

# Effectiveness of Structured Near Peer-Guided Mentorship Intervention in Improving Academic Performance and Mental Well-being among University Nursing Students: A Quasi-experimental Study

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## ABSTRACT

**Introduction:** The significance of mental health is becoming more widely recognised as it adds to quality of life. Mentoring relationships can enhance both professional and personal growth, which in turn can improve mental well-being.

**Aim:** To assess the prevalence of mental well-being and effectiveness of structured peer-guided mentorship in improving academic performance and mental well-being among undergraduate nursing students who need additional curricular support and have low mental well-being.

**Materials and Methods:** A quasi-experimental pre-post-interventional study was conducted at the Department of Physiology and Medical Education, Sri Siddhartha Institute of Nursing affiliated under Sri Siddhartha Academy of Higher Education (SSAHE), Agalakote, Tumkur, Karnataka, India, among 249 undergraduate nursing students between November 2022 to March 2023 to assess the prevalence of mental well-being by using Warwick Edinburg Mental Well-being Scale (WEMWBS) in English after validating it in current setting. Internal consistency was evaluated utilising Cronbach's alpha. Of these 249 students,

year I and II students had relatively lower mental well-being scores and were found in need of additional curricular support based on their formative assessments scores. A total of 80 students of year I and year II were selected who had formative assessment scores less than 50%. These students underwent near peer-guided mentoring for core competencies in their academic year. Paired t-test was used and data was analysed using IBM Statistical Package for Social Sciences (SPSS) statistics (version 26.0).

**Results:** Among undergraduate nursing students, it was demonstrated that low mental well-being scores was more common in years I and II relative to later years. The near peer-guided mentorship programme was associated with a statistically significant ( $p$ -value<0.001) at 5% level improvement in academic performance and mental well-being scores.

**Conclusion:** The nursing professionals need to be cared for their mental well-being in their earlier years of academic life with suitable educational interventions as they are affected by the transition phase at university. This will enable individuals to reach their full potential and achieve academic performance to their best.

**Keywords:** Academic performance, Curriculum development, Mental health, Nursing education, Peer group, Psychometrics, Undergraduate

## INTRODUCTION

The idea of mental well-being and how it affects every facet of human existence is gaining attention on a global scale [1]. Nursing students often experience stress from challenges that may be viewed as stressors throughout their education [2]. Research studies indicate that students experience higher stress from academic difficulties than from other elements, like personal life problems, connections with teachers, clinical practice, and professional identity [3-6]. Students faced challenges in the absence of appropriate and sufficient help throughout their nursing education [7,8]. Thereby, the need for organised assistance to help students succeed in their academic careers has grown dramatically [9].

Students sometimes turn to their peers for advice rather than their institutions to get through difficult times. Peer mentoring, commonly referred to as "peer assisted learning," is a student support method that has emerged because of this [7]. It has been observed that people with higher levels of education than the mentees are often used as peer mentors. Peer mentorship programmes in nursing foster professional development, increase social capital, and support academic achievement, yet students and faculty members continue to underutilise them [10].

There is limited information about the prevalence of mental well-being among nursing students in India and other developing nations compared to developed nations. Improved mental health have an impact over their academic performance and professional growth [2,11]. To assess the burden of mental health, this study has initially assessed its prevalence using a standardised tool after evaluating its validity and reliability to current setting. Even though research on peer mentorship in higher education is expanding, there are limited studies focussed on structured near peer-guided mentorship programme in nursing students which this study has taken over as its objective.

Hence, the study aimed to assess the prevalence of mental well-being among undergraduate nursing students and the objective was to study the effectiveness of structured peer-guided mentorship in improving academic performance and mental well-being.

## MATERIALS AND METHODS

This was a **quasi-experimental pre-post-interventional study** conducted at Sri Siddhartha Institute of Nursing affiliated under Sri Siddhartha Academy of Higher Education (SSAHE), Agalakote, Tumkur, Karnataka, India, among undergraduate nursing students. The study was carried out over a defined academic period for a

semester between November 2022 to March 2023, following approval from the Institutional Ethics Committee with approval number (IEC Approval No: SSMC/MED/IEC-168/October-2022).

**Sample size calculation:** The sample size was calculated to estimate the prevalence of mental stress among nursing students. With an expected prevalence ( $p$ ) of 0.85, obtained from the pilot study, a precision ( $d$ ) of 0.05, and a Z-value of 1.96 for 95% confidence interval, the minimum required sample size was computed using the formula:

$$\text{Formula } n = \frac{Z_{1-\alpha/2}^2 * p(1-p)}{d^2}$$

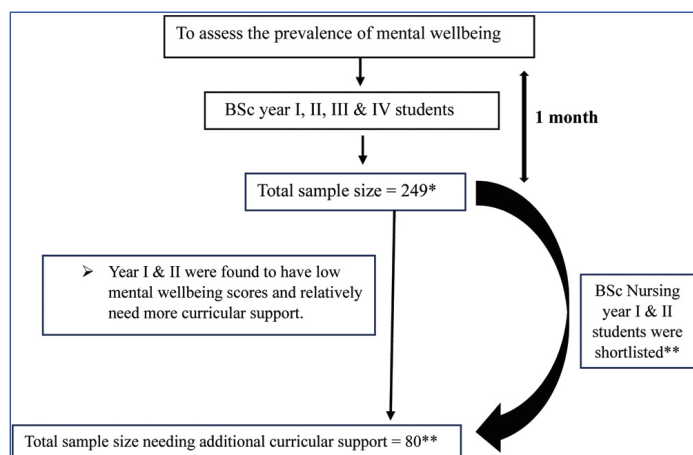
$$n = (1.96)^2 \times 0.85 \times (1-0.85) / (0.05)^2$$

$$= 195 \text{ nursing students}$$

To compensate for potential non response or incomplete data, 20% was added to the minimum sample size, resulting in a final sample size of 249 students.

The study population consisted of undergraduate B.Sc. Nursing students enrolled in the Institution across different academic years. A total of 249 nursing students were initially screened for academic performance and mental well-being.

Mental well-being was assessed using a validated questionnaire (WEMWBS) in English. Of these 249 students, year I and II students had relatively lower mental well-being scores than 3<sup>rd</sup> and final year. The academic performance was evaluated based on formative assessment scores. Based on predefined criteria by university regulations of SSAHE with formative assessment scores to be obtained with a minimum of 50%, first- and second-year nursing students with <50% of formative assessment scores were identified as Students Requiring Additional Curricular Support (SNACS). From this screened population, 80 students were classified as belonging to SNACS and were recruited into the intervention group [Table/Fig-1].



**[Table/Fig-1]:** Flow diagram showing selection of study participants, including initial screening ( $n=249$ ), identification of SNACS group ( $n=80$ ), and allocation to intervention.

\*Only for assessing the prevalence

\*\*To assess the outcome of the intervention- academic performance.

Note: The prevalence of the mental well-being was assessed among all the B.Sc nursing students from year I – year IV with study participants being 249 in number.

The intervention of near peer guided mentorship was implemented among students needing additional curricular support from year I and year II of B.Sc Nursing only. No students from year III and IV were part of intervention group and nor been selected as peer mentors.

#### Inclusion criteria:

- Undergraduate B.Sc. Nursing students enrolled in the institution;
- Students belonging to first and second academic years;
- Students identified as needing additional curricular support (SNACS) based on university guidelines:
  - Below-average performance in formative academic assessments (<50% as per the university guidelines);
  - Reduced mental well-being scores on screening (<50 as per the scale with median scores).
- Students who provided written informed consent;

- Students willing to participate in the entire duration of the mentorship programme.

#### Exclusion criteria:

- Final-year nursing students and interns;
- Students with regular academic performance not requiring additional curricular support;
- Students currently undergoing formal psychological or psychiatric treatment;
- Students absent during baseline or post-intervention assessments;
- Students unwilling to participate or who withdrew consent during the study.

#### Study Procedure

**Intervention:** Structured Near-Peer–Guided Mentorship Programme

Following enrollment, the intervention group i.e., the shortlisted SNACS group, underwent a structured near-peer–guided mentorship programme. Participants were oriented to the objectives and process of peer mentoring. Students were organised into small groups of 6-8 members, comprising six SNACS students and two peer mentors from the same academic year.

**Selection of peer mentors:** Peer mentors were selected from the same year students who were able to communicate with SNACS group and facilitate their learning. No students from year III and IV were part of intervention group and nor been selected as peer mentors.

These mentors (from same year of study participants) consistently obtained academic excellence in formative assessments (>70% score) and were trained and supervised by one subject-expert faculty each from their respective specialty and was of Assistant professor cadre affiliated to the same university. Faculty supervision focused on mentoring strategies, group dynamics, and implementation of predefined core academic competencies.

To ensure uniformity, two standardised academic topics per academic year were selected from the subjects of human physiology, community health nursing, communication and education technology and medical–surgical nursing. For each topic, session went through one week process; with one hour in each day for five days, thereby a total of five hours to provide sufficient time in learning process. At the end of the week, there was an assessment conducted to evaluate the achievement of expected outcomes in the covered topics. The mentorship sessions emphasised integration of theoretical concepts with clinical application. Learning objectives and standardised resource materials were provided to all groups.

Each mentorship cycle concluded with a weekly formative assessment, conducted using Multiple-Choice Questions (MCQs) and Short-Answer Questions (SAQs). The MCQ's were prepared to test the core competency in the selected topics with moderate to difficult level in achieving the expected outcomes and were drafted to assess the student's level of understanding and application of knowledge.

**Formative assessment to define SNACS group and assess the outcome of the intervention:** Maximum marks: 70, the pattern of questions was of MCQs:  $10 \times 1 = 10$ , Short essay:  $8 \times 5 = 40$  and short answers:  $10 \times 2 = 20$ . The MCQs used to assess the knowledge and comprehension, the short essay questions were asked to assess the concepts and application while the short answer questions to assess the rationale and application over the topics. Preintervention and postintervention scores were kept the same to maintain the standard and reduce the bias.

**Assessment of mental well-being**

Mental well-being was assessed using the WEMWBS [12]. Official permission to use the scale was obtained from the developer. Given

the limited validation of WEMWBS in the Indian nursing education context, the scale was evaluated for content validity, construct validity, acceptability (0.86) and internal consistency (0.889) in the current setting.

The WEMWBS consists of 14 positively worded items, scored on a 5-point Likert scale (1–5). Total scores range from 14 to 70, with higher scores indicating better mental well-being.

## Outcome Measures

### Primary outcomes:

- Change in academic performance (formative assessment scores);
- Change in mental well-being (WEMWBS scores).

### Secondary outcomes:

- Internal consistency and reliability of the WEMWBS in the study population.

## STATISTICAL ANALYSIS

Data analysis was conducted using IBM SPSS Statistics (version 26.0). Descriptive statistics were computed and presented as means and standard deviations for continuous variables. The impact of the intervention on mental well-being was assessed using a paired samples t-test, comparing pre- and post-intervention WEMWBS scores among the same participants. Paired samples analysis was performed to examine the association between baseline and post-intervention scores. Findings were reported as mean differences with corresponding 95% confidence intervals, t values, and degrees of freedom. The magnitude of change was quantified using Cohen's d. All statistical tests were two-sided, and a p-value <0.05 was considered statistically significant.

## RESULTS

Detailed demographic data of the study participants were collected using a structured questionnaire. The mean age of the participants was 22±3 years, with the majority belonging to the 18-24 year age group. Females constituted 88% (n=220) of the sample, while males accounted for 12% (n=29). Students from year I, II, III, and IV represented 32%, 26%, 20%, and 22% of the total sample, respectively. Regarding place of residence, 92% (n=229) were hostellers and 8% (n=20) were day scholars. Socioeconomic status was assessed using modified Kuppaswamy classification, where 4% belonged to lower-income (upper lower and lower), 80% to middle-income (upper middle and lower middle), and 16% to higher-income categories (upper class).

The results conveyed that students from all the phases of bachelor's programme have enrolled in the study with relative increase in phase 1 participation (32%) [Table/Fig-2]. Cronbach's (1951) coefficient alpha uses data from a single test administration to determine reliability. All 14 of the questionnaire's items of the scale has the fewest redundant items, based on the general sample's Cronbach's alpha value of 0.888 and the student sample's value of 0.886. Test-retest reliability was high at one week (0.86). [Table/Fig-2] shows the study participants in each year.

Phase	n (%)
Year I	80 (32)
Year II	65 (26)
Year III	50 (20)
Year IV	54 (22)

[Table/Fig-2]: Study participants in the study – phase wise.

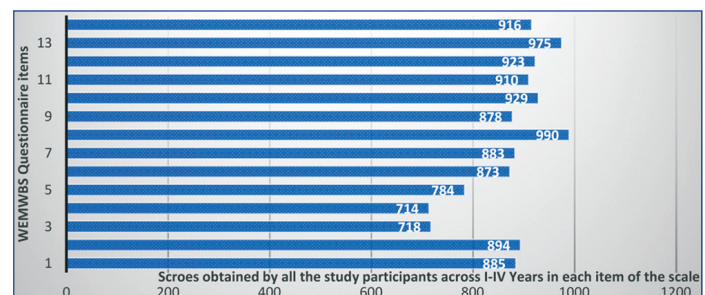
The prevalence of low mental well-being among nursing students was found to be 128 (51.4%). This reflected a higher need of interventions to improve the affected group.

The prevalence of the mental well-being was assessed among all the B.Sc nursing students from year I – year IV with study participants being 249 in number. The median score of the WEBWBS score was relatively higher among 3<sup>rd</sup> and 4<sup>th</sup> Year students in comparison to Phase I and II students, reflecting the need of intervention among year I and II [Table/Fig-3].

Phase	Median	Mean±SD	Friedman test	p-value
Year I	42	44.51±10.91	11.902	0.008*
Year II	49.5	49.14±11.71		
Year III	53	51.98±11.87		
Year IV	52	52.56±9.46		

[Table/Fig-3]: Prevalence of mental well-being among nursing students.

The questions with 3, 4, 5 and 9 of WEMWBS scale were found to impact the overall mental well-being among all the students. These questions reflect the amount of stress the students are exposed to and their difficulty in planning and programming their academic and social life. The data represented the sum of the scores obtained for each question by 249 nursing students from all the years (I - IV) [Table/Fig-4].



[Table/Fig-4]: Sum of Scores for Individual questions in WEMWBS obtained among all the nursing students (Year I- Year IV).

A paired samples t-test was conducted to compare pre-test and post-test scores among 80 participants. A statistically significant increase in scores was observed from pre-test (35.29±5.09) to post-test (54.71±4.84),  $t(79)=-34.45$ , p-value <0.001, with a very large effect size ( $d=3.85$ ). The mean improvement was 19.43 points (95% CI: 18.30 to 20.55), indicating a substantial change following the intervention [Table/Fig-5].

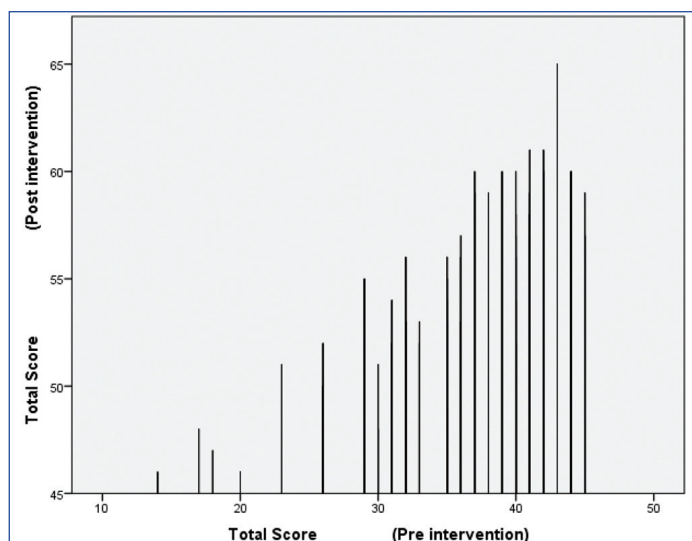
SNACS	N	Mean±SD	Std. Error Mean	Paired t-test
Pre-intervention	80	35.2875±5.09205	0.56931	p<0.001
Post-intervention	80	54.7125±4.84231	0.54139	

[Table/Fig-5]: Comparison of preintervention and post-intervention academic scores among SNACS group using paired t-test. SNACS: Students needing additional curricular support, df=79

A paired samples t-test was conducted to evaluate the effectiveness of the intervention on mental well-being as measured by the WEMWBS. Results showed a statistically significant increase in WEMWBS scores from pre-intervention (36.19±7.02) to post-intervention (55.31±3.99),  $t(79)=-39.51$ , p-value <0.001. The mean improvement was 19.13 points (95% CI: 18.16 to 20.09), with an extremely large effect size ( $d=4.42$ ), indicating a substantial enhancement in mental well-being following the intervention [Table/Fig-6,7].

WEMWBS	N	Mean±SD	Std. Error Mean	Paired t-test
Pre-intervention	80	36.19±7.016	0.784	p<0.001
Post-intervention	80	55.31±3.989	0.446	

[Table/Fig-6]: Comparison of preintervention and post-intervention WEMWBS scores among students using paired t-test. df=79



**[Table/Fig-7]:** Comparison of pre-intervention vs post-intervention WEMWBS scores. \*The pre-intervention scores were baseline scores and post-intervention scores were considered collectively at the end of the intervention.

## DISCUSSION

The present study evaluated subjective well-being and the influence of a structured near peer-guided mentoring programme on academic performance among undergraduate nursing students. In the current study findings, the WEMWBS demonstrated strong content validity, and significant improvements were observed across the academic years, with higher scores noted among senior students. These outcomes highlight the role of academic exposure, coping abilities, and psychosocial adjustment in shaping students' mental well-being. A strong and statistically significant comparison was observed between pre-test and post-test WEMWBS scores ( $p$ -value  $<0.001$ ). This indicates high consistency in individual ranking over time, meaning participants with higher baseline well-being generally retained higher well-being after the intervention [Table/Fig-6,7]. The findings were supported by the literature that being aware of one's own potential, working to overcome obstacles, being successful in one's personal and social life, and trying to support society internally are all indicators of one's capacity to maintain mental well-being [7,13-16].

The current study results align with earlier validation studies of the WEMWBS conducted in multiple linguistic and cultural settings. For instance, studies among Chinese students reported Cronbach's alpha values of 0.93, confirming robust internal consistency [17].

Similar findings were observed in the validation research by Tennant R et al., who demonstrated strong content validity and high reliability with alpha values of 0.89 in student samples and 0.91 in general populations [1]. Additionally, confirmatory factor analysis across studies consistently supported the unidimensional structure of the scale, with acceptable psychometric indices such as Root Mean Square Error of Approximation (RMSEA), Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) [8,18]. These results, consistent with our observations, reinforce the appropriateness of WEMWBS in assessing mental well-being.

In our study population, the median WEMWBS scores among nursing students across all academic phases were lower than the values proposed by the original scale developers. Nevertheless, there was a statistically significant progression in scores from early to later years, suggesting that increasing academic maturity, improved coping strategies, and adaptation to the academic environment contribute to better psychological resilience. These trends are consistent with literature demonstrating the adverse impact of stress, workload [4-6], and academic pressure on younger students, particularly those in the initial phases of professional programmes [19-21].

A paired samples t-test was performed on 80 participants to compare their scores before and after the intervention. The results showed a statistically significant improvement. The average score increased from 35.29 (SD=5.09) before the intervention to 54.71 (SD=4.84) after the intervention,  $t(79)=34.45$ ,  $p$ -value  $<0.001$ . On average, scores improved by 19.43 points (95% CI: 18.30 to 20.55), indicating a large and meaningful effect of the intervention [Table/Fig-5]. Peer mentors are often more approachable than faculty members and are effective in reducing stress, promoting social integration, and facilitating academic understanding. Unlike digital mentoring models, which have reported challenges in implementation, the face-to-face modality used in the present study was well-accepted and smoothly integrated within the nursing programme [21-23].

Although mentoring is commonly evaluated from the perspective of mentees, emerging evidence suggests that peer mentors also benefit through enhanced communication, leadership skills, and confidence [24,25]. The current study findings support this, as peer mentors reported notable personal and interpersonal growth. Similar studies have shown that mentors experience pride, improved conflict management, and strengthened leadership qualities, reinforcing the reciprocal value of peer-mentoring systems [26,27]. A set of research studies evaluating the prevalence of stress and the role of peer mentorship are depicted in [Table/Fig-8] [4,6,19,21,23,28,29].

S. No.	Research title	Authors	Key findings	Year published
1.	Prevalence and level of stress among final-year students at a health science institute in Bangladesh.	Alam MJ et al.,	68.60% of students reported feeling stressed out while attending their school. Stress generally affects all facets of their well-being and their academic achievement. Environmental factors, a new collegiate setting, student maltreatment, rigorous study schedules, and personal characteristics have all been linked to increased stress symptoms.	2025 [4]
3.	Comprehensive analysis of stress factors affecting students: a machine learning approach.	de Filippis R and Foysal AA	Students' stress levels are significantly predicted by psychological elements like self-esteem and physiological factors like sleep quality. Students' anxiety levels and academic performance were found to be significantly correlated negatively, underscoring the detrimental effects of psychological stress on educational outcomes.	2024 [6]
4.	Learn Slow, achieve low - Students Needing Additional Curricular Support and Psychological Support (SNACS, SNAPS).	Shivasakthy M et al.,	Diagnosing the cause behind the students who learn slow and achieve low is the most important step in differentiating them as Students Needing Additional Curricular Support (SNACS) and Students Needing Additional Psychological Support (SNAPS). Only then may the necessary supportive actions be taken to enhance their academic performance and well-being.	2016 [19]
5.	Digital peer mentoring in higher education: Results from a qualitative study involving digital part-time nursing students.	Toreid HE et al.,	The outcomes reveal that mentors have difficulties maintaining digital peer mentoring with the students and that students express little need for online mentoring. Both students and mentors found the mentoring process difficult in this study. A virtual placement could not be as stable as a physical placement because the learning process is supported in a socially located placement.	2025 [21]
6.	Effects of intra-class peer mentorship intervention programme on the academic performances of academically underperforming medical students in Nigeria	Eleje GU et al.,	The study's main conclusions were that the intra-class (same class) peer mentorship programme greatly improved academic achievement, as shown by the rise in CAT scores, as well as increased student involvement and subjective liveliness. This study adds to the increasing amount of data that shows peer mentoring is an effective strategy for raising academic performance in medical school. Given that mentees' academic performance significantly improved, same-class peer mentorship may be incorporated into medical curricula as an affordable way to help students who are struggling academically.	2025 [28]

7.	Perceived stress and coping strategies used by undergraduate dental students: An observational study.	Atif S et al.,	High levels of stress and academic burnout are reported by Pakistani undergraduate dental students. "Workload" had the highest mean domain score, while "faculty and administration" had the lowest. Students in their undergraduate years feel more accountable for fulfilling their degree requirements. The majority of students considered "lack of time for relaxation" and "overloaded feeling due to huge syllabus" to be extremely stressful.	2025 [23]
8.	Improving academic performance and retention of first-year biology students through a scalable peer mentorship programme	Wilton M et al.,	Student academic performance and retention are enhanced by high-quality peer mentoring. The mechanisms behind how near-peer mentorship structures contained in a structured course support the reported favorable outcomes have not yet been rigorously characterised in the literature. Students who get excellent mentoring that supports practical study strategies and academic soft skills will be more likely to engage in specific academically desirable behaviors, which will improve their grades.	2021 [29]

**[Table/Fig-8]:** Review of key findings observed among studies conducted to assess the prevalence of stress and evaluate the role of peer mentorship affecting academic performance among the students [4,6,19,21,23,28,29].

The prevalence of reduced mental well-being observed in this study underscores an urgent need for structured psychological support within health-science education. Early identification of distress using validated tools such as WEMWBS and timely implementation of peer-mentoring or other supportive interventions may mitigate academic stress, enhance students' overall well-being, and contribute to better academic and professional outcomes.

### Limitation(s)

This study was conducted exclusively among nursing students at a single institution, which may limit the generalisability of the findings. Ethical considerations also precluded the inclusion of a control group. Due to Hawthorne effect, the academic performance typically improves over an academic term regardless of intervention. Without controls, it is difficult to attribute improvement to mentorship vs natural learning progression. Low scorers may tend to improve due to increased familiarity with assessment format, general maturation and regression to the mean.

### CONCLUSION(S)

Using the validated WEMWBS tool, lower median well-being scores were observed across all phases, reflecting the impact of academic pressures, stress, and transitional demands within professional education. The study identifies a relatively high prevalence of low mental well-being among students in earlier academic years and raises the concern to be screened among all the health professionals. Earlier intervention among the students will always benefit them in developing required soft skills and communication. One of the efficient and long-lasting way to improve nursing undergraduates' mental health, academic achievement, and professional preparedness is to incorporate peer mentorship into academic programmes on a regular basis. The study also emphasises the necessity of ongoing, organised support networks in health-science education to foster mental health, lessen stress-related academic deterioration, and improve student achievement. Future studies involving multiple disciplines across health sciences, larger multi-centre samples and inclusion of control and comparison groups would provide deeper insights into the determinants of mental well-being and the broader effectiveness of peer-mentoring interventions.

**Authors contribution:** The manuscript has been read and approved by all the authors, that the requirements for authorship as stated in this journal have been met, and that each author believes that the manuscript represents honest and novel work and all co-authors have contributed in concept and design of study, analysis and interpretation of data, revising it critically for important intellectual content and final approval of the version to be published. The principal author has done acquisition of data and drafted the article along with the criteria mentioned above.

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