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# Structural equation modeling of the relationship between nursing students' quality of life and academic resilience

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## الملخص

**أهداف البحث:** في دول الشرق الأوسط، هناك ندرة في الدراسات التي تستكشف العلاقة بين جودة الحياة والمرونة الأكاديمية لطلاب التمريض. حددت هذه الدراسة العلاقة بين متغيرات الملف الشخصي لطلاب التمريض وحالة جودة حياتهم والمرونة الأكاديمية.

**طرق البحث:** استخدمت هذه الدراسة تصميما وصفيا مقطعيا مع نمذجة المعادلة الهيكلية. أجريت هذه الدراسة في كلية التمريض بجامعة حائل بالمملكة العربية السعودية. تم استخدام استبانات المسح باستخدام مقياس جودة الحياة برونزڤيكن الموجز المكون من 12 عنصرا ومقياس المرونة الأكاديمية المكون من 30 عنصرا لجمع البيانات من طلاب التمريض (العدد = 384). تم استخدام نمذجة المعادلة الهيكلية عبر برنامج تحليل المتغير الكامن الإصدار 0.6-7 للاشتقاق والتحليل الإحصائي.

**النتائج:** أظهرت نمذجة المعادلة الهيكلية عدم وجود ارتباط مع جودة الحياة والمرونة الأكاديمية عند مقارنتها باستخدام متغيرات الملف الشخصي للمشاركين (الجنس ومستوى السنة والوحدات الأكاديمية المسجلة). هناك علاقة بين المعدل التراكمي وجودة الحياة. ومع ذلك، لم يتم العثور على ارتباط بين جودة الحياة والمرونة الأكاديمية.

**الاستنتاجات:** أظهر المعدل التراكمي ارتباطا إيجابيا بجودة الحياة، وبالتالي، فإن طلاب التمريض الحاصلين على معدل أعلى لديهم جودة الحياة أكثر استقرارا

ومرغوبا. بالإضافة إلى ذلك، توضح النتائج التي توصلنا إليها شخصية طلاب التمريض على الرغم من خصائصهم المشتركة.

**الكلمات المفتاحية:** المرونة الأكاديمية؛ المملكة العربية السعودية؛ طلاب التمريض؛ جودة الحياة؛ نموذج المعادلة الهيكلية؛ تحليل الطبقة الكامنة

## Abstract

**Objective:** Across the Middle Eastern countries, there is a lack of studies exploring the connection between the quality of life (QoL) and academic resilience of nursing students. This study determines the association between nursing students' profile variables and their QoL and academic resilience (AR).

**Methods:** A descriptive cross-sectional design with structural equation modeling (SEM) was adopted. This study was conducted at the College of Nursing at the University of Ha'il, KSA. Survey questionnaires using the 12-item Brunnsviken Brief Quality of Life Scale (BBQ) and 30-item Academic Resilience Scale (ARS-30) were utilised to collect data from nursing students (n = 384). SEM via latent variable analysis (*lavaan*) software version 0.6—7 was used for statistical derivation and analysis.

**Results:** SEM revealed no correlation with QoL and AR when compared using the participants' profile variables (gender, year level, and enrolled units). There was a correlation between the grade point average (GPA) and QoL. However, no association was found between QoL and AR.

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**Conclusion:** GPA exhibited a positive correlation with QoL; thus, nursing students with higher GPA have a more stable and desirable QoL. Additionally, our findings illustrate the individuality of nursing students despite their shared characteristics.

**Keywords:** Academic resilience; KSA; Latent class analysis; Nursing students; Quality of life; Structural equation modeling

## Introduction

The COVID-19 pandemic has had a substantial impact on nursing students' (NSs) quality of life (QoL), and evaluating their QoL stresses the need for a healthy mind and body, with one potentially harming the other if both are not adequately cared for during this pandemic.[1] Students that are stressed or overwhelmed are anxious, ineffectual, and less inspired and motivated in the class, resulting in poor school performance.[2] As a corollary, NSs' QoL should be assessed and measured. Specifically, in the context of the pandemic, appraising how it impacts NSs' well-being.

QoL is defined as one's understanding and perspective in life in the contextual relationship of a person's cultural and values system. This perspective connects with the person's goals, expectations, standards, personal issues, and physical environment.[3] Similarly, the World Health Organization Quality of Life Assessment Group described QoL as a multifaceted subjective and objective understanding and assessment of a person's life attributes.[2] On the other hand, resilience represents an individual's method of overcoming obstacles in life and pursuing happiness despite adversities, tragedy, and stressful life events.[4] A multifactorial stressful life event emanates from family, social relationships, financial problems, and even intrapersonal conflicts.[5]

Academic resilience (AR), a form of resilience forged among students, is defined as the ability to persist and perform academically even when they are exposed to various risk factors or adversities.[6] For example, students from low-income families are likely to drop out of school and have the worst academic outcomes in standard assessments.[7] However, some students appear less vulnerable to risk factors, emerging with the best academic performance.[7]

The physical, sociocultural, and religious dimensions of an NS's QoL were found to be linked. One study found that being religious and having a strong faith helps to enhance one's QoL.[8] Another study examined the use of yoga as a coping mechanism for managing the increased demand of their nursing school, even if only for a brief duration.[9] In a study of nursing internship students by Grande et al.,[2] the psychological domain was found to be the most important of the four domains of their QoL, followed by the social domain. The environmental and physical domains have received less attention.[1] Several published studies on the resilience of NSs have demonstrated the nature and meaning of resilience among students. Resilience is shown to enhance students' psychological and intellectual characteristics while also protecting them from the negative consequences of increasing academic demands.[10] Saudi NSs were also reported to be resilient and psychologically healthy.[11] Nurses' communication skills are one area where they can improve the generation of resilient skills.[12] Nursing schools are responsible for improving their students' resiliency skills to better prepare them for their professional jobs.[13]

Many circumstances, both within and beyond NSs' control, have a negative impact on their current learning experiences. These include the demands of their daily lives at university and home, including the ongoing threat of the COVID-19 pandemic. As NSs' resilience was explored, it was found that improving their resilience will help them withstand the rigours of their nursing schools.[14] A study on resilience conducted among NSs in KSA found that they had a positive perception of their QoL utilising gender, year level, and other traits as predictors.[15] To the best of our knowledge, few published studies have examined the relationship between the QoL of Saudi NSs and their AR in the last decade.

Given the lack of research on this subject, this study determined participants' responses to the Brunnsviken Brief Quality of Life Scale (BBQ)[16] and the 30-item Academic Resilience Scale (ARS-30),[17] as well as established a correlation between participants' BBQ and ARS-30 responses when grouped according to their demographic profiles. Additionally, we utilised a structural equation modeling (SEM) to illustrate the interrelationship between NSs' QoL and AR.

### Background of the study

QoL relates to an individual's total state of well-being. QoL is a subjective feeling of satisfaction, including the physical health, psychological state, social relationships, and relationships to salient features.[3] QoL is a person's perceived satisfaction or dissatisfaction with life.[3] The QoL of health care workers, particularly nurses, is well documented. Woods-Giscombe[18] reported that current research underscores different strategies to improve the QoL of nurses in their workplace. These strategies focus on wellness and mindfulness programmes for nurses to promote coping and self-care. Recently, there has been growing interest in the examination of the QoL of NSs. Aboshaiqah and Cruz[15] reported that Saudi NSs perceived psychological health as highly correlated to QoL, while Brazilian NSs viewed the physical domain as highly significant to their QoL.[19] Furthermore, the QoL of Turkish NSs was a significant predictor of their life satisfaction.[12] Mak et al.[20] observed that a health-promoting lifestyle (HPL) (i.e., interpersonal relations) that mitigates stress enhances Chinese NSs' QoL. Several studies have explored stressful events among NSs resulting in poor QoL.[14,15,18] Thus, some institutions included programmes to increase students' QoL and resilience.[13]

Resilience refers to 'the personal qualities that enable one to thrive in the face of adversity'.[21] Wagnild and Young[22] proposed a theory of resilience composed of five qualities: equanimity, perseverance, self-reliance, meaning, and

existential aloneness. These qualities were found to be important in developing resilience among nurses. Wang et al.[23] indicated that nurses develop resilience through social support, self-efficacy, and a positive work climate. The impact of resilience on academic performance and career satisfaction in nursing has been the focus of attention in recent years. AR in NSs is considered a crucial quality in confronting challenges and solving problems during their studies and future careers.[24] Meyer et al.[25] reported that, although distinct from each other, AR and 'grit' in NSs are positively correlated. Among South Korean NSs, high AR predicts academic success and social-affective capability.[26] Therefore, AR has been described as having a significant influence on NSs' completion of the nursing programme.[27]

NSs face various problems and concerns daily, let alone the impact of the COVID-19 pandemic on their current teaching and learning processes. This situation has resulted in feelings of uncertainty and doubts,[28] affecting NSs' overall QoL and AR. While QoL and AR studies during the COVID-19 pandemic have received much attention from nurses and doctors, little is known about the relationship between QoL and AR in NSs.[29,30] Thus, our study explores associations between QoL and AR, particularly from Saudi NSs.

### Hypotheses

Given the published research, existing literature, and theories on QoL and AR, we propose the following:

Hypothesis 1: No difference exists in the responses of the participants to QoL and AR, based on their demographic profiles. Hypothesis 2: The SEM will demonstrate no correlation between the participants' profile variables and their state of QoL and AR.

## Materials and Methods

### Research design

We used a descriptive, cross-sectional design to investigate the relationship between QoL and AR of NSs in KSA.

### Study setting

This study was conducted in a nursing college of a state university in the north-western region of KSA. While it has a single leadership structure, male and female colleges are physically separated. It was established in 2005 and is overseen by the Ministry of Education.

### Sampling and participants

This study employed total enumeration sampling, or a census of all NSs enrolled in the nursing programme in the study setting during the academic year 2020−2021. To be eligible as a participant, a student must be enrolled for both semesters of the academic year, be in the second-to-fourth-year level except for the fifth year or internship year, and provide consent to participate. A total of 58 (10%) of the 579 current BS NSs participated in the pilot testing of the Arabic version of the questionnaires. We retrieved 50 replies, and 48

were deemed suitable for reliability testing after being checked for completeness.

In collecting the data, the remaining 521 respondents were asked to complete the Arabic-translated questionnaire. At this stage, 400 responses were obtained, and following thorough verification of accuracy and completeness, a total of 384 responses were considered suitable for analysis (response rate = 73.7%). This sample size is deemed sufficient for a simple SEM of the data.[31]

### Ethical considerations

After all required documentation, this study was approved, and the Arabic translations of the instruments were submitted to the University of Ha'il's ethical committee. Due to COVID-19 regulations on face-to-face interaction, data collection was conducted online via Google survey forms. The opening section of the form highlighted the instructions and consent declaration. Consent indicates that if they engage, answer, and return the survey form, their participation is willing and voluntary, often referred to as implicit consent. The survey questionnaires were sent using the participants' registered email addresses, concealing their full names and other personally identifiable information. Subsequent follow-up messages were sent to their *WhatsApp* group/class chat to ascertain whether the survey forms had been successfully received.

### Instruments

We employed two psychometrically validated tools to assess the QoL and AR of NSs. Both instruments were used with permission from the respective authors. Before the two surveys, questions were designed to elicit information about the participants' demographic and academic characteristics, including gender, year level, percentage of enrolled units, and previous semester's grade point average (GPA).

The BBQ developed and published by Lindner et al.[16] was used to assess QoL. This brief QoL measure was developed to determine total QoL by measuring satisfaction with 12 items about six life domains: recreation, philosophy of life, self-regard, creativity, learning, and friendship. This single-factor scale is scored on a scale of 0−4, with 0 indicating strong disagreement and 4 indicating strong agreement. The total life score was calculated by multiplying the satisfaction rating (items 1, 3, 5, 7, 9, and 11) and the importance rating (items 2, 4, 6, 8, 10, and 12) for each life area and adding the six-item categories (leisure time, view of my life, creativity, learning, friends, friendliness, and myself as a person). Possible scores ranged from 0 to 96. Higher scores indicated a higher QoL. The BBQ has a Cronbach's alpha coefficient of 0.76 from a 731-sample size and an intraclass correlation coefficient of 0.82, indicating a high level of test-retest reliability.[16] The Arabic translation of the tool, available at http://bbqscale.com/download/, was utilised for this study.

Cassidy's 30-item Academic Resilience Scale (ARS-30)[17] was used to measure resilience. This questionnaire was designed to evaluate students' AR based on how they manage academic challenges. The scale's components incorporate cognitive, affective, and behavioural responses to academic challenges. The three components of the ARS-

30 are 'perseverance', 'reflecting and adaptive-help-seeking', and 'negative affect and emotional response'. The ARS-30 is scored on a scale of 1−5, with 1 being the most likely and 5 being the least likely. Before combining the scores in each component, the positively worded items (2, 4, 5, 8, 9, 10, 11, 13, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, and 27) were reverse scored. Higher scores indicate higher levels of AR. The overall score ranged from 30 to 150. The ARS-30 three-factor solution was supported by factor analysis, which yielded an overall variance of 42.4%, indicating acceptable construct validity. The tool's overall Cronbach's alpha score was 0.90, with the three factors ranging from 0.78 to 0.83.[17]

We processed the translation of the ARS-30 instrument to Arabic from its original English version with the help of three language experts affiliated with the study setting, following the guidelines and procedures for semantic equivalence.[32] A forward-backward translation ensured the validity of the instrument's content.[32] The instrument was then validated by three experienced researchers from the College of Nursing who are fluent in Arabic and English. We conducted a pilot test of the translated version of the instrument with a subset of the population (10%) to identify any errors or flaws. Cronbach's alpha coefficient for the ARS-30 instrument was 0.84, suggesting high reliability.[33] When assessing AR in NSs, the ARS-30 was the preferred measure.

### Data collection

As face-to-face interaction is not permitted in the study setting due to the COVID-19 prevention policy, data were collected using a Google online form from February 7, 2021, to June 8, 2021. Google survey forms were sent to the participants' registered email addresses. The participants' personal information was withheld during the data collection process. We sent reminders every 48−72 h via email and *WhatsApp* group chat to ensure a high response rate.

### Statistical analysis

Statistical analysis was conducted using IBM Statistical Package for Social Sciences (SPSS) version 27.0. Armonk, NY: IBM Corp. To address objective one, we assessed the frequency and percentage distributions of the surveyed students' responses. We computed the means and standard deviations to summarise the responses to both instruments to answer objective two. Meanwhile, an independent two-sample t-test for gender and one-way analysis of variance (ANOVA) for the remaining profile variables were employed to assess a significant difference in the participants' scores on both instruments based on their demographic profiles. For objective three, we used the point−biserial correlation coefficient for gender and Kendall's tau correlation coefficient. Additionally, utilising SEM, the latent variable analysis (*lavaan*) package version 0.6−7[34] in the R environment was employed to model the complex relationships between the latent and observable variables under study. Thus, we used SEM, using the maximum likelihood of estimation to ascertain the relationships between the attributes of QoL and AR.[35] The following parameters were used to appraise model fit: CMIN/df $\leq$ 3.00, root mean square error of approximation (RMSEA) $\leq$ 0.08,[35] and comparative fit index (CFI) $\geq$ 0.90.[36]

## Results

### Participants' demographic profile

The results revealed that, out of the 384 samples, most of the participants were females (76.7%). In terms of units enrolled, 81.4% enrolled in 100% of the offered units, while only 2.90% enrolled in less than 50.0%. Regarding year level, most of the participants were second-year students (42.7%), followed by third- (35.2%) and fourth-year students (22.1%). The majority obtained a GPA of B (37.2%), and none had a D or D+ (Table 1).

### Responses to the BBQ and ARS-30

For the BBQ, the items with the highest means were items 11 'I am satisfied with myself as a person, I like and respect myself', and item 12, *My satisfaction with myself as a person is important for my quality of life'*; both had a mean of 3.6. These were followed by items 9, 6, 4, and 1, with a mean of 3.3. The lowest was item 3 *'I am satisfied with how I view my*

**Table 1: Participants' demographic profile (*n = 384*).**

| Profile variable | | N | % |
|---|---|---|---|
| Gender | Male | 80 | 23.3 |
| | Female | 264 | 76.7 |
| Units enrolled | less than 50% of offered units | 10 | 2.9 |
| | 50% of offered units | 54 | 15.7 |
| | 100% of offered units | 280 | 81.4 |
| Year level | Second year | 147 | 42.7 |
| | Third year | 121 | 35.2 |
| | Fourth year | 76 | 22.1 |
| Grade point average (GPA) | D | 0 | 0.0 |
| | D+ | 0 | 0.0 |
| | C | 5 | 1.5 |
| | C+ | 86 | 25.0 |
| | B | 128 | 37.2 |
| | B+ | 47 | 13.7 |
| | A | 66 | 19.2 |
| | A+ | 12 | 3.5 |

**Table 2: Responses of the participants to the BBQ (*n = 384*).**

| Item | Rating Scale | | | | | | | | | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | | 1.0 | | 2.0 | | 3.0 | | 4.0 | | | |
| | N | % | N | % | N | % | N | % | N | % | | |
| 1. I am satisfied with my leisure time: I have the opportunity to do what I want in order to relax and enjoy myself. | 0 | 0.0 | 4 | 1.2 | 10 | 2.9 | 215 | 62.5 | 115 | 33.4 | 3.3 | 0.6 |
| 2. My leisure time is important for my quality of life. | 12 | 3.5 | 0 | 0.0 | 54 | 15.7 | 162 | 47.1 | 116 | 33.7 | 3.1 | 0.9 |
| 3. I am satisfied with how I view my life: I know what means a lot to me, what I believe in, and what I want to do with my life. | 22 | 6.4 | 0 | 0.0 | 57 | 16.6 | 169 | 49.1 | 96 | 27.9 | 2.9 | 1.0 |
| 4. How I view my life is important for my quality of life. | 10 | 2.9 | 0 | 0.0 | 23 | 6.7 | 168 | 48.8 | 143 | 41.6 | 3.3 | 0.8 |
| 5. I am satisfied with opportunities to be creative: to get to use my imagination in my everyday life, in a hobby, on the job, or in my studies. | 27 | 7.8 | 2 | 0.6 | 39 | 11.3 | 161 | 46.8 | 115 | 33.4 | 3.0 | 1.1 |
| 6. Being able to be creative is important for my quality of life | 0 | 0.0 | 0 | 0.0 | 35 | 10.2 | 156 | 45.3 | 153 | 44.5 | 3.3 | 0.7 |
| 7. I am satisfied with my learning: I have the opportunity and desire to learn new, exciting things and skills that interest me. | 20 | 5.8 | 0 | 0.0 | 76 | 22.1 | 88 | 25.6 | 160 | 46.5 | 3.1 | 1.1 |
| 8. Learning is important for my quality of life | 34 | 9.9 | 0 | 0.0 | 12 | 3.5 | 117 | 34.0 | 181 | 52.6 | 3.2 | 1.2 |
| 9. I am satisfied with friends and friendship: I have friends that I associate with and who support me (as many friends as I want and need). | 28 | 8.1 | 0 | 0.0 | 28 | 8.1 | 71 | 20.6 | 217 | 63.1 | 3.3 | 1.2 |
| 10. Friends and friendship are important for my quality of life | 22 | 6.4 | 4 | 1.2 | 15 | 4.4 | 174 | 50.6 | 129 | 37.5 | 3.1 | 1.0 |
| 11. I am satisfied with myself as a person: I like and respect myself. | 2 | 0.6 | 0 | 0.0 | 23 | 6.7 | 77 | 22.4 | 242 | 70.3 | 3.6 | 0.7 |
| 12. My satisfaction with myself as a person is important for my quality of life | 4 | 1.2 | 0 | 0.0 | 19 | 5.5 | 79 | 23.0 | 242 | 70.3 | 3.6 | 0.7 |

**Table 3: Responses of the participants to the ARS-30 (*n* = 384).**

| Items | Rating Scale | | | | | | | | | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1.0 | | 2.0 | | 3.0 | | 4.0 | | 5.0 | | | |
| | N | % | N | % | N | % | N | % | N | % | | |
| 1. I would not accept the tutors' feedback. | 22 | 6.4 | 86 | 25.0 | 49 | 14.2 | 94 | 27.3 | 93 | 27.0 | 3.4 | 1.3 |
| 2. I would use the feedback to improve my work. | 201 | 58.4 | 128 | 37.2 | 15 | 4.4 | 0 | 0.0 | 0 | 0.0 | 1.5 | 0.6 |
| 3. I would just give up. | 0 | 0.0 | 22 | 6.4 | 57 | 16.6 | 93 | 27.0 | 172 | 50.0 | 4.2 | 0.9 |
| 4. I would use the situation to motivate myself. | 243 | 70.6 | 64 | 18.6 | 37 | 10.8 | 0 | 0.0 | 0 | 0.0 | 1.4 | 0.7 |
| 5. I would change my career plans. | 0 | 0.0 | 150 | 43.6 | 78 | 22.7 | 101 | 29.4 | 15 | 4.4 | 2.9 | 1.0 |
| 6. I would probably get annoyed. | 49 | 14.2 | 100 | 29.1 | 94 | 27.3 | 86 | 25.0 | 15 | 4.4 | 2.8 | 1.1 |
| 7. I would begin to think my chances of success at university were poor. | 7 | 2.0 | 49 | 14.2 | 78 | 22.7 | 210 | 61.0 | 0 | 0.0 | 3.4 | 0.8 |
| 8. I would see the situation as a challenge. | 187 | 54.4 | 93 | 27.0 | 57 | 16.6 | 7 | 2.0 | 0 | 0.0 | 1.7 | 0.8 |
| 9. I would do my best to stop thinking negative thoughts. | 101 | 29.4 | 127 | 36.9 | 101 | 29.4 | 15 | 4.4 | 0 | 0.0 | 2.1 | 0.9 |
| 10. I would see the situation as temporary. | 171 | 49.7 | 64 | 18.6 | 94 | 27.3 | 15 | 4.4 | 0 | 0.0 | 1.9 | 1.0 |
| 11. I would work harder. | 187 | 54.4 | 14 | 4.1 | 121 | 35.2 | 22 | 6.4 | 0 | 0.0 | 1.9 | 1.1 |
| 12. I would probably get depressed. | 0 | 0.0 | 193 | 56.1 | 0 | 0.0 | 42 | 12.2 | 109 | 31.7 | 3.2 | 1.4 |
| 13. I would try to think of new solutions. | 194 | 56.4 | 49 | 14.2 | 101 | 29.4 | 0 | 0.0 | 0 | 0.0 | 1.7 | 0.9 |
| 14. I would be very disappointed. | 0 | 0.0 | 108 | 31.4 | 49 | 14.2 | 93 | 27.0 | 94 | 27.3 | 3.5 | 1.2 |
| 15. I would blame the tutor. | 0 | 0.0 | 14 | 4.1 | 42 | 12.2 | 288 | 83.7 | 0 | 0.0 | 3.8 | 0.5 |
| 16. I would keep trying. | 101 | 29.4 | 100 | 29.1 | 101 | 29.4 | 42 | 12.2 | 0 | 0.0 | 2.2 | 1.0 |
| 17. I would not change my long-term goals and ambitions. | 108 | 31.4 | 142 | 41.3 | 94 | 27.3 | 0 | 0.0 | 0 | 0.0 | 2.0 | 0.8 |
| 18. I would use my past successes to help motivate myself. | 100 | 29.1 | 101 | 29.4 | 101 | 29.4 | 42 | 12.2 | 0 | 0.0 | 2.2 | 1.0 |
| 19. I would begin to think my chances of getting the job I want were poor. | 42 | 12.2 | 108 | 31.4 | 93 | 27.0 | 101 | 29.4 | 0 | 0.0 | 2.7 | 1.0 |
| 20. I would start to monitor and evaluate my achievements and effort. | 187 | 54.4 | 56 | 16.3 | 0 | 0.0 | 101 | 29.4 | 0 | 0.0 | 2.0 | 1.3 |
| 21. I would seek help from my tutors. | 194 | 56.4 | 49 | 14.2 | 101 | 29.4 | 0 | 0.0 | 0 | 0.0 | 1.7 | 0.9 |
| 22. I would give myself encouragement. | 187 | 54.4 | 56 | 16.3 | 101 | 29.4 | 0 | 0.0 | 0 | 0.0 | 1.8 | 0.9 |
| 23. I would stop myself from panicking. | 101 | 29.4 | 142 | 41.3 | 101 | 29.4 | 0 | 0.0 | 0 | 0.0 | 2.0 | 0.8 |
| 24. I would try different ways to study. | 164 | 47.7 | 123 | 35.8 | 57 | 16.6 | 0 | 0.0 | 0 | 0.0 | 1.7 | 0.7 |
| 25. I would set my own goals for achievement. | 265 | 77.0 | 49 | 14.2 | 15 | 4.4 | 15 | 4.4 | 0 | 0.0 | 1.4 | 0.8 |
| 26. I would seek encouragement from my family and friends. | 172 | 50.0 | 49 | 14.2 | 116 | 33.7 | 7 | 2.0 | 0 | 0.0 | 1.9 | 1.0 |
| 27. I would try to think more about my strengths and weaknesses to help me work better. | 179 | 52.0 | 108 | 31.4 | 42 | 12.2 | 15 | 4.4 | 0 | 0.0 | 1.7 | 0.8 |
| 28. I would feel like everything was ruined and was going wrong. | 27 | 7.8 | 202 | 58.7 | 115 | 33.4 | 0 | 0.0 | 0 | 0.0 | 2.3 | 0.6 |
| 29. I would start to self-impose rewards and punishments depending on my performance. | 100 | 29.1 | 187 | 54.4 | 42 | 12.2 | 15 | 4.4 | 0 | 0.0 | 1.9 | 0.8 |
| 30. I would look forward to showing that I can improve my grades. | 226 | 65.7 | 60 | 17.4 | 52 | 15.1 | 4 | 1.2 | 2 | 0.6 | 1.5 | 0.8 |

**Table 4: Correlation between the responses of the participants to the BBQ and ARS-30 ($n = 384$).**

| Profile Variables | | Academic Resilience Scale (ARS-30) | | | | | | | | | Brunnsviken Brief Quality of life scale (BBQ) | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | Perseverance | | | Reflecting and adaptive help-seeking | | | Negative affect and emotional response | | | | | |
| | | Mean | SD | p-value | Mean | SD | p-value | Mean | SD | p-value | Mean | SD | p-value |
| Gender | Male | 15.7 | 2.9 | 0.645 | 8.1 | 3.6 | 0.569 | 14.1 | 2.7 | 0.701 | 66.68 | 17.77 | 0.259 |
| | Female | 15.9 | 3.0 | | 8.4 | 3.8 | | 14.2 | 2.7 | | 64.04 | 18.38 | |
| Units Enrolled | less than 50% of offered units | 17.9 | 2.9 | 0.069 | 11.0 | 4.2 | 0.063 | 13.8 | 2.0 | 0.879 | 65.40 | 16.53 | 0.208 |
| | 50% of offered units | 15.7 | 2.9 | | 8.1 | 3.6 | | 14.2 | 2.7 | | 60.61 | 18.42 | |
| | 100% of offered units | 15.8 | 2.9 | | 8.3 | 3.8 | | 14.2 | 2.7 | | 65.41 | 18.23 | |
| Year Level | Second year | 16.1 | 3.0 | 0.078 | 8.6 | 3.9 | 0.195 | 14.2 | 2.6 | 0.497 | 65.44 | 18.16 | 0.784 |
| | Third year | 16.0 | 3.0 | | 8.4 | 3.9 | | 14.4 | 2.6 | | 63.96 | 18.67 | |
| | Fourth year | 15.2 | 2.7 | | 7.7 | 3.3 | | 13.9 | 2.9 | | 64.24 | 17.91 | |
| GPA | D | 0 | 0 | 0.668 | 0 | 0 | 0.797 | 0 | 0 | 0.689 | 0 | 0 | 0.555 |
| | D+ | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| | C | 14.3 | 2.4 | | 6.3 | 3.0 | | 16.0 | 2.4 | | 56.60 | 17.36 | |
| | C+ | 16.2 | 2.9 | | 8.6 | 3.8 | | 14.1 | 2.5 | | 62.98 | 18.26 | |
| | B | 15.7 | 3.0 | | 8.4 | 3.8 | | 14.3 | 2.8 | | 64.11 | 17.56 | |
| | B+ | 15.7 | 2.9 | | 8.2 | 3.8 | | 13.9 | 2.6 | | 65.13 | 18.03 | |
| | A | 15.7 | 2.9 | | 8.1 | 3.7 | | 14.2 | 2.7 | | 67.85 | 19.01 | |
| | A+ | 16.1 | 2.7 | | 8.5 | 3.4 | | 14.4 | 2.2 | | 66.42 | 22.81 | |
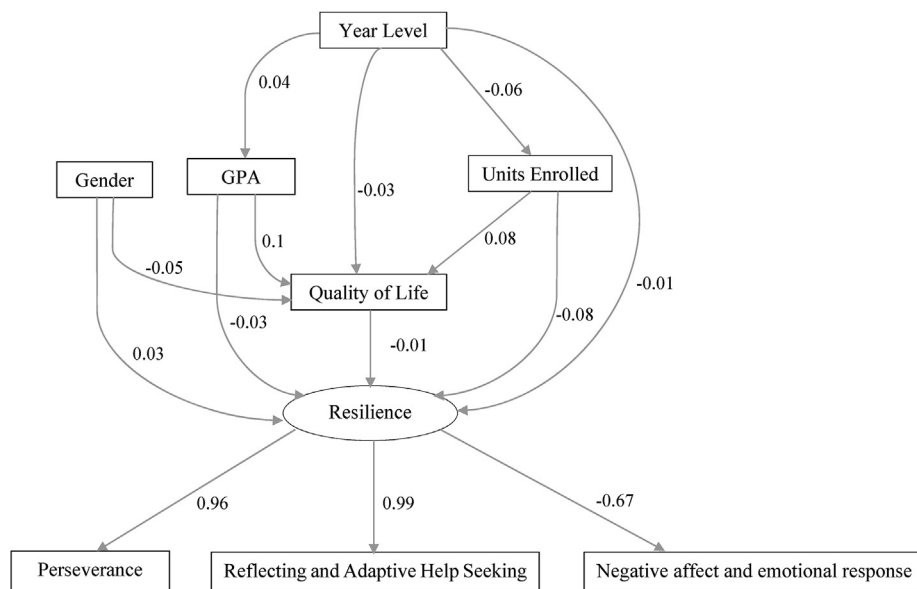
**Figure 1:** Structural Equation Modeling (SEM).

| Table 5: Regression weights. | | | |
|---|---|---|---|
| Structural equation modeling | Regression Weights | | |
| | β | CR | p |
| Gender → QoL | −0.048 | −0.894 | 0.371 |
| Gender → Resilience | 0.030 | 0.557 | 0.578 |
| Year level → QoL | −0.028 | −0.521 | 0.602 |
| Year level → GPA | 0.043 | 0.793 | 0.428 |
| Year level → Resilience | −0.100 | −1.858 | 0.063 |
| Year level → Units enrolled | −0.057 | −1.059 | 0.289 |
| GPA → QoL | 0.105 | 1.961 | 0.050 |
| GPA → Resilience | −0.027 | −0.503 | 0.615 |
| Units enrolled → QoL | 0.079 | 1.474 | 0.140 |
| Units enrolled → Resilience | −0.075 | 1.391 | 0.164 |
| QoL → Resilience | −0.005 | −0.098 | 0.922 |
| Resilience → Perseverance | 0.965 | 23.912 | 0.00 |
| Resilience → Reflecting and adaptive help-seeking | 0.992 | 41.565 | 0.000 |
| Resilience → Negative effect and emotional response | −0.669 | −16.072 | 0.000 |

*life: I know what means a lot to me, what I believe in, and what I want to do with my life'* with a mean of 2.9 (Table 2).

On the other hand, for the ARS-30 measuring AR among participants, the items with the highest mean score were items 3 *'I would just give up,'* 15 *'I would blame the tutor'*, and 14 *'I would be very disappointed'* being the top one, two, and three, respectively. The two lowest were items 4 *'I would use the situation to motivate myself'* and 25 *'I would set my own goals for achievement'*, both with a mean score of 1.4 (Table 3). All computed p-values were larger than 0.05, indicating no significant difference in the scores for the three factors under AR and QoL among the groups in the four demographic variables.

*Correlation between the responses to the BBQ and ARS-30*

The correlation coefficients between the demographic variables, AR factors, and QoL are presented in Table 4. The

correlation coefficients were very close to zero, suggesting a very weak or no linear relationship between the variables. The calculated p-values were greater than 0.05, indicating no statistically significant association (Table 4).

*SEM between the participants profile to QoL and AR*

Using the lavaan package in R resulted in an SEM (Figure 1) that adequately fit the data (Chi-square $p = 0.066$, comparative fit index = 0.992, Tucker−Lewis Index = 0.984, RMSEA = 0.043, standardised root mean square = 0.034). As illustrated, two constructs of AR, perseverance (std.all/ $β = 0.965$) and reflecting and adaptive help-seeking (std.all/ $β = 0.992$) are positively correlated, while negative affect and emotional reprise (std.all/$β = −0.669$) are inversely correlated with AR. Only GPA is positively correlated with QoL among the demographic profiles. Gender, enrolled units, and year level showed no significant effects on QoL and AR in

the SEM. Finally, with a $p = 0.922$, there was no significant association between QoL and AR (Table 5).

## Discussion

This study explored the association between the Saudi NSs' QoL and AR. There was no disparity in terms of the participants' gender concerning their QoL and AR. Both genders rated their QoL and AR equally, making no differentiation between whether males had a greater QoL and AR or vice versa. In contrast to our findings, McLean[37] revealed that women experienced more significant anxiety and were more negatively impacted than their male counterparts. While students' QoL scored higher in the social relationships and environment domains, they scored lower in the psychological and physical health domains.[38] Contrary to our findings among Chinese NSs, where higher resilience was reported for those in advanced year levels, we found no difference in perceived AR across year levels.[39] Numerous factors may influence students' decision to take on a full or a half academic load.[40] Additional influences could arise from their sociocultural characteristics. Accordingly, students with lower academic achievement tend to exhibit undesirable behaviours inside the school compared to those with a higher GPA.[41] Remarkably, our study found no GPA below the bottom 50th percentile. Notably, 40.0% of the participants had GPA in the top 20th percentile with A and A+ grades.

Published studies on QoL and AR among NSs proved to be multifactorial. Physical factors play a role in a person's state of QoL. These physical factors may be related to physical lifestyle, having adequate rest and sleep, and obesity.[42] In Poland, Spain, and Slovakia, an analysis found a direct correlation between NSs' reported stress and coping abilities and their QoL.[43] Negative QoL was reported from NSs' caring roles and hospital experiences.[43] Mak et al.[20] advocates using HPLs, including activities such as exercise and proper diet, and spiritual growth. Studies show that yoga and self-compassion are effective in reducing stress[9] and religiosity and spiritual coping.[8]

Our SEM revealed that, except for GPA, none of the profile variables were directly related to either QoL or AR, with GPA having a narrow margin of correlation. As Hwang and Shin[26] reported, NSs, regardless of gender, academic performance, or year level, possess high AR and excellent social disposition and academic excellence. They are satisfied with their environment and their protective factors on various occasions and circumstances, regardless of their academic correlations. Therefore, while the SEM demonstrated that all profile variables were connected, concrete discrimination could not be established when each variable was classified according to its direct association with QoL and AR.

To support the results of the SEM, recently published studies revealed that QoL and resilience have no distinct relationship. Perdellar[44] found that resilience among depressed patients may lead to a better prognosis but is not an assurance of the recurrence of mental illness leading to QoL. However, resilience is considered a beneficial aspect in the QoL of patients. Macia et al.[45] determined if resilience is a predictive factor for the QoL of cancer patients and found that it cannot predict a desirable QoL. Resilience and QoL were also compared between adolescents suffering from chronic heart disease (CHD) and cancer survivors, where the latter showed less resilience than the former. Despite this disparity in their resilience, there is no correlation between the QoL of these two groups of hospitalised teenagers and a higher QoL.[46] This demonstrates that resilience is not a predictor of either a greater or lower, better or worse QoL.

Despite numerous studies published on QoL and resilience that focused on NSs, only two explored the direct association between QoL and resilience in a group of NSs. These only involved first-and fourth-year levels, not during the COVID-19 pandemic,[47] and outside KSA.[14] There is an overwhelming body of research highlighting the role of nursing education, clinical instructors, nursing curriculum, and nursing school. These studies suggest the inclusion of QoL and training among NSs,[48] creation of modules on building resilience among NSs,[24] and promoting advocacy in championing the role of self-efficacy and resilience amongst students, which should be integrated into the nursing curricula.[49] Undeniably, nurse educators have a responsibility to foster AR among their students to enable them to face and overcome obstacles and adversities related to their future professional duties as licenced nurses.[39]

The findings of this study may have some limitations, particularly in terms of generalisability to present the state of QoL and AR of NSs. One reason for this is that a cross-sectional design was adopted. It can only present findings on the state of phenomena at a single point in time but cannot infer actual changes over time. The participants were also from a single university. In addition to using inferential statistics such as ANOVA, we also created an SEM to further enhance the validity of the interrelationship of the profile variables studied under the main phenomena of QoL and AR.

Although our results are comparable to previous studies on the same phenomena, the uniqueness of our study underlies three important reasons: (1) the study was conducted during the COVID-19 pandemic, which the world has never experienced, (2) we focused on AR that can only be ascribed to the NSs, rather than on other types of resilience, and (3) understanding the QoL and AR of NSs is essentially significant and urgent because their vulnerability to countless stressors is intensely overwhelming given the fact that their curricular demands may be an aggravating factor in their current struggle with the pandemic.

Our results and the study itself should be a pivotal factor for more research focusing on the same phenomena in other academic institutions among their students.

## Conclusions

In the SEM, all but one (GPA) of the profile variables did not clearly indicate that they were associated with the NSs'

QoL and AR. Thus, the study's two hypotheses are accepted in this regard. It is also worth noting that, despite sharing academic disciplines, geopolitical regions, and belief systems, Saudi NSs are unique and diverse in many ways. Furthermore, our findings indicate that students with a higher GPA have a more secure and better QoL. Finally, our research demonstrated the importance of AR in pursuing a better QoL for NSs who struggled to reach their academic goals despite additional obligations outside the university.

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## Conflict of interest

The authors have no conflicts of interest to declare.

## Ethical approval

The Research Ethics Committee of the University of Ha'il (Reference No. H-2020-231, approved: 11/27/2020) approved the study. An implied consent was obtained from all participants included in this study when they send back the online survey forms.

## Authors contributions

RANG and DJEB led the conceptualisation of the topic focus, searched relevant literature and studies, and provided research materials. RANG, DJEB, and KCPS developed the methods section. RANG, DIC, and PP collected and organised the data for analysis. KCPS analysed and interpreted the data. RANG wrote the initial draft of the article, organised the discussion and provided support for the derived results. DJEB wrote the final draft of the manuscript. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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