

# Factors within the Primary Health Care System Affecting Compliance with Standard Infection Prevention Precautions among Community Health Practitioners in Bayelsa State, Nigeria

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**Received:** 30 December 2024; **Revised:** 04 February 2025; **Accepted:** 10 February 2025; **Published:** 14 February 2024

## Abstract

**Background:** The cross-sectional study explored factors in the primary healthcare system affecting compliance with infection prevention precautions among community health practitioners (CHPs) in Bayelsa State, Nigeria, and the lived experiences of healthcare managers and practitioners in the primary healthcare system. **Methods:** The study involved 389 CHPs recruited through multistage sampling techniques. Data was collected using a mixed method techniques involving questionnaires, focus group discussions, and Key information interviews. However, 354 (91%) questionnaires were correctly filled out and returned. Item Mean Analysis was used to analyze data with a 2.0 criterion mean to determine factors affecting compliance with standard infection prevention precautions. Any item mean that is less than the criterion mean affects compliance with infection prevention precautions. **Results:** The study found that a significant proportion of CHPs (139, 39.3%) are aged 48 and above, with a 'mean age' of 42 (SD = 11.3). The majority were male (217; 85%), married (190; 54%), Christian (345; 96.8%), and had served for 21-30 years (119; 37%). The study identified key factors of the primary health care system affecting compliance with standard infection prevention precautions, including the unavailability of resources (1.2), lack of infection prevention training (1.0), and absence of policy enforcement (1.0). **Conclusion:** The findings of this study underscore the crucial role of policymakers and government officials in addressing the factors affecting compliance with infection prevention precautions. They should commit to infection prevention by providing resources, support, and responsible personnel for overseeing and enforcing measures at the primary health centers.

**Keywords:** Primary Health Care, Community Health Practitioners, Bayelsa State, infection prevention, standard precaution.

## Introduction

Infection prevention and control (IPC) is a practical, evidence-based approach to prevent avoidable infections, requiring continuous action at all health system levels <sup>[1]</sup>. Infection prevention policy includes hand hygiene, use of personal protective equipment, respiratory hygiene, environmental hygiene, injection safety, etc. <sup>[2]</sup>. Healthcare professionals are more likely to contract infection at work when infection control procedures are not followed correctly <sup>[7]</sup>.

However, a study conducted in Saudi Arabia among primary healthcare personnel indicated that the facility's compliance with standard infection prevention precautions was low (49.5%). Still, they were better ( $p = 0.040$ ) among those who had training in

infection prevention <sup>[6]</sup>. A study conducted in Geneva also indicated that even advanced systems have deficiencies in implementing infection control policies <sup>[8,9]</sup>. Another study conducted in Brazil to assess infection control structure in primary health centers indicated that it lacks most infection prevention equipment <sup>[10]</sup>. Low compliance with infection prevention precautions was also discovered in health facilities in Tanzania <sup>[11]</sup>. However, a cross-sectional study conducted in primary health facilities in Enugu, Nigeria, indicated poor knowledge and compliance with infection prevention and suggested more research to unravel this gap <sup>[12]</sup>.

Previous studies indicated that individual, work-related, and primary healthcare systems factors were implicated (3,4,5,15). A study conducted among health workers in primary health centers in Tanzania indicated that attending IPC training or an IPC seminar in

the previous year organized by the Primary Health Care system influenced their compliance with infection prevention precautions [13]. Another study conducted in Italy among nurses indicated that factors surrounding the management of the system is affected their compliance level [14]. However, no study has investigated the primary healthcare system factors affecting compliance with standard infection prevention precautions.

Bayelsa State was carved out of Rivers State in the Niger Delta Region of Nigeria in 1996. it's bounded to the East and West by Rivers and Delta State, with the beautiful waters of the Atlantic Ocean dominating its southern borders. Bayelsa, known as the cradle of Ijaw culture and tradition, has established a separate ministry for culture and Ijaw national affairs, mandating public servants to wear traditional attire every Friday and promoting the importance of the people's culture [17].

There are eight (8) Local Government Areas in Bayelsa State. The State is characterized by scattered villages and rural settlements, with 25% of the population living in urban villages like Ogbia, Oloibiri, Bassambiri, Okpuama, Twon-Brass. and Nembe. These towns have over 10,000 residents and are now local government headquarters. Out of 1,121,493 residents of Bayelsa State, only 280,280 live in urban centers, with high urbanization in Nembe and Yenagoa. The indigenes of Bayelsa State are mostly farmers, fishermen, petty traders, and civil servants [18].

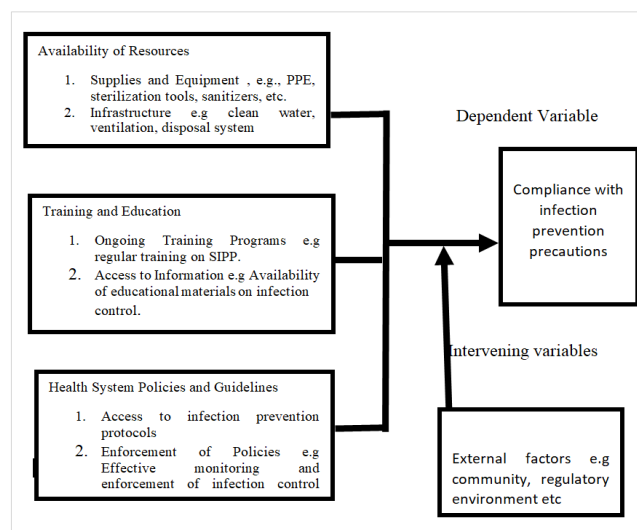
Community health practitioners are frontline primary health care workers in Nigeria. They are trained and licensed to provide promotive, preventive, curative, and rehabilitative health care services to people in the community and at the primary health care center [15,30]. Their educational qualifications include Certificates, National Diplomas, higher national Diplomas, Bachelor of Community Health Science (BCHS), MSc in Community Health, and Ph.D. in Community Health [16, 28]. They are trained at the College of Health Technology, University Teaching Hospitals, and Universities in Nigeria. The Community Health Practitioners Registration Board of Nigeria (CHPBN) is saddled with the responsibility of Licensing and regulating the training and practice of Community Health Practitioners in Nigeria [16]. In Bayelsa State, 511 Community health practitioners are employed by the State Government to provide health services in primary health care centers. Bayelsa State has about 189 primary healthcare facilities, mostly in rural areas, and are manned by community health practitioners [16, 29].

Primary healthcare (PHC) is the foundation of the healthcare system, managing non-emergency health issues and providing preventative care. It is the first point of contact for individuals, families, and communities, ensuring affordability and maintaining primary health centers throughout development. PHC also promotes health promotion and education, connecting patients with secondary care. It aims to bring health closer to the community [20]. PHC is a comprehensive approach to health, focusing on people's needs from health promotion to disease prevention, treatment, rehabilitation, and palliative care, ensuring equitable distribution and the highest possible health and well-being [21].

Nigeria operates three tiers of the Health System- Tertiary Health Care System, Secondary Health Care System, and Primary Health Care System. The Federal Government funds the tertiary health system, the State Government funds the secondary health system, and the local government owns and funds the primary health care system. The National Primary Health Care Development Agency (NPHCDA) regulates the Primary Health Care system [22]. The Agency is responsible for monitoring and evaluating the National Health Policy, providing technical support for primary

health care planning, management, and implementation, and mobilizing resources for its development. Every state in Nigeria is expected to have a State Primary Health Care Development Agency [23].

The study investigated the primary healthcare system factors influencing compliance with infection prevention precautions among community health practitioners in Bayelsa State. It explored the lived experiences of primary healthcare managers and community health practitioners on factors affecting compliance with infection prevention precautions in the primary healthcare system. The findings will help the system identify improvement areas and implement necessary changes, protect public health, prevent healthcare-associated infections, enhance health workers and patient safety, enhance continuous quality improvement, and guide evidence-based policy decisions.



**Fig 1: Conceptual framework independent variable**

Systemic Factors set the foundation for compliance with infection prevention precautions by ensuring that necessary resources, training, and policies are in place. Figure 1 above indicates that when factors within the primary health care system, like availability of resources, training, education, and health system policies and guidelines, are put in place, compliance with standard infection precautions is achievable. The conceptual framework outlines the key elements and their relationships that guide the research on factors within the primary health care system that affect compliance with infection prevention precautions among community health practitioners (CHPs) in Bayelsa State. This framework integrates systemic factors to provide a comprehensive understanding of the determinants of compliance.

## Methods

A descriptive study with a mixed-method approach was adopted. Taro Yemen formula and a 10% response rate gave us a sample size 389. Stratified, random, and snowball techniques (focus group discussion and managers of PHC for interview) were used for data collection from CHPs working at the primary health care center and the managers of the primary health care system in Bayelsa State who gave verbal consent. Any outside these are excluded from the study. A self-structured Likert scale questionnaire of always, sometimes, and never. The validity of the quantitative instrument is the ability to measure what it can [25]. The principal investigator and analysis

specialists ensure face and material validity, covering all aspects of the construct to ensure accurate content and accurate outcomes [25]. The reliability of the quantitative instrument was also tested. Reliability refers to an instrument's ability to produce similar results when replicated under the same conditions [26]. The test-retest reliability technique was used to assess the instrument's reliability. This entails conducting an overview with a group of respondents, rehashing the study with a similar gathering sometime in the not-too-distant future, and looking at the reactions at the two focuses in time [26]. Twenty questionnaires were distributed to community health practitioners in Rivers State that share the same characteristics as those in Bayelsa State. The questionnaires were distributed and retrieved immediately, and a second collection of 20 questionnaires was redistributed and retrieved immediately after two weeks.

The Pearson Product Moment Correlation Coefficient was used to compare outcomes. A coefficient of 0.76 was obtained, which is considered sufficient.

Key informant interviews and focus group discussions were used to collect qualitative data from CHPs and primary healthcare system managers. Validity is the outcome goal of research work. The validity of qualitative data collection instruments (Interviews and focus group discussions) is based on trustworthiness (credibility, transferability, dependability, and confirm ability) [27]. The credibility of the qualitative data was tested through triangulation, member checks, and saturation. Triangulation involves documenting evidence from various sources, while member check allows participants to verify findings. Saturation involves continuous recruitment until rich information is gathered [27]. Researchers created a detailed description of interview participants' experiences on factors of the primary healthcare system affecting compliance with standard infection prevention precautions, ensuring transferability for future research. The study utilized triangulation, interviews, focus group discussions, observation, tape recorder, and field notes to ensure dependability, enhancing reliability. Researchers used a reflexivity strategy to ensure confirm ability and trustworthiness in the study. They made their position explicit, acknowledging biases and values, and allowed data to speak for itself, ensuring the truth and accuracy of participant opinions. The data collection period lasted 11 months, from December 2022-Nov 2023.

Quantitative data were analyzed with descriptive statistics of item mean analysis, frequency, and percentages. Colaizzi's phenomenological method was used to analyze the qualitative data. The Colaizzi method is a phenomenological research method used to analyze qualitative data, identifying and extracting meaningful themes or categories to understand individual subjective experiences [19].

Ethical clearance was obtained from the Bayelsa State Ethical Review Committee, and all stakeholders were informed. Before they were recruited for the study, consent was sought, and an informed consent form was signed by participants. Participants willingly participated and were free to quit the research as they wished. In developing the questionnaire, focus group discussion, and Key informant interview guide, insulting or inappropriate language was avoided. The privacy and anonymity of respondents were a top priority for the researcher. All participants were treated with respect and dignity.

## Result

Three hundred and eighty-nine (389) questionnaires were administered, but 354 (91%) were correctly filled and returned, which was considered high for making quality inferences. Three focus group discussions with four participants each and Six key informant interviews with PHC managers that lasted for 1hr each. The data obtained were subjected to statistical analysis such as descriptive statistics (Item Mean Analysis, percentages, and frequency) using the Statistical Package of Social Sciences (SPSS) version 21. The criterion mean was set at 2.0, which means that any item mean greater than or equal to the criterion is an implemented factor. Any item mean less than the criterion mean is not implemented and is considered a factor within the primary health care system affecting compliance with infection prevention among community health practitioners in Bayelsa State. Thematic analysis was conducted on the qualitative data, extracting meaningful themes or categories to understand individual subjective experiences.

### Demographic Variables of Participants

Fig 1 indicated that 40 (11.3%) are between the ages of 18 and 27, 90(25.4%) are between 28 and 37, 85 (24%) are between 38 and 47, and 139 (49.3%) are 48 and above, with a "mean age" of 42 ('SD' = 11.3).

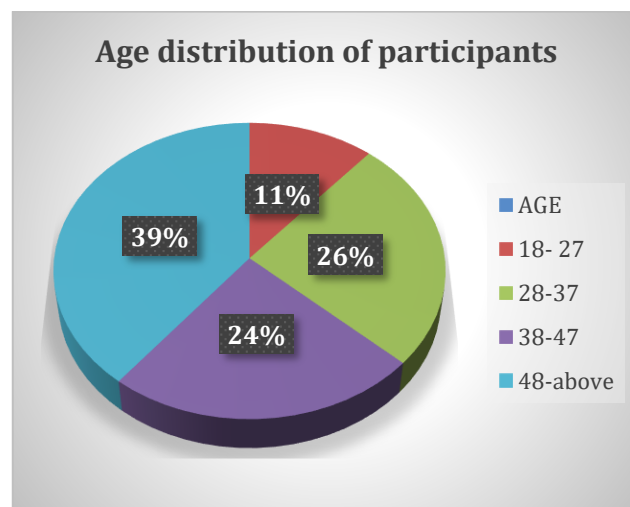


Fig 1: Age distribution of participants

Fig 2 1 indicated that 217 (61%) were males and 137 (39%) were females.

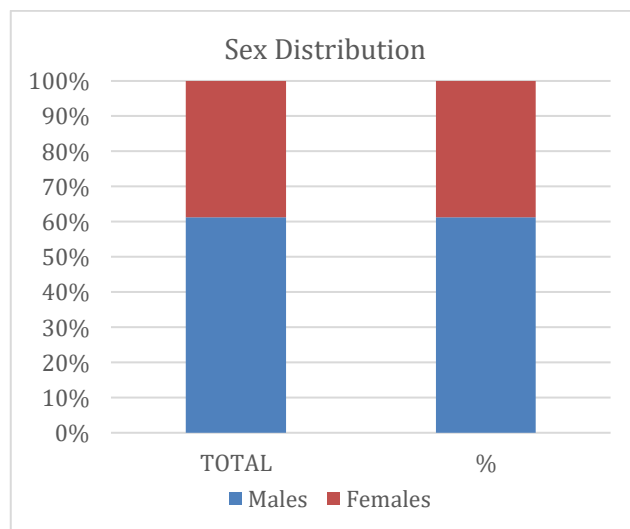
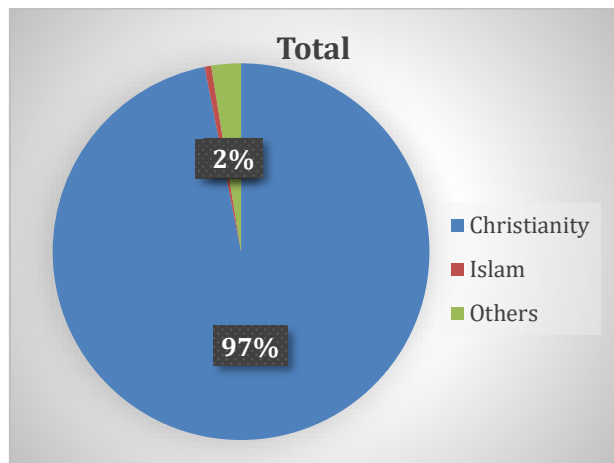


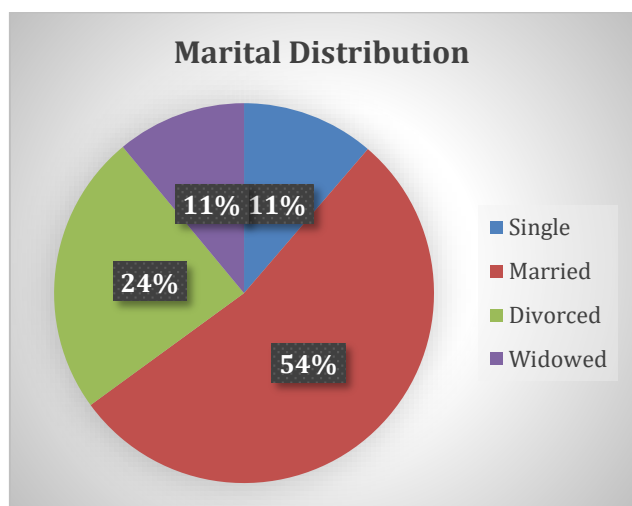
Fig 2: Sex distribution of Participants

Fig. 3 below indicates that 343 (99%) were Christians, 2 (0.6%) were Muslims, and 9(2%) were others.



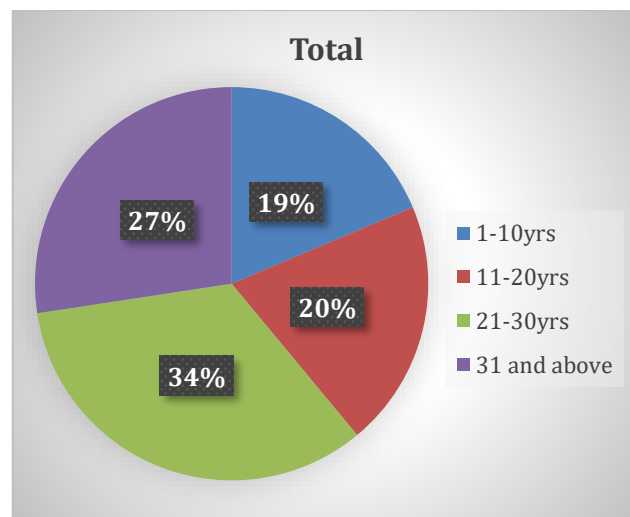
**Fig 3: Religious distribution of participants**

Fig 4 below indicated that 40(11.3%) were singles, 190 (54%) were married, 85 (24%) were divorced, and 39 (11%) were widowed.



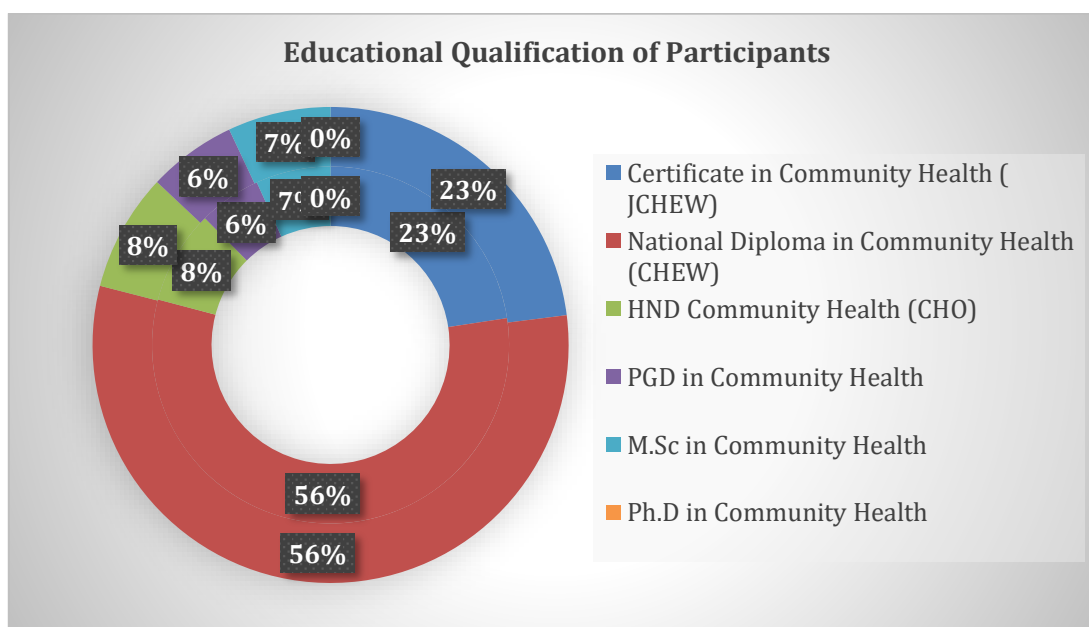
**Fig 4: Marital Distribution of Participants**

Fig. 5 below indicates that 66(12%) of participants have been in service between 1 and 10yrs, 72 (20.3%) had served for 21-30years, 119 (34%) had served for 11-20yrs, and 97 (27%) had served for 31 and above.



**Fig 5: Years of service Distribution of Participants**

Fig 6 below indicates that 80 (23%) possessed a certificate in community health (JCHEWs), 200 (56%) possessed a National Diploma in community health (CHEWS), 30 (8%) possessed a higher national diploma in Community Health (CHO), 20(6%) possessed a PGD in Community Health, 24 (7%) possessed an MSc in Community Health, and none had a Ph.D. in community health.



**Fig 6: Educational Qualification of Participants**

Factors of Primary Health Care System affecting Compliance with Standard Infection Prevention Precaution

Table 1 indicated that resources for compliance with standard infection prevention precautions are unavailable: The item mean was 1.2 lower than the criterion mean of 2.0. Training on standard

infection prevention precautions is not available. The item mean was 1.0, lower than the criterion mean of 2.0. Management support is available for standard infection precautions. The item mean of 2.0 equals the criterion mean of 2.0. There is no enforcement of infection prevention policy. The item mean is 1.0, lower than the criterion mean of 2.0.

**Table 1: Factors of Primary Health Care System affecting Compliance with Standard Infection Prevention Precaution**

S/N	ITEMS	Responses			TWS	Mean	Decision
		Always	Sometimes	Never			
1	Availability of resources for infection prevention e.g PPE	15 (45)	39 (78)	300(300)	423	1.2	Rejected
2	Infrastructure e.g, clean water, waste disposal system, ventilation	20(60)	25(50)	309(309)	419	1.2	Rejected
3	Regular training on Standard Infection Prevention Precaution	5 (15)	4 (8)	345 (345)	368	1.0	Rejected
4	Availability of educational materials on infection control.	200(600)	50(100)	104 (104)	804	2.3	Accepted
5	Access to infection prevention protocols	9 (27)	335 (670)	10 (10)	707	2.0	Accepted
6	Enforcement of infection prevention policies	4 (12)	2 (4)	348 (348)	364	1.0	Rejected

## Discussion

The findings indicated that the Primary Health Care system's factors affecting compliance with standard infection prevention precautions on infection among Community Health Practitioners in Bayelsa State include **unavailability of resources for infection prevention** ( $\bar{x} = 1.2$ ), **No adequate infrastructure** ( $\bar{x} = 1.2$ ), **No regular training on Standard infection precautions** ( $\bar{x} = 1.0$ ), **Enforcement of infection prevention policies** ( $\bar{x} = 1.0$ ). However, the study indicated that educational materials on infection prevention are **Available** ( $\bar{x} = 2.3$ ) and **accessible** ( $\bar{x} = 2.0$ ). Participants in the focus group also confirmed that the government has not provided them with PPE for some years but that they go individually to the health facility with disposable gloves and sanitizers. They also stated that they had not received training on personal protective equipment. Their knowledge of standard infection prevention precautions was based on personal studies of the infection prevention protocols available in the facility and what they learned during their school days. Participants also confirmed that most facilities do not have a good water supply and that the infrastructures are dilapidated. This finding is similar to a study that states that compliance with standard infection prevention precautions among healthcare workers is very low due to lack of training on standard infection prevention precautions, lack of accessibility of personal protective equipment, and lack of management support (3,16). The key informant interview with management of the Primary Health Care System revealed that they lack of funds to conduct supportive supervision and provide PPE for health workers in the primary health centers had been a challenge. However, when there are infection prevention protocols from the National Primary Health Care Agency, they ensure that these protocols are distributed to officers in charge of the health facilities. Another study conducted in Lagos, Nigeria, among Nurses, indicated that the most reported factors affecting the practice of standard precautions were non-availability of personal protective equipment (PPE) (92.1%), lack of regular training on standard precautions (91.1%) and lack of good policy on standard precautions (81.5%) (16,24).

## Conclusion

At the time of the study, factors within the primary health care system affecting the compliance with standard infection prevention precautions among community health practitioners in Bayelsa State were the unavailability of infection prevention resources, lack of training on infection prevention and how to use PPE, inadequate infrastructures and the non-enforcement of infection prevention policies. Sanctions and ongoing support are required to prevent health workers and patients from contracting infections. The findings of this study underscore the crucial role of policymakers and government officials in addressing the factors affecting compliance with infection prevention precautions. They should commit to infection prevention by providing resources, support, and responsible personnel for overseeing and enforcing measures at the primary health centers.

## Declarations

## Ethical Approval

Taken from The Institutional Ethics Committee

## Data Availability

All data available on corresponding author upon responsible request.

## Conflicting Interest

The Authors declared no conflicting interest.

## Financial Support and Sponsorship

None

## Acknowledgment

The authors acknowledged the research assistants and the cooperation of the participants.

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