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Improving Healthy Lifestyles in Agricultural Communities through Nursing-Based Self-Empowerment

Rizeki Dwi Fibriansari[1*], Nurfika Asmaningrum[1], Annisa Pratiwi[1]
[1] Faculty of Nursing, University of Jember, Jember, Indonesia
***Corresponding author:** rizekifibriansari@unej.ac.id*

ORCID: **Rizeki Dwi Fibriansari:** https://orcid.org/0000-0002-7877-9785; ORCID: **Nurfika Asmaningrum:** https://orcid.org/0000-0001-6911-6894; ORCID: **Annisa Pratiwi:** https://orcid.org/0009-0006-8376-1412

ABSTRACT

Background: Agricultural communities are vulnerable to unhealthy lifestyle behaviors due to heavy workloads and limited access to health education. Strengthening self-empowerment through nursing interventions is essential to promote sustainable health practices; however, evidence on LOHAS-informed, nurse-led empowerment interventions in Indonesian agricultural communities remains limited.

Purpose: This study aimed to evaluate changes in self-empowerment among agricultural communities following the implementation of a nursing-based self-empowerment intervention to support healthy lifestyle practices.

Methods: This study employed a pre-experimental one-group pretest–posttest design involving 265 participants from agricultural communities. Changes were assessed across six self-empowerment dimensions: self-capacity building, social network building, social service utilization, health empowerment, purposeful participation in goal attainment, and perceived well-being. Data were analyzed using the Wilcoxon signed-rank test to compare pretest and posttest scores.

Results: Among 265 respondents, posttest scores were higher than pretest scores across all six self-empowerment dimensions. Mean scores increased from 18.42 to 25.63 for self-capacity building, 17.96 to 25.12 for social network building, 18.75 to 26.04 for social service utilization, 17.84 to 25.78 for health empowerment, 18.02 to 25.47 for purposeful participation in goal attainment, and 18.63 to 26.18 for perceived well-being. The differences were statistically significant across all six dimensions (p-values < .001).

Conclusion: The self-empowerment scores increased across all six dimensions following the nursing-based intervention among agricultural communities. However, the absence of a control group limits causal interpretation, and the sustainability of these changes remains unknown. Controlled studies with longer follow-up periods are needed to assess causality and the sustainability of changes in self-empowerment and healthy lifestyle practices.

Keywords : Agricultural Communities; Community Health Nursing; Health Promotion; Healthy Lifestyle; Self-Empowermen

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BACKGROUND

Health is a fundamental determinant of human well-being and is closely linked to healthy lifestyle practices (Astuti et al., 2024). The level of health is crucial for the development and enhancement of human resources and serves as one of the essential foundations for the implementation of national development, which fundamentally represents holistic human development (Udiyo Basuki & M.Hum., 2020). Self-empowerment in the agricultural sector plays a strategic role in improving farmer's welfare, strengthening food security, and supporting sustainable development (Tucker et al., 2018). This process involves empowering individuals and farmer groups to enhance their capacity to manage resources, access technology, and adapt to global challenges. Agricultural communities tend to face unique health challenges due to high levels of physical labor (Maisyaroh et al., 2019), yet often have limited access to health information and a lack of understanding of healthy lifestyles. Consequently, the health conditions of agricultural communities are frequently overlooked (Muslim et al., 2022). Although empowerment approaches have been used in community health promotion, limited studies have evaluated a structured nursing-based self-empowerment intervention across six empowerment dimensions in Indonesian agricultural communities.

Self-empowerment in the agricultural sector represents a strategic approach to strengthening farmers' independence while supporting national food security (R. D. Fibriansari, Astuti, et al., 2025a). Through agribusiness modernization, capacity building of farmer groups, and access to innovative financing mechanisms, the agricultural sector can develop in a sustainable and inclusive manner (Maisyaroh, 2019a). However, the success of these initiatives requires collaboration among government agencies, relevant institutions, and farming communities. Farmers may face occupational health risks because of the physically demanding nature of agricultural work, including musculoskeletal injuries (Widianto et al., 2020). According to Statistics Indonesia (Badan Pusat Statistik or BPS), data from the August 2024 National Labor Force Survey (Sakernas) showed that 28.18% of employed Indonesians aged 15 years and older worked in agriculture, forestry, and fishing, highlighting the importance of addressing the health needs of these communities (Purwandari et al., 2023). Previous research conducted among farmers in the Sukodono region in 2024 also identified excess body weight among participants (R. D. Fibriansari, Asmaningrum, et al., 2025) Specifically, 34 women (8%) and 6 men (2%) were classified as overweight, while obesity was reported among 70 women (26%) and 10 men (3%). These findings highlight the need to consider nutritional health when developing health promotion initiatives for agricultural communities.

Agricultural communities face complex health challenges arising from the physically demanding nature of their work (R. D. Fibriansari & Asmaningrum, 2025), limited access to health information, and low awareness of the importance of healthy lifestyle practices (R. D. Fibriansari, Astuti, et al., 2025a). These conditions contribute to an increased risk of degenerative diseases, including hypertension (Ambarika et al., 2023), diabetes, obesity, and musculoskeletal disorders (Fijri et al., 2022). Addressing these health challenges requires a holistic and sustainable approach to improving the overall health and well-being of farming

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communities. Healthy lifestyle practices are essential for maintaining individual and community health, promoting environmental hygiene, and encouraging active participation in creating clean and healthy communities (Kasrudin et al., 2021). Key components of a healthy lifestyle include dietary patterns, physical activity (Sari & Acob, 2024), sleep habits, and stress management, which collectively influence body weight and overall health outcomes (R. D. Fibriansari, Astuti, et al., 2025a).

Enhancing community self-reliance in agricultural settings through the adoption of healthy lifestyles is critically important for enabling populations to achieve optimal health status (Maisyaroh, 2019b), defined as a state of complete physical, mental, and social well-being rather than merely the absence of disease or infirmity (Palozzi et al., 2020). In pursuit of sustainable health development goals, the implementation of a self-empowerment approach is essential (Indriyani et al., 2024), as it strengthens community autonomy and capacity to effectively address the challenges they face (Muliyadi et al., 2024). Self-empowerment approaches encourage communities to identify and utilize available resources (R. D. Fibriansari, Astuti, et al., 2025a) and to recognize their own inherent potential (Sebayang et al., 2019). This strategy aims to foster independence and responsibility in problem-solving, as well as to promote positive behavioral changes and healthier lifestyle practices among agricultural populations (Astuti et al., 2024). Self-empowerment-based nursing interventions have been shown to be effective in facilitating healthy behavior change, enhancing community self-reliance, and strengthening the social and economic resilience of agrarian communities.

This study integrates the principles of self-empowerment with a community nursing approach (Tucker et al., 2018), positioning nurses as facilitators, educators, and motivators in enhancing awareness (Susanto et al., 2016) and strengthen agricultural workers' autonomy in managing their health. The intervention is guided by the six dimensions of the Lifestyles of Health and Sustainability (LOHAS) framework: physical, mental, emotional, spiritual, environmental, and social well-being (Choi & Feinberg, 2021). These dimensions provide the conceptual basis for healthy lifestyle education, while community nursing activities and multisectoral collaboration are intended to support participants in developing their capacity to maintain their health.

In this study, the LOHAS framework serves as the basis for the intervention content, whereas the outcomes are assessed using six dimensions of self-empowerment: self-capacity building, social network building, social service utilization, health empowerment, purposeful participation in goal attainment, and perceived well-being. Conceptually, the intervention is intended to support changes in these empowerment dimensions through health education, guided participation, and community support. However, the six LOHAS dimensions and the six self-empowerment dimensions represent distinct conceptual domains and should not be treated as equivalent measures. The study therefore evaluates pretest–posttest changes in self-empowerment following the nursing-based intervention. Its contribution lies in applying a LOHAS-informed, community nursing approach to self-empowerment in an agricultural context, with multisectoral collaboration intended to strengthen community support for healthy lifestyle practices. The study's contribution is the application and preliminary evaluation of a LOHAS-informed, nurse-facilitated empowerment intervention in an agricultural community

setting. This study aimed to evaluate changes in self-empowerment among agricultural communities following the implementation of a nursing-based self-empowerment intervention to support healthy lifestyle practices.

METHODS

Design and Setting

This study employed a pre-experimental one-group pretest–posttest design to evaluate changes in self-empowerment following a nursing-based intervention designed to support healthy lifestyle practices. The study was conducted in the working area of Sukodono Community Health Center (Puskesmas Sukodono), Lumajang Regency, East Java, Indonesia. A total of 265 respondents from agricultural and livestock-related communities were recruited using purposive sampling. Data were collected at 2025. The study assessed pretest–posttest changes in six dimensions of self-empowerment: self-capacity building, social network building, social service utilization, health empowerment, purposeful participation in goal attainment, and perceived well-being.

Participants and Sampling

Participants were recruited using purposive sampling from agricultural and livestock-related communities within the catchment area of Sukodono Community Health Center, Lumajang Regency, East Java, Indonesia, from July to September 2025. Inclusion criteria were individuals engaged in agricultural work in the Sukodono area, without complications from existing diseases, and willing and able to cooperate with the research procedures. Exclusion criteria were individuals unable to read and write and farmers with activity limitations. Potential participants were identified and approached during Occupational Health Program (Upaya Kesehatan Kerja, UKK) activities conducted in collaboration with Sukodono Community Health Center, where the researchers participated in data collection. The study objectives and procedures were explained to potential participants, and informed consent was obtained before enrollment. As purposive sampling is a non-probability sampling method, the findings should be generalized to other agricultural communities with caution.

The target population comprised 4,344 residents engaged in agricultural and livestock-related occupations in Sukodono District, based on Statistics Indonesia (BPS) data from 2024. The target sample size of 265 participants was calculated using the Lemeshow sample-size formula developed by Lemeshow et al. (1997). During recruitment, 273 individuals were approached, of whom five declined participations, and three were excluded based on the eligibility criteria. The remaining 265 participants completed both pretest and posttest assessments and were included in the final analysis.

Purposive sampling is a non-probability sampling method; therefore, the participants may not be representative of all agricultural and livestock-related communities. The findings should be interpreted with caution when considering their applicability to other populations and settings.

Instruments and Data Collection

Self-empowerment was assessed using a 30-item self-report questionnaire adapted from previously validated items by Choi and Feinberg (2021). The questionnaire measured six

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dimensions: self-capacity building, social network building, social service utilization, health empowerment, purposeful participation in goal attainment, and perceived well-being. Each item was rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Data were collected through self-administered questionnaires and direct observation at pretest and posttest.

The nursing-based self-empowerment intervention aimed to strengthen participants' awareness and autonomy in adopting healthy lifestyle practices. The educational content focused on dietary patterns, physical activity, sleep habits, and stress management. Nurses acted as facilitators and educators, guiding participants to recognize health risks, reflect on current lifestyle practices, identify personal and community resources, and set practical health goals. Community-based support was provided through collaboration with Occupational Health Program (Upaya Kesehatan Kerja, UKK) cadres.

The intervention and data collection were conducted in four sessions over three months. In Session 1, participants completed the pretest questionnaire and underwent initial observation. Session 2 consisted of an educational session on healthy lifestyle practices using a self-empowerment approach. During Session 3, UKK cadres provided follow-up support in the first and second months, focusing on dietary patterns, physical activity, sleep habits, and stress management. In Session 4, conducted in the third month, participants completed the posttest questionnaire and program evaluation. The same questionnaire and assessment procedures were used at both time points to ensure measurement consistency.

Participants' demographic characteristics and pretest–posttest scores were recorded in a structured research database. Paired pretest and posttest data were analyzed to evaluate changes across the six self-empowerment dimensions. Because the study used a one-group pretest–posttest design without a control group, the findings were interpreted as changes observed during the study period rather than definitive evidence of a causal intervention effect.

Data Analysis

To examine changes in participants' self-empowerment scores before and after the nursing-based intervention, the Wilcoxon signed-rank test was used to compare paired pretest and posttest scores across the six self-empowerment dimensions. This nonparametric test was selected because the outcomes were measured using Likert-scale items and the data did not meet the assumptions required for the planned parametric analysis. Statistical analyses were performed using IBM SPSS Statistics 29.0.1.1.

Before analysis, the completeness of paired pretest and posttest observations was checked for each outcome. Only participants with available paired data for the relevant outcome were included in the corresponding analysis. Any missing data were handled according to the actual data-management procedures used in the study. The assumptions relevant to the Wilcoxon signed-rank test, including paired observations, independence between participants, and the distribution of paired differences, were considered.

Descriptive statistics were used to summarize pretest and posttest scores. The Wilcoxon signed-rank test was used to evaluate differences between paired measurements. Statistical tests were two-sided, and the significance level was set at $\alpha = 0.05$. P-values displayed as 0.000

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by the statistical software were reported as $p < 0.001$. Where available, the Wilcoxon test statistic and an appropriate effect-size estimate with its 95% confidence interval were reported.

Ethical Consideration

This study received ethical approval from the Ethics Committee of the Faculty of Nursing, Universitas Jember (Approval No. 343/UN25.1.14/KEPK/2025), dated July 24, 2025. The study was conducted in accordance with established ethical principles, including respect for autonomy, beneficence, non-maleficence, and justice.

Informed consent was obtained from participants before data collection. Participation was voluntary, and participants were informed of their right to withdraw from the study in accordance with the approved research procedures. Confidentiality and data protection measures were implemented in accordance with the procedures documented in the approved research protocol.

RESULTS

Table 1 presents the frequency distribution of respondents' characteristics, including their sociodemographic profiles. These characteristics provide an overview of the study population and important context for interpreting the findings regarding self-empowerment among agricultural communities following the nursing-based intervention.

Table 1. Frequency Distribution of Respondent Characteristics (n=265)

Respondent Characteristics	N	%
A. Age		
<40	127	47.9
40-49	5	1.8
50-59	48	18.1
60-69	72	27.2
≥70	13	4.9
B. Gender		
Man	32	12.1
Woman	233	87.9
C. Education		
Primary School	241	90.9
Junior High School	20	7.6
Senior High School	3	1.1
Higher Education	1	0.4
D. Type of Occupation		
Farmer	12	4.5
Agricultural Laborer	245	92.5
Others	8	3.0
E. Length of Employment		
1-5 years	8	3.0
5-10 years	43	16.2
>10 years	214	80.8

Table 1 shows the demographic characteristics of the respondents. The plurality of respondents were aged below 40 years (47.9%), followed by those aged 60–69 years (27.2%)

and 50–59 years (18.1%). A smaller proportion were aged between 40–49 years (1.8%) and over 70 years (4.9%). These findings indicate that most respondents were within the productive age group, potentially influencing their engagement in community and health-related activities. In terms of gender, most respondents were female (87.9%), while only 12.1% were male. This distribution reflects the predominance of women's involvement in agricultural and household roles within the studied community.

Regarding educational background, the majority of respondents had completed primary school (90.9%), with a smaller proportion having completed junior high school (7.6%), senior high school (1.1%), and higher education (0.4%). This suggests that the respondents generally have a low level of formal education, which may affect their comprehension and application of health information and sustainable lifestyle practices.

Based on occupational type, most respondents worked as farm laborers (92.5%), followed by farmers (4.5%) and other occupations (3.0%). This finding demonstrates that the majority of the population rely on agricultural labor as their primary source of livelihood. In terms of length of work, most respondents had worked for more than 10 years (80.8%), while 16.2% had 5–10 years of experience, and only 3.0% had less than 5 years of experience. This indicates that most respondents possess extensive experience in agricultural work, which may contribute to their established work habits and lifestyle patterns.

Table 2. Differences in the self-empowerment levels of agricultural communities before and after the implementation of healthy lifestyle practices.

Self-empowerment dimension	Pre	Post	Mean difference	p-value
	Mean±SD	Mean±SD		
Self-Capacity Building	18.42 ± 3.25	25.63 ± 2.81	7.21	< 0.001
Social Network Building	17.96 ± 3.47	25.12 ± 2.65	7.16	< 0.001
Building Social Service Utilization	18.75 ± 3.58	26.04 ± 2.71	7.29	< 0.001
Health Empowerment	17.84 ± 3.39	25.78 ± 2.62	7.94	< 0.001
Purposeful Participation in Goal Attainment	18.02 ± 3.66	25.47 ± 2.73	7.45	0.001*
Perceived Well-Being	18.63 ± 3.52	26.18 ± 2.69	7.55	< 0.001

Table 2 presents the pretest and posttest scores across the six self-empowerment dimensions among agricultural community participants. The mean scores increased across all dimensions following the nursing-based healthy lifestyle intervention. Self-Capacity Building increased from 18.42 ± 3.25 to 25.63 ± 2.81, Social Network Building from 17.96 ± 3.47 to 25.12 ± 2.65, Social Service Utilization from 18.75 ± 3.58 to 26.04 ± 2.71, Health Empowerment from 17.84 ± 3.39 to 25.78 ± 2.62, Purposeful Participation in Goal Attainment from 18.02 ± 3.66 to 25.47 ± 2.73, and Perceived Well-Being from 18.63 ± 3.52 to 26.18 ± 2.69. The Wilcoxon signed-rank test indicated statistically significant pretest–posttest differences across all six dimensions ($p \leq .001$). These findings demonstrate increases in self-reported self-empowerment scores following the intervention; however, the study design does not establish that the intervention alone caused these changes or that they resulted in sustained healthy lifestyle behaviors.

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DISCUSSION

The demographic characteristics of the respondents provide important context for interpreting the findings of this study. Respondents aged under 40 years constituted the largest age group, accounting for 127 of the 265 participants (47.9%); however, this proportion did not represent a majority of the sample. The inclusion of participants across different age groups reflects the diversity of the agricultural community involved in the study. Age-related differences in physical capacity and adaptability have been discussed in previous research (N. R. D. Fibriansari, Kep, et al., 2025);(R. D. Fibriansari, Astuti, et al., 2025b); (R. D. Fibriansari & Kurniawan, 2021). The present study did not establish whether age was associated with greater responsiveness to the nursing-based self-empowerment intervention. Therefore, the demographic findings should be interpreted descriptively rather than as evidence of age-related differences in intervention outcomes. The presence of respondents aged 60–69 years also highlights the importance of considering the needs and circumstances of older adults when planning health promotion activities for agricultural communities.

The findings of this study address the research objective of evaluating changes in self-empowerment following a nursing-based intervention among agricultural communities. All six self-reported self-empowerment domain scores increased from pretest to posttest, suggesting improvements in participants' reported self-empowerment after the program. These findings are consistent with the potential relevance of empowerment-oriented nursing approaches in health promotion (Wippold & Frary, 2022), particularly among agricultural populations facing physically demanding workloads (Widianto et al., 2021) and limited access to health education (Handayani, 2020). However, because this study measured self-empowerment domains rather than directly observed lifestyle behaviors, it cannot establish whether the score increases translated into changes in diet, physical activity, sleep, or other health practices. Furthermore, the absence of a control group limits causal interpretation, and whether these changes lead to sustained healthy behaviors remains unknown.

The observed increases across all six dimensions of self-empowerment can be discussed in relation to the theoretical framework of health self-empowerment, which emphasizes health awareness, self-efficacy, and active participation in health-related decision-making. The increase in self-capacity building may reflect changes in participants' perceived capacity to manage their health, although the present analysis did not independently establish improvements in specific skills or behaviors related to nutrition, physical activity, sleep, or stress management. Similarly, the increases in social network building and social service utilization indicate higher posttest scores in these dimensions but do not, by themselves, demonstrate increased use of social support or health services. These mechanisms remain plausible explanations that require further empirical investigation. Because this study used a one-group pretest–posttest design without a control group or long-term follow-up, the observed changes cannot be attributed solely to the intervention, and the sustainability of any behavioral changes cannot be established. The findings should therefore be interpreted as short-term changes in self-empowerment scores following the intervention. Their implications should be considered alongside empirical studies of comparable nursing-based empowerment

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interventions, taking into account differences in study design, population, intervention content, and outcome measures.

The highest improvement observed in perceived well-being indicates that the intervention not only influenced behavioral aspects but also positively affected participants' subjective health perceptions and overall quality of life. This finding supports the notion that empowerment-based interventions foster holistic health improvements by addressing physical, psychological, and social dimensions simultaneously. Furthermore, the increase in purposeful participation in goal attainment demonstrates strengthened motivation and autonomy, which are essential predictors of long-term lifestyle adherence.

The results of this study are consistent with previous research reporting that empowerment-based and community-centered nursing interventions effectively improve health behaviors and self-management capacities among vulnerable populations. Similar studies have shown that self-empowerment approaches enhance health literacy, social engagement, and perceived well-being, particularly in rural and agricultural settings where formal education levels are generally low and occupational health risks are high. These findings reinforce the role of nurses as facilitators and motivators in community health promotion.

However, some differences may exist when compared to studies conducted in non-agricultural or urban populations. The magnitude of improvement observed in this study may be influenced by the strong communal culture and long-term occupational engagement characteristic of agricultural communities, which can amplify the impact of group-based empowerment interventions. Additionally, the predominance of female participants may have contributed to higher engagement levels, as women often play central roles in family health management and community activities.

Overall, this study demonstrates that a nursing-based self-empowerment model is both effective and contextually appropriate for improving healthy lifestyle practices among agricultural communities. These findings highlight the importance of integrating empowerment principles into community nursing practice to achieve sustainable health outcomes in rural populations. Significant increases were observed across all components of self-empowerment, including self-capacity building, social networking, social service utilization, health empowerment, goal attainment, and perceived well-being. These results highlight the importance of empowerment-based nursing interventions in enhancing individuals' awareness, motivation, and independence in maintaining a healthy lifestyle. Strengthening self-empowerment within agricultural communities can therefore serve as a sustainable approach to promoting long-term health and well-being.

Limitations

This study has several limitations. First, purposive sampling in a single community health center catchment area in Sukodono, Lumajang Regency, may limit the generalizability of the findings to other agricultural communities. Second, the one-group pretest–posttest design without a control group prevents attributing the observed changes solely to the intervention. Third, self-reported questionnaire data may be subject to measurement and social desirability biases. In addition, limitations in the systematic monitoring of intervention fidelity,

if applicable, may affect the reproducibility of the program. Finally, the absence of long-term follow-up means that the sustainability of changes in self-empowerment scores and their translation into actual healthy lifestyle behaviors could not be established. Future studies should employ controlled designs, recruit more diverse samples, systematically monitor intervention fidelity, and include follow-up assessments.

Implications for Nursing Practice

The findings have practical implications for community nursing, as posttest scores increased across all six self-empowerment dimensions following the nursing-based intervention. Based on these findings, community nurses may consider incorporating structured health education and self-reflection activities into community health promotion programs for agricultural populations, with attention to self-capacity building, health empowerment, social network building, social service utilization, purposeful participation in goal attainment, and perceived well-being. Feasible activities may include facilitating discussions about healthy lifestyle practices, encouraging participants to identify achievable personal health goals, and providing information about available community health services. Community nurses can use empowerment-based education as part of UKK programs, while monitoring behavior and service-use outcomes. These recommendations are consistent with the observed improvements in self-empowerment scores; however, the study did not directly establish improvements in specific health behaviors or increased service utilization. Further evaluation is therefore needed to determine the feasibility, effectiveness, and sustainability of integrating these activities into routine nursing practice. Future studies should also assess intervention fidelity, actual lifestyle behaviors, and longer-term outcomes, preferably using controlled study designs.

CONCLUSION

This study found statistically significant increases in all six self-empowerment dimensions among agricultural community participants following a nursing-based self-empowerment intervention ($p < .001$), suggesting that empowerment-oriented community nursing may support participants' capacity, motivation, and autonomy in adopting healthier lifestyles. However, the one-group pretest–posttest design without a control group or long-term follow-up prevents attribution of these changes solely to the intervention or confirmation of their sustainability. Future research should use controlled longitudinal designs with longer follow-up periods to evaluate the sustained effects of nursing-based empowerment interventions on self-empowerment, healthy lifestyle behaviors, and health outcomes such as blood pressure, blood glucose levels, and quality of life.

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AUTHOR CONTRIBUTIONS

Rizeki Dwi Fibriansari: conceptualization, methodology, writing the original draft, and preparation of the research proposal and research report. **Nurfika Asmaningrum:**

supervision, writing review and editing, and review of the final manuscript. **Annisa Pratiwi:** investigation, data curation, and data collection and processing. All authors have reviewed and approved the final version of the manuscript and agree to be accountable for their respective contributions and for ensuring the integrity of the work as a whole.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest related to this study.

DECLARATION OF AI USE

The authors used ChatGPT (OpenAI) to assist in developing recommendations for addressing reviewer comments and improving the clarity and academic wording of the manuscript. The authors reviewed and evaluated the suggestions and remain fully responsible for the accuracy, interpretation, and final content of the manuscript.

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