

Teaching methods and creative motivation among nursing students: Implications for pedagogical competencies in nursing education

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Abstract

Motivation is a key determinant of effective learning in nursing education, and teaching methods strongly influence student engagement. This study examined the relationship between teaching methods and creative motivation among nursing students in order to determine the need for the integration of pedagogical competencies in higher nursing education. A quantitative, descriptive-correlational study was conducted with a purposive sample of 100 nursing students in North Macedonia. Data were collected using a structured questionnaire assessing perceptions of teaching methods and an adapted 9-item Creativity Motivation Scale (CMS; $\alpha = 0.838$). Descriptive statistics, Mann-Whitney U, Kruskal-Wallis H, and Spearman correlation tests were applied. The overall CMS mean score was $M = 4.06$ ($SD = 0.61$), indicating a high level of creative motivation. Student-centered teaching methods (cooperative learning, simulation, role-playing) were associated with higher motivation compared to traditional lectures. No significant difference was found between male and female students ($U = 524, p = .833$). A near-significant trend toward higher motivation across more advanced years of study was observed ($H = 7.674, p = .053$). In conclusion, the results highlight the importance of active, student-centered teaching approaches and underscore the need for integrating pedagogical competencies into nursing curricula.

Keywords: nursing students, creative motivation, teaching methods, pedagogical competencies

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1. Introduction

In the modern education system, increasing attention is paid to the development of creativity and motivation among students as key prerequisites for their personal, academic, and professional development. Creative motivation is an important educational category that unites the concepts of creativity and motivation and arises as a result of a complex interaction between the psychological characteristics of the individual and the pedagogical conditions in which the learning process takes place. It has the potential to transform learning from a passive process of acquiring information into an active, engaged, and productive process of creating knowledge. In this context, teaching methods and educational approaches play a key role in its development, enabling the stimulation of intrinsic motivation, critical thinking, and creative problem solving. Understanding motivation among nursing students, as well as the role of teaching methods in its promotion, can be based on contemporary theoretical approaches that emphasize the active role of the student in the learning process and the importance of the teacher's pedagogical competencies. In this context, an important basis is Self-Determination Theory, which explains motivation as a result of satisfying three basic psychological needs: autonomy, competence, and relatedness. According to this theory, students show a higher level of intrinsic motivation when they feel that they are actively participating in the learning process, that they are able to master the tasks assigned, and that there is positive interaction with the teacher and other students (Deci & Ryan, 2000).

In the teaching process, the choice and application of teaching methods play a key role in satisfying these needs. In this regard, the principles of Constructivist Learning Theory indicate that learning is most effective when students are actively involved, have the opportunity to discuss, solve problems, and connect new knowledge with previous experiences. Teaching methods based on interaction, practical work, and critical thinking contribute to greater student engagement, which directly affects their motivation. In contrast, traditional, passive forms of teaching often do not provide enough space for the development of autonomy and initiative among students (Popovska Nalevska & Kuzmanovska, 2022). Furthermore, contemporary educational trends in the field of health sciences are increasingly focused on competency-based approaches, such as Competency-Based Education. This approach emphasizes the importance of developing specific skills and competencies, in addition to acquiring theoretical knowledge. Within nursing education, this implies not only clinical competencies, but also the development of pedagogical skills, especially considering the role of nurses as educators of patients, families, and the community. The lack of formally integrated content for the development of pedagogical competencies in curricula can lead to insufficient preparation of students for this important professional role.

In this sense, it can be assumed that teaching methods that encourage the active role of students and support their autonomy and competence have a positive impact on the level of motivation. At the same time, the results of such research can serve as a basis for improving curricula through the integration of content aimed at the development of pedagogical competences. In this way, theoretical assumptions not only enable a better understanding of the relationship between teaching methods and motivation, but also provide guidelines for improving the quality of nursing education.

In nursing education, this issue is of particular importance due to the specific nature of the profession, which requires a high level of practical skills, critical thinking and the ability to make decisions in complex situations. Therefore, the way in which teaching is implemented directly affects the preparation of future health professionals. Despite the increased interest in modern teaching methods, there is still a need for a deeper understanding of their impact on the motivation of nursing students, as well as the role of the pedagogical competencies of teaching staff in this process. The extent to which the application of different teaching approaches contributes to the development of creative motivation among students has not been sufficiently investigated, which indicates the existence of a

research gap in this area. On the other hand, the role of the nurse as an educator highlights the pedagogical function that includes planning, organizing and implementing educational activities, both for patients and colleagues or students, in order to ensure quality, safe and effective health care. They represent a bridge between theoretical knowledge and practical application, enabling the development of competent, informed and responsible individuals. The World Health Organization (2016), has set unified global standards for the key competencies that every professional teacher in nursing education should possess. These competencies serve as a framework for the development of curricula, the evaluation of the quality of education and the preparation of high-quality nurses who will be able to respond to the contemporary health needs of the population. Similarly, Halstead and Billings (2019) noted that the professional preparation of nursing teachers must include formal education in the field of pedagogy, and clinical expertise alone is not sufficient for quality teaching.

For these reasons, the purpose of this research is to analyze the relationship between teaching methods and learning motivation among nursing students, with an emphasis on the implications for improving teaching practice and the need for integrating pedagogical competencies into nursing curricula. Unlike previous studies that have examined teaching methods or student motivation in isolation, this research offers a novel contribution by simultaneously assessing multiple dimensions of creative motivation and directly linking them to specific, ranked teaching methods. This dual focus, combining a validated subscale motivation instrument with a comparative ranking of teaching approaches, provides a more applied basis for curricular decision-making.

2. Literature Review

Research suggests that traditional teaching methods, which are based on one-way knowledge transfer, have a limited effect on student motivation and engagement. In contrast, modern student-centered teaching approaches significantly contribute to increasing motivation, autonomy, and critical thinking among students. According to Zhang et al. (2018) creative motivation is a complex construct that integrates the processes of learning, creating, and achieving new ideas, and is closely related to students' intrinsic motivation and cognitive activity. Systematic reviews in the field of nursing education show that the use of interactive teaching methods, such as simulation teaching, problem-based learning, cooperative learning, and clinical scenarios, significantly increases student motivation and their readiness for clinical practice. A variety of contemporary instructional approaches have been implemented in nursing education to enhance student engagement and learning outcomes, including high-fidelity simulation combined with standardized patients (Fawaz & Hamdan-Mansour, 2016; Lee et al., 2017) gamified simulation environments, mobile-assisted video-based learning (Forbes et al., 2016) case-based learning (Yoo & Park, 2015) problem-based learning (Gandhi et al., 2015) and self-assessment through video-based reflection and analysis (Yoo et al., 2010).

Educators who hold positive attitudes toward student-centered approaches are more likely to design and implement lesson plans and activities that foster cooperation, critical thinking, and independent problem-solving (Prince, 2004). Their instructional choices are guided by a strong belief in the value of student participation and autonomy, resulting in more effective learning experiences. For educator development, intervention studies indicate that structured preparation can produce measurable gains in educator behaviors and related outcomes. A blended programme that combined a web-based pedagogy module with case-based, face-to-face workshops significantly increased overall clinical-teaching competency among registered-nurse educators, and also improved self-efficacy and attitudes towards technology-enhanced learning (Wu et al., 2020). In the same context, studies conducted on simulation teaching indicate that this method significantly improves clinical readiness and motivation among health science students (Yahya et al., 2024).

From the perspective of pedagogical theory, Bandura (1997) and Deci and Ryan (2020) emphasize that motivation is the result of the interaction between personal factors and the learning environment, with the teacher playing a key role in stimulating it. In this regard, the pedagogical competencies of teaching staff are considered a key factor in the selection and effective application of teaching methods. In the field of nursing education, Iwasiw and Goldenberg (2015) emphasize that the integration of contemporary pedagogical approaches is necessary for

the development of professional, clinical and communication competencies in future nurses. Hence, the quality of the teaching process depends not only on the content, but also on the pedagogical preparedness of teachers and their ability to apply student-centered methods.

In recent years, there has been an increased interest in digital teaching tools and mobile learning. Research shows that the use of mobile applications, video materials, and e-learning platforms has a positive effect on student motivation and self-directed learning (Kim & Park, 2019; Oducado et al., 2020). Additionally, gamification in education has been shown to be an innovative approach that increases engagement and motivation by introducing game elements into the teaching process (Zainuddin et al., 2020). This approach is particularly effective among younger generations of students, who show a higher level of interaction and interest in learning. Despite the positive effects of these methods, research indicates that their successful implementation largely depends on the pedagogical competencies of the teaching staff. Teachers who possess didactic and pedagogical knowledge are more effective in selecting and applying modern teaching strategies, which directly affects student motivation and success. Research shows that a lack of pedagogical competence among teaching staff often results in the dominance of traditional teaching methods and reduced motivation among students (Mikkonen et al., 2020). On the other hand, teachers who have pedagogical training more often apply interactive and student-centered methods, which positively affects student engagement and results (McLean et al., 2008).

3. Materials and Methods

Research Aim and Questions - The general aim of the research is to examine the relationship between teaching methods and learning motivation among nursing students in order to determine the need for the integration of pedagogical competencies in higher nursing education. In accordance with the research aim, the following research questions were formulated:

- What is the overall level of creative motivation among nursing students?
- Are there statistically significant differences in creative motivation by gender and year of study?
- Which teaching methods are perceived as most motivating by nursing students?
- What are the implications of these findings for the integration of pedagogical competencies into nursing curricula?

Research Sample - The research sample included 100 students studying in nursing study programs at higher education institutions in the Republic of North Macedonia. The sample was purposively selected in order to include students who are actively involved in theoretical and practical teaching related to the nursing profession. All respondents were informed about the purpose of the research and participated voluntarily, ensuring the anonymity and confidentiality of the data. No personal identifying information was collected, and participants were free to withdraw from the study at any time without consequences. The nursing education system in the Republic of North Macedonia comprises a three-year Bachelor of Nursing programme (180 ECTS credits), followed by an additional one-year Specialist programme (60 ECTS credits). Participants were drawn from all years of study, providing a comprehensive perspective across different stages of nursing education. The demographic characteristics of the sample are presented in Table 1.

Research Design and Instrument - The research was designed as a quantitative, descriptive-correlational study. Data were collected using a structured survey questionnaire. The first part of the instrument concerned the students' perception of the application of different teaching methods, covering traditional and modern approaches, assessed using a five-point Likert scale. The *Creativity Motivation Scale* (CMS), developed by Zhang et al. (2018), was used to measure motivation related to creativity. A culturally adapted and validated version of the scale in the Macedonian context was applied (Nalevska Popovska, 2026). The version of the CMS used consists of 9 items, grouped into three subscales: 'Doing New Things' (items 1, 4, 7), 'Learning New Things' (items 2, 5, 8), and

‘Accomplishing Creative Outcomes’ (items 3, 6, 9). Each item was rated on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Higher mean scores indicate higher levels of creative motivation.

Table 1

Demographic Characteristics of the Research Sample (N = 100)

Characteristic	%
Gender	
Female	88
Male	12
Year of Study	
First year	14
Second year	31
Third year	23
Fourth year	32
Age Group (years)	
18-20	27
21-23	29
24-26	26
Over 26	18

Data Analysis - The collected data were analyzed using IBM SPSS Statistics. Initially, descriptive statistics were calculated (frequencies, percentages, means, standard deviations, minimum and maximum values). The internal consistency of the CMS was assessed using Cronbach’s alpha coefficient. Inter-subscale relationships were examined using Spearman’s rank correlation coefficient (rs), given the ordinal nature of Likert-scale data. Differences in creative motivation by gender were examined using the Mann-Whitney U test, and differences by year of study were examined using the Kruskal-Wallis H test. Additionally, a motivation index was calculated for each teaching method based on the weighted mean value of Likert responses. The level of statistical significance was set at $p < 0.05$.

4. Results

4.1 Reliability of the Creativity Motivation Scale

Prior to the main analysis, the internal consistency of the CMS was assessed. The overall Cronbach’s alpha coefficient for the full 9-item scale was $\alpha = 0.838$, indicating good internal consistency. The subscale reliability coefficients were: Doing New Things $\alpha = 0.682$, Learning New Things $\alpha = 0.626$, and Accomplishing Creative Outcomes $\alpha = 0.581$. Although the subscale alphas are moderate, they are acceptable for 3-item subscales and are consistent with findings from the original scale validation study (Zhang et al., 2017).

4.2 Research Question 1: Level of Creative Motivation

One of the primary objectives of this study was to assess the overall level of creative motivation among nursing students. Table 2 presents the descriptive statistics for the CMS subscales and total score, including mean values, standard deviations, observed ranges and distribution by motivation level. Table 2 presents the descriptive statistics for the CMS subscales and total score. The results show that nursing students demonstrate a high level of creative motivation across all subscales.

The results show that nursing students demonstrate a high level of creative motivation across all subscales. The highest mean was observed for ‘Accomplishing Creative Outcomes’ ($M = 4.20$, $SD = 0.65$), followed by ‘Learning New Things’ ($M = 4.06$, $SD = 0.68$) and ‘Doing New Things’ ($M = 3.91$, $SD = 0.77$). The total mean CMS score was $M = 4.06$ ($SD = 0.61$), with 72% of respondents demonstrating a high level of creative motivation,

27% a moderate level, and only 1% a low level.

Table 2
Creative Motivation Scores and Levels by Subscale (N = 100)

Subscale	Mean	SD	Min	Max	Low (%)	Moderate (%)	High (%)
Doing New Things	3.91	0.77	1.00	5.00	3	44	53
Learning New Things	4.06	0.68	2.33	5.00	2	34	64
Accomplishing Creative Outcomes	4.20	0.65	2.33	5.00	1	28	71
Total CMS Score	4.06	0.61	2.33	5.00	1	27	72

To examine the internal structure of the CMS, Spearman's rank correlation coefficients were calculated between the three subscales (Table 3). All inter-subscale correlations were statistically significant at $p < 0.001$, confirming the convergent validity of the instrument. All three subscales demonstrated moderate to strong positive correlations with one another (r_s ranging from 0.635 to 0.677), indicating that students who score high on one dimension of creative motivation tend to score high on the others. This pattern supports the theoretical coherence of the CMS construct.

Table 3
Spearman Correlations Between CMS Subscales

	Doing New Things	Learning New Things	Accomplishing Creative Outcomes
Doing New Things	—		
Learning New Things	$r_s = 0.635^{***}$	—	
Accomplishing Creative Outcomes	$r_s = 0.668^{***}$	$r_s = 0.677^{***}$	—

*** $p < 0.001$

4.3 Research Question 2. Differences by Gender and Year of Study

Table 4 presents the results of the Mann-Whitney U test and Kruskal-Wallis H test examining differences in creative motivation by gender and year of study.

Table 4
Differences in Creative Motivation by Gender and Year of Study

Group	N	Mean	SD	Test statistic	p
Gender					
Female	88	4.07	0.58	U = 524	.833
Male	12	4.00	0.86		
Year of Study					
First year	14	3.90	0.77	H = 7.674	.053
Second year	31	3.88	0.51		
Third year	23	4.13	0.60		
Fourth year	32	4.24	0.60		
Post-hoc: 2nd year vs Specialist				U = 288	.011*

* $p < 0.05$

The Mann-Whitney U test revealed no statistically significant difference in creative motivation between female and male nursing students ($U = 524$, $p = .833$). The Kruskal-Wallis H test indicated a borderline non-significant trend toward higher creative motivation in more advanced years of study ($H = 7.674$, $p = .053$). Post-hoc pairwise comparisons revealed a significant difference between second-year Bachelor of nursing students and Specialist students ($U = 288$, $p = .011$).

4.4 Research Question 3. Teaching Methods and Student Motivation

Table 5 presents the distribution of students' responses regarding the motivational value of different teaching methods.

Table 5
Teaching Methods and Students' Motivation

Teaching Method	Strongly Disagree (%)	Disagree (%)	Partially Agree (%)	Agree (%)	Strongly Agree (%)	Motivation Index	Rank
Cooperative learning	0	2	22	32	44	4.18	1
Simulations	0	8	20	33	39	4.03	2
Role-playing	2	6	21	29	42	4.03	2
Use of IT in teaching	1	4	26	31	38	4.01	4
Project-based learning	0	4	25	41	30	3.97	5
Interactive discussions	2	6	21	42	29	3.90	6
Problem-based learning	2	6	22	52	18	3.78	7
Lectures	22	24	44	5	5	2.47	8

The traditional teaching method of lectures received the lowest motivation index ($M = 2.47$), with 46% of students expressing disagreement or strong disagreement that lectures contribute to their motivation. In contrast, all student-centered teaching methods achieved motivation indices above 3.78. The highest motivation index was observed for cooperative learning ($M = 4.18$), followed by simulations and role-playing ($M = 4.03$ each), the use of information technologies in teaching ($M = 4.01$), project-based learning ($M = 3.97$), interactive discussions ($M = 3.90$), and problem-based learning ($M = 3.78$).

5. Discussion

5.1 Level of Creative Motivation

The finding that 72% of nursing students demonstrated a high level of creative motivation is consistent with Self-Determination Theory, which posits that high motivation arises when students' psychological needs for autonomy, competence, and relatedness are satisfied (Deci & Ryan, 2000). It is particularly significant that the highest results were observed in the subscale 'Accomplishing Creative Outcomes', followed by 'Learning New Things', which indicates a strong orientation towards knowledge and professional development. This finding is in line with the characteristics of health professions, where continuous learning is an essential part of professional identity. The high percentage of students with high motivation can also be linked to the nature of the study program, which combines theoretical and practical teaching. However, despite the dominantly high values, the existence of a small percentage of students with moderate and low motivation indicates the need for further improvement of teaching approaches.

5.2 Gender and Year of Study

The finding of no statistically significant gender difference in creative motivation ($U = 524$, $p = 0.833$) suggests that creative motivation in nursing education is not significantly influenced by gender, which is consistent with prior literature indicating that intrinsic motivation in higher education tends to be relatively stable across gender groups. Given the predominantly female composition of the sample (88 %), which reflects the global

demographic structure of the nursing profession, this result further confirms that motivation for learning is shaped more by educational factors, such as teaching methods and curriculum design, than by individual demographic characteristics.

With respect to year of study, although the Kruskal-Wallis H test did not reach statistical significance ($H = 7.674$, $p = 0.053$), the observed trend toward higher motivation in more advanced years is noteworthy. The significant post-hoc difference between second-year and Specialist-level students ($U = 288$, $p = 0.011$) suggests that accumulated clinical experience and exposure to more advanced practical content may progressively contribute to the development of creative motivation. This finding is consistent with Constructivist Learning Theory, which posits that active engagement with complex, real-world problems enhances intrinsic motivation and creative engagement.

5.3 Teaching Methods

The results clearly indicate that nursing students have a significantly more positive perception of active and interactive teaching methods, compared to traditional lectures. This finding is in line with the principles of Constructivist Learning Theory, according to which learning is most effective when students are actively involved in the process of acquiring knowledge (Popovska Nalevska & Kuzmanovska, 2020). In particular, methods such as cooperative learning, simulations, and role-playing provide opportunities for collaboration, practical application, and active engagement, which directly contribute to greater student motivation. These methods create an environment in which students are not passive recipients of information, but active participants in the learning process, thereby fostering intrinsic motivation and deeper learning.

5.4 Implications for Pedagogical Competencies

The findings of this study carry important implications for the integration of pedagogical competencies into nursing curricula. The consistently higher motivation indices associated with student-centered teaching methods suggest that the pedagogical approach of the instructor directly influences the quality of the learning experience. However, the effective application of such methods requires more than clinical expertise, it demands a solid foundation in pedagogical theory, instructional design, and educational evaluation. In this regard, the results of this study support the growing body of evidence indicating that nursing curricula should formally incorporate pedagogical and didactic content as a core component of professional preparation (Iwasiw & Goldenberg, 2015; Quintana et al., 2023).

In the Republic of North Macedonia, as in many other countries in the region, nursing education programs are predominantly structured around clinical and biomedical competencies, while the educational role of the nurse remains insufficiently addressed. This gap becomes particularly evident when considering that nurses are expected to act as educators not only in academic settings, but also in direct patient care, community health promotion, and the mentoring of junior colleagues. Ironside (2001) points out that traditional nursing curricula often focus on clinical skills, while the educational role of the nurse remains underdeveloped. Similarly, Billings and Halstead (2016) indicate that in many nursing programs there is insufficient integration of pedagogical content, which results in limited competencies among students in the area of health education. Caputi (2010) notes that the introduction of structured pedagogical components in curricula can significantly improve students' readiness for the role of educators. Additionally, Cangelosi and Moss (2010) demonstrates that nursing students who are exposed to teaching and communication-related curriculum content exhibit higher levels of self-confidence and better communication skills in clinical practice.

While this study was conducted within the specific context of North Macedonia, its findings carry broader relevance for countries undergoing similar reforms in health education. Many transitional and developing education systems, including several nations in Southeast Asia face comparable challenges in shifting from traditional, lecture-based instruction toward student-centered pedagogy in nursing and health sciences curricula.

As such, the results of this study may offer a useful reference point for institutions and beyond that are seeking evidence-based guidance on integrating pedagogical competencies into health professional education, particularly where resource constraints and curricular traditions present similar barriers to reform.

Taken together, these findings indicate the need for a systematic review and reform of existing nursing curricula, with the aim of integrating structured modules focused on teaching methodology, communication skills, and educational competencies. Such integration would not only enhance student motivation during their studies, but would also better prepare future nurses for the complex educational demands of contemporary healthcare practise.

5.5 Practical Implications

The findings of this study offer several concrete implications for education stakeholders. For nursing educators and practitioners, the results underscore the need to prioritize student-centered methods: cooperative learning, simulation, and role-play in particular, over lecture-based delivery, and to pursue formal pedagogical training as a core professional competency rather than an optional addition to clinical expertise. For students, exposure to these methods appears to translate directly into higher creative motivation, suggesting that curricular reform in this direction could improve both engagement and long-term readiness for the educator role nurses are expected to assume in clinical and community settings. For institutions and schools of nursing, the results support embedding structured pedagogical and didactic modules within existing curricula, rather than treating teaching methodology as tangential to clinical training, a shift that could be implemented through targeted faculty development programs and revised curriculum standards.

6. Conclusion

The results of the research indicate that teaching methods have a significant impact on the motivation to learn among nursing students. Modern student-centered approaches, such as cooperative learning, simulations, interactive discussions, the use of information technology and role-playing, are associated with a higher level of motivation compared to traditional lectures. These findings confirm the importance of active learning and student engagement in the teaching process. The research further indicates that student motivation depends not only on the content of the teaching, but also on the manner of its implementation, as well as on the pedagogical competencies of the teaching staff. The World Health Organization has set unified global standards for the key competencies that every professional teacher in nursing education should possess. These competencies serve as a framework for the development of curricula, the evaluation of the quality of education and the preparation of high-quality nurses who will be able to respond to the contemporary health needs of the population. The document identifies the core areas of competence that the educator should integrate, including knowledge, skills and behaviours, and prepares professionals to support students in acquiring the necessary cognitive, affective and psycho-motor skills. The findings of this study suggest the following recommendations:

- Integration of pedagogical and didactic modules in nursing curricula in order to develop teaching competences in future and existing health professionals.
- Increasing the use of student-centred teaching methods, especially simulations, problem-based learning and cooperative forms of work.
- Continuous training and professional development of teaching staff in the field of pedagogy and modern teaching strategies.
- Encouraging interactive and practically oriented teaching that increases student motivation and engagement.

Limitations of the Study - Several limitations of this study should be acknowledged. First, the sample consisted of 100 nursing students from higher education institutions in the Republic of North Macedonia, which, although drawn from multiple institutions, may not be fully representative of the entire nursing student population in the country. The purposive sampling method limits the generalizability of the findings. Second, the study relied on self-reported data collected through a structured questionnaire, which introduces the possibility of response bias and social desirability bias. Third, the cross-sectional design does not allow for causal inferences about the relationship between teaching methods and motivation.

Ethical Considerations - This study was conducted in full accordance with the ethical principles outlined in the Declaration of Helsinki. Participation was voluntary and anonymous. Written informed consent was obtained from all participants prior to their inclusion in the study. Participants were informed of the purpose, procedures, expected duration, and voluntary nature of their participation, and were assured of their right to withdraw at any point without any negative consequences, before providing consent. No personal identifying information was collected, and participants were free to withdraw from the study at any time without consequences. The anonymity and confidentiality of all participants were strictly ensured throughout data collection and analysis. Informed consent was obtained from all participants prior to data collection.

Declaration of the Use of Generative Artificial Intelligence Tools – The authors declare that all study-related activities were carried out by the author and that AI tools did not replace the author's intellectual contribution. No confidential or personally identifiable data were entered into any AI tool. The author takes full responsibility for the accuracy, integrity, originality, and content of this work.

CRedit authorship contribution statement - Gorica Popovska Nalevska: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision. Gordana Ristevska Dimitrovska: Conceptualization, Methodology, Investigation, Resources, Writing – original draft, Writing – review & editing, Supervision.

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