

The impact of teacher training on the delivery of quality education: A study of schools in Mogadishu, Somalia



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ABSTRACT

Today, improving the quality of education is central to Africa's strategic goal of catching up with industrialized nations. This study focused on the effects of pre-service and in-service teacher training on the quality of education in private and public schools in the Mogadishu Benadir region of Somalia. The research used a quantitative approach, collecting data through a questionnaire distributed to a significant sample of individuals. Non-probability sampling was utilized, targeting teachers and school principals who were readily accessible and selected purposefully. The study involved 145 participants, including both principals and teachers from private and public schools in the region. Factor analysis was used to examine the relationship between pre-service and in-service teacher training and the provision of quality education. The findings indicated that both pre-service and in-service training are crucial investments for enhancing educational quality, with correlation coefficients of 0.648 and 0.660, respectively, showing a positive relationship with the quality of education. The study demonstrates the significant positive impact of teacher training on educational quality and suggests further research is needed to explore how this training aligns with educational curriculum and standards.

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1. Introduction

Teacher education is crucial for student quality because it trains teachers to handle everyday classroom situations and to tailor their teaching methods to fit specific groups of learners (Straková, 2015; Jamal Dori Lal and Delhi, 2021). Pre-service teacher training (PTT) or in-service teacher training (ITT) programs help educators present their subject matter methodically and logically (Saleem et al., 2019). One crucial way to promote teachers' quality is teacher training, so giving adequate knowledge to the students and managing the classroom is vital for everybody involved in the teaching profession. The quality of teachers is crucial to the success of education in society because they are the most highly developed human species that can expertly identify, cultivate, and nurture the potential of a productive citizenry (Dange and Siddaraju, 2020).

Many teachers struggle to manage their classrooms because they have not already taken a train, so teachers must have practical classroom management abilities (Ulla, 2016; Education et al., 2013).

Numerous committees and studies have emphasized that teaching quality is the most critical internal element affecting student performance, which can be improved through teacher preparation programs (Gore et al., 2017). Regarding teaching efficacy and student learning outcomes, teachers' professional development is highly correlated with educational and teacher quality (Wang and Shih, 2022). The history of teacher education extends back to the ancient era, which has seen enormous changes over time (Jamal Dori Lal and Delhi, 2021).

Teacher training programs can produce well-equipped teachers who promote quality education (QE) by producing quality students, maintaining a quality learning environment, updating content, utilizing technologically assisted quality processes, and planning quality outcomes following the moment's needs (Dange and Siddaraju, 2020). Continuous teacher growth is essential throughout a teacher's career, which seems to be a given (Straková, 2015). Since teachers are most well-known for their role in educating the pupils under their supervision, they play a crucial part in

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guaranteeing the delivery of high-quality education (Bonney et al., 2015).

According to Nzarirwehi and Atuhumuze (2019), schools do poorly because teacher preparation programs force teachers to "just listen" rather than put the cutting-edge teaching techniques they have learned into practice. Teachers in the twenty-first century must possess abilities that most professionals in the industry could not have imagined twenty years ago (Straková, 2015).

In Somalia, the minister of education and public and private universities and schools are struggling to enhance teaching quality by training their teachers. This kind of effort is being made in Somalia and other African countries. Today, a key component of Africa's strategic objective to catch up to the industrialized world is the quality of its educational system. Millions of dollars are spent yearly on teacher professional development (PD), with complex regulatory frameworks created to ensure that instructors participate in ongoing professional learning activities (Gore et al., 2017). However, fewer studies provide clear evidence of the effects of teacher training on providing QE.

In actuality, the availability of the correct kind of teachers is essential to the success of any educational program or policy, regardless of how wonderful they may be. Both PTT and ITT require attention and investment from educational institutions and policymakers to ensure that teachers have the knowledge and skills they need to provide high-quality education to their students. A teacher training program is essential to improving the quality of education by producing qualified and effective educators (Dange and Siddaraju, 2020).

The study aimed to determine how PTT and ITT impact the provision of QE in the performance of private and public schools in Mogadishu, Benadir region, Somalia.

2. Literature review

2.1. PTT

PTT is one of the most crucial components of every teacher education program, and it equips student teachers with the skills they will need to become licensed teachers in the future (Ulla, 2016). Raising the education level requires qualified teachers who are an asset to every nation (Dange and Ssiddaraju, 2020; Saleem et al., 2019). This means that PTT equips instructors with solid classroom management skills through the knowledge and skills acquired during PTT. Pre-service education offers trainees the chance to learn about and comprehend the qualities of effective teaching as well as to acquire professional knowledge and attitudes (Straková 2015; Wang and Shih, 2022). To ensure enough qualified instructors in schools and the proper teaching and learning resources, PTT is a vital teacher preparation program that people must complete before beginning their careers as teachers (Stetson and

Stroud, 2014). During PTT, instructors also earn experience and learn about the content of the subject they will teach. Katman and Tutkun (2015) revealed that students will gradually lose interest in that class and subject. Fresh teachers will fail if they cannot effectively explain the content knowledge or communicate the subject of study because they may be highly knowledgeable. Still, they are less skilled in the art of public expression.

Several factors have made PTT more needed in most nations around the world. Hassan and Wekesa (2017) indicated our children are disproportionately harmed by conflict in the process of fighting, escaping, or hiding, which goes beyond the physical devastation of school infrastructure and directly affects students, teachers, and administrators. Our nation's educational institutions, schools, or local governments can give pre-service teacher programs in various ways. Workshops, seminars, online training courses, and other forms of professional development may be included.

It is a good idea to send pre-service teacher candidates out to schools to give them experience dealing with challenges in the real world. A study conducted by Stetson and Stroud (2014) showed that preschool classroom experiences, on the other hand, give vivid, real-world illustrations of those ideas and show that kids naturally like learning about science and non-fiction historical items. In this, they face many challenges; the most important is classroom management. Due to their inexperience as teachers, lack of confidence, fear of receiving a poor grade, and lack of teaching experience, the student teachers encountered several difficulties during their practicum teaching, including classroom management (Ulla, 2016; Coşkun, 2013).

Effective classroom management leads to a positive teacher-student relationship and efficient use of time by following all the institution's rules and regulations. This results in reduced misbehavior and disorder. Achieving this is what they are being prepared for. However, new teachers assigned to teach for the first time may struggle to manage even a small group of students. A study conducted by Freeman et al. (2014) showed that many teachers feel unprepared to control student behavior since they did not obtain enough classroom management training before starting their teaching careers.

By the time students complete their training, they ought to be able to clearly state their areas of strength and weakness and the standards by which they will be judged prepared for the teaching profession (Straková, 2015). Overall, PTT programs are essential to ensuring a well-trained and competent pool of teachers available to educate future generations.

2.2. ITT

The best way to describe in-service education is as the appropriate classes and activities a serving teacher can participate in to improve his professional knowledge, abilities, and competence

(O'Dwyer and Atli, 2015). ITT supports the education system, and it has a significant effect on teachers' academic qualifications, performance, and professionalism, but proper planning, implementation, evaluation, and resources are necessary to realize these benefits (Nzarirwehi and Atuhumuze, 2019; Katman and Tutkun, 2015). This is because the trainees might not have a clear idea about how crucial ITT is.

Staff development initiatives are necessary due to changes in how people live, work, study, and the world and lifestyle (Chalchisa, 2010; Straková, 2015). Teachers pursuing professional development should consider the moral aim of education and make strategies to act more forcefully as change agents (Qaisra and Haider, 2023). On the other hand, ITT programs may be focused on a specific subject or skill, or they may be more general, covering a broad range of topics. Therefore, teachers should be instilled that a lack of in-service training for teachers will impede their professional development and cause missing gaps between expectations and actual levels of success (Osamwonyi, 2016).

ITT programs, on the other hand, are designed for teachers already working in the field and looking to improve their skills and knowledge (Katman and Tutkun, 2015). According to Nzarirwehi and Atuhumuze (2019), ITT has always supported teachers' professional and personal growth to benefit their students, courses, and institutions. ITT entails doing and experiencing things that improve how effectively professionals carry out their duties (Qaisra and Haider, 2023). There is little doubt that in-service education will continue to address the gaps between pre-service education and teachers' productivity in the workplace caused by the changing society (Osamwonyi, 2016). The fact that the function of trainers is not clearly defined, which suggests that training requirements are not appropriately handled, presents another difficulty for ITT (Nzarirwehi and Atuhumuze, 2019; O'Dwyer and Atli, 2015). Seminars, workshops, conferences, lectures, exhibitions, and other activities intended to enhance personnel in an organization from the start of their employment through retirement are permitted under the umbrella of in-service education (Osamwonyi, 2016).

A study by Hassan and Wekesa (2017) revealed a form of "in-service" training here in Somalia. Still, the content, length, and frequency are insufficient and do not address critical issues like teaching students with special educational needs. Many unqualified teachers in classrooms lack the necessary pedagogical and teaching skills.

Every school system in the world agrees that the most important internal factor affecting student performance is the caliber of the teaching (Carter, 2012). Lack of in-service training for teachers will impede their professional development and cause missing gaps between expectations and actual levels of success (Osamwonyi, 2016). Maintaining excellent standards in teacher preparation programs depends on ITT (Qaisra and Haider, 2023). The ultimate goal

of teacher training programs is to develop a dedicated group of individuals who will defend our country's democratic values (Dange and Siddaraju, 2020). Teachers have many opportunities to gain new knowledge and practice various teaching methods during ITT (Saleem et al., 2019).

2.3. Theoretical framework

This framework explores the relationship between teacher training and the provision of QE (Fig. 1).

1. Teacher training

- PTT
- ITT

2. QE

The theoretical framework illustrates how teachers' pedagogical skills and curriculum policy implementation influence the provision of QE. The hypotheses are as follows:

H1: Teachers' pedagogical skills positively impact the provision of QE.

H2: Curriculum policy implementation positively impacts the provision of QE.

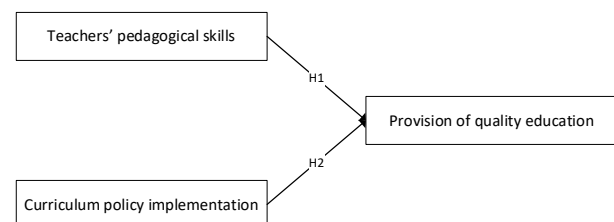


Fig. 1: Theoretical framework

3. Research method

The study aims to examine how teacher training is essential to instructors. The researchers formulated two hypotheses for measuring how teacher training is crucial to those involved in the teaching profession. A questionnaire based on PTT and ITT was used to gather data for the research. The questionnaire is a set of questions or items designed to elicit information from respondents about their attitudes, experiences, or opinions. Questionnaires can be used to gather quantitative and qualitative data. Questionnaires are widely used in market research, as well as social and health sciences. The questionnaire was divided into two parts: part one was the respondents' demographics, and part two was 8 and 7 items for PTT and ITT impact, respectively, on providing QE. A questionnaire is a form with several questions explicitly addressed to a statistically significant number of individuals to gather quantitative data for a survey (Oshagbemi, 2017). The target population for the study was 145, including school principals

and teachers for private and public schools in Mogadishu Benadir Region-Somalia. The study used probability sampling. In statistics, probability sampling is a sampling approach in which all members of the population have a predetermined and equal chance of being included in the sample. This technique is based on the randomization principle, which means that the procedure is structured in such a way that every individual in the population has an equal chance of being selected. Statistical inferences can be made by researchers using this technique, which means that the results acquired can be generalized from the surveyed sample to the entire population. Sampling is choosing a sample from a population. Since the researchers only included teachers and principals who were easily accessible to them, study participants were chosen purposefully. The five categories on the Likert Scale—strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree—are used to gauge how much you agree with a statement.

To analyze the collected data, SPSS 26 was used. The SPSS statistics is a software package that allows for both logical batched and non-batched statistical analyses. This software is one of the most popular statistical tools, capable of performing highly complicated data manipulation and analysis using simple commands. SPSS can handle data from practically any form of file to create tabulated reports, distribution and trend charts and plots, descriptive statistics, and advanced statistical analyses. A reliability test was conducted to ensure the level of stability and consistency. The consistency with which an instrument yields the same data after repeated use is known as reliability (Considine et al., 2005). Alpha Cronbach's alpha measures an instrument's degree of reliability (Daud et al., 2018). The constructs, the number of components for each construct, and their alpha values are displayed in Table 1.

Table 1: Constructs of PTT, ITT, and QE

Construct	Number of items	Cronbach's alpha
PTT	8	0.845
ITT	7	0.830
Provision of QE (PQE)	5	0.826

Table 1 indicates that Cronbach's alpha for the three constructs is more significant than 0.8. This suggests that the constructs are credible measures of their respective concepts and that the constructs are all trustworthy. This is significant because these constructs can be used to examine both PTT and ITT and the delivery of high-quality education.

3.1. Respondents' demographics

Table 2 shows that the population is predominantly male, with 114 males and 31 females. This means that 78.6% of the population is male and 21.4% is female. Table 3 shows that most of the population (71.0%) have a bachelor's degree. This is

followed by those with a master's degree (22.1%), a diploma (4.8%), and a doctorate (2.1%).

Table 2: The gender frequency and percentage of a population

Gender	Frequency	Percentage
Male	114	78.6
Female	31	21.4
Total	145	100.0

Table 3: The educational level distribution of a population

Educational level	Frequency	Percentage
Diploma	7	4.8
Bachelor's degree	103	71.0
Master's degree	32	22.1
Doctorate	3	2.1
Total	145	100.0

4. Factor analysis

Factor analysis is the most popular technique for evaluating the construct validity of tests in applied research (Koyuncu and Kılıç, 2019). Before using them in other analyses like multiple regression or multivariate analysis of variance, factor analysis is particularly useful for removing a small number of factors from a considerable number of linked variables to a more manageable number (Shrestha, 2021). Table 4 demonstrated how PTT reduced the eight parts of the initial build to the best-case scenario of a single element. The factor's eigenvalue was 3.870, and its contribution to the variance of the eight items was 48.39%. All of them were appropriate items for measuring PTT because, according to the eight items (PTT1-PTT8), the loadings of the PTT are all greater than 0.5. The correlation between the item and the factor is called factor loading, and a factor loading of more than 0.30 often denotes a moderate link (Tavakol and Wetzel, 2020). Their reliability index (Cronbach alpha), a measure of reliability, was very good at 0.845.

Table 4 shows that the confirmatory factor analysis reduced the six items of ITT to one factor: ITT. All loadings of this factor (ITT1-ITT6) are more significant than 0.5. The factor loadings convey how each variable relates to the underlying factor. According to Rogers (2024), factor loading, which measures how well a factor matches the standardized responses to a variable, aids in deciphering the significance of a factor by providing this information. The higher the factor loading, the better it fits the pertinent statement. The factor had an eigenvalue of 3.497 and contributed 49.96% of the variance in the eight items.

As shown in Table 4, the confirmatory factor analysis narrowed down the five QE elements to only one factor: QE. This factor's loadings (QE1-QE5) are more than 0.5. The factor loadings illustrate the relationship between each variable and the underlying factor. This indicates that the more appropriate a factor's loading is to a statement, the more significant the factor loading is. The factor's eigenvalue was 2.958, which indicates that it explained $2.958/5 = 59.19\%$ of the variation in the seven items.

Table 4: Data presentation and analysis

Construct	Attributes	Factor Loadings	Reliability
Pre-service	The PTT program adequately prepares teachers with the necessary knowledge and skills to provide QE	0.723	0.845
	The PTT program effectively addresses the diverse needs of students	0.714	
	The PTT program effectively addresses the diverse needs of students	0.682	
	The PTT program prepares teachers to assess and evaluate student learning effectively	0.722	
	The PTT program equips teachers with the necessary classroom management skills	0.801	
	The PTT program emphasizes modern teaching methods and strategies	0.695	
	The PTT program adequately prepares teachers to create inclusive and welcoming classroom environments	0.607	
	The PTT program provides sufficient opportunities for practical teaching experience	0.598	
	Eigenvalue	3.870	
	% variance explained	48.39	
In-service	The ITT programs have positively impacted teachers' ability to provide QE	0.751	0.830
	The ITT programs effectively address the changing educational needs and demands	0.606	
	The ITT programs provide practical strategies and techniques that can be applied in the classroom	0.826	
	The ITT programs enhance teachers' understanding of effective classroom management	0.749	
	The ITT programs equip teachers with the necessary skills to incorporate technology into their teaching	0.610	
	The ITT programs provide opportunities for collaboration and professional growth	0.687	
	Eigenvalue	3.497	
	% variance explained	49.96	
	The provision of QE produces qualified Educators	0.778	
	The provision of QE has a positive impact on socioeconomics	0.796	
QE	The provision of QE enables the achievement of educational objectives	0.845	0.826
	The provision of QE enhances innovations	0.688	
	The provision of QE produces citizens with national moral values	0.730	
	Eigenvalue	2.958	
	% variance explained	59.19	

The same Table 4 demonstrates the reliability of the factors. One of the most popular methods for determining reliability in the social and organizational sciences is Cronbach's alpha reliability (Bonett and Wright, 2015). When used repeatedly, the consistency of an instrument's results determines its reliability (Considine et al., 2005). The terms "consistency" and "uniformity" or "lack of significant difference" describe how repeated measurements turn out (Louangrath and Sutanapong, 2018). Based on the data gathered, Cronbach's Alpha is less than and close to 1.00, indicating reliability. An instrument with a validity coefficient of at least 0.70 or 70% is accepted as valid in research, according to Kathuria and Kumar Pandya (2020), who argued that a Cronbach's alpha of 0.71 is reliable (Abshir, 2020). The values of Cronbach's alpha for PTT, ITT, and QE are 0.845, 0.830, and 0.826, respectively. Table 5 proves that the instrument used to test the factors is reliable. According to Nawi et al. (2020), < 0.6 is poor, 0.6 to < 0.7 is moderate, 0.7 to < 0.8 is good, 0.8 to < 0.9 is very good, and 0.9 > is excellent.

4.1. Correlation

The degree of a relationship between two variables is measured by correlation. The study measures how PTT and ITT are related to QE. The correlation coefficient (R) values for the relationships between pre-service teacher preparation, in-service teacher preparation, and high-quality education were found to be 0.648 and 0.660, respectively. The Pearson correlation is a tool for measuring interdependency among two or more variables. The product of correlation shows that PTT and QE are strongly correlated (r=0.648). Similarly, ITT and QE are strongly correlated (r=0.660).

4.2. Hypothesis testing

In Tables 6 and 7, the study examined how PTT and ITT affect QE. The ratio of the two mean squares (F-76.465) and the (P-0.000) indicated that the null hypothesis was rejected. This means that both PTT and ITT significantly impact QE.

Table 5: Correlation coefficients between PTT, ITT, and QE

	PTT	ITT	QE
PTT	1	0.650**	0.648**
ITT	0.650**	1	0.660**
QE	0.648**	0.660**	1

** : Indicates correlation is significant at the 0.01 level (2-tailed)

The statistics known as R-squared and adjusted R-squared are obtained from general linear model analyses, such as regression and ANOVA (Table 8). R-squared represents the percentage of the outcome variable's variance that the sample's predictor variables can explain, while adjusted R-squared represents an estimate of the population (Ozili, 2023).

5. Discussion

Pre-service teacher education is the training and preparation teachers receive before teaching (Yildiz Durak, 2021). It typically includes four years of college or university coursework, including courses on teaching methods, curriculum, and classroom management (Dorsah et al., 2022). Pre-service teacher education programs typically include student teaching and supervised experience in a real classroom. Pre-service teacher education aims to prepare teachers with the knowledge, skills, and dispositions they need to be effective educators (Yildiz Durak, 2021).

Table 6: ANOVA results for the impact of PTT and ITT on QE

Sum of squares	Degrees of freedom	Mean square	F-statistic	Significance level (P-value)
54.156	2	27.078	76.465	.000 ^b
50.286	142	.354		
104.442	144			

b: Indicates that the significance level is less than 0.001

Table 7: Regression coefficients for the impact of PTT and ITT on QE

Model	Unstandardized Coefficients		Standardized coefficients		
	B	Std. error	Beta	T-statistic	Significance level
(Constant)	.691	.268		2.576	.011
Pre-service	.412	.083	.379	4.944	.000
In-service	.446	.083	.413	5.393	.000

Dependent variable: QE; (T = 4.944, 5.393), (p = 0.000) indicate high t-statistics and low p-values, showing that the null hypothesis was rejected

Table 8: Model summary for the impact of PTT and ITT on QE

R-squared	Adjusted R-squared	Std. error of the estimate
.519	.512	.59509

ITT is the professional development teachers receive after they start teaching (João et al., 2023). It can take many forms, such as workshops, conferences, online courses, and job-embedded coaching. In-service teacher education is designed to help teachers stay current on the latest research and best practices in teaching. In-service teacher education aims to help teachers improve their practice and stay current on the latest research and best practices (Nzarirwehiand Atuhumuze, 2019).

Both pre-service and in-service teacher education are essential for providing QE. Pre-service teacher education gives teachers the foundation they need to be effective in the classroom (Ghimire, 2015). In-service teacher education helps teachers continue to grow and develop professionally to provide the best possible education for their students. The correlation coefficient for the relationship between PTT and ITT on QE is 0.648 and 0.660, respectively. This research highlights the importance of both pre-service and in-service teacher education in improving educational outcomes in Mogadishu. Educational authorities and stakeholders should allocate appropriate resources and support to ensure high-quality pre-service and in-service teacher education programs. The study's practical implications underscore the need to prioritize and invest in both pre-service and in-service teacher education in Mogadishu and similar contexts. Educational institutions can enhance the quality of education by increasing training and professional development opportunities for teachers, thereby contributing to the overall growth and success of students.

The study emphasizes a crucial relationship between teacher training and excellent education, although there are certain limitations in this relationship:

a. Causality: Establishing a direct causal link between teacher training and better student results can be difficult. Other factors, such as class size, student demographics, and school resources, have a substantial impact on learning. Studies frequently struggle to isolate the exact influence of training, making it difficult to establish causation.

b. Training quality and design: Not all teacher training programs are made equally. The success of training is highly influenced by its content, delivery methods, and alignment with real-world classroom requirements. Even if teachers work hard, a poorly structured program may have little impact.

c. Sustainability and implementation: Even with good training, it can be difficult to transfer taught abilities into long-term classroom practice. Workload, administrative assistance, and availability of resources can all make it difficult for instructors to consistently apply new tactics.

d. Individual teacher ability is important, but effective education is also influenced by larger systemic issues such as school leadership, curriculum standards, and community involvement. Focusing simply on teacher education risks overlooking these other critical components.

e. Standardized measures: Standardized tests are frequently used in research to assess QE, which can be a limited and sometimes deceptive indicator. These exams may not capture the whole variety of skills and information that children acquire, thus ignoring the multiple effects of great instruction.

6. Conclusion

The study convincingly showed that Pre-service and in-service training and the delivery of high-quality education are positively correlated. The study is anticipated to demonstrate how crucial pre-service and in-service teacher preparation is to high-quality education. Since most of Somalia's educational institutions are privately funded foundations, the study is expected to impact their understanding of teacher preparation. Further studies are needed to investigate how the teacher training (pre-service and in-service) is aligned with the curriculum and standards.

6.1. Recommendations

Teacher training is important to ensure that all students receive a high-quality education. It provides educators with the knowledge, skills, and methods they need to build effective learning environments that promote student achievement. The research

recommendations highlight areas where teacher training influences the quality of education:

1. Teacher training should not be a one-time affair but rather an ongoing one. Educators require regular opportunities to develop new skills, stay current on curricular changes, and collaborate with peers. This can be accomplished through workshops, conferences, online courses, and peer mentorship initiatives.
2. Teachers should receive training to address the requirements of all students, regardless of their learning style, cultural background, or ability level. This encompasses customized instruction, social-emotional learning, and trauma-informed methods.
3. Effective teacher training necessitates investment in high-quality programs conducted by qualified educators that offer significant learning experiences. This involves giving teachers opportunities to practice new skills and receive feedback.
4. Creating a supportive school atmosphere in which instructors feel appreciated and empowered is critical to the successful implementation of training programs. This involves giving teachers more authority in the classroom, access to resources, and opportunities for leadership.

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Compliance with ethical standards

Ethical considerations

This study was conducted following ethical standards and guidelines. Prior to participation, all participants were provided with detailed information about the study's purpose, procedures, and their rights. Informed consent was obtained from all participants. The confidentiality and anonymity of all participants were ensured throughout the study. Data were collected and stored securely to protect participants' privacy. The research protocol was reviewed and approved by the ethics committee of SIMAD University.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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