

A cross-sectional study of resilience and well-being among nursing students in Saudi Arabia

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Abstract

Objectives: Promoting resilience and embracing healthy coping strategies can effectively assist nursing students in managing stress and enhancing their welfare. Nonetheless, a comprehensive understanding of the factors influencing their well-being and resilience, pivotal for both academic accomplishments and future career longevity, remains incomplete.

Methods: A cross-sectional descriptive correlational design was adopted for this study. Participants comprised students enrolled in pre-registration nursing programs at both undergraduate and graduate levels. The World Health Organization-5 Well-Being Index and the 10-item Connor-Davidson Resilience Scale were utilized to assess psychological well-being and resilience, respectively.

Results: The study involved 175 university nursing students selected through convenience sampling. On the 10-item Connor-Davidson Resilience Scale, the average score was 25.5, with undergraduate and graduate students scoring an average of 25.4 and 26.3, respectively. Nevertheless, the two groups had no statistically significant difference ($p=0.526$). Regarding perceived well-being, the average World Health Organization-5 score was 16.1, with no noticeable distinction between undergraduates and postgraduates ($p=0.858$). Notably, bivariate analysis revealed a moderate positive correlation between self-reported resilience and perceived well-being ($r_p=0.281$, $p=0.001$). Moreover, senior students exhibited significantly higher scores on the perceived well-being scale than junior students (17.0 vs 15.1, $p=0.010$). Multivariable regression analysis also identified that self-reported resilience represents a consistent means of predicting perceived well-being (regression coefficient $B=0.22$, $p<0.001$).

Conclusions: The outcomes indicate that university-based nursing students who exhibit higher levels of resilience have more positive perceptions of their well-being. Moreover, postgraduate students exhibit more significant resilience levels than undergraduate students.

Keywords

Nursing education, Saudi Arabia, well-being, nursing students, resilience

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Introduction

Due to staffing issues and other challenges related to nursing practice, nursing is becoming an increasingly demanding and stressful profession.¹ Nursing students in universities are placed under higher degrees of stress on an academic level than those who study alternative subjects. One explanation for this is that nursing students must adapt to various clinical settings and encounter diverse patient situations, including people who are suffering or dying.^{2–4} School-related stress causes psychological distress and hurts well-being. Moreover, students who are studying nursing must apply their theoretical knowledge on a practical level in order to marry theory with practice.⁵ They must manage the

academic and emotional demands of patient care,³ which can exacerbate stress and lead to psychological disorders such as excessive worry, anxiety, and depression.

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Resilience, which first appeared in the 1970s,^{5,6} is crucial for nursing students to overcome challenges so that they are sufficiently prepared to practice postgraduation.^{4,7} According to the psychological hypothesis, resilience is a type of stable personal diathesis that frequently manifests at the biological, psychological, and social levels.⁸ In which most biological (e.g., the hyperactivity of the hypothalamic-pituitary-adrenal axis) level has been suggested as a biomarker of suicidal behavior in patients with psychopathological disorders, altering resilience, and reducing well-being.⁹ According to the conceptual framework of resilience among students who are studying nursing, resilience represents a process of cumulative achievement in overcoming adversity that improves human well-being.⁴ Continuous exposure to stress can result in diminished well-being and reduced satisfaction in one's job.¹⁰ This may have an impact on nursing students' desire to work in clinical settings after graduation.¹¹

Previous research has found that resilience can impact learning experiences, academic achievement, course completion, and professional practice.³ In fact, resilience has been identified as a critical indicator of academic success for students in many fields, including hospitality and tourism.¹² However, the level of resilience can vary between nursing students from different nations. Nursing students in Australia and Spain have exhibited high resilience levels, whereas their counterparts in Nigeria have demonstrated a moderate degree of resilience.¹³

Studies have also shown that nursing students who demonstrate more psychological stability and less academic burnout are more resilient.^{14,15} Resilient individuals tend to search for positive meaning in adverse circumstances, which allows them to effectively manage their distress and use the knowledge gained from setbacks to manage comparable issues in their careers.¹⁶ It is worth noting that resilience represents a process that helps individuals maintain their health and bounce back from adversity rather than simply being a sign of well-being.¹⁷

Well-being is a subjective term encompassing life satisfaction, pleasant affect, and disagreeable affect.^{18,19} Resilience is crucial component of well-being, as it allows individuals to resist stress and improve their well-being through healthy coping mechanisms.²⁰ Therefore, it is assumed that resilient nursing students will have higher levels of perceived well-being, making it essential for success and continuation in the nursing profession to develop resilience and active coping mechanisms.^{3,21}

Although the positive effects of resilience on health have been consistently reported, little is known about its relationship with nursing students' well-being. To our knowledge, few studies have explored the influence of resilience on university nursing students and their well-being in Saudi Arabia. The researcher's investigation determined a correlation between resilience and well-being among Saudi nursing students, and we hypothesized that higher resilience may contribute to higher levels of perceived well-being. As far as we are aware, no research has been conducted on the resilience

Table 1. Background characteristics of the university nursing (N= 175).

Background characteristics	n (%)
Sex	
Female	103 (58.9%)
Male	72 (41.1%)
Program	
Undergraduate	149 (85.1%)
Postgraduate	26 (14.9%)
Senior year student	
No	80 (45.7%)
Yes	95 (54.3%)

Data of the characteristics are presented as frequency (percentage).

and well-being of university nursing students in Saudi Arabia. Limited research is notable, given that nursing education in Saudi Arabia demands more practical hours than in countries such as Australia and Singapore. Additionally, the clinical environment in Saudi Arabia poses unique challenges for healthcare professionals and nursing students, primarily due to the high nurse-to-patient ratio, making it a demanding context for study.²² Moreover, in Saudi culture, there is a strong emphasis on endurance and emotional control, which may result in health professionals suppressing adverse reactions when working in stressful circumstances.²³ As such, resilience may be understood and experienced differently by Saudi Arabian nursing students than by Australian and Singaporean nursing students. Our research fills a gap in the literature by comparing students' resilience to well-being across different years of their nursing degree program. Additionally, the data consider (Table 1) specific academic factors related to well-being, like seniority, program, and gender.

This study drew upon the research of Saudi Arabian nursing students going through university to investigate how resilience and well-being are connected. The theory this investigation proposed is that nursing students with greater resilience will, consequently, also possess greater well-being. In response, to support the success of nursing students and the nursing profession in Saudi Arabia, nursing faculties have a responsibility to nurture and safeguard student resilience via the provision of robust coping mechanisms.^{3,21}

Material and methods

Study design, participants, and setting

A cross-sectional descriptive correlational method was adopted to examine the dynamics between resilience and well-being. Participants were drawn from the pre-registration nursing stages of both undergraduate and graduate levels. The Saudi Commission for Health Specialties mandates that all students in these programs complete the same curriculum to become registered nurses, ensuring consistency in their education and training.²²

The undergraduate nursing program is a 5-year full-time program that admits students straight from secondary school. In contrast, the postgraduate nursing program is a 3-year full-time program geared toward individuals who already hold a first degree in a different field but wish to pursue a second career in nursing. Typically, undergraduate nursing students commence their studies at 18, whereas postgraduate nursing students are older and have busier schedules. The curricula of both programs rely on incorporating theoretical knowledge and clinical practice. Clinical placement for undergraduate students begins in their second study year and increases progressively up to a 16-week duration in their final year. Senior students can be defined as individuals who have acquired sufficient clinical experience.

In comparison, junior students are still in their first 3 years of undergraduate study, while senior students are in years 4 and 5. The period that postgraduate students spend in clinical placement starts at 8 weeks before progressing to 16 weeks in the concluding study year. Junior students are in their first year of postgraduate study, while senior students are in their second and final years.

This study's data was collected between May and June 2023, with all eligible nursing students invited to participate. The selection criteria included nursing students who (a) gave consent to participate in this study and are (b) currently enrolled as full-time Bachelor of Nursing Degree or Master's degree students. The exclusion criteria included (a) undergraduate nursing students, (b) first-study students, (c) students at another university, and (d) students known to have a history of psychiatric disease.

Based on the previously described effect size of 0.39,²⁴ a sample size 109 was required for the multiple regressions. Effect sizes of 0.15, 0.39, and 0.59 are considered small, medium, and large, respectively. The model included five variables and required a statistical significance of 0.05 to achieve the minimum level of statistical power of 0.8.

Data collection procedure

To ensure the study's ethical standards, a qualified nurse approached all eligible nursing students at the end of their lectures. The students received a detailed information sheet outlining the study's purpose and a consent form. Involvement in the research was voluntary, with every contributor able to change their mind without forfeiting. With consent confirmed in writing, those who decided to proceed were given questionnaires to fill out, taking approximately 10–15 min. All participants' identities remain anonymous and, to protect their privacy, all related data will continue to be treated with strict confidentiality.

Outcome measures

Connor–Davidson resilience scale. The 10-item CD-RISC, which is validated and available in Arabic (CD-RISC-10),

was utilized to examine the extent of resilience in nursing students.²⁵ This questionnaire was designed to capture essential characteristics of resilience over a previous month, particularly the ability to tolerate situations such as change, personal issues, disease, stress, failure, and unpleasant emotions.^{25–27} The CD-RISC-10 adopted a Likert scale to score each item. Item responses range from 0 (“not true at all”) to 4 (“true nearly all of the time”). The overall score ranges from 0 to 40, with higher scores indicating higher resilience capacity.²⁷ Examples of items include, “I am able to adapt when changes occur” and “I am not easily discouraged by failure.” The overall score ranges from 0 to 40, with higher scores indicating higher resilience capacity. Previous studies confirmed the satisfactory reliability and validity of the scale, particularly in the context of undergraduate and student nurse samples.^{13,27} For this research, the Cronbach's alpha for the CD-RISC-10 was 0.84.

World Health Organization-5 well-being index. As a survey instrument, the World Health Organization-5 (WHO-5) was used to measure well-being factors related to psychology over a 2-week timetable. The instrument was validated and made available in Arabic.²⁸ The five items on the scale measure vitality (feeling energetic, being fresh, and reinvigorated when waking up in the morning), having a healthy interest in one's hobbies and ambitions, and maintaining a good mood.²⁸ Each item is scored using a six-point Likert scale, with 0 representing “never” and 5 representing “always”—with higher scores indicating greater self-perceived well-being.²⁸ Total scores ranged from 0 to 25, with results falling below 13 being associated with reduced well-being—hence, requiring a depression test. The WHO-5 is now available in over 30 languages. The WHO-5 featuring high psychometric qualities, which measures have been extensively employed in research projects and evaluated in various populations.²⁹ In this research, the Cronbach's alpha for the WHO-5 was 0.85.

Statistical data analyses. IBM SPSS 28.0 (IBM Corporation, Armonk, NY, USA) was utilized to break down data. Descriptive statistics—including frequency (%), mean (standard deviation (SD)), and measures of self-reported resilience and subjective well-being—were utilized to showcase the sample's contextual features, such as gender, research program, and study year. Independent *t*-tests examined differences in resilience and well-being between groups, including junior and senior students and undergraduate and postgraduate pre-registration program students. Additionally, bivariate analyses using Pearson correlation and independent *t*-tests were conducted to explore the links between apparent well-being and self-reported resilience and to analyze the various features of those students who participated, such as sex, program of study (undergraduate or postgraduate), and senior-year status. Multivariable regression analysis was drawn to highlight issues meaningfully associated

Table 2. Self-report resilience (CD-RISC-10 total score) and perceived well-being (WHO-5 total score) of the university nursing students.

Background characteristics	CD-RISC-10 total score		WHO-5 total score	
	Mean (SD)	range	Mean (SD)	range
Sex				
Female	26.0 (6.7)	5–40	15.1 (5.0)	1–25
Male	25.2 (6.4)	5–38	17.5 (4.7)	2–25
p-value	0.651		0.002	
Program				
Undergraduate	25.4 (6.5)	5–40	16.2 (5.1)	1–25
Postgraduate	26.3 (6.9)	8–38	16.0 (4.4)	7–25
p-value	0.526		0.858	
Senior year student				
No	26.0 (6.5)	8–38	15.1 (5.2)	1–25
Yes	25.4 (6.6)	5–40	17.0 (4.7)	6–25
p-value	0.729		0.010	

p-values are computed by independent t-test.

with the stated well-being, drawing upon those factors that demonstrated significance ($p < 0.05$) in bivariate analyses. The significance level was set at 0.05 for all statistical analyses and remained two-sided.

Ethical considerations. The Institutional Review Board of the King Saud University Medical City granted ethics approval (IRB # 23-677). Participation was anonymous and voluntary, and participants were informed of the study's goals and nature and their freedom to withdraw at any time. Due to the tight schedule, data were gathered after lectures. Every participant received a detailed information sheet about the study, and they were guaranteed that their personal information would be treated with strict confidentiality, solely for this research. The electronic data collected would be securely stored on a password-protected computer belonging to the researcher. Furthermore, access to this data would be exclusively limited to the research team, both during and after the study's completion.

Results

Participant characteristics

The study participants comprised 175 university-based nursing students, of which 103 were female and 72 were male. Among them, 149 students pursued their undergraduate degrees (85.1%), while 26 were enrolled in postgraduate programs (14.9%). Among the undergraduates, 71 were in their junior years, spanning from year 1 to 3 (47.7%), while 78 were in their senior years, specifically years 4 or 5 (52.3%). Among the graduates, nine students were first-year students (34.6%), while 17 were in their second or third year (65.4%). Table 1 summarizes all participant characteristics.

Self-reported resilience

Table 2 presents the outcome measures for university nursing students, focusing on self-reported resilience and perceived well-being. The CD-RISC-10 scores, indicating resilience, had a mean of 25.5 (SD=6.6). The range was 5.0–40.0. Comparing resilience levels, undergraduate students had an average score of 25.4, while graduate students scored slightly higher at 26.3. However, there were no significant differences in resilience levels based on sex, program type, or junior/senior status.

Perceived well-being

In terms of perceived well-being, measured by the WHO-5, the mean score was 16.1 (SD=5.1), ranging from 1.0 to 25.0. The difference in perceived well-being between undergraduate and graduate students ($p=0.131$) was not statistically significant. However, a significant difference was observed when comparing junior and senior students ($p=0.010$). Senior students in the second or third year of graduate study or fourth or fifth year of undergraduate study reported higher WHO-5 scores, indicating a greater level of perceived well-being.

Predictors of perceived well-being

Table 3 displays the outcomes of both bivariate analyses and multivariable regression analyses, which were conducted to investigate the perceived well-being of university nursing students in Saudi Arabia. Numerous factors displayed noteworthy associations with perceived well-being, including sex, year of study, and self-reported resilience. The correlation between self-reported resilience and perceived well-being was moderate and positive ($rp=0.281$, $p < 0.001$).

Table 3. Factors associated with perceived well-being (WHO-5 total score) in the university nursing students.

Background characteristics	Bivariate analysis ^a		Multivariable analysis ^b		
	Mean (SD)/correlation coefficient	<i>p</i>	B	SE	<i>p</i>
Sex					
Female (ref)	15.1 (5.0)	0.002			
Male	17.5 (4.7)		2.10	0.76	0.008
Program					
Undergraduate (ref)	16.2 (5.1)	0.858	NE		
Postgraduate	16.0 (4.4)				
Senior year student					
No (ref)	15.1 (5.2)	0.010			
Yes	17.0 (4.7)		1.40	0.75	0.069
Self-reported resilience CD-RISC-10 total score	0.281	<0.001	0.22	0.10	<0.001
			R ² =0.155		

NE: not being entered into multivariable regression; B: regression coefficient; SE: standard error of the regression coefficient; ref: reference group of the independent categorical variables; R²: proportion of variance explained by the multivariable regression model.

^aPearson's correlation coefficients between the independent variables and the outcome are presented for continuous independent variables, whereas mean (standard deviation) of the outcome variable is presented for categorical independent variables.

^bOnly those examined independent variables with *p* values < 0.05 in bivariate analyses were selected for multivariable regression analysis.

Regarding gender disparities, the study found that male students exhibited significantly higher levels of perceived well-being than their female counterparts, with scores of 17.5 versus 15.1, respectively ($p=0.002$). In addition, senior students demonstrated considerably greater perceived well-being than junior students, with scores of 17.0 against 15.1 ($p=0.010$). Furthermore, the results from the multivariable regression analysis indicated that self-reported resilience (with a regression coefficient of $B=0.22$; $p<0.001$) and gender (comparing female to male, $B=2.10$; $p=0.008$) both had an independent and significant impact on the levels of perceived well-being. When considered in combination, these variables accounted for 15.5% of the variance in perceived well-being.

Discussion

The findings from this study support the notion that resilient nursing students tend to perceive their well-being more positively. It was also observed that male students reported significantly higher of well-being levels than female students. Additionally, senior students reported a substantially higher level of well-being than junior students.

Resilience

The study identified that Saudi university nursing students generally exhibited lower levels of resilience compared to their counterparts in other countries, which could be attributed to the fact that the clinical and study environments in Saudi Arabia may be stressful.^{13,14} A survey on burnout and levels of stress that was performed on a population of Saudi nursing students highlighted an increase in psychological

morbidity and stress levels over semesters.³⁰ Resilience showed an inverse relationship with perceived stress levels.³¹ These findings suggest the importance of establishing a learning environment conducive to fostering resilience among university-based nursing students in Saudi Arabia. Notably, graduate students demonstrated higher levels of resilience undergraduates, which aligns with the notion that resilience develops as individuals overcome adversity and face challenges.^{4,32,33} The higher resilience levels among postgraduate students may reflect their maturity and personal development through previous hardships, as completing the undergraduate degree equips them with coping mechanisms necessary for postgraduate education. However, the differences in the resilience levels observed between senior and junior students were not statistically significant. This finding aligns with prior research on nursing students in Australia, which found that resilience levels did not significantly improve throughout nursing education.³⁴ The study suggested that students may temporarily experience disengagement before recognizing personal growth from overcoming adversity and preparing for future challenges.³⁵ The ongoing pressures faced by junior and senior nursing students may contribute to fatigue and hinder significant increases in resilience among senior students.

Well-being

Overall, the students' perceptions of well-being were rated moderately. Two factors are associated with well-being: gender and seniority. In terms of the year of study, senior students reported higher perceived well-being, contrary to findings from other studies. Longitudinal research has shown a decline in psychological health among university students

from the first to the third year.³⁶ Similarly, a cross-sectional study on Chinese nursing students indicated better psychological health in junior and senior years.³⁷ These discrepancies could be attributed to the stress associated with academic work and clinical practicum experienced by senior students. In Saudi Arabia, clinical practicum typically takes place during the last year of study, and it is recognized as a noteworthy stressor for nursing students, especially those who may feel ill-prepared for the demands of real clinical settings.^{4,33} The nursing students in the current study begin clinical rotations in their junior year, and empowerment workshops are provided each year to help students adapt to their work conditions and enhance their well-being. Furthermore, the study found that senior students had higher average well-being scores than non-senior students. Non-senior students scored lower in well-being. It could be that non-senior students need to adjust to new education environments with higher educational pressure, implying more competitiveness in their academic lives. This finding was consistent with the study of Pascoe, Hetrick,³⁸ who pointed out that exposure to high-level stressors might lead to poorer adjustment, psychological or behavioral problems, and lower well-being. Notably, our cohort had a higher proportion of male students compared to the study by Smith and Yang³⁷ (41.1% vs 2.7%). Although our study revealed a gender disparity in subjective well-being, it aligns with the overall trend of increasing male representation in nursing.³⁹ This study parallels a previous study by Reverté-Villarroya et al.,⁴⁰ where the results indicated a statistically significant mean difference in self-perceived mental well-being between the genders. In this study, male students had higher well-being mean scores ($M=17.5$) compared to females mean scores ($M=15.1$), which indicates that male students practice a healthier lifestyle.

Resilience and well-being

The current research findings indicate a moderately positive association between a sense of well-being and resilience among a population of university nursing students. Additionally, within this group of students, resilience was determined to be a significant predictor of perceived well-being. These results support previous research highlighting the link between resilience and psychological health. Bore et al.⁴¹ found that high resilience levels among undergraduate psychology students strongly predicted greater psychological well-being. Similarly, Zeng et al.,⁴² discovered a moderately positive relationship between resilience and psychological well-being in Chinese school students, suggesting that resilience bridges psychological health and a mature mindset that perceives obstacles as opportunities for intellectual growth. Likewise, low resilience was strongly related to demoralization combined with depression.⁴³ Resilient individuals find meaning in hardships, which helps regulate negative emotions and contributes to a better sense of well-being.^{16,44} Given the mediating role of positive

thinking in the correlation between resilience and well-being, addressing this aspect should be incorporated into nursing education.⁴⁵

Limitations

The study has some limitations that are worth noting. First, relating to the cross-sectional approach method, we cannot establish a causal relationship between resilience and reported well-being. Additionally, the study's duration prevented tracking individual changes in these characteristics over time. Self-report measures introduced the possibility of socially desirable response bias, highlighting the need for future research to adopt prospective, longitudinal designs to uncover patterns.⁴⁶ Furthermore, the limited collection of the three demographics data restricts our ability to examine the correlation between resilience and reported well-being. Moreover, the study sample was drawn from only one university, which may limit the generalizability of the findings. In addition, this study used a convenience sample, so the results may not be representative. Future research should consider gathering additional personal data, such as information on the learning environment, psychosocial background, family dynamics, religious beliefs, relationship status, prior practical experience, happiness, and emotional intelligence.

Implications

The outcomes of this study suggest that Saudi university nursing students have relatively low and stable levels of resilience. The strong association between subjective well-being and resilience indicates the need for targeted interventions to improve these aspects. The findings underscore the importance of curriculum design and nurturing learning environments in fostering resilience and well-being among nursing students while helping to reduce their vulnerability.⁴⁷ Previous research has found that nurses who cultivate resilience throughout their careers are less likely to develop anxiety, depression, and posttraumatic stress disorder.^{48,49} Nurse educators should prioritize building nursing students' resilience throughout their academic curricula. Nurse educators must first put the concept of resilience into context and apply it to nursing students' settings and experiences. Stephens⁴ suggested that clarifying the concept of resilience will help nurse educators and researchers develop evidence-based interventions and strategies to promote resilience. The dynamic character of resilience implies that resilience is a changeable phenomena that can be learnt, taught, and nurtured.³³ As a result, faculty and students must understand resilience as a process that can be strengthened.

Resilience can be enhanced through junior-year nursing students engaging in clinical placements. Clinical placement provides an opportunity to adapt to the challenging clinical setting and enhance their clinical competence. Clinical placements also alleviate the burden of clinical practice and

the reality shock, potentially benefiting nurses' personal well-being. Mentorship programs and skill-revision workshops before clinical practice may also help junior-year students better prepare for challenges and provide additional support. Future research could measure the impact of such interventions on student learning and well-being.

Nursing students' curriculum should enhance students' resilience and equip them with coping skills to handle various pressures and potential difficulties.¹⁵ For instance, problem-based learning fosters tenacity, critical thinking, and problem-solving abilities, all contributing to resilience development.⁵⁰ Also, reflective writing activities enable students to explore problems from multiple perspectives and draw meaningful conclusions from their experiences, fostering an optimistic outlook even in challenging situations. Additionally, teaching psychosocial skills, effective coping mechanisms, and emotion regulation in the classroom can enhance students' resilience.^{4,51} Creating a learning environment that prioritizes students and holds high expectations for them is also conducive to fostering resilience.²⁹

The study also revealed that postgraduate students exhibited higher levels of resilience, highlighting the link between resilience and reported well-being among nursing students. Future research should examine the mediating variables that influence these relationships and investigate the causal links between the variables of interest. The findings from this study hold significant implications for the development of future nursing curricula.

Conclusion

Nursing education places importance on clinical competence, procedural knowledge, and the development of personal traits. The significant correlation between resilience and well-being in nursing students underscores the requirement to fortify this relationship to enhance both perceived and actual well-being and personal resilience. A nursing curriculum should incorporate strategies to cultivate this personal trait and promote well-being. By fostering resilience in nursing students, they can thrive in their educational journey and future professional careers.

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Authors' contributions

AMR and AMA were involved in conceptualization; AMR, AMA, and SMA were involved in data curation, formal analysis, investigation, methodology, project administration, resources, software, validation, visualization, and writing the original draft; AMR, AMA, and SMA were involved in supervision and reviewing and editing the manuscript. All authors reviewed the results and approved the final version of the manuscript.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Research ethics and patient consent

Ethical approval was obtained from the Institutional Review Board of the University Medical City (IRB # 23-677). Written informed consent was obtained from all participants before the study.

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