STUDY PROTOCOL

Improving struggling medical and nursing students' subjective vitality, school engagement and academic performance through a peer mentorship intervention programme: an intervention protocol

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Abstract

Background The undergraduate medical training programme is demanding and rigorous. This underlines the importance of a peer mentorship strategy to improve the well-being, self-determination, school connectedness, and performance of struggling medical and nursing students. This study is aimed at identifying struggling medical and nursing students using two cumulative continuous assessment test (CAT) scores, assess their subjective vitality and school engagement and evaluate the impact of the peer mentorship intervention on them.

Methods The study will adopt a mixed-methods approach and will be conducted in the medical colleges of Nnamdi Azikiwe University, Awka, Nigeria, and the University of Rwanda. Three instruments will be used: The subjective Vitality Scale (SVS), the University Student Engagement Inventory (USEI), and the academic records of the students before and after the commencement of the intervention programme. The consenting least-performing medical and nursing students identified by their low CAT scores (below 45%) in basic medical sciences will be selected for study in each institution. The outcome measures will include students' CAT scores, subjective vitality, and school engagement scores. The data will be analysed both quantitatively and qualitatively. Thematic content analysis will be adopted in the analysis of the responses generated from the focus group discussion. The mean ± standard deviation or median and interquartile range statistic will be adopted for the quantitative data.

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Discussion Given the paucity of data on struggling medical and nursing students in Nigeria and Rwanda, this research was designed to help in exploring evidence-based interventions to improve and prevent poor subjective well-being of struggling students. The study is expected to fill these knowledge gaps. Trial registration: Pan African Clinical Trial registry, PACTR202405546896613, registration date: 27th May, 2024. This proposal has been supported by grant 1R25TW011217 from the US National Institutes of Health (NIH)/Fogarty International Center (FIC) which also includes co-funds from the U.S. Department of State's Office of the U.S. Global AIDS Coordinator and Health Diplomacy (S/GAC) and the President's Emergency Plan for AIDS Relief (PEPFAR) to the African Forum for Research and Education in Health (AFREhealth). The Grant Principal Investigators are Profs. Nelson K.Sewankambo (contact PI), Prisca Adejumo, Jean Bisimwa Nachega, Fatima Suleman.

Keywords AFREhealth, Academic performance, Medical students, Nursing students, Subjective vitality

Introduction

The undergraduate medical training programme is demanding and rigorous. As a result, several students struggle with their studies. For example, a study in Nigeria revealed that 45.7% of medical graduates repeated at least one examination during their studies, while 26.8% of graduates reported repeating more than one examination during their studies [1]. A six-year analysis from 2015 to 2020 indicated an average dropout rate of 11.7% for medical students has been reported in Nigeria which has been linked to myriads of factors including disrupted academic programmes, a lack of students' welfare, low motivation, traditional methods of instruction and weak academic abilities [2]. Similarly, Rwanda is remarked to be facing a shortage of trained medical practitioners given that Rwanda has only three medical schools [3], and as many as 54% of Rwandan medical students reported being fairly or severely stressed [4]. Rwandan Medical students are not intrinsically motivated to pursue their career [5] negatively impacting their performances. Indeed, the academic failure of some African medical students adds to the shortage of medical personnel.

Struggling medical students are underperforming because of a specific affective, cognitive, structural, or an interpersonal difficulty [6, 7]. In low and middle-income nations of Africa such as Nigeria and Rwanda, the medical degree is not only viewed as a career but as an opportunity for social status advancement. This mentality can create additional pressure on students [8]. Consequently, about one-third of medical students suffer from depression, a value which is above the non-medical students' population (22% women, 19% men) and much higher than the general population (3.9–6.6%) [9]. Many studies have demonstrated that suicide and suicidal behaviours are high among medical students with as much as 27.3%, 8.9%, and 3.6% of medical students reporting lifetime prevalence rates of suicidal thoughts, planning and attempts respectively [10]. This potentially reduces the subjective vitality and school engagement of these students. More importantly, students' academic performance has been linked to their subjectivity and school engagement indicating that students who are high flyers are likely to have better subjective well-being and school connectedness [11].

Enhancing the vitality, school engagement, and academic achievements of struggling medical students necessitates a shift from traditional teacher-centred pedagogy towards a more student-centred approach, especially considering the limited support and engaging pedagogical strategies in many medical schools [12]. While peer mentoring has shown positive effects on learning outcomes and psychosocial well-being across diverse student populations in medical education, research evidence on its influence specifically on struggling medical and nursing students' outcomes in Nigeria and Rwanda remains scarce [13]. Therefore, addressing the issue of underperformance and the psychological well-being of struggling medical and nursing students is critical to achieving the United Nations (UN) Sustainable Development Goal 3, which is a policy priority for health institutions. To mitigate the risk of poor subjective well-being and high dropout rates among these students, institutions should establish early identification systems for struggling students and implement peer mentorship programmes tailored to their needs. Unlike formal mentoring programmes, peer mentorship initiatives are characterized by longitudinal, context-specific, and goal-sensitive assessments, responding directly to institutional needs [14]. Furthermore, the proposed study distinguishes itself from previous mentorship studies that typically used near-peer mentoring, where mentors are one or more years ahead of the mentees academically [14, 15]. Instead, our study introduces an innovative approach by pairing mentors and mentees from the same class level. Our choice of same-class peer-mentorship is anchored on the evidence that it could offer opportunity for shared experience, stronger bonding, immediate feedback and accessibility since mentees report more career and psychosocial mentoring from younger than from older mentors [16]. Our objective is to enhance the

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well-being, autonomy, school engagement, and academic performance of struggling medical students through peer mentorship interventions within the same class level, aiming to cultivate healthier and more proficient healthcare practitioners. This study seeks to identify struggling medical and nursing students and evaluate their performance at Nnamdi Azikiwe University and the University of Rwanda using two cumulative continuous assessment test (CAT) scores.

Methods
Study design
Our study is an intervention study. It will adopt a mixed-methods study design. The study will also employ pretest- posttest control group design. The pretest–posttest control group design is a common experimental design used in research to evaluate the effectiveness of an intervention. In this design, participants are simple randomly assigned to one of two or more groups. One group receives the intervention, while the other group, known as the control group, does not receive the intervention and serves as a baseline for comparison. We intend to control for the effect of gender, age, and average income of guardian or parent. The intervention programme will last for at least four months.

1. Pretest: Before the intervention is administered, both the experimental peer-mentorship and control groups will be assessed on the outcome variable(s) of interest. This initial assessment, or pretest, will provide a baseline measure of the participants' characteristics or behaviors before the peer-mentorship intervention.
2. Intervention: The experimental group will receive the peer-mentorship intervention being studied.
3. Posttest: After the intervention has been administered, both the experimental and control groups will be assessed again on the same outcome variable(s) as in the pretest. This posttest will allow researchers to determine whether any changes observed in the experimental group are due to the intervention or simply due to chance or other factors.

By comparing the pretest and posttest scores of the experimental group with those of the control group, researchers can assess whether the intervention had a significant impact on the outcome variable(s) of interest. The presence of a control group helps to control for extraneous variables and increases the validity of the study by providing a baseline against which the effects of the intervention can be compared. By comparing the pretest and posttest scores of the experimental group with those of the control group, researchers can assess

whether the intervention had a significant impact on the outcome variable(s) of interest. The presence of a control group will help to control for extraneous variables and increases the validity of the study by providing a baseline against which the effects of the intervention can be compared.

Study population
The study will be conducted among preclinical medical and nursing students in Nnamdi Azikiwe University, Awka, Nigeria and the University of Rwanda, Kigali, Rwanda.

Study site
College of Health Sciences and Technology, Nnamdi Azikiwe University, Okofia, Nnewi Campus, Nigeria and at the College of Medicine and Health Sciences, University of Rwanda, Huye campus, Kigali, Rwanda.

Eligibility criteria
This will include all consenting struggling preclinical medical and nursing students whose CAT scores are less than 45% in the two selected universities as mentees whereas high performing medical and nursing students with good communication skills and willing to participate will be selected as peer mentors in appropriate ratio to the identified struggling students.

Sample size determination
The minimum sample size to determine a difference in the proportions of participants with poor academic performance between struggling participants and non-struggling participants (control group) will be significant at the 5% level and an 80% chance of detecting the difference (power) and will be calculated using the formula for comparison of two proportions by Bolarinwa [17]:

$$ n = \frac{(u + V)^2 \{p_1(100 - p_1) + p_2(100 - p_2)\}}{(p_1 - p_2)^2} $$

Where
n = the desired minimum sample size for each group.
u = One-sided percentage point of the normal distribution, corresponding to 100% minus power. Thus where P is 80%, then U = 0.84
v = Percentage point of the normal distribution, corresponding to the two sided significance level. Thus at 5% significance level V = 1.96
p_1 = the estimated percentage of an attribute that is present in population 1 (struggling students)
p_2 = the estimated percentage of an attribute that is present in population 2 (control/non struggling students)

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At 95% confidence level, with 80% power, v = 1.96 and u = 0.84

A study by Okoye et al. [1] in Nigeria found that 26.8% of medical graduates in the country had repeated more than one examination during their medical school years due to poor academic performance, while this was reported by estimated 0.5% in the control group. Then, $p_1 = 26.8\%$ and $p_2 = 0.5\%$

$$n = \frac{(0.84 + 1.96)^2 \{26.8(100 - 26.8) + 0.5(100 - 0.5)\}}{(26.8 - 0.5)^2}$$

Therefore

$$n = \frac{(2.80)^2 X (1,033.11 + 99)}{(10.70)^2}$$
$$n = 22.77 = 23$$

Hence, the calculated minimum sample size for each group was 23

To account for attrition:

New sample size N^1 was

$$N^1 = \text{Calculated sample } X \frac{100}{100 - x}$$

Where $x = 20\%$ attrition

$$N^1 = 23x \frac{100}{80}$$
$$N^1 = 23 \times 1.25$$
$$N^1 = 28.8 = 29 \text{ subjects for each group}$$

Hence; a total of 58 subjects will be needed as the minimum sample size for the study i.e. 29 for the struggling student group and another 29 for the control group.

The study involves participants from two countries, and we aim to maintain proportional representation that reflects the distribution of medical and nursing students experiencing academic difficulties in each country. The sample size will be divided between the two countries based on the relative number of struggling students identified in each country during the initial phase of the study. This will ensure that the intervention's impact can be adequately assessed across both settings. The final allocation will be adjusted accordingly to maintain balance and ensure the study's findings are generalizable across both countries.

Since, it is a mixed method study, detailed sample size determination for the qualitative aspect of the study is not applicable, but researcher-determined [18]. For mixed method research, sample size will be decided as the minimum sample size required both for quantitative and qualitative research. In qualitative research, sample size is based on the 'saturation' of information [18]. For example, while conducting in-depth interviews or focus group discussions (FGDs), one stops conducting more interviews or FGDs at a point when new information is no longer emerging, that is, 'saturation' has been achieved [18]. In the Data Collection Procedure, 12 participants will be required in interviews [19] and 6 to 12 will be required for focus groups [20, 21]. Therefore, the minimum sample size for the qualitative research design will be 15.

Sampling technique

Convenience sampling approach. All available medical and nursing students will be assessed for struggling status. Preclinical medical and nursing students will be recruited as they present in their various classes and campuses in Nnamdi Azikiwe University, Nnewi Campus, Nigeria and College of Medicine and Health Sciences, University of Rwanda, Rwanda until the sample size is reached.

Intervention

Peer mentoring intervention programme will be administered to the selected struggling medical and nursing students with low CAT scores (less than 45%). Trained researchers will train the peer mentors in conducting the peer-mentoring programme in the campus. The intervention will focus on enhancing the well-being, autonomy, school engagement, and academic performance of struggling medical students through peer mentorship interventions within the same class level, aiming to cultivate healthier and more proficient healthcare practitioners. The peer-mentorship programme aims at improving students' learning outcomes and well-being by collaboration. Learning experiences will be structured to allow non-hierarchical, reciprocal relationship. However, peer mentors will asked to refer mentees' needs they could not handle to the lead researchers in each country.

Control group

A control group consisting of non-struggling medical and nursing students with CAT between 45 and 69% with similar characteristics will be identified from the class and will not be not be receiving the Peer-mentoring intervention programme. They will undergo the same assessments at baseline and follow-up without receiving the intervention, serving as a comparison to evaluate the effectiveness of peer mentorship programme.

Procedures involved
Research phases
We will adopt a mixed-method approach to conduct the study. The explanatory sequential design will be particularly adopted. The first phase of the study will constitute the quantitative research design. A quasi-intervention group pre-test post-test experimental research design will be adopted to determine the impacts of the peer

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mentorship programme on medical and nursing students' subjective vitality, school engagement and academic achievement. The second phase of the study which will come after the intervention sessions have been completed will consist of the collection of qualitative data using the focus group discussion targeted at understanding how the peer mentorship programme was helpful to them, which aspects of their lives were impacted more, the challenges they faced during the programme, and how the programme could be improved upon.

Participants
Our sample size will constitute struggling medical students from Nigeria and Rwanda. Using a multistage sampling procedure, first, two medical schools from each country will be randomly sampled. Second, preclinical struggling medical and nursing students defined as those whose continuous assessment Test (CAT) scores are less than 45% and who agree that they are underperforming in the studies will be sampled using convenience sampling technique. Third, the purposive sampling technique will be used to recruit high performing preclinical medical students who consented to participate in the study as mentors. Thereafter, preclinical struggling mentees will be grouped into mentoring groups using simple random technique. Peer mentors will be informed not to be involved in mentoring any other student outside the ones allocated to them.

Instruments for data collection
The study will adopt a mixed-methods approach. Three instruments will be adopted for data collection. As shown in Appendix 1, the first instrument will be the Subjective Vitality Scale (SVS) developed by Ryan and Frederick [22]. Though there are the state and trait dimensions of the scale, we will use only the state dimension which has been in practice by other researchers [23]. Originally, the reliability coefficient for SVS using Cronbach Alpha reliability index was 0.84. Other researchers have reported reliability coefficients ranging between 0.80 and 0.91 [23, 24]. The second instrument is the University Student Engagement Inventory (USEI) [25–27]. USEI is validated with university students from nine different countries and regions from Europe, North and South America, Africa, and Asia [28, 29] (Appendix 1). It contains 15 items. The scale revealed good psychometric properties indicating that it can be used transculturally. Previous studies demonstrated reliability coefficients of > 0.70 for all factors and > 0.8 for the total Scale [27]. The third instrument will be the academic records of the students before the commencement of the programme and after the programme. The consenting least-performing medical and nursing students identified by their low CAT scores (below 45%) in basic medical sciences will be selected for study in each institution. Based on anecdotal report, this below 45% threshold was based on internal institutional guidelines and practices specific to the participating institutions, where a score below 45% is commonly used to identify students at risk of poor academic performance.

Study outcome measures
Data on the number with struggling status, subjective vitality and school engagement of struggling medical and nursing students' scores.

Procedure for the peer mentorship programme, method of data collection and experimental procedure

Obtaining ethical approval, consent and identification of struggling students   Ethical approval will be obtained from the study institutions. Additionally, permission from the medical schools will be obtained. Assistant researchers from the faculties will be recruited and trained. The purpose of the study will be explained to the students. Thereafter, students' consent will be obtained, and the purpose of the study will be explained to them. The students' written informed consent will be obtained. Thereafter, researchers will review cumulative continuous assessment test (CAT) scores of the consenting medical and nursing students to identify those in the struggling category. The struggling students will be defined as those scoring lower than 45% in their CAT.

Selection of mentees and mentors   The researchers will select high-scoring students with at least 70% in CAT as mentors. The researchers will ensure mentors have demonstrated their consent, willingness, academic proficiency and possess qualities conducive to mentoring.

Blinded mentor–mentee assignment   The researchers will prepare opaque envelopes, each containing a piece of paper containing the name of a potential mentor. In a blinded pattern, have each struggling student randomly select an envelope. Each consenting struggling student will randomly select an envelope containing their potential mentor. The peers will be paired one on one, or at most a mentor will have two mentees.

Training of researchers   There will be a two-day training of trainers (researchers) workshop. This will consist of what they will pass down to the mentors and mentees.

Orientation and training   The researchers will conduct orientation sessions for both mentors and mentees separately, outlining programme objectives, expectations, and

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guidelines. Then peer mentors and mentees will have a two-day training seminar on the peer mentor–mentee relationship. This training will include etiquette in conversations, the roles of the peer mentor and those of the mentees, instructional procedures and modes for the programme, contents to be taught and limits of the mentor as well as the mentee. They will also provide training for mentors on effective mentoring strategies, active listening, communication skills, and confidentiality protocols. The researchers will emphasize the importance of maintaining professionalism and boundaries within the mentorship relationship. There will be mandatory training of mentors, which will include the monitoring of their work and involvement by asking them to keep a mentoring diary, and there will be supervision to maintain the quality of their mentorship. Mentors will be encouraged to contact the mentoring programme coordinator when they are not confident about the next steps to take.

Establishment of peer mentorship relationships/programme The researchers will facilitate an introductory meeting between mentors and mentees to foster rapport and establish goals. They will encourage mentees to communicate their academic challenges, goals, and expectations to their mentors. The mentor and mentees will set regular meeting schedules (online or physical) at least two times per week with each meeting lasting at least one hour for mentors and mentees to discuss academic progress, challenges, and strategies for improvement. There will be at least one face-to-face meeting per month. The frequency of contact or communication between the mentor and the mentee will depend solely on their needs [15, 21]. During the relationship, they will be discussing their notebooks, textbooks, clinical sessions or any other good material in discussed the class. The peer mentorship relationship will last for at least four months.

Implementation of peer mentorship intervention The researchers will incorporate structured activities and interventions into mentorship sessions to address specific academic concerns and enhance subjective vitality and school engagement. Additionally, the researchers will encourage mentors to provide academic support, guidance, and encouragement tailored to the individual needs of their mentees. The researchers will also monitor mentor–mentee interactions and provide ongoing support and guidance as needed.

Data collection The researchers will use mixed-methods approaches to collect data on subjective vitality, school engagement, and academic performance before and after the peer mentorship intervention. After the programme, the post-test scores will be collected. Then the post-intervention interview will be conducted including a focus group discussion (Appendix 2) [30–32]. We will follow the Tong et al.'s Consolidated Criteria for Reporting Qualitative Research (COREQ) in conducting the FGDs [33]. A validated FGD guide will be utilized to understand the experience of struggling mentees and their mentors with the formal mentoring programme. The FGD questions will be piloted with three struggling students. The guide will be finalized, and the data will be collected through FGDs within the context to reduce recall bias. The FGDs will be conducted by the two members of the research teams (one for each country) with specific guide from two members of the team with background knowledge in psychology. The two interviewers will be lecturers in the two medical schools. By so doing, the researchers would have built reasonable relationship with the students. Content analysis will be employed as theoretical framework to guide the study. Respondents who have taken part in the intervention programme will be selected using purposive sampling for the FGDs. The FGDs will be conducted physically within the university setting, and the prompts for the FGDs are attached in Appendix 2. FGDs will be audio recorded and transcribed accurately. It is expected that the FGDs will last for about an hour. Manual thematic analysis will be performed and consensus among all authors will be built regarding themes and subthemes. Supporting quotes from different respondents will be included in the data analysis. The researchers will also employ academic records to gather qualitative data on the impact of the intervention.

Evaluation and analysis The researchers will analyze collected data to evaluate the effectiveness of the peer mentorship intervention in improving academic performance, subjective vitality, and school engagement among struggling medical and nursing students. The researchers will compare pre-intervention and post-intervention outcomes to assess the magnitude of change and identify any significant trends or patterns. For the quantitative data, Fisher's exact test will be performed for categorical data, and the Student's t-test or Mann–Whitney U-test will be applied to continuous variables depending on their distribution.. Hypotheses will be tested at 0.05 level of significance. IBM SPSS version 26 will be used for the quantitative data analysis. The qualitative data will be analyzed using thematic content analysis. Data will be transcribed verbatim, and in vivo codes will be included. Researchers will read the transcripts severally, coding line-by-line to identify emerging concepts. The major emerging concepts, specifics will be grouped into subthemes and these subthemes will used to form themes.

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Documentation and reporting The researchers will document all aspects of the peer mentorship program, including participant demographics, mentor–mentee interactions, intervention activities, and outcomes. The researchers will prepare a comprehensive report outlining the protocol, implementation process, findings, and recommendations for future iterations or improvements of the programme.

Continuous improvement The researchers will solicit feedback from mentors, mentees, and stakeholders to identify strengths and areas for improvement in the peer mentorship program. The researchers will use feedback and evaluation findings to refine program protocols, training materials, and intervention strategies for subsequent implementations.

Expected results

We expect that the outcomes from the peer mentoring programme will include:

a. Increased learning outcomes of struggling medical and nursing students as measured by their scores in CAT

b. Enhanced subjective vitality of struggling medical and nursing students as will be measured through their scores in the Subjective Vitality Scale

c. Increased school engagement of struggling medical and nursing students which is expected to enhance students' intrinsic motivation to succeed academically and promote a greater sense of responsibility for their learning journey.

d. Improved capacities of struggling medical and nursing students to work in groups so as to enhance their learning outcomes.

Contribution to medical education, service delivery and inter-professional health research in Africa

This study will be in line with the African Forum for Research and Education in Health (AFREhealth) Strategic Priority 1 and will be instrumental in discovering vital areas for curricula adjustment especially connected to the psychological needs and wellbeing of medical and paramedical students. In addition, findings from this study may help medical educators encourage and implement peer mentorship support for struggling students and avoid inadvertently creating a tense learning environment that will contribute to medical students' stress.

Data management plan and statistical analysis

The gathered information will remain anonymous through the use of distinct identifiers. It will be inputted into a designated laptop secured with a password, with access restricted solely to the research team. The data will be analyzed both quantitatively and qualitatively. Thematic content analysis will be adopted in the analysis of the responses generated from the focus group discussion. The mean ± standard deviation or median and interquartile range statistic will be adopted for the quantitative data. Data will be analyzed using SPSS 26.0 IBM Corporation. Fisher's exact test will be performed for categorical data, and the Student's t-test or Mann–Whitney U-test will be applied to continuous variables depending on their distribution. A *p*-value of < 0.05 will be considered statistically significant. The data will collected separately in the two countries, and then compared to give a clearer view of the impact of the peer mentoring programme in the two countries.

Ethics statement

An ethical approval was obtained from Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria Research Ethics Committee with approval number NAUTH/CS/66/VOL.15/VER.3/337/2023/93 and the Institutional Review Board of the College of Medicine and Health Sciences, University of Rwanda: with approval number 108/CMHS IRB/2024. In addition, permissions will be obtained from the authorities of the selected tertiary institutions. An informed consent will be obtained from each study participant before the involvement in the study. The collected data will be kept confidential and accessed only by the research team member. The protocol was also registered with Pan African Clinical Trial Registry with Trial registration: PACTR202405546896613, registration date: 27th May, 2024.

Discussion

This study aims at improving struggling medical and nursing students' subjective vitality, school engagement and academic performance through a peer mentorship intervention programme. The motivation for this study is that it is observed that several students struggling with their studies, often have high levels of stress and burnout [34, 35]. A dropout rate of approximately 12% has also been reported in Nigeria, while nearly 19% has been reported in Rwanda [34, 35]. The study is expected to fill these knowledge gaps. Nigeria and Rwanda's efforts to support struggling medical and nursing students, in line with global initiatives, depend on the availability of sufficient and reliable data. This data must be derived from a well-designed and adequately powered study, utilising representative population samples to inform policy implementation.

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This study will involve medical and nursing students in both Nigeria and Rwanda, ensuring an equitable distribution of data for assessing struggling students in these fields. The findings will contribute to educational policy planning at both national and international levels. However, a current limitation within the educational systems of Nigeria and Rwanda is the limited application of diagnoses for struggling medical and nursing students [36]. The majority of the medical and nursing students being studied will likely benefit from the programme to restore their academic performance and reduce the risk of drop-out from school. The findings from this proposed research may be relevant, and may contribute to the existing body of knowledge on peer mentorship interventions in medical education, and may hold significant implications for health professional schools in Africa seeking to improve support mechanisms for struggling students [37]. Ultimately, this intervention programme may not only enhance the school connectedness and academic performance of struggling medical and nursing students but may also foster a culture of mutual support and collaboration within the medical school community [38]. However, the essence of the study will be to demonstrate whether there will be significant changes in the academic performance of the students following intervention [35].

A foremost strength of this study would be the few studies in Nigeria and Rwanda that will measure the academic performance among struggling medical and nursing students with the two-point assessment. Furthermore, authorization for the study will come from the Health Research Ethics Committee located at the institution of the study, which will implement the policy stress-free. Moreover, virtually all the investigators in this proposed study are members of faculty of the universities, which will also make translation to educational and health practice easy. However, an expected limitation of this study is the selection of this threshold for struggling student of score below 45%, which is based on internal institutional guidelines and practices specific to the participating institutions, where a score below 45% is commonly used to identify students at risk of poor academic performance.

Conclusion

The paucity of data on peer mentorship interventions among struggling medical and nursing students in Nigeria and Rwanda, coupled with the need for more medical and health professionals in Nigeria and Rwanda, make this study relevant and necessary. Struggling students in medical and nursing programs will be selected based on their CAT scores and be included in a peer mentorship programme. Due to the paucity of data on struggling medical and nursing students in Nigeria and Rwanda, this research will expectedly help in formulating evidence-based interventions to improve and prevent poor subjective well-being of struggling students and also reduce high failure or drop-out rates, as well as cater for the psychosocial well-being of them could be catered for. The study is expected to fill these knowledge gaps.

Abbreviations

AFREhealth	African Forum for Research and Education in Health
ANCOVA	Analysis of covariance
ASUU	Academic Staff Union of the Universities
CAT	Continuous assessment test
FGD	Focused group discussion
LMICs	Low and middle-income countries
NAU	Nnamdi Azikiwe University
NAUTH	Nnamdi Azikiwe University Teaching Hospital
NAUTHEC	Nnamdi Azikiwe University Teaching Hospital Ethics Committee
NIH	National Institutes of Health
SPSS	Statistical packages of social sciences
SVS	Subjective Vitality Scale
USEI	University Student Engagement Inventory

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12909-024-06137-z.

Supplementary Material 1.

Authors' contributions

GU E, DC I, KC N, U D, OI I, N S, NS D, SI O, LI E, OM O, KB O, JP N, M B, UK N, E T, VC A, EJ A, O O, and EO N were involved in the overall conceptual design and implementation of the project, and overall revision of the manuscript. GU E, DC I, KC N, LI E, NS D, EJ A, KC N, and U D were involved in the writing of this manuscript and overall revision. All the authors were involved in the revision of the manuscript. The authors read and approved the final manuscript.

Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

An ethical approval was obtained from Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria Research Ethics Committee with approval number NAUTH/CS/66/VOL.15/VER.3/337/2023/93 and the Institutional Review Board of the College of Medicine and Health Sciences, University of Rwanda: with approval number 108/CMHS IRB/2024. In addition, permissions will be obtained from the authorities of the selected tertiary institutions. An informed consent will be obtained from each study participant before the involvement in the study. The collected data will be kept confidential and accessed only by the research team member. The quasi-experimental Trial registration: Pan

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