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#### Abstract

Background: As a critical discipline within the healthcare field, nursing students inevitably encounter complex ethical dilemmas during their clinical internships in hospitals. These dilemmas test not only their professional knowledge and skills but also their ethical sensitivity. To effectively enhance nursing students' ability to address ethical dilemmas in clinical practice, fostering their ethical sensitivity is crucial. Ethical sensitivity is the awareness of ethical issues even in situations where there are no obvious moral conflicts. A high level of ethical sensitivity helps nursing students make more morally appropriate decisions in their actual work, thereby improving the quality of nursing services and patient satisfaction. Situational case study teaching is a method that simulates real clinical situations, allowing students to enhance their ethical sensitivity through the analysis and discussion of specific cases. Based on this, the present study aims to explore the impact of situational case study teaching on the ethical sensitivity of nursing students who have not yet started their hospital clinical internships. Methodology: Between April 2024 and June 2024, this study implemented an educational intervention using the situational case study teaching method at the faculty of Nursing, Lincoln University College, Malaysia, after obtaining permission from Muramatsu (the author of the ESQ-NS) and approval from the institutional Ethical Committee of Lincoln University College. A convenience sampling method was used to select a total of 55 nursing students who had not yet begun their clinical internships. First, an initial questionnaire survey was conducted with all 55 nursing students to assess their level of ethical sensitivity before the educational intervention. Subsequently, the situational case study teaching intervention was conducted, involving the analysis and discussion of specific cases aimed at enhancing the students' ethical sensitivity. After the intervention, a follow-up questionnaire survey was conducted with these students to assess the effect of the educational intervention and the changes in their level of ethical sensitivity. Results: After the intervention, the total ESQ-NS score of nursing students was 38.5±13.5, which was higher than the pre-intervention score of 33±19. Statistical analysis showed that the difference was significant (t=4.109, P<0.05). After the intervention, the per-item score rate on the ESQ-NS was 82.05%±6.59%, higher than the pre-intervention per-item score rate of 66.59%±5.68%, with an increase observed in each item's score rate. Conclusion: The study results indicate that the situational case study teaching method has a positive effect on enhancing the ethical sensitivity of nursing students. Statistical analysis revealed that the improvement was highly significant (p<0.01). Specific scenario discussions effectively promote deep engagement and critical thinking among nursing students in the classroom, thereby improving their ethical sensitivity.

Keywords: Nursing Student, Ethical Sensitivity, Case Study Teaching Method, Ethical Sensitivity Questionnaire, Ethical Sensitivity Questionnaire for Nursing Students (ESQ-NS).

## INTRODUCTION

The rapid development of contemporary science and technology and the swift progress of social civilization have brought unprecedented convenience and welfare. However, simultaneously, various moral contradictions and ethical conflicts in social life are increasingly prevalent. Despite the advancements in modern medicine due to technological progress, cultural clashes, differing economic ideologies,

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and other factors inevitably contribute to increased internal conflicts within hospitals. Moral distress is a multifaceted and difficult issue within the nursing profession.<sup>[1]</sup> Scholars such as Monroe<sup>[2]</sup> have measured the professional values of

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How to cite this article: Tang J, Yahya F. Evaluating the Impact of Situational Case Study Teaching Methods on Nursing Students' Ethical Sensitivity Using the Ethical Sensitivity Questionnaire for Nursing Students (ESQ-NS). J Nat Sc Biol Med 2024;15:409-416 registered nurses and tested whether these values correlate with ethics education and years of experience, revealing frequent conflicts among nurses themselves, as well as between nurses and physicians or patients.

Nursing as a profession is fraught with challenges, requiring nurses to make ethical decisions in practice. However, ethical and moral values are often challenged, hindering nurses from making the most appropriate ethical decisions.[3] Nursing students, as the future of the nursing industry, need to cultivate and enhance their ethical sensitivity even before formal hospital clinical internships. This builds confidence in their ability to perform well, potentially reducing the likelihood of losing confidence and ultimately leaving the nursing profession due to ethical dilemmas. In clinical nursing practice, ethical challenges faced by nursing staff often involve conflicting solutions in certain circumstances. <sup>[4]</sup> Research by Laurs *et al.*<sup>[5]</sup> indicates a correlation between ethical dilemmas and nurse turnover, suggesting that greater ethical distress increases the likelihood of nurses leaving their jobs. The ethical sensitivity and empathy of nurses in tertiary hospitals are closely related, emphasizing the need for managers to enhance ethical sensitivity through regular training to stabilize nursing teams and reduce turnover.<sup>[6]</sup> Furthermore, the study points out that ethical dilemmas for nurses are often associated with unethical work environments, such as resource shortages, inadequate communication between nurses, physicians, and families, and unnecessary treatment practices.

The concept of ethical dilemma was initially proposed by scholar Jameton<sup>[7]</sup>, who argued that nurses are sometimes unable to act in the most ethical and appropriate manner due to various rules and constraints, leading to the emergence of ethical dilemmas. Ethical dilemmas, also known as ethical perplexities, fundamentally involve conflicts between multiple moral obligations.<sup>[8,9]</sup>

Ethical sensitivity refers to an individual's awareness of ethical dilemmas even in the absence of clear ethical conflicts. It involves timely responsiveness to the spiritual and physical needs of others and the anticipation of potential harms from certain actions.<sup>[10]</sup> Ethical sensitivity is considered a fundamental component of moral behavior. A lack of or reduced ethical sensitivity can lead nursing practices astray from ethical standards, thereby compromising the fundamental principles of the nursing profession.<sup>[11-13]</sup>

Effective ethical sensitivity helps nurses make optimal clinical decisions, reduce ethical conflicts, alleviate job stress, and enhance service quality. It not only plays a positive role in reducing nurse turnover and preventing talent loss but also significantly improves the effectiveness of overall healthcare services and patient satisfaction.<sup>[11-13]</sup> The nursing decision-making process should be grounded in moral reasoning. Nurses are expected to analyze ethical principles and stakeholders' interests based on certain values, develop alternative solutions and anticipated outcomes for ethical dilemmas, and ultimately choose the most reasonable course of action.<sup>[17-20]</sup>

Scholar Su *et al.*<sup>[21]</sup> conducted research from November 2019 to December 2019 at a nursing college in Hunan Province, China, involving 316 undergraduate nursing students from freshman to junior levels. The study found that undergraduate nursing students' ethical decision-making levels were moderate. Compared to traditional theoretical teaching methods, students showed a preference for experiential teaching methods such as scenario simulations and case analyses.

Zhu *et al.*<sup>[22]</sup> conducted a study from August 2017 to January 2019, selecting 268 diploma nursing students using cluster sampling. They were randomly divided into control and intervention groups to enhance ethical decision-making abilities using traditional teaching methods for the control group and scenario situational case teaching for the intervention group over one semester. Results indicated that situational case study teaching was more effective than traditional methods in improving ethical decision-making among associate degree nursing students. Based on these findings, this experiment adopts situational case study teaching as the educational intervention method.

To ensure the accuracy of the measurements in this experiment, two existing questionnaires measuring ethical sensitivity were compared. As early as 1995, Lützén *et al.*<sup>[23]</sup> developed the Moral Sensitivity Questionnaire (MSQ) to assess moral sensitivity levels in nursing practice across six dimensions: interpersonal orientation, structural moral meaning, expression of benevolence, enhancement of autonomy, experience of moral conflict, and trust in medical and nursing knowledge. The questionnaire was later modified in 1997 for assessing moral sensitivity among psychiatric doctors. However, Chen *et al.*<sup>[24]</sup> argued that the MSQ questionnaire may not be suitable for groups outside of nurses.

In 2019, Japanese scholar Muramatsu and colleagues developed the Ethical Sensitivity Questionnaire for Nursing Students (ESQ-NS), which consists of 13 items across three factors: respect for individuals, fair distribution, and maintenance of patient privacy. Data analysis confirmed the questionnaire's reliability with a Cronbach's  $\alpha$  coefficient of 0.82, making ESQ-NS the first scale designed to assess ethical sensitivity specifically in nursing students.<sup>[25]</sup> These findings validate ESQ-NS as a reliable tool for evaluating the effectiveness of ethics education among nursing students. Given that the subjects of this experiment are nursing students who have not yet undergone hospital clinical internships, ESQ-NS was chosen as the measurement tool for this study.

# MATERIALS AND METHODS General Information

In this experiment, paired sample t-tests were employed. Sample size calculation was conducted using G\*Power 3.1 software, selecting t-test with the following parameters: effect size set at 0.5, significance level ( $\alpha$ ) at 0.05, and power (1- $\beta$  error probability) at 0.95. From April 2024 to June 2024, a convenience sampling method was used

to select a total of 55 nursing students from the Lincoln University College, Faculty of Nursing in Malaysia. Among them, there were 52 diploma nursing students and 3 undergraduate nursing students. The gender distribution included 7 males and 48 females, comprising various ethnicities such as Chinese, Indian, Malay, and others, with an average age of  $20.5 \pm 1.5$  years.

Pre-intervention surveys on ethical sensitivity among nursing students participating in the experiment were conducted from April to June 2024. After the educational intervention concluded, post-intervention surveys on ethical sensitivity were administered to the nursing students. The same individual conducted the educational interventions using identical materials, ensuring the comparability of the experimental results.

#### Inclusion criteria:

a. Nursing students from Lincoln University Malaysia.

- b. Year 1-2 diploma students
- Year 1-3 undergraduate students

c. Students who were able to participate in the whole process as much as possible

Exclusion criteria: Participants are in the process of receiving their nursing education rather than having completed their nursing education.

### **Methods**

This experiment was designed as a pre-post comparative study. Prior to any data collection, all participating nursing students were required to read and sign an informed consent form. Following obtaining written consent, the first questionnaire survey on ethical sensitivity was conducted before the educational intervention. Subsequently, after the completion of the educational intervention, a second questionnaire survey was administered to all participating nursing students. All surveys were conducted onsite, with a standardized script explaining the questionnaire's instructions to students. The surveys were administered anonymously, and students were instructed to complete them independently within 20 minutes. All questionnaires were distributed and collected onsite, resulting in a 100% response rate with 110 questionnaires distributed in total. The instrument used in this study was the Ethical Sensitivity Questionnaire for Nursing Students (ESQ-NS). Permission to use the ESQ-NS was obtained from its developer, Muramatsu, via email. The case studies and supplementary materials used in the study received approval from the Institutional Ethical Committee of Lincoln University College.

The educational intervention utilized situational case study teaching to enhance ethical sensitivity among the participating nursing students. Specifically, the intervention included six scenario-based case studies covering the themes of respect for individuals, fair distribution, and maintenance of patient privacy. Before discussing the scenario cases, students were introduced to the definitions of ethical dilemmas and ethical sensitivity, along with supplementary materials covering two main ethical principles: Kohlberg's Six Stages of Moral Development Conceptual Graph:<sup>[26]</sup> Stage 1: Punishment/Submission Stage 2: Reward/Obedience Stage 3: Interpersonal Concordance Stage 4: Law and Order

Stage 5: Social Contract

Stage 6: Universal Ethical Principles

Principles of Biomedical Ethics:[27]

Respect for Autonomy

Nonmaleficence

Beneficence

Justice

After presenting the ethical principles, the scenario cases were presented to all nursing students. Students were then divided into groups to analyze and discuss the scenarios freely. Upon concluding their discussions, students shared their perspectives, and the researcher facilitated a Q&A session to address any questions or concerns. Following the completion of all educational sessions, the second identical questionnaire survey (ESQ-NS) was administered to all nursing students.

#### **Evaluation Criteria**

For the evaluation of ethical sensitivity among nursing students, the Ethical Sensitivity Questionnaire for Nursing Students (ESQ-NS) developed by Japanese scholar Muramatsu *et al.* in 2019 was employed. This questionnaire is specifically designed for assessing ethical sensitivity in nursing students. The ESQ-NS has demonstrated good reliability with a Cronbach's  $\alpha$  coefficient of 0.82. The Cronbach's  $\alpha$  coefficients for individual items range from 0.77 to 0.81, indicating strong internal consistency. The test-retest reliability measured by Pearson's coefficient is 0.42, and the correlations between different factors range from 0.16 to 0.57.<sup>[25]</sup>

The ESQ-NS comprises three factors: Respect for individuals, Fair distribution, and Maintenance of patient privacy, totaling 13 items. Responses are rated on a 4-point Likert scale (1 = strongly disagree, 4 = strongly agree), with total scores ranging from 13 to 52. Higher scores indicate higher ethical sensitivity among nursing students.

#### **Statistical Analysis**

Data analysis was conducted using SPSS 29.0. Continuous data were found to follow a normal distribution. Descriptive statistics were employed to summarize the basic characteristics of the sample, including means, standard deviations, frequencies, and percentages.

### The Statistical Tests Included

Paired sample t-test: Used to calculate differences in means before and after the intervention, reporting mean difference (MD), standard error, t-value, and p-value ( $\alpha = 0.05$ ). Multiple linear regression analysis: Conducted to explore the predictive effect of educational intervention on total ESQ-NS scores and scores across different dimensions, while controlling for potential confounding variables.

All tests were two-tailed, and statistical significance was set at  $\alpha = 0.05$ . Results were reported using mean differences (MD) and their 95% confidence intervals (CI).

# RESULTS

Ethical sensitivity of nursing students who had not yet experienced clinical practice in the hospital was mostly moderate. The difference between the ethical sensitivity per question scores and total scores of nursing students before and after the intervention was statistically significant (p<0.05). \*Following figure and table, Q1 to Q13 as the sequence number of each question, Pre is the result of the first questionnaire and Post is the result of the questionnaire after the second educational intervention.

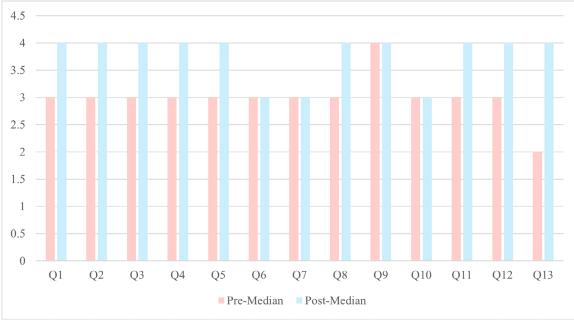
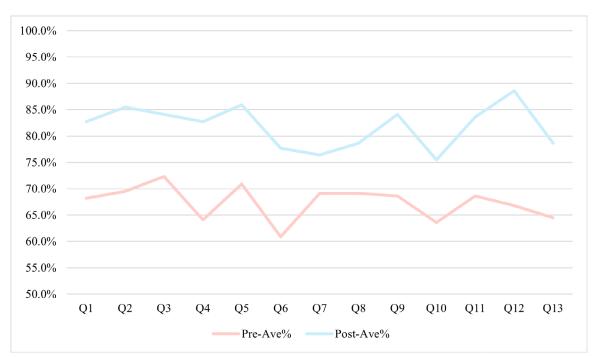
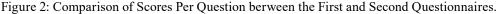


Figure 1: Comparison of the Median Per Question between the First and Second Questionnaires.

The graph demonstrates the mean scores for each item of the ESQ-NS questionnaire before and after the educational intervention. The post-intervention scores increased on all items, indicating that the nursing students' ethical sensitivity was enhanced.





The figure displays the average response rate for each item, illustrating the proportion of participants choosing each option before and after educational intervention. The results show higher response rates post-intervention compared to pre-intervention.

		Mean	Ν	Std. Deviation	Std. Error Mean
Pair 1	Post1	3.31	55	1.200	0.162
rall I	Pre1	2.73	55	1.367	0.184
D-:- 2	Post2	3.42	55	0.854	0.115
Pair 2	Pre2	2.78	55	1.166	0.157
D-:- 2	Post3	3.36	55	0.910	0.123
Pair 3	Pre3	2.89	55	1.181	0.159
D ' 4	Post4	3.31	55	0.879	0.119
Pair 4	Pre4	2.56	55	1.135	0.153
Pair 5	Post5	3.44	55	0.958	0.129
	Pre5	2.84	55	1.259	0.170
Dein	Post6	3.11	55	0.956	0.129
Pair 6	Pre6	2.44	55	0.958	0.129
D ' 7	Post7	3.05	55	0.870	0.117
Pair 7	Pre7	2.76	55	0.942	0.127
<b>D</b> ' 0	Post8	3.15	55	1.061	0.143
Pair 8	Pre8	2.76	55	1.170	0.158
D · O	Post9	3.36	55	0.910	0.123
Pair 9	Pre9	2.75	55	1.404	0.189
D-:- 10	Post10	3.02	55	1.130	0.152
Pair 10	Pre10	2.55	55	1.259	0.170
D 11	Post11	3.35	55	0.821	0.111
Pair 11	Pre11	2.75	55	1.075	0.145
D 12	Post12	3.55	55	0.919	0.124
Pair 12	Pre12	2.67	55	1.292	0.174
D-: 12	Post13	3.15	55	1.129	0.152
Pair 13	Pre13	2.58	55	1.243	0.168

The table provides a detailed overview of the central tendency and dispersion trends for each item before and after educational intervention. The average scores indicate an increase, suggesting a positive impact of the intervention on ethical sensitivity.

### Table 2: Paired Samples Test.

			44	Significance	
		L	df	One-Sided p	Two-Sided p
Pair 1	Post1 – Pre1	4.606	54	< 0.001	< 0.001
Pair 2	Post2 – Pre2	7.618	54	< 0.001	< 0.001
Pair 3	Post3 – Pre3	5.529	54	< 0.001	< 0.001
Pair 4	Post4 – Pre4	8.987	54	< 0.001	< 0.001
Pair 5	Post5 – Pre5	6.514	54	< 0.001	< 0.001
Pair 6	Post6 – Pre6	10.536	54	< 0.001	< 0.001
Pair 7	Post7 – Pre7	4.707	54	< 0.001	< 0.001
Pair 8	Post8 – Pre8	5.775	54	< 0.001	< 0.001
Pair 9	Post9 – Pre9	5.540	54	< 0.001	< 0.001
Pair 10	Post10 – Pre10	6.500	54	< 0.001	< 0.001
Pair 11	Post11 – Pre11	7.462	54	< 0.001	< 0.001
Pair 12	Post12 – Pre12	6.589	54	< 0.001	< 0.001
Pair 13	Post13 – Pre13	6.333	54	< 0.001	< 0.001

The table displays the results of paired-sample t-tests for each item, indicating the statistical significance of score changes before and after intervention. Significant p-values (<0.05) suggest a significant impact of the intervention on students' ethical sensitivity. significant effect sizes, with the majority of paired samples showing large effect sizes (Cohen's d and Hedges' correction), indicating significant effectiveness of educational intervention in enhancing ethical sensitivity among nursing students.

The table shows that all paired samples have statistically

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	· · · · · · · · · · · · · · · · · · ·		Standardizer <sup>a</sup>	Point Estimate —	95% Confidence Interval	
					Lower	Upper
Pair 1	Post1 – Pre1	Cohen's d	0.937	0.621	0.330	0.908
	Posti – Prei	Hedges' correction	0.950	0.612	0.325	0.895
Pair 2	Post2 – Pre2	Cohen's d	0.620	1.027	0.697	1.351
		Hedges' correction	0.628	1.013	0.687	1.333
Pair 3	Post3 – Pre3	Cohen's d	0.634	0.746	0.444	1.042
Pair 3	Posts – Pres	Hedges' correction	0.643	0.735	0.437	1.028
Pair 4		Cohen's d	0.615	1.212	0.859	1.557
	Post4 – Pre4	Hedges' correction	0.624	1.195	0.847	1.536
Pair 5	Post5 – Pre5	Cohen's d	0.683	0.878	0.564	1.187
		Hedges' correction	0.693	0.866	0.556	1.170
Pair 6	Post6 – Pre6	Cohen's d	0.474	1.421	1.041	1.793
	Posto – Preo	Hedges' correction	0.480	1.401	1.027	1.768
Pair 7	Post7 – Pre7	Cohen's d	0.458	0.635	0.342	0.922
rall /		Hedges' correction	0.465	0.626	0.337	0.909
Pair 8	Post8 – Pre8	Cohen's d	0.490	0.779	0.474	1.078
Pair o		Hedges' correction	0.497	0.768	0.467	1.063
Pair 9	Post9 – Pre9	Cohen's d	0.828	0.747	0.445	1.044
		Hedges' correction	0.839	0.737	0.439	1.029
Pair 10	Post10 - Pre10	Cohen's d	0.539	0.876	0.562	1.185
		Hedges' correction	0.547	0.864	0.554	1.168
Pair 11	Post11 – Pre11	Cohen's d	0.596	1.006	0.678	1.328
		Hedges' correction	0.605	0.992	0.669	1.310
Pair 12	Post12 – Pre12	Cohen's d	0.982	0.888	0.573	1.198
	rostiz - rielz	Hedges' correction	0.996	0.876	0.565	1.181
Pair 13	Post13 – Pre13	Cohen's d	0.660	0.854	0.542	1.160
1 all 13	rosus - Preis	Hedges' correction	0.669	0.842	0.534	1.144

### DISCUSSION

The study results indicate that nursing students who are still in school and have not yet started clinical hospital internships show moderate levels of ethical sensitivity and ethical decision-making abilities, consistent with the findings of Zhu Lei and colleagues.[22] In this experiment, there were only 3 undergraduate nursing students and 52 diploma nursing students, with results indicating nonrepresentative significance (P>0.05). Zhu et al. suggest that factors such as younger age and shorter education duration among associate degree nursing students influence their ethical decision-making abilities, which positively correlate with educational level.<sup>[22]</sup> Additionally, Su et al.'s research indicates a positive correlation between nursing students' ethical decision-making abilities, ethical sensitivity, and professional values (P<0.001), suggesting that higher ethical sensitivity and more positive professional values enhance nursing students' ethical decision-making abilities.<sup>[21]</sup>

The current experiment data demonstrate that the average scores on ESQ-NS significantly improved post-intervention, with paired-sample t-tests indicating statistical significance, further confirmed by effect size analysis. Through Figures 1 and 2, it is evident that situational case study teaching effectively enhances nursing students' ethical sensitivity. This aligns with Kohlberg's stages of moral development theory, where students, through discussing and analyzing ethical scenarios, better understand and apply ethical principles like autonomy, non-maleficence, beneficence, and justice in theory and practice. This teaching method not only promotes students' awareness and understanding of ethical dilemmas but also strengthens their ability to handle ethical issues in actual nursing practice.

The experimental data from this study on the educational intervention using scenario-based case analysis teaching method to enhance nursing students' ethical sensitivity are consistent with the findings of Namadi *et al.*<sup>[28]</sup>. Namadi *et al.*<sup>[28]</sup> suggests that the lecture method provides nursing students with opportunities for attentive listening, thereby fostering respect for others' rights and opinions and making it easier to accept opposing viewpoints.

While this research contributes to nursing education practices, it has significant limitations: 1) The study included a total of 55 participants (n=55), with 52 diploma students (n=52) and 3 undergraduate students (n=3) from the same institution, potentially limiting broader generalizability across diverse cultural backgrounds such as Chinese, Malay, and Indian. 2) The study utilized only a single scale (ESQ-NS) without employing multiple measures. 3) It employed a single educational intervention, scenariobased case analysis teaching, which may benefit from incorporating multiple educational interventions to better cultivate nursing students' ethical sensitivity. 4) The short-term nature of the educational intervention may not predict the long-term impact on nursing students' ethical sensitivity. 5) The homogeneous cultural background of participating nursing students may not apply to students from other cultural backgrounds.

It is recommended to integrate situational case study teaching into nursing education curricula, especially before students enter the hospital internship stage. Educational interventions should focus on cultivating nursing students' ethical sensitivity to enhance their ethical decision-making abilities in practical work. Furthermore, administrators should prioritize enhancing ethical sensitivity through relevant training in daily education to improve the overall quality of the nursing workforce and reduce turnover.

# CONCLUSION

In this study, the ethical sensitivity level of nursing students at Lincoln University College in Malaysia was found to be moderate, with room for improvement. Factors such as students' educational levels and duration of nursing studies can influence their ethical sensitivity. Due to limitations in human resources, the study only surveyed nursing students from one university, with a sample size that may not be sufficiently large. Additionally, the study did not include comparison analysis with nursing students who have already undergone clinical internships. The pre-post measurement of nursing students in this study may result in some biases. Future research could expand the scope of study participants, extend the timeline of educational interventions, utilize multiple assessment scales, and employ various educational interventions for better comparative analysis, thereby enhancing the representativeness of research findings.

## **Ethics Approval and Consent to Participate**

All respondents in the survey received an information letter in which we emphasized that participation was voluntary, they could withdraw from the study without reason, and data would be anonymous. The institutional Ethical Committee of Lincoln University College approved this research (Ref. No.: LUC/Ethical/LoP/MY/SP/507).

### **Consent for Publication**

Not applicable.

### **Conflicts of Interest**

The authors declare no conflict of interest.

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