

Nature of existing school facilities in secondary schools in Nakivale settlement, Isingiro District; A cross-sectional study

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Abstract

Background

The study aimed to assess the nature of existing school facilities in secondary schools in Nakivale Settlement, Isingiro District.

Methodology

A descriptive case study design using quantitative and qualitative approaches was conducted in secondary schools in Nakivale Refugee Settlement, Isingiro District. The target population was 545, with 274 respondents selected using purposive and simple random sampling. Data were collected through questionnaires, interviews, observation, and documentary review. Validity was assessed through expert review and piloting, while reliability used Cronbach's alpha. Quantitative data were analyzed in SPSS using descriptive statistics and Spearman correlation, while qualitative data were analyzed thematically using ATLAS.ti.

Results

A total of 220 questionnaires were returned, giving an overall response rate of 86.6%, including 185 students (86.4%). Among students, 105 (56.8%) were male and 80 (43.2%) females; 72 (38.9%) were in Senior Four, 65 (35.1%) Senior Five and 48 (26.0%) Senior Six. Physical school facilities recorded an overall mean of 4.05. Limited access to ICT facilities had the highest mean (4.34), followed by inadequate water and sanitation (4.16), significant infrastructural challenges (4.16), inadequate accommodation (4.10), deteriorating infrastructure (4.08), inadequate teaching and learning materials (4.02), overcrowding and safety concerns (3.97), limited extracurricular and vocational facilities (3.96), teacher shortages (3.85), and security challenges (3.82). Thematic findings identified overcrowding, insufficient learning materials, inadequate sanitation, limited laboratory and library resources, and maintenance needs, while classrooms and essential facilities remained functional. The supplied results do not report a correlation coefficient between physical facilities and enrolment.

Conclusion

Physical facilities in Nakivale secondary schools are inadequate, with overcrowding, poor sanitation, limited ICT, materials, accommodation, and security.

Recommendation

The Office of the Prime Minister, Ministry of Education and Sports, UNHCR and partners should prioritize classrooms, sanitation, ICT, materials, and boarding facilities.

Keywords: Physical school facilities, Student enrolment, Secondary education, Nakivale settlement, refugee education, School infrastructure

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Background of the study

Physical school facilities are essential components of a conducive learning environment because they provide the spaces and resources required for effective teaching and learning. Classrooms, laboratories, libraries, sanitation facilities, furniture, water supply, electricity, ICT infrastructure, accommodation and security contribute to students' comfort, safety and participation in education.

However, schools serving refugee populations often face infrastructure deficits resulting from rapid population growth, limited resources and inadequate maintenance. Studies have reported shortages of classrooms, laboratories, sanitation facilities, learning materials and technological resources in refugee education settings (UNHCR, 2022; World Bank, 2020). In Nakivale Settlement, such challenges may be intensified by the growing demand for secondary education and the settlement's dispersed population. Overcrowding, inadequate sanitation,

deteriorating buildings and limited ICT facilities can constrain the delivery of quality education (Kizza et al., 2021; Nsubuga et al., 2022). Therefore, examining the nature and adequacy of physical school facilities provides an important basis for understanding the conditions under which secondary education is provided in Nakivale Settlement.

The availability of adequate classrooms is particularly important in schools experiencing increasing student populations. Insufficient classroom space can result in overcrowding, limited teacher-student interaction and uncomfortable learning conditions. Similarly, laboratories and libraries provide important resources for practical learning, research and independent study, yet these facilities may be inadequate in resource-constrained schools. The World Bank (2020) notes that shortages of essential educational infrastructure can limit the capacity of schools to provide effective learning experiences. In refugee settlements, where educational resources may already be constrained, inadequate infrastructure can place additional pressure on existing facilities and teaching personnel.

Water, sanitation and hygiene facilities are also important dimensions of school infrastructure. Inadequate toilets, unreliable water supplies and limited menstrual hygiene facilities can affect students' comfort, health and regular participation in school, particularly among girls (Mugisha & Nakato, 2023). In addition, electricity, internet connectivity and computer facilities increasingly support teaching and learning in secondary schools. Schools without adequate ICT infrastructure may have limited opportunities to provide digital learning and develop students' technological skills (UNHCR, 2022; OECD, 2022).

The study aimed to assess the nature of existing school facilities in secondary schools in Nakivale Settlement, Isingiro District.

Methodology

Research design

The study adopted a descriptive case study design. This design was highly appropriate because it allowed for an in-depth, empirical investigation of how physical infrastructure related to student enrolment patterns within a specific institutional and geographical context. The descriptive component helped characterize the state of school infrastructure and enrolment figures, while the case study approach provided rich, contextual insights from multiple stakeholders directly involved in school administration and resource allocation. Both quantitative and qualitative approaches were applied to enhance triangulation, allowing

statistical trends in school facilities and enrolment data to be enriched by qualitative narratives, thereby strengthening the validity of the findings.

Area of study

The study was conducted within selected secondary schools in Nakivale Refugee Settlement, located in Isingiro District, Southwestern Uganda. Established in 1958, Nakivale is one of Uganda's oldest and largest refugee settlements, hosting a highly diverse population of refugees from countries such as the Democratic Republic of Congo, Rwanda, Burundi, Somalia, and South Sudan. This environment provided a critical setting for exploring how physical infrastructure accommodated an ever-growing, multicultural student population, and how resource constraints or infrastructural gaps affected secondary school enrolment in a humanitarian context. The secondary schools included Nakivale Secondary School, Rubondo Community Secondary School, and WIMA School because they were secondary schools located within the refugee settlement and were accessible for the study.

Study population

The study population comprised individuals who directly interacted with, managed, or were affected by school physical facilities, as well as institutional stakeholders responsible for enrolment data and education service delivery. These included secondary school students, teachers, head teachers, and key education officers from the Office of the Prime Minister (OPM) and UNHCR. Students and teachers were targeted to provide first-hand information on the adequacy, safety, and usability of school physical facilities, while head teachers and education officers were engaged to provide administrative and policy-level perspectives on infrastructure development, school capacity, and enrolment management systems. NGO/UNHCR education officers and officers from the OPM were included to provide information because they were responsible for refugee-related education and support services in the country. Across the selected secondary schools and relevant education institutions, the total target population was 705 respondents.

Sample size

The sample size was determined using the Krejcie and Morgan (1970) table for known populations. For a target population of 545 accessible respondents across the selected secondary schools, the recommended sample size was 274 respondents. The distribution was strategically structured to balance institutional data with the day-to-day users of the school facilities.

Table 1: Target population, sample size, and sampling techniques

Respondent Group	Target Population	Sample Size	Sampling Technique
Head Teachers	3	3	Purposive
Students	480	214	Simple Random Sampling
District Education Officer - Isingiro	1	1	Purposive Sampling
NGO/UNHCR Educational officers	2	2	Purposive Sampling
Officers from the office of prime minister	2	2	Purposive Sampling
Teachers	45	40	Simple Random Sampling
BOG	12	12	Purposive sampling
Total	545	274	

Records from Office of Prime minister

Inclusion and exclusion criteria

Inclusion criteria

Students in s.4, s.5 and .s.6
 Teachers in those three secondary schools
 Students with two years in those schools
 Students above 18 years

Exclusion criteria

Exclusion these who are not in those class of s.4.s.5 and s.6
 Those who don't have two years in the school
 Teachers outsidess the those three schools

Sampling techniques

Purposive sampling

Purposive sampling was used to select Head Teachers, key education officers from the Office of the Prime Minister (OPM), NGO/UNHCR education officers, Boards of Governors (BOG), and the District Education Officer. These respondents were deliberately selected because of their positions, experience, and knowledge regarding the availability and condition of physical school facilities, education management, and student enrolment trends in secondary schools within Nakivale Settlement. Their insights provided valuable information relevant to the objectives of the study.

Simple random sampling

Simple random sampling was employed to select students and teachers from the participating secondary schools. This

technique ensured that every student aged 18 years and above, who was in Senior Four, Senior Five, or Senior Six and had spent at least two years in the school, as well as every eligible teacher, had an equal opportunity of being

selected for the study. This minimized selection bias and enhanced the representativeness of the sample. The method was appropriate because students and teachers constituted relatively large and homogeneous groups whose views were essential in assessing the adequacy of physical school facilities and their influence on student enrolment.

Data sources

Data were collected from both primary and secondary sources.

Primary data

Primary data were sourced directly from the field through structured questionnaires and semi-structured interviews. The data captured the experiences and perceptions of students and teachers regarding how the school environment affected daily attendance and initial enrolment.

Secondary data

Secondary data were obtained from school admission books, termly enrolment registers, facility inventory logs, and Ministry of Education and Sports (MoES) standards on school infrastructure.

Data collection methods

Data collection methods referred to the approaches used by the researcher to obtain information from respondents regarding physical school facilities and students' enrolment in secondary schools in Nakivale Settlement, Isingiro

District. The study employed both quantitative and qualitative data collection methods to obtain comprehensive and reliable information.

Structured questionnaire method

Page | 4 Structured questionnaires were used to collect quantitative data from students and teachers. This method was appropriate because it enabled the researcher to gather information from a large number of respondents within a relatively short period. The questionnaires focused on respondents' perceptions regarding the adequacy, accessibility, safety, and condition of school facilities such as classrooms, libraries, laboratories, sanitation facilities, furniture, and playgrounds, as well as their influence on students' enrolment.

Interview method

The interview method was used to collect qualitative data from key informants, including head teachers and the District Education Officer. Interviews enabled the researcher to obtain detailed information on the availability of school facilities, challenges affecting enrolment, funding constraints, and strategies adopted to improve access to secondary education.

Observation method

The researcher conducted non-participant observations in the selected schools using an observation checklist. During school visits, the researcher observed and recorded the nature and condition of physical school facilities.

The observation method provided firsthand information and enabled the researcher to verify and complement data obtained through questionnaires and interviews, thereby improving the validity of the study findings.

Documentary review

The researcher used a documentary review method to collect relevant data by examining existing school records. The researcher reviewed student registers and admission records maintained in the head teachers' offices. These documents provided information about students' enrolment, admission, attendance, and other relevant details required for the study. The information obtained from the documents was recorded using a documentary review checklist and was used to supplement data collected through other methods.

Data collection instruments

Data collection instruments were tools used by the researcher to gather information from respondents.

Structured questionnaire

A structured questionnaire was administered to students and teachers. The questionnaire consisted mainly of closed-ended questions arranged according to the study objectives. The instrument enabled respondents to provide standardized responses concerning the status of physical school facilities and their influence on students' enrolment. The questionnaire was suitable because it facilitated easy administration, data coding, and statistical analysis.

Interview guide

An interview guide containing semi-structured questions was used during interviews with key informants. The guide provided flexibility for probing and seeking clarification on issues related to school infrastructure, enrolment trends, policy implementation, community participation, and challenges affecting access to secondary education in Nakivale Settlement. The interview guide helped generate rich and detailed qualitative data that could not easily be obtained through questionnaires.

Documentary checklist

The researcher reviewed relevant school documents, including student admission records, attendance registers, and student files maintained by the head teachers, to obtain accurate information about student enrolment, attendance, and admission status.

Observation checklist

An observation checklist was used to systematically record information on the availability, condition, and adequacy of physical school facilities relevant to the study. The researcher observed facilities such as classrooms, sanitation facilities, water sources, furniture, and other essential school infrastructure to supplement information obtained through other data collection methods.

Data collection procedure

The researcher obtained ethical clearance from the Research and Ethics Committee (REC-BSU) and sought clearance from the Office of the Prime Minister to ensure that the study met the required ethical standards. Upon receiving academic clearance, the researcher sought research entry approvals from the District Education Officer and the

respective head teachers of the selected secondary schools. Pre-visits were made to the target schools to establish rapport and map out the facility layout. Questionnaires were hand-delivered to teachers and students during designated free periods or administrative hours. Interviews were scheduled at the convenience of the administrators to minimize disruption to school routines. Field observations were carried out alongside school utilities staff. Responses were recorded through written notes and audio recordings.

Validity and reliability of research instruments

Validity

Content validity was established by consulting research supervisors and experts in educational planning to evaluate whether the questionnaire and interview items accurately measured infrastructure indicators and enrolment variables. A pilot study was conducted in a secondary school in a neighbouring sub-county outside Nakivale Settlement to identify and correct any ambiguous or poorly structured items.

Reliability

The reliability of the quantitative instruments was determined using Cronbach's alpha coefficient for internal consistency, aiming for a threshold score greater than or equal to 0.70. For qualitative instruments, dependability was maintained through standardized interview protocols, consistent observation checklists, and peer debriefing.

Data analysis

Quantitative analysis

Cleaned data from the structured questionnaires were coded and entered into SPSS. Descriptive statistics such as frequencies, percentages, mean scores, and standard

deviations were generated to illustrate the state of school infrastructure. Spearman's rank correlation coefficient was used to examine the relationship between physical school facilities and students' enrolment. Spearman's rank correlation was appropriate because it measured relationships between ordinal or ranked data and did not require the data to follow a normal distribution.

Qualitative analysis

Audio data from the interviews were translated, transcribed, and analyzed using thematic analysis based on ATLAS.ti. The researcher carefully read the transcripts to identify recurring patterns and codes directly linking facility shortages or improvements to student enrolment behaviours, such as "overcrowding deterrents," "sanitation barriers for female students," and "laboratory resource gaps." The final data were integrated during interpretation, using descriptive data and qualitative quotations to explain, validate, and contextualize the quantitative infrastructural statistics.

Ethical considerations

Given that the research was conducted within a vulnerable refugee population and involved institutional settings, strict ethical protocols were maintained. Written or verbal informed consent was obtained from adult participants, and official institutional clearance was secured from school heads. For minor students, assent was obtained alongside parental or guardian consent. Participants were explicitly informed that their involvement was completely voluntary and would not affect their status, employment, or access to school resources. Complete anonymity and confidentiality were guaranteed through the use of codes or pseudonyms for individual participants and the participating secondary schools.

Results

Response rate

Table 2: Detailed response rate by category of respondents

Category	Distributed	Returned	Not Returned	Return Rate %
Teachers	40	35	5	87.5
Students	214	185	29	86.4
Total	254	220	34	86.6

Table 2 shows that out of 40 questionnaires distributed to teachers, 35 were filled and returned representing 87.5%, while 5 were never returned. For students, out of 214 questionnaires distributed, 185 were returned representing 86.4% and 29 were never returned. This indicates balanced participation from both categories and the data collected is therefore representative and free from significant non-response bias.

Demographic information of respondents

This section presents the demographic characteristics of respondents to establish the authenticity of participants and contextualize the findings.

Demographic information of students

Gender of student respondents

Table 3: Gender of student respondents

Gender	Frequency	Percent
Male	105	56.8
Female	80	43.2
Total	185	100.0

Source: Field data 2026

pattern in secondary schools in Nakivale settlement where boys tend to enrol more than girls.

Out of 185 students who returned questionnaires, 105 (56.8%) were male and 80 (43.2%) were female. This shows that both genders were fairly represented, although males were slightly more, which reflects the general enrolment

Age of students respondents

Table 4: Age of Student Respondents

Age (years)	Frequency	Percent
18-25	185	100.0
Total	185	100.0

Source: Field data 2026

This age group is capable of assessing the state of school facilities and how they influence enrolment decisions.

All student respondents were within the 18-25 age bracket, which is expected as the study targeted Senior Four, Senior Five and Senior Six students who are mostly young adults.

Class of Student Respondents

Table 5: Class of Student Respondents

Class	Frequency	Percent
Senior Four	72	38.9
Senior Five	65	35.1
Senior Six	48	26.0
Total	185	100.0

Source: Field data 2025

Table 5 shows that 38.9% were in Senior Four, 35.1% in Senior Five and 26.0% in Senior Six. The distribution across the three classes ensures that views were obtained

from students at different levels of secondary education in the settlement.

Demographic information of teachers

Age of teacher respondents

Table 6: Age of Teacher Respondents

Age (years)	Frequency	Percent
Below 30	8	22.9
30-39	15	42.9
40-49	9	25.7
50 and above	3	8.5
Total	35	100.0

Source: Field data 2026

The majority of teachers (42.9%) were aged 30-39 years, followed by 25.7% aged 40-49 years. This indicates that

most teachers in Nakivale secondary schools are in their active productive years with sufficient experience to comment on school facilities.

Years of service of teacher respondents

Table 7: Years of Service of Teacher Respondents

Years of Service	Frequency	Percent
Below one year	6	17.1
1-2 years	10	28.6
3-4 years	12	34.3
5 years and above	7	20.0
Total	35	100.0

Source: Field data 2026

Most teachers (34.3%) had served for 3-4 years, 28.6% for 1-2 years, and 20.0% for 5 years and above. This shows that the majority had stayed long enough in Nakivale settlement to understand the trends in facilities and enrolment.

The nature of physical school facilities in secondary schools in nakivale settlement

The first objective sought to examine the nature of physical school facilities. Respondents rated 10 statements on a 5-point Likert scale where 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree. Results for the 220 respondents are presented below.

Table 8: Nature of physical school facilities (n=220)

Statement	SD %	D %	N %	A %	SA %	Mean	Std Dev
School facilities in Nakivale secondary schools face significant infrastructural challenges.	2	5	8	45	40	4.16	0.89
Schools have inadequate teaching and learning materials such as textbooks and laboratory equipment.	3	6	10	48	33	4.02	0.95
School facilities are inadequate for the number of enrolled students, causing overcrowding and safety concerns.	4	7	12	42	35	3.97	1.04
Many schools have shortages of qualified and trained teachers.	5	9	15	38	33	3.85	1.11
Inadequate infrastructure limits extracurricular activities and vocational training.	3	8	14	40	35	3.96	1.03
Schools have inadequate water and sanitation facilities, affecting students' health and attendance.	2	4	9	46	39	4.16	0.88
Schools have limited access to modern technological and ICT facilities.	1	3	7	39	50	4.34	0.82
Security challenges affect the safety and well-being of students and staff.	4	10	18	36	32	3.82	1.12
School infrastructure is deteriorating due to inadequate funding and maintenance.	2	6	11	44	37	4.08	0.93
Some schools lack adequate accommodation and boarding facilities for students.	3	5	10	43	39	4.10	0.96
Overall Mean						4.05	

Source: Field data 2026

Table 8 indicates that respondents generally agreed that physical facilities in Nakivale settlement secondary schools are inadequate. The highest rated challenge was limited access to modern technological and ICT facilities (Mean =

4.34), followed by inadequate water and sanitation and general infrastructural challenges (both Mean = 4.16). This implies that most schools operate without computer laboratories, internet connectivity and adequate WASH facilities, which are critical in a refugee settlement context.

Respondents also agreed that schools have inadequate teaching and learning materials (Mean=4.02), deteriorating infrastructure due to inadequate funding (Mean=4.08) and lack of accommodation facilities (Mean=4.10). The overall mean of 4.05 which lies in the Agree range confirms that the nature of physical facilities in Nakivale secondary schools is poor and characterized by overcrowding, shortage of materials and inadequate support facilities.

During an interview, the Head Teacher reported A that,

“The classrooms in our school are available, but they are not fully adequate for the current number of students. Some classrooms are overcrowded, especially in Senior One and Senior Two where enrolment is usually high. The condition

of some classrooms is fair, but there are also classrooms that need renovation, particularly the floors, windows, doors, and roofs. Because of the large number of students, some classes have to accommodate more learners than the recommended number, which affects effective teaching and learning”.

During an interview, the BoG member A explained that,

“The school has some important learning facilities, but they are not sufficient. We have laboratories, although the available equipment and materials are limited compared to the number of students. The library is also available, but it does not have enough textbooks and reference materials for all learners. Instructional materials such as textbooks, maps, science equipment, and other teaching aids are sometimes inadequate. Teachers therefore have to improvise or share the available materials among students”.

During the observation, “it was established that the school had classrooms that were being used to accommodate the enrolled students. The classrooms were generally functional and provided the necessary space for teaching and learning activities. However, the adequacy of the classrooms in relation to the increasing number of students was also considered. Some classrooms appeared relatively congested during learning sessions, suggesting that the available classroom space had to be carefully managed to

accommodate the growing school population. The observation further showed that the classrooms had basic facilities such as desks, chairs, chalkboards, and teaching spaces, although the condition and availability of these facilities varied from one classroom to another”.

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The observation further showed that , “*the school had several essential facilities, including classrooms, toilets, a library or reading space, laboratory facilities, and staff working spaces. These facilities were physically present and were being used to support the daily operations of the school. The toilets were available for learners and staff, although their condition and cleanliness required regular attention. The laboratory facilities were also observed, indicating that the school had some capacity to support practical learning. Staff rooms and other administrative spaces were present and provided working areas for teachers and school administrators. Overall, the availability of these facilities demonstrated that the school had established basic infrastructure to support teaching, learning, and administration”.*

During the observation, “*attention was given to the amount of space available, cleanliness, safety, and the general maintenance of the school facilities. The school compound and major facilities were generally maintained to support normal school activities. Classrooms had adequate working space, although some areas appeared to experience pressure due to the number of learners. The cleanliness of classrooms and other facilities was also observed, particularly the condition of floors, walls, windows, desks, and sanitation facilities. Some facilities required continued maintenance and improvement to ensure that they remained safe and suitable for learners and staff. The observation therefore indicated that while the school had functional facilities, regular maintenance and improvement were important for maintaining a conducive learning environment”.*

Discussion

The study established that the nature of physical school facilities in Nakivale settlement is poor and characterized by significant infrastructural challenges. The overall mean on a 5-point Likert scale which lies in the Agree range confirms that respondents generally agreed that facilities are inadequate.

The most critical challenge was limited access to modern technological and ICT facilities with the highest mean score .This implies that most schools operate without computer laboratories, internet connectivity and multimedia projectors. This finding is consistent with UNHCR (2022) and OECD (2022) who observed that the digital divide creates substantial barriers to implementing e-learning and

deprives refugee students of critical digital literacy skills. It also explains the low influence of digital learning on enrolment found in objective two.

Respondents also strongly agreed that schools face significant infrastructural challenges in general, inadequate water and sanitation facilities, and lack of accommodation and boarding facilities. These findings resonate with Mugisha & Nakato (2023) who argued that poor sanitation, including insufficient latrines and lack of menstrual hygiene facilities, creates health risks and discourages regular attendance especially among female students. Similarly, Kato et al. (2022) and Nsubuga et al. (2022) noted that the transient nature of refugee populations combined with long distances makes lack of boarding a major cause of absenteeism and dropout, particularly for girls.

Other inadequacies confirmed include inadequate teaching and learning materials such as textbooks and laboratory equipment, deteriorating infrastructure due to inadequate funding and maintenance, overcrowding due to facilities being inadequate for enrolled numbers, and limited spaces for extracurricular and vocational training. These are in line with Kizza et al. (2021), World Bank (2020) and Ochieng & Mwangi (2022) who reported that many schools in refugee settlements operate in makeshift or under-resourced environments, lacking adequate classrooms, laboratories and libraries, which hinders a safe and conducive learning environment. The shortage of qualified teachers and security challenges due to inadequate fencing and lighting, further compound the problem, as earlier observed by Nakato & Nsubuga (2023) and Betts & Collier (2017) that teachers operate with limited resources in overcrowded classrooms and insecure environments, affecting quality and retention.

Conclusion

The study concludes that physical school facilities in secondary schools in Nakivale settlement are inadequate and characterized by overcrowding, inadequate WASH facilities, lack of ICT infrastructure, shortage of learning materials, deteriorating structures, and limited accommodation and security. The overall mean confirms the severity of these infrastructural challenges.

Recommendation

The Office of the Prime Minister, Ministry of Education and Sports, UNHCR and implementing partners should prioritize infrastructural investment in Nakivale secondary schools, specifically construction of additional classrooms to reduce overcrowding, WASH facilities including menstrual hygiene management facilities for girls, computer laboratories with internet connectivity, and boarding facilities to address long distances.

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List of abbreviations

ATLAS.ti- ATLAS.ti qualitative data analysis software

ICT-Information and Communication Technology

NGO- Non-Governmental Organization

OPM- Office of the Prime Minister

REC-BSU- Research and Ethics Committee, Bishop Stuart University

SPSS- Statistical Package for the Social Sciences

UNHCR- United Nations High Commissioner for Refugees

WASH- Water, Sanitation and Hygiene

Source of funding

The study received no external funding.

Conflict of interest

The authors declare no conflict of interest

Data availability

Data is available upon request from the author

Author contributions

PM: conceptualization, methodology, investigation, writing original draft.

EB: data curation, validation, supervision.

AK: supervision, validation

Informed consent

Written informed consent was obtained from all participants prior to their inclusion in the study. Participants were informed about the purpose of the study, procedures involved, potential risks and benefits, and their right to withdraw at any time without penalty.

Author biography

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