Hahn J.-H. and Ko MJ. The effect of ethical climate on employees' ethical behavior and well being: moderating effect of employees' ethical value. *Korean J Business Adm* 2015; 28(11): 2829–2849.
26. Lütznén K and Kvist BE. Moral distress: a comparative analysis of theoretical understandings and inter-related concepts. *HEC Forum* 2012; 24(1): 13–25.
27. Mayer DM, Kuenzi M and Greenbaum RL. Examining the link between ethical leadership and employee misconduct: The mediating role of ethical climate. *J Bus Ethics* 2010; 95(1): 7–16.
28. Yi MS and Chang YC. The relationship between ethical leadership and organizational commitment -The mediating effect of ethical climate. *J Hum Resour Manag Res* 2010; 17(3): 65–86.
29. Elçi M, Şener I and Alpkın L. The impacts of ethical leadership on the antisocial behavior of employees: the mediating role of ethical climate. *J Glob Strategic Manag* 2013; 14(1): 56–66.
30. Choi DL, Kwon HW and Park JM. The effects of ethical leadership on organizational effectiveness: mediated effect of boss trust and ethical climate. *Korean Rev Organizational Stud* 2016; 12(4): 1–25.
31. Jeong EJ, Park OI, Moon H, et al. The effect of self-control on the relationship between ethical climate and professionalism of general hospital nurses. Proceedings of the Korean Soc Com Living Science Conference 2014; 10: 118.
32. Yeun EJ, Kwon YM and Ahn OH. Development of a nursing professional values scale. *J Korean Acad Nurs* 2005; 35(6): 1091–1100.
33. Victor B and Cullen JB. The organizational bases of ethical work climates. *Administrative Science Quarterly* 1988; 33: 101–125.
34. Cullen JB, Victor B and Bronson JW. The ethical climate questionnaire: an assessment of its development and validity. *Psychol Rep* 1993; 73(2): 667–674.
35. Noh YG. The influence of hospital ethical climate perceived by nurses on supervisor trust and organizational effectiveness. Dissertation. South Korea: The Graduate School, Gyeongsang National University, 2014.
36. Joung MY. Development of ethical sensitivity scale for clinical nurse. Dissertation. South Korea: The Graduate School of Public Administration, Pusan National University, 2017.
37. Baron RM and Kenny DA. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J Personal Soc Psychol* 1986; 51(6): 1173–1182.
38. Sobel ME. Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology* 1982; 13: 290–312.
39. Kim CH. The relationships among ethical dilemma, professional values, ethical confidence of clinical nurses. Dissertation. South Korea: Graduate School Chungnam National University, 2014.
40. Kim MR. Clinical nurses' professionalism, nursing performance and intention of retention. Dissertation. South Korea: Graduate School of Hanyang University, 2008.
41. Noh YG, Jung MS and Lee YS. Nurse's job satisfaction and organizational commitment according to hospital ethical climate types. *J Korean Acad Nurs* 2013; 19(4): 513–524.
42. Choi SM. Influence of organizational ethical climate perceived by health care personnel on perception and performance of patients' personal information protection. Dissertation. South Korea: Graduate School of Hanyang University, 2017.
43. Hea-Jin M and Young PJ. Factors influencing intentions to care for emerging infectious disease patients among national and public hospitals nurses. *J Korean Acad Fundamentals Nurs* 2021; 28(1): 11–22.

44. Lee E. Late public health nurse Han-na Lee, who suicided herself while suffering from severe labor due to COVID-19, was recognized as an on duty death. YTN, 2021, [https://www.ytn.co.kr/\\_ln/0103\\_202109231700013242](https://www.ytn.co.kr/_ln/0103_202109231700013242) (accessed 12 November 2021).
45. Lim S. Nursing Officials 'leave and Resign' Surge. Daily Medi, 2021, [https://www.dailymedi.com/print\\_paper.php?number=875239&news\\_article=nm\\_news\\_article&target=print\\_paper](https://www.dailymedi.com/print_paper.php?number=875239&news_article=nm_news_article&target=print_paper) (accessed 12 November 2021).
46. Han DL, Seo KS, Kim ES, et al. Influences of moral sensitivity and safety environment on compliance with standard precautions among nurses. *Korea Acad Cooperation Soc* 2018; 19(3): 364–375.
47. PARK Mijeong MJ. Suggestions on public health ethics education for local government public health officials. *Korean J Med Ethics* 2017; 20(1): 17–39.
48. Yun HY, Kim SK, Jang HE, et al. The influence of moral distress and moral sensitivity on moral courage in nursing students. *Korean J Med Ethics* 2018; 21(4): 64–80.
49. Lee KJ and Yoo SY. Relationships between nurses' ethical dilemma, coping types, job satisfaction and turnover intention in Korea. *J Korean Clin Nurs Res* 2011; 17(1): 1–15.
50. Mun MY and Kim MY. Influence of hospital ethical climate and nursing professionalism on patient safety management activity by nurses. *J Korean Acad Nurs Adm* 2019; 25(5): 458–466.
51. Schluter J., Winch S., Holzhauser K., et al. Nurses' moral sensitivity and hospital ethical climate: a literature review. *Nurs Ethics* 2008; 15(3): 304–321.
52. Koskenvuori J, Numminen O and Suhonen R. Ethical climate in nursing environment: a scoping review. *Nurs Ethics* 2019; 26(2): 327–345.
53. Humphries A and Woods M. A study of nurses' ethical climate perceptions. *Nurs Ethics* 2016; 23(3): 265–276.
54. Barkhordari-Sharifabad M, Ashktorab T and Atashzadeh-Shoorideh F. Ethical leadership outcomes in nursing: a qualitative study. *Nurs Ethics* 2018; 25(8): 1051–1063.
55. Zhang N., Li M., Gong Z., et al. Effects of ethical leadership on nurses' service behaviors. *Nurs Ethics* 2019; 26(6): 1861–1872.
56. Aloustani S, Atashzadeh-Shoorideh F, Zagheri-Tafreshi M, et al. Association between ethical leadership, ethical climate and organizational citizenship behavior from nurses' perspective: a descriptive correlational study. *BMC Nursing* 2020; 19: 15–18.