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Gender dynamics in self-resilience: evidence from junior high school students in Indonesia

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Abstract

Context and relevance. Building on previous research that highlights gender differences in adolescent resilience, this study focuses on junior high school students to provide insights that can guide targeted interventions for improving mental well-being and academic success. **Objective.** This study aims to analyze the differences in self-resilience among junior high school students in Indonesia based on gender. **Hypothesis.** There is a significant difference in self-resilience between male and female junior high school students, with one group potentially demonstrating higher resilience than the other across various dimensions. **Methods and materials.** A total of 1000 students from junior high schools in Magelang Regency participated in the study. **Results.** The results revealed that the students' overall level of self-resilience was moderate, with female students ($M = 3,52$, $SD = 0,65$) demonstrating a significantly higher level of self-resilience than male students ($M = 3,38$, $SD = 0,70$) across all dimensions ($p = 0,001$). Among the five dimensions measured, optimism had the highest score ($M = 3,61$), followed by empathy, emotion regulation, problem cause analysis, and self-efficacy. The high optimism score suggests that students generally maintain a positive outlook on the future, while the high empathy score reflects their capacity to comprehend and empathize with the feelings of others. The higher self-resilience observed among female students may be attributed to their greater emotional awareness, social connection, and empathetic tendencies, which are often nurtured through socialization and cultural expectations. **Conclusions.** The study found a significant but small gender difference in self-resilience among junior high school students, with female students exhibiting higher resilience. These findings emphasize the need for targeted interventions that consider gender differences to enhance adolescent resilience and mental well-being.

Keywords: self-resilience, gender differences, optimism, emotion regulation

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Гендерная динамика самоустойчивости: данные среди учеников старшей школы в Индонезии

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Резюме

Контекст и актуальность. На основании предыдущих исследований, выделяющих гендерные различия в уровнях устойчивости у подростков, настоящее исследование сосредоточено на анализе учащихся старшей школы с целью получения актуальной информации, которая может быть использована для разработки целенаправленных мер и программ по повышению психологического благополучия и академической успешности данной возрастной группы. **Цель.** Цель исследования — проанализировать различия в уровне самоустойчивости среди учеников старшей школы в Индонезии в зависимости от пола. **Гипотеза.** Существует значительное различие в самоустойчивости между мальчиками и девочками в старшей школе, при этом одна из групп может демонстрировать более высокий уровень устойчивости по различным измерениям. **Методы и материалы.** В исследовании приняли участие 1000 учащихся старшей школы округа Магеланг. **Результаты.** Результаты показали, что общий уровень самоустойчивости учащихся был средним, причем девочки ($M = 3,52$, $SD = 0,65$) демонстрировали значительно более высокий уровень самоустойчивости, чем мальчики ($M = 3,38$, $SD = 0,70$), по всем измерениям ($p = 0,001$). Среди пяти измеряемых аспектов наивысший балл был у оптимизма ($M = 3,61$), за ним следовали эмпатия, регуляция эмоций, анализ причин проблем и самозффективность. Высокий уровень оптимизма свидетельствует о том, что учащиеся в целом сохраняют позитивный взгляд на будущее, а высокий уровень эмпатии отражает их способность понимать и сопереживать чувствам других. Более высокая самоустойчивость, наблюдается у девочек, что может быть связано с их большей эмоциональной осознанностью, социальной связностью и склонностью к эмпатии, которые часто формируются в процессе социализации и под влиянием культурных ожиданий. **Выводы.** Исследование выявило значительное, но небольшое гендерное различие в самоустойчивости среди учащихся старшей школы, при этом девочки демонстрировали более высокую устойчивость. Эти результаты подчеркивают необходимость разработки целенаправленных мер, учиты-

вающих различия между полами, для повышения устойчивости и психологического благополучия подростков.

Ключевые слова: самоустойчивость, гендерные различия, оптимизм, регуляция эмоций

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Introduction

Adolescence is a pivotal period in human development, during which individuals experience significant physical, cognitive and psychosocial changes. Adolescent experiences, both physical and psychosocial, shape the structure and function of neural networks, affecting the development of normal and pathological behaviors (Dow-Edwards et al., 2019). Physical changes include rapid growth and significant hormonal changes, which impact the mental and physical health of adolescents. In this context, physical activity has been widely recognized for its positive impact on adolescent well-being. Research shows that regular exercise can help reduce symptoms of anxiety and depression, as demonstrated by a 12-week physical activity program that significantly alleviated these symptoms in participants (Silva et al., 2024). Similarly, exercise interventions have been found to effectively lower anxiety and depression levels in children and adolescents with ADHD (Feng et al., 2024).

Meanwhile, cognitive changes include the development of abilities such as strategic plan-

ning, suppressing unsuitable behaviors, and specific types of memory that progressively develop throughout adolescence. These advancements are supported by significant neurodevelopmental processes, including synaptic pruning and myelination, which optimize brain function and enhance cognitive abilities. Research indicates that the maturation of gray matter, particularly in the prefrontal cortex, plays a key role in improving executive functions such as decision-making, impulse control, and emotional regulation (Diekema, 2020; Squeglia, 2020). These cognitive changes interact with psychosocial shifts, such as changes in the social environment, including the move from primary school to a larger secondary school with a large and unstable social hierarchy, as well as increased time spent with friends compared to childhood (Blakemore, 2019).

Adolescence is widely recognized as a transitional stage between childhood and adulthood, during which cognitive abilities develop significantly, leading to improvements in abstract thinking, problem-solving, and decision-making skills

(Pfeifer & Allen, 2021). It is also a period during which adolescents explore ways to navigate new and often stimulating social challenges while adapting to the diverse physical, cognitive, and emotional changes occurring within them. In particular, adolescence is a period of critical transition that sets the foundation for later development and well-being. Given these significant cognitive shifts, support from both family and community is essential. As adolescents seek greater independence, misunderstandings with parents may arise, potentially leading to maladaptive behaviors such as non-suicidal self-injury (Li et al., 2023). Community involvement, including extracurricular activities, can enhance cognitive skills and provide much-needed social support, particularly benefiting disadvantaged adolescents (Pan et al., 2022). This stage is marked by notable physical, cognitive, and psychosocial transformations, including rapid physical development, alterations in facial features, voice, and body traits that vary between genders, metabolic shifts, the emergence of new drives and motivations, changes in sleep patterns and circadian rhythms, as well as a variety of social, behavioral, and emotional changes. This phase also involves sexual maturation that begins with adrenarche in mid-childhood and persists throughout puberty, a period of adjustment to social and cultural complexities. It is also the stage when gender differences in social and emotional behaviors, including gender roles, commonly become more defined (Patton et al., 2016).

When confronted with these difficulties and stresses, resilience is an essential component for adolescents to adapt positively and maintain mental well-being. Interventions that enhance individual resilience factors, family and/or social support can help reduce the likelihood of developing psychopathology after experiencing childhood adversity (Dray et al., 2017; Fritz et al., 2018). Factors including coping strategies, cognition, optimism, and self-esteem at the individual level, positive family relationships or social connections, as well as community influences like participation in school, church, or support groups, have been recognized as contributing to resilient outcomes in both adolescence and adulthood (Gartland et al., 2019). Resilience is the capac-

ity of an individual to recover from challenging circumstances, adapt to change, and manage stress effectively. According to Resilience Theory by Reivich & Shatté (2003), resilience is built upon key factors such as emotional regulation, impulse control, optimism, causal analysis, empathy, self-efficacy, and reaching out. These cognitive and emotional skills help individuals navigate adversity and maintain well-being. While Reivich & Shatté (2003) focus on specific skills that can be developed to improve resilience, Maddi (2005) perspective frames resilience as a personality disposition that influences how individuals interpret and respond to stressors. For teenagers, resilience is fundamental in coping with the stress and pressure of daily life, helping them remain focused and productive (Abdillah et al., 2023). In adolescence, this ability to adapt and thrive despite adversity, trauma, or major stressors — such as family difficulties, health challenges, and environmental or academic pressures — becomes particularly significant (Ungar & Theron, 2020). Reflecting this, Nilsson et al. (2023) found that resilience in adolescents helps mitigate trauma symptoms, with peers serving as a protective factor against interpersonal trauma and adverse childhood circumstances for males, while family played a role in buffering noninterpersonal trauma for females.

Earlier studies indicated that adolescents from single-parent households exhibited lower resilience and self-esteem, along with more depressive symptoms, compared to those living with both parents (Chung et al., 2020). As a result, it is important to allocate more attention, resources, and health services to adolescents from single-parent families. Additionally, Stratta et al. (2013) reported that gender differences in resilience and coping mechanisms following traumatic events revealed that adolescent boys exposed to the earthquake reported higher resilience scores and used problem-focused coping strategies more frequently than girls. Therefore, gender differences in stress responses and coping styles were identified. This previous research stresses the importance of resilience, as adolescents with higher levels of resilience tend to have better mental health, higher academic

achievement, more positive social relationships, and more adaptive coping skills compared to those with lower resilience. However, it also suggests that there are differences in resilience levels between male and female adolescents, with gender factors potentially influencing the development and manifestation of resilience.

Although research on adolescent resilience has been conducted, there is still limited work that specifically analyzes the self-resilience of junior high school students while considering gender aspects. In fact, a comprehensive understanding of the dynamics of resilience in junior high school students and how gender influences this process is key to creating focused interventions to improve adolescent mental well-being. Therefore, this study aims to investigate the differences in self-resilience among junior high school students based on gender. The findings are expected to provide valuable insights for schools, parents, and mental health practitioners in designing resilience-strengthening programs that meet the unique needs of adolescent boys and girls, ultimately supporting the positive development and optimal mental well-being of junior high school students.

Methods

Research design

This research is a quantitative study with a cross-sectional survey design aimed at analyzing the differences in self-resilience among junior high school students based on gender. The study was conducted with students from Magelang Regency, Indonesia. Magelang Regency was selected as the study location due to its demographic diversity, with schools spread across both urban and rural areas, as well as a variety of school types (public and private junior high schools). This diversity allows for an analysis of self-resilience in different educational contexts. Junior high school students were chosen as the target group because this is a critical period in adolescent development (Fengjun et al., 2022), during which they experience significant physical, cognitive, and psychosocial changes and face various adaptation challenges that require resilience.

Participants

The population consisted of all junior high school students in Magelang Regency. The sample was selected through a cluster random sampling method, considering the representation of public and private schools, as well as geographical location (urban and rural). The sampling process resulted in a total of 1000 students, with 500 male students and 500 female students. The selection of 1000 students with a balanced composition of males and females aimed to obtain representative data for analyzing gender differences in self-resilience.

Instruments

The instrument used is a self-resilience scale constructed based on the resilience theory of Reivich and Shatté (Reivich & Shatté, 2003), which consists of seven dimensions: emotion regulation, impulse control, optimism, analyzing the cause of the problem, empathy, self-efficacy, and reaching out. This scale uses a Likert response format with five answer choices: Perfect Fit (5), Fit (4), Quite Fit (3), Not Appropriate (2), and Very Mismatched (1). The detailed framework of the self-resilience instrument is presented in Table 1.

Validity and reliability of the instrument

Content validity was evaluated through expert judgment involving two experts as validators. The first validator is a PhD in Developmental Psychology, specializing in adolescent development and psychosocial adaptation, with over 5 years of experience in adolescent development research and in creating instruments for measuring psychological variables in adolescents. The second validator is a PhD in Guidance and Counseling, specializing in adolescent psychological assessment, with over 5 years of practical experience in adolescent problem management and the development of school-based intervention programs. The validators assessed the relevance of the items with respect to theoretical constructs, linguistic accuracy, and cultural and developmental appropriateness for adolescents, using a structured assessment format with a scale of 1–4 for each item. The validation results confirmed

Table 1

Self-resilience scale grid

No.	Dimension	Indicator	Item code	Number of items
1.	Emotion regulation	Ability to stay calm under pressure	ER1, ER2, ER3	3
		Ability to regulate emotions	ER4, ER5, ER6	3
2.	Impulse control	Ability to control desires	IC1, IC2, IC3	3
		Ability to delay gratification	IC4, IC5, IC6	3
3.	Optimism	Looking at the future positively	OP1, OP2, OP3	3
		Confidence in problem-solving skills	OP4, OP5, OP6	3
4.	Analyzing the cause of the problem	Identifying the cause of the problem	CA1, CA2, CA3	3
		Finding a solution to a problem	CA4, CA5, CA6	3
5.	Empathy	Understanding the feelings of others	EM1, EM2, EM3	3
		Provide appropriate responses	EM4, EM5, EM6	3
6.	Self-efficacy	Confidence in one's own abilities	SE1, SE2, SE3	3
		Courage to face challenges	SE4, SE5, SE6	3
7.	Reaching out	Ability to seek help	RO1, RO2, RO3	3
		Willingness to learn from experience	RO4, RO5, RO6	3
Total				42

that all items were relevant and aligned with the measured constructs, with only minor language adjustments made to enhance readability for junior high school students.

Subsequently, a pilot test was conducted to further assess the instrument's validity and reliability. Construct validity was evaluated using confirmatory factor analysis (CFA) with LISREL 8.80 software. The CFA results indicated that the self-resilience measurement model, comprising seven dimensions (emotion regulation, impulse control, optimism, problem cause analysis, empathy, self-efficacy, and reaching out), exhibited a good fit with the data (CFI = 0.97, TLI = 0.96, RMSEA = 0.04). All items demonstrated significant factor loadings ($p < 0.05$), ranging from 0.52 to 0.87, confirming the validity of the items in measuring their corresponding dimensions of self-resilience.

Additionally, the reliability of the self-resilience scale was tested using the internal consistency method, with Cronbach's alpha coefficient. The results indicated that the self-resilience scale showed high reliability, with a Cronbach's alpha of 0.92. The reliability coefficients for each dimension were also deemed good, ranging from 0.78 to 0.86.

Data analysis

The gathered data were analyzed using both descriptive and inferential statistical methods. Descriptive statistics were applied to outline the overall level of self-resilience among students, as well as by gender. Inferential statistics, specifically the independent t-test, were employed to analyze the differences in self-resilience between male and female students. Prior to conducting the t-test, the assumptions of normality and homogeneity of variance were assessed. If these assumptions were violated, non-parametric tests were used instead. A significance level of 0.05 was applied for all statistical analyses.

Results

Respondent characteristics

Based on Table 2, the respondents in this study are evenly distributed by gender, with 50% being male and 50% female. Regarding school type, the highest proportion of students are from public junior high schools (31.0%), followed by private junior high schools (28.9%). Private Islamic junior high schools account for 25.1%, while public Islamic junior high schools represent 15.0% of the sample. Regarding age, most of the respondents are 13 years old (38.5%),

followed by 14 years old (28,0%) and 12 years old (27,5%), with the smallest proportion being 15 years old (6,0%). Most respondents identify as Muslim (85,0%), while smaller proportions identify as Christian (9,0%) or Catholic (6,0%). Lastly, slightly more respondents attend schools in rural areas (54,2%) compared to urban areas (45,8%). This distribution reflects a diverse representation across key demographic and contextual variables.

Students’ self-resilience level

This section presents the results of a descriptive analysis to examine students’ overall self-resilience levels and its dimensions. These findings provide an overview of students’ self-resilience, forming the basis for further discussions on gender-based differences and the implications for designing targeted interventions. The analysis indicates that students’ self-resilience is at a moderate level ($M = 3,45$, $SD = 0,68$). Table 3 provides the descriptive statistics for the overall self-resilience level.

Based on Table 4, the optimism dimension has the highest mean score ($M = 3,61$, $SD = 0,75$), indicating a generally positive outlook among students. This is followed by

empathy ($M = 3,59$, $SD = 0,74$) and emotion regulation ($M = 3,52$, $SD = 0,79$). Moderate scores are seen in analyzing the cause of the problem ($M = 3,47$, $SD = 0,81$) and self-efficacy ($M = 3,40$, $SD = 0,77$), while lower scores are noted in impulse control ($M = 3,38$, $SD = 0,82$) and reaching out ($M = 3,28$, $SD = 0,85$). In summary, the findings indicate that while students demonstrate strengths in optimism and empathy, there are opportunities for improvement in areas like impulse control and seeking support, which suggests a need for targeted interventions to enhance overall self-resilience.

Gender differences in self-resilience

Before conducting the difference test, prerequisite analyses were performed. The normality test, performed using the Kolmogorov-Smirnov test, yielded a significance value of $p = 0,200$, which is greater than 0,05 (Table 5). Therefore, the self-resilience data can be considered normally distributed, meeting the assumption of normality. Additionally, the homogeneity test using Levene’s Test produced a significance value of $p = 0,382$ (Table 6). Since this value is greater than 0,05, it can be concluded that the data variance between the groups is homogeneous.

Table 2

Respondent characteristics (N = 1000)

Characteristic	Category	Frequency (f)	Percentage (%)
Gender	Male	500	50,0
	Female	500	50,0
School type	Public Junior High School	310	31,0
	Private Junior High School	289	28,9
	Public Islamic Junior High School	150	15,0
	Private Islamic Junior High School	251	25,1
Age	12 Years	275	27,5
	13 Years	385	38,5
	14 Years	280	28,0
	15 Years	60	6,0
Religion	Islam	850	85,0
	Christian	90	9,0
	Catholic	60	6,0
School location	Urban	458	45,8
	Rural	542	54,2

Table 3

Descriptive statistics of overall self-resilience level

Variable	N	Mean	Std. deviation	Min.	Max.
Self-Resilience	1000	3,45	0,68	1,25	5,00

Table 4

Descriptive statistics of self-resilience dimensions

No.	Dimensions	Mean	Std. deviation	Min.	Max.
1.	Emotion regulation	3,52	0,79	1,00	5,00
2.	Impulse control	3,38	0,82	1,00	5,00
3.	Optimism	3,61	0,75	1,00	5,00
4.	Analyzing the cause of the problem	3,47	0,81	1,00	5,00
5.	Empathy	3,59	0,74	1,00	5,00
6.	Self-efficacy	3,40	0,77	1,00	5,00
7.	Reaching out	3,28	0,85	1,00	5,00

Table 5

Normality test results

Variable	Test statistic	Sig. (p-value)	Normality conclusion
Self-Resilience	Kolmogorov-Smirnov	0,200	Normal ($p > 0,05$)

Table 6

Homogeneity of variance test results

Variable	Levene statistic	Sig. (p-value)	Homogeneity conclusion
Self-resilience	0,845	0,382	Homogenous ($p > 0,05$)

Based on Table 7, there are significant differences in self-resilience scores between male and female students across all dimensions. Female students scored higher than male students in all seven dimensions of self-resilience, as indicated by the negative t-values. The dimensions showing significant differences include emotion regulation ($t = -2,84$, $p = 0,005$), impulse control ($t = -2,38$, $p = 0,017$), optimism ($t = -2,58$, $p = 0,010$), analyzing the cause of the problem ($t = -2,40$, $p = 0,016$), empathy ($t = -3,46$, $p = 0,001$), self-efficacy ($t = -2,49$,

$p = 0,013$), and reaching out ($t = -2,28$, $p = 0,023$). All p-values are less than 0,05, suggesting that the differences between male and female students in these dimensions of self-resilience are statistically significant. However, Cohen's d values ranging from 0,08 to 0,11 suggest a small difference in self-resilience scores between male and female students across all dimensions. Thus, although gender-related differences in self-resilience scores are statistically significant, their practical impact is limited.

Table 7

Comparison of self-resilience score based on gender

No.	Dimensions	Male	Female	t	p-value	Cohen's d
1.	Emotion regulation	3,45	3,59	-2,84	0,005	0,10
2.	Impulse control	3,32	3,44	-2,38	0,017	0,08

No.	Dimensions	Male	Female	t	p-value	Cohen's d
3.	Optimism	3,55	3,67	-2,58	0,010	0,09
4.	Analyzing the cause of the problem	3,41	3,53	-2,40	0,016	0,09
5.	Empathy	3,51	3,67	-3,46	0,001	0,11
6.	Self-efficacy	3,34	3,46	-2,49	0,013	0,09
7.	Reaching out	3,22	3,34	-2,28	0,023	0,09

Note: The negative t-value indicates that female students scored higher than male students on the dimensions; A p-value < 0,05 signifies a substantial difference between male and female students across the dimensions.

Discussion

This study indicates that the self-resilience levels of junior high school students in Magelang Regency fall within the moderate category. This finding aligns with previous research, which suggests that adolescents generally exhibit moderate to high levels of resilience (Dray et al., 2017; Fritz et al., 2018). Zhou et al. (2024) emphasized that resilience is a dynamic process rather than a fixed trait, developing through successful socio-emotional adaptation and creating a foundation of resilience resources for future challenges. The moderate level of self-resilience observed in this study highlights the potential for further development through appropriate interventions. Among the dimensions of self-resilience, optimism had the highest mean score. Adolescents with higher levels of optimism tend to experience better psychological well-being, demonstrate more adaptive coping skills, and achieve higher academic performance (Hill et al., 2021). Therefore, fostering optimism through psychosocial interventions may serve as an effective strategy for enhancing adolescent resilience (Zukerman et al., 2024).

In contrast, the reaching-out dimension had the lowest mean score in this study. Reaching out refers to the ability to seek support and resources from others when facing difficulties (Hjemdal et al., 2006). Low scores on this dimension may indicate challenges adolescents face in seeking help, such as stigma, limited availability of services, or social norms discouraging help-seeking behavior (Radez et al., 2021). Overall, the moderate level of self-resilience observed in this study underscores the need for targeted interventions to enhance resilience. Schools are well-positioned to lead these efforts through a whole-school approach that involves teachers, staff, families, and

communities (Ungar & Theron, 2020). In this context, school-based programs that foster resilience are increasingly recognized as essential in education, helping students manage stress, navigate difficulties, and enhance emotional well-being. Social-emotional learning initiatives, such as the social-emotional and ethical learning curriculum and the sources of strength program, have been shown to improve emotional regulation, empathy, and interpersonal skills, leading to positive behavioral and academic outcomes (Min et al., 2024; Valido et al., 2023). Additionally, incorporating culturally sensitive and gender-responsive approaches can significantly enhance the relevance and effectiveness of these programs (Wilson et al., 2017).

The results also reveal a meaningful difference in self-resilience between male and female students, with female students demonstrating higher levels of self-resilience than their male peers. This finding aligns with previous studies suggesting that women generally exhibit higher resilience compared to men (Nishimi et al., 2021; Tomas et al., 2021). Several factors may explain these gender differences. Variations in gender socialization and coping strategies likely play a role, as females are more inclined to seek social support and express emotions, whereas males are more prone to internalize their struggles. Additionally, contextual factors such as family, school, and community environments may influence resilience. Nilsson et al. (2023) found that resilience in adolescents reduces trauma symptoms, with peer support protecting males from interpersonal trauma and adverse childhood experiences, while family support helped females cope with noninterpersonal trauma. These insights underscore the importance of considering

gender roles and social contexts when designing interventions to enhance adolescent resilience.

These findings emphasize the need for designing interventions to enhance adolescent resilience with consideration for gender differences. Gender-sensitive programs should address specific protective and risk factors relevant to both males and females (Dray et al., 2017). For instance, interventions for boys could focus on enhancing adaptive coping strategies and reducing internalizing behaviors, while programs for girls might prioritize strengthening social support networks. Given the crucial role of family and school environments in fostering resilience, family resilience has been identified as a strong predictor of mental health in university students (Fan et al., 2024). Likewise, a supportive school atmosphere, characterized by positive peer relationships and teacher-student interactions, significantly contributes to students' resilience (Yang et al., 2022). Recognizing and addressing these gender differences allows interventions to more effectively equip adolescents with the resilience needed to overcome challenges and flourish.

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Conclusion

This study examined gender differences in self-resilience among junior high school students in Magelang Regency, Indonesia. The results revealed that students' overall level of self-resilience was moderate, with female students demonstrating significantly higher self-resilience across all dimensions. However, this difference has a small effect size, as indicated by Cohen's *d* values; therefore, its practical impact is limited. Among the dimensions, optimism had the highest average score, while reaching out had the lowest. These findings provide important insights for designing targeted interventions to strengthen students' self-resilience, taking into account gender differences and aspects that need further focus. Future research should investigate the factors contributing to gender differences in adolescent self-resilience and explore the development of culturally sensitive and gender-responsive interventions that support the positive development and mental well-being of junior high school students.

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AlHalik AlHalik — ideas, application of statistical methods for data analysis; conducting the experiment; data collection and analysis.

All authors participated in the discussion of the results and approved the final text of the manuscript.

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Тауфик Агунг Праново — идеи; концептуализация; аннотация, составление черновика; написание и оформление рукописи; планирование исследования; контроль за проведением исследования.

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