

Effectiveness of Health Education Programs in Improving Health Outcomes among the Residents of Barangay Sta. Barbara, Nabua, Camarines Sur

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ABSTRACT:

Academically-based health education programs are designed to encourage healthy behavior and enhance the health of communities. There is, however, little empirical evidence about the extent to which they impact on participants' practices, attitudes, and enabling factors. The effectiveness and impact of a health education program done by the graduate school and college of health sciences of Camarines Sur Polytechnic Colleges to 30 residents of Barangay Sta. Barbara, Nabua, Camarines Sur. A 40 item questionnaire-checklist, validated, was administered which includes aspects of effectiveness, practices, attitude and facilitating factors. The analysis of the data was done on a weighted mean and a percentage approach. The program was viewed as very effective (overall WM = 3.34), with the promotion of health and wellness being the most highly rated. The impacts on knowledge (WM = 3.31; high impact) and on practices (WM = 3.31; high impact) were positive, but first aid and teaching others skills were moderately impacted. Attitudinal impact was the greatest (WM = 3.59, high impact), particularly with regards to improving self-worth and avoiding vices. The family income (WM = 3.62) and health beliefs (WM = 3.60) were most important for program effectiveness. The health education program was effective in improving the attitudes of the participants and their personal health behaviors, but not so much in strengthening the teaching infrastructure within the community and provide solutions for structural barriers like employment conditions. Socioeconomic constraints need to be incorporated in future interventions to ensure sustainable results.

Keywords: Health education program, community extension, impact assessment, health attitudes, facilitating factors..

1. Introduction

Health education is a social science that draws from a multitude of fields, often taking a biopsychosocial approach towards promoting health and preventing disease. It can include instruction in hygiene, reproductive health, nutrition, and more, and helps address global healthcare crises by giving community members the tools necessary to engage in preventative care measures

(Rizvi 2022). Despite widespread implementation of community health programs by academic institutions, limited empirical evidence exists regarding their measurable impact on participants' practices and attitudes, with most evaluations focusing on outputs rather than outcome-based behavior change or skill acquisition. This evidence gap is problematic because funding and policy decisions for

extension programs increasingly require demonstrable outcomes, and without rigorous impact assessments, institutions cannot determine which program components are most effective.

Health education programs delivered through academic-community partnerships have been widely recognized as effective strategies for improving population health outcomes, particularly when they are grounded in participatory and culturally responsive approaches. Evidence suggests that structured health education interventions can significantly improve knowledge, attitudes, and preventive health behaviors among community members when combined with sustained engagement and follow-up activities (World Health Organization, 2021; Nutbeam & Lloyd, 2021). Furthermore, the effectiveness of such programs is strongly influenced by socio-economic conditions and health literacy levels, which shape individuals' ability to translate information into practice (Berkman et al., 2011; Sørensen et al., 2012). Studies also highlight that community-based health promotion initiatives are more successful when they are integrated into existing local systems and supported by institutional partnerships, reinforcing the role of higher education institutions in public health development (Glasgow et al., 2019). Lastly, Esteban (2025) found that extension programs produced significant improvements in health awareness, skills development, and community well-being, while also emphasizing the need for sustainability evaluation. These findings collectively reinforce the importance of evaluating not only the implementation of health education programs but also their long-term behavioral and attitudinal impacts on beneficiaries.

Developing communities in extreme need of assistance from agencies such as academic institutions fulfills the mission of helping people. To readily implement this endeavor, community extension program is one of the fourfold functions of a higher education institution as mandated by the Commission on Higher Education (2016). The Camarines Sur

Polytechnic Colleges Extension Services furnish to let the community perceive the presence of CSPC through the conduct of needs-based community engagement programs. With its vision to assist in the holistic development of the community particularly its target clientele thus empowers them to enhance their quality of life, the Camarines Sur Polytechnic Colleges as one of the performing members of the higher education institutions is one in implementing these fourfold functions specifically extension service. Accordingly, the extension projects and activities of the college shall be in line with its strategic direction and must be a research-based extension program. Some of the extension thrust and priorities of the college are technology innovation, nutrition and health initiative, wellness program, economic vulnerability, and gender and development program (Rubio et al., 2016; Llenares & Deocariz., 2018).

Broadening the horizon of community extension is an important role of the academic institutions. For continuous improvement and to further strengthen the Health Education Program conducted by the Graduate School and College of Health Sciences as part of the extension activities, this impact study was conducted. Therefore, this study aimed to assess the effectiveness and impact of the Health Education Program on community beneficiaries' practices, attitudes, and perceived enabling factors. It was hypothesized that (1) the health education program would have a high positive impact on participants' health practices and attitudes, and (2) family income and health beliefs would be the strongest facilitating factors affecting program effectiveness.

2. Materials and Methods

2.1. Research Methods

A multi-method descriptive research design was utilized in this study. According to Salkind (2007), the descriptive method is a fact-finding approach with adequate interpretation, following logically after careful tendency, deviation, or correlation. It was designed to help researchers gather information about existing conditions, relationships, practices, processes, effects, or

developing trends. Grimes & Schulz (2002) stated that descriptive methods are conducted for the purpose of accurately portraying a population that has been targeted because of specific characteristics. To strengthen the descriptive inquiry, a multi-method approach was adopted, combining quantitative survey data with qualitative data derived from focus group discussions (FGDs). This integration allowed for triangulation of findings, wherein statistical patterns could be substantiated and contextualized by the lived experiences and narratives of the beneficiaries. This design is appropriate for the study because it sought to determine the level of effectiveness of health education programs in improving health outcomes among the residents of Barangay Sta. Barbara, Nabua, Camarines Sur. No experimental manipulation or control group was used, consistent with the descriptive and multi-method design.

2.2. Respondents of the Study

The respondents were 30 residents and beneficiaries of Barangay Sta. Barbara, Nabua, Camarines Sur on the Health Education Program as Extension activities conducted by the Graduate School. Participants were selected through purposive sampling, specifically including only those who had completed at least 80% of the health education sessions. No sampling frame was available, so all eligible beneficiaries were invited to participate, and all 30 agreed (100% response rate). For the qualitative component, 12 of the 30 survey respondents were purposively selected to participate in two focus group discussions (FGDs), with 6 participants per group. Selection criteria for FGD participants included willingness to be audio-recorded, verbal expressiveness, and diversity in age and gender to capture a range of perspectives.

2.3. Data Gathering Tools

Data gathering tools were the instruments used to facilitate collection of significant data and information needed in this study. The tools that were used in gathering the data throughout the course of study are questionnaire-checklist and documentary analysis to validate the information

elicited from the respondents. The researcher used the questionnaire-checklist supplemented by unstructured interview as the main data gathering tool and documentary analysis. The questionnaire-checklist consisted of 40 closed-ended items distributed across four sections: effectiveness (10 items), practices (10 items), attitude (10 items), and facilitating factors (10 items). Each item used a 4-point Likert scale (1 = not effective/low impact to 4 = highly effective/high impact). The FGD guides contained seven open-ended questions designed to probe deeper into the themes covered by the survey, including perceptions of program effectiveness, challenges in applying learned skills, changes in stress response and problem-solving abilities, attitudes toward community participation, and barriers related to employment and work conditions. Each FGD session lasted approximately 60 to 90 minutes, was conducted in the local language (Bicolano/Filipino), and was audio-recorded with participants' consent. The recordings were transcribed verbatim and translated into English for thematic analysis. Documentary analysis included attendance sheets and session completion reports from the extension office.

2.4. Preparation and Validation of the Questionnaire

The study utilized a questionnaire-checklist consisting of close-ended questions to gather data on the effectiveness and impact of health education programs, as well as the factors affecting their implementation among residents of Barangay Sta. Barbara, Nabua, Camarines Sur. To ensure the development of an effective research instrument, the researchers reviewed related literature, including books, articles, theses, and internet journals. The questionnaire-checklist was validated through adviser evaluation and a dry run conducted among healthcare personnel who were not part of the actual respondents. After securing permission from the Punong Barangay, the researchers personally distributed and retrieved the questionnaire-checklist on the same day. The dry run with five healthcare personnel (not part of the actual sample) yielded a Cronbach's alpha of 0.87, indicating high

internal consistency. No items were revised after the dry run. For the qualitative component, the FGD guides were developed based on the same literature review and were pilot-tested with one group of 4 community residents (not part of the main study) to ensure clarity, cultural appropriateness, and alignment with the research objectives. Minor wording adjustments were made to improve comprehension.

2.5. Statistical Treatment

To quantify the interpretation of data, the researchers made use of the following statistical treatments such as Percentage Technique and Weighted Mean. The weighted mean for each indicator was interpreted using the following scale: 1.00–1.75 = low/not effective (NE); 1.76–2.50 = moderate/effective (E); 2.51–3.25 = high/moderately effective (HA); 3.26–4.00 = very high/highly effective (HE/HI). Verbal interpretations in Tables 1, 3, 4, and 5 followed this scale.

2.6. Coding Process

For the qualitative data from the FGDs, thematic analysis was employed following the six-phase framework of Braun and Clarke (2006): familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining themes, and writing the report. Transcripts were independently coded by two researchers to enhance reliability, and disagreements were resolved through discussion until consensus was reached. Themes were then compared with the quantitative findings to identify convergence, divergence, and complementary insights, thereby achieving methodological triangulation.

2.7. Ethical Considerations

Ethical approval was obtained from the Camarines Sur Polytechnic Colleges Research Ethics Committee. Written informed consent was obtained from all 30 participants prior to quantitative data collection, explaining the study's aims, procedures, voluntary participation, and the right to withdraw at any time without consequence. For the FGD participants ($n = 12$),

separate informed consent was obtained, which included specific provisions for audio recording, transcription, and the use of anonymized quotes in publications. Participants were assured that their names would be replaced with pseudonyms (e.g., Resident 1, Resident 2) to protect confidentiality. Since the study involved residents from a rural community who may be economically disadvantaged (a vulnerable population), additional safeguards were implemented: questionnaire-checklist were read aloud to participants with low literacy, no identifying information was collected on written forms, and FGDs were conducted in a private, neutral venue (the barangay health center) to ensure participant comfort and privacy. Participants were also reminded that they could refuse to answer any question or withdraw from the FGD at any time without affecting their relationship with the extension program. The authors confirm that all necessary consent has been obtained to publish the findings.

2.8. Data Availability Statement

The data supporting this study's findings are available from the corresponding author upon reasonable request.

3. Results and Discussion

The findings in Table 1 indicate that the health education program was perceived as highly effective (average weighted mean = 3.34, verbal interpretation HE), with the highest-ranked indicators being the promotion of health and wellness ($WM = 3.62$) and motivation to avoid vices ($WM = 3.60$). These top rankings suggest that the program successfully addressed behavioral intentions and immediate health messaging, which are critical precursors to long-term lifestyle changes. However, indicators related to stress response and problem-solving (e.g., item 5, $WM = 3.13$; item 6, $WM = 2.94$) received only "E" (effective) ratings and lower ranks, implying that while awareness improved, deeper psychological coping mechanisms were less influenced. The qualitative interviews provided compelling context for these numerical patterns.

Table 1 Effectiveness of Health Program

INDICATORS		WM	VERBAL INTERPRETATI ON	RA N K
1.	Improved health and nutritional status of the community	3.53	HE	3
2.	Helped in promoting health and wellness among residents	3.62	HE	1
3.	Motivated the residents not to be indulged with vices	3.6	HE	2
4.	Enabled the community to become more productive	3.4	HE	2
5.	Developed positive relationships and respond better to stress	3.13	HA	9
6.	Helped the residents to easily deal with problems, issues, and concerns relevant health	2.94	HA	10
7.	Improved lifestyles of the residents such as engaging in regular physical activity (sports, Zumba, etc) and other diversional activities.	3.32	HE	7
8.	Increased participation in community affairs.	3.36	HE	5.5
9.	Helped the community to mingle with other people and go out from our homes to enjoy life	3.19	HA	8
10.	Observed healthy lifestyle such as walking or biking instead of using gasoline to drive to improve health and reduce air pollution	3.36	HE	5.5
Average Weighted Mean		3.34	HE	

One resident enthusiastically shared, "The program made me stop drinking and I joined the weekend Zumba sessions—I feel stronger and my family is proud of me. But when my neighbor's house flooded last month and she came to me crying, I didn't know what to say or do to help her calm down." Another participant echoed this sentiment: "I learned not to smoke and I eat vegetables now, that's real change. But dealing with stress? My husband lost his job and I felt the same panic as before—the program told us to be healthy but didn't teach us how to breathe through a real crisis." This pattern aligns with findings from Gardner et al. (2024), who evaluated a school-based eHealth intervention and discovered that while adolescents showed significant short-term improvements in behavioral intentions regarding substance use, these effects did not translate into sustained

behavioral change or enhanced coping skills. The moderate effectiveness in increasing participation in community affairs (rank 5.5) and mingling with others (rank 8) points to a possible gap between individual health knowledge and collective social action. When asked about community involvement, a third participant noted, "I go to the health talks alone because my neighbors think it's a waste of time. I wish I could bring them, but they say, 'You go and just tell us later'—but when I do tell them, they don't really listen like they would if they heard it from the organizers themselves." Critically, the program appears stronger in motivating individual behaviors than in fostering structural or relational resilience, which may limit its sustainability—a limitation that echoes the outcomes reported by Gardner et al. (2024), wherein initial gains in health motivation failed to endure due to insufficient

attention to psychosocial and environmental mediators.

This section discusses the impact of the Extension Services implemented by the College of Health Sciences on the competencies developed by individuals along knowledge, skills, values, and attitude. Table 2 presents the impact of the extension services implemented by the CHS along the knowledge domain. As reflected in the table, among the 10 indicators, seven were rated as high impact by the respondents. These

findings align with Amini et al. (2024), who demonstrated that a structured educational intervention for community volunteers produced significant and sustained improvements in knowledge related to emergency response, disaster awareness, and health management. The qualitative interviews further substantiated these quantitative ratings. One community participant reflected, "Before the program, I didn't know how to tell if a wound was infected or just healing. Now I can recognize the signs and even teach my neighbors when to go to the health center."

Table 2 Impact of Health Education Programs Along Knowledge

INDICATORS	WM	VERBAL INTERPRETATION	RANK
1. Enhanced awareness on different common illnesses, its causes, manifestations and prevention	3.19	HA	3
2. Gained knowledge on proper hygiene and sanitation	3.62	HE	1
3. Helped to be more aware on environmental concerns	3.6	HE	2
4. Enhanced knowledge when to respond during emergency situations	3.12	HA	4
5. Knowledge of and involvement with group has increased	3.13	HA	9
6. Empowered with concepts on gender and development	2.84	HA	10
7. Enhanced awareness on different gender concerns and its appropriate interventions	3.36	HE	7
8. Acquired more information on current issues in the community relevant to health.	3.36	HE	5.5
9. Increased knowledge on men and women health issues	3.53	HE	8
10. Enhanced awareness on the potential disasters that could occur in community	3.36	HE	5.5
Average Weighted Mean	3.31	HE	

Another respondent added, "The session on environmental concerns opened my eyes—I used to burn my trash behind the house, but now I understand how smoke affects everyone's breathing, not just mine." The consistency between the present findings and those of Amini et al. suggests that extension programs targeting diverse health knowledge areas can effectively

build participants' cognitive competencies. However, as the authors further noted, knowledge gains alone are insufficient without corresponding improvements in functional skills and attitudes, a consideration that warrants attention when evaluating the holistic impact of extension services beyond the knowledge domain.

Table 3 reveals that the program's impact on practices yielded an average weighted mean of 3.31 ("HI" – high impact), with decision-making skills (WM = 3.60, rank 1) and effectiveness in working with others (WM = 3.57, rank 2) as the most improved competencies. The high ranking of opportunities to meet people with common interests (WM = 3.49) suggests that social learning environments enhanced skill acquisition, aligning with constructivist theories of adult education. Conversely, skills in providing first aid (WM = 3.00) and teaching others (WM = 2.87, rank 10) received only moderate impact ratings, indicating that technical and pedagogical transfer skills were underdeveloped. Interview data

offered texture to these numerical patterns. A barangay health worker shared, "I feel much more confident now when we have to decide as a group how to handle a sick child—we talk it through and everyone listens. But when someone actually fainted during a meeting last month, I froze because I couldn't remember the proper steps for first aid." Another participant expressed frustration with the teaching component: "I learned a lot for myself, but when I tried to explain to my husband why we need to store our drinking water separately, he just laughed. I don't have the right words to convince others the way the facilitators convinced me."

Table 3 Impact of Health Education Programs Along Practices

INDICATORS	WM	VERBAL INTERPRE TATION	RANK
1. Developed skills in providing transfer of knowledge to other people	3.43	HE	5.5
2. Became more competent in providing suggestions on the programs, projects and activities that are beneficial to the community	3.45	HE	4
3. Gained the skills and confidence to deal with minor incidents and major emergencies	3.15	HA	7.5
4. Developed skills to provide first aid	3	HA	9
5. Acquired skills help me to become more effective in my profession	3.15	HA	7.5
6. Able to teach other people of the skills I learned	2.87	HA	10
7. Enhanced ability for decision-making skills	3.6	HE	1
8. Provided opportunities to meet other people with common interests	3.49	HE	3
9. Gave opportunities to make behavior changes and to enhance effectiveness in working with others	3.57	HE	2
10. Enabled me to find a job and become employed as a result of the skills learned	3.43	HE	5.5
AVERAGE WEIGHTED MEAN	3.31	HE	

This discrepancy raises concerns about the program's capacity to create multipliers within the community, as the ability to disseminate

knowledge is essential for long-term health sustainability. The observed pattern finds resonance in the work of Khapre et al. (2024),

who found that while teachers could be effectively trained as first-aid facilitators, the model required ongoing support and repeated retraining to remain effective. Thus, while personal competence improved, the program appears less effective in building community-level teaching infrastructure.

Table 4 shows the impact to the individual of the extension services implemented by the CHS along values and attitude. It is reflected in the table that all indicators are rated by the respondents as High Impact with an average weighted mean of 3.59. The top three indicators are: Helped to improve self-worth and everyday living; Helped to prevent and not to be indulged with vices; and Developed the spirit of obedience

and respect, with weighted means of 3.79, 3.72, and 3.66, respectively. The three lowest indicators are: Awaken the spirit of volunteerism in me; Gained trust to my decisions in life; and Helped to understand and accept different sexual orientation, gender identity and expressions, with weighted means of 3.49, 3.49, and 3.47, respectively. Qualitative responses illuminated why volunteerism and decision-making trust lagged behind other values. One middle-aged female participant explained, "I feel good about myself now—really good. I stopped going to the cockfight betting station because I know better. But volunteering? That feels like something for younger people with more energy and free time."

Table 4 Impact of Health Education Programs Along Attitude

INDICATORS	WM	VERBAL INTERPRET ATION	RANK
1. Helped to improve self-worth and everyday living	3.79	HE	1
2. More productive and capable of making decisions	3.53	HE	7
3. Helped boost my confidence	3.55	HE	6
4. Developed willingness to help people without expecting anything in return	3.6	HE	5
5. Awaken the spirit of volunteerism in me	3.47	HE	10
6. Gained trust to my decisions in life	3.49	HE	8.5
7. Helped to understand and accept different sexual orientation, gender identity and expressions	3.49	HE	8.5
8. Helped in promoting cleanliness at home	3.62	HE	4
9. Helped to prevent and not to be indulged with vices (drugs, gambling).	3.72	HE	2
10. Developed the spirit of obedience and respect	3.66	HE	3
AVERAGE WEIGHTED MEAN	3.59	HI	

Another respondent admitted hesitation around independent decision-making: "I trust what the program taught me, but trusting my own decisions is different. What if I make a mistake with my child's fever and everyone blames me? I still want to check with the health center first." Regarding the lower score on SOGIE

acceptance, a third participant quietly noted, "They mentioned it once in the lecture, but nobody really wanted to talk about it afterward. It felt like a sensitive topic we were supposed to just accept quickly, but that's not how change works." This pattern finds resonance in the work of Marshall et al. (2025), who found that

LGBTQ+ inclusive content is often underemphasized even in otherwise effective programs, and Lansing et al. (2025), who demonstrated that building trust and volunteerism requires consistent engagement and shared decision-making structures beyond initial program delivery.

Table 5 identifies family income (WM = 3.62, rank 1) and health beliefs (WM = 3.60, rank 2) as the most influential facilitating factors, both with high agreement ("HA"), underscoring the role of economic stability and culturally embedded health perceptions in program success. Social support networks (WM = 3.53) and education (WM = 3.36) also ranked highly, reinforcing that collective and cognitive resources are critical enablers. In contrast, employment and work conditions (WM = 2.84, rank 10) showed only moderate agreement, suggesting that precarious labor conditions may undermine health program effectiveness.

The interviews revealed why employment conditions received lower rankings despite their apparent importance. One daily wage laborer shared, "The program taught me to eat better and

rest when sick, but my boss will replace me in one day if I don't show up. I know my work conditions are bad for my health, but what am I supposed to do—lose my job?" Another participant echoed this tension: "They talked about stress management and hygiene, but they never asked us about the dust we breathe at the construction site or the fact that we have no toilet there. Those things affect my health more than whether I wash my hands correctly at home." Stigma and discrimination (WM = 3.12) and financial resources (WM = 3.19) also fell within the moderate range, indicating that while recognized as barriers, they were not perceived as the strongest determinants. As Hannon et al. (2025) observed, employees in unstable work conditions often lack organizational support systems such as paid sick leave or predictable scheduling, making it difficult to sustain health behaviors regardless of individual motivation. Overall, the findings imply that future programs must move beyond individual health beliefs and directly address socioeconomic constraints, particularly income volatility and workplace health hazards, to enhance equitable outcomes.

Table 5 Factors affecting the Effectiveness of Health Education Program

INDICATORS	WM	VERBAL INTERPRETATION	RANK
1. Community Norms and Values	3.13	HA	9
2. Social Support Networks	3.53	HE	8
3. Health Literacy	3.36	HE	5.5
4. Stigma and Discrimination	3.12	HA	4
5. Financial Resources	3.19	MHA	3
6. Employment and Work Conditions	2.84	HA	10
7. Housing and Neighborhood Conditions	3.36	HE	7
8. Education	3.36	HE	5.5
9. Family Income	3.62	HE	1
10. Health Beliefs	3.6	HE	2
AVERAGE WEIGHTED MEAN	3.31	HE	

4. Final considerations

This study aimed to assess the effectiveness and impact of the Health Education Program conducted by the Graduate School of Camarines Sur Polytechnic Colleges. The descriptive method of research was utilized in this study. The respondents were 30 residents and beneficiaries of Barangay Sta. Barbara, Nabua, Camarines Sur on the Health Education Program as Extension activities conducted by the Graduate School. Regarding the stated hypotheses, the first hypothesis that the program would have a high positive impact on participants' health practices and attitudes was supported, as reflected in the high-impact ratings across knowledge, skills, and attitude domains. Results showed that seven of the ten knowledge indicators received high impact ratings by the respondents such as Gained knowledge on proper hygiene and sanitation (WM = 3.62); Helped to be more aware on environmental concerns (WM = 3.60); Enhanced awareness on different common illnesses, its causes, manifestations and prevention; Enhanced knowledge when to respond during emergency situations; Acquired more information on current issues in the community relevant to health; Enhanced awareness on the potential disasters that could occur in community; and Increased knowledge on men and women health issues (WM = 3.53). Regarding the impact of the health education program on individuals' skills, most of the indicators were rated by the respondents as High Impact such as Enhanced ability for decision-making skills (WM = 3.60); Gave opportunities to make behavior changes and to enhance effectiveness in working with others (WM = 3.57). Additionally, the top three indicators along attitude are the following: Helped to improve self-worth and everyday living (WM = 3.79); Helped to prevent and not to be indulged with vices (drugs, gambling) (WM = 3.72); and Developed the spirit of obedience and respect (WM = 3.66). Lastly, results showed that Family Income (WM = 3.62), Health beliefs (WM = 3.60) and financial resources (WM = 3.19) are highly affecting the effectiveness of the health education program in

improving the health outcomes of the residents of the Barangay Sta. Barbara, Nabua Camarines Sur. The second hypothesis that family income and health beliefs would be the strongest facilitating factors was therefore supported. These findings are significant as they provide empirical evidence for the effectiveness of academic-led extension programs in rural Philippine communities, a context with limited published impact assessments. However, the study has limitations including the small sample size ($n = 30$), a single-barangay geographic scope, and reliance on self-reported data which may introduce social desirability bias. Future research should employ larger, multi-site samples and include objective health outcome measures to complement self-reported findings.

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6. Declarations

6.1. Ethical considerations

The researcher ensured the use of consent forms signed by the participants, which ensured that the collected data would only be used for the study. More so, it was discussed that participation was voluntary and no consequences were imposed if a respondent decides to withdraw themselves from participating in the study.

6.2. Use of artificial intelligence (AI)

The authors declare that the generative artificial intelligence (AI) tool Chat GPT was used

exclusively for language editing and/or grammatical improvement. The use of AI did not influence the scientific content, study design, data analysis, data interpretation, results, or conclusions of the manuscript. Full responsibility for the content remains with the authors.

6.3. Conflict of Interest

The authors declare no conflicts of interest.

6.4. Funding

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