

**Artikel Asli /Original Article**

## Academic Stress and Financial Stress as Predictors of Anxiety Level Among Radiologic Technology Students

Tekanan Akademik dan Tekanan Kewangan sebagai Peramal Tahap Kebimbangan dalam  
Kalangan Pelajar Teknologi Radiologi

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### ABSTRACT

This study examined whether academic stress and financial stress significantly predict anxiety levels among Radiologic Technology students. A quantitative descriptive-predictive design was employed. A stratified random sample of 187 Radiologic Technology students from all year levels in selected higher education institution in Davao City, Philippines participated during the second semester of Academic Year 2024–2025. Data were collected using adapted versions of validated instruments measuring Academic Stress Inventory, Financial Stress Scale, and Anxiety Scale, all demonstrating acceptable reliability (Cronbach's  $\alpha = .765-.943$ ). Descriptive statistics, Pearson correlation, and multiple linear regression analysis were utilized. Students reported a high level of academic stress (overall mean = 3.64), particularly in test- and subject-related domains (mean = 3.94). Financial stress was rated at a moderate level (overall mean = 2.62), while anxiety levels were also moderate (overall mean = 2.62). Correlation analysis showed significant positive relationships between anxiety and academic stress ( $r = .633, p < .001$ ) and financial stress ( $r = .358, p < .001$ ). Multiple linear regression analysis revealed that academic stress significantly predicted anxiety levels ( $\beta = .605, p < .001$ ), whereas financial stress was not a significant predictor ( $\beta = .057, p = .390$ ). These findings highlight that academic-related pressures are the primary drivers of anxiety among Radiologic Technology students, emphasizing the need for targeted academic and psychosocial interventions.

Keywords: Academic stress, anxiety level, financial stress, radiologic technology students, predictive study

### ABSTRAK

Kajian ini bertujuan untuk menentukan sama ada tekanan akademik dan tekanan kewangan merupakan peramal signifikan kepada tahap kebimbangan dalam kalangan pelajar Teknologi Radiologi. Reka bentuk kajian kuantitatif deskriptif-ramalan telah digunakan. Seramai 187 orang pelajar Teknologi Radiologi daripada semua peringkat pengajian di institusi pengajian tinggi terpilih di Davao City, Filipina telah dipilih melalui kaedah pensampelan rawak berstrata dan terlibat dalam kajian ini semasa semester kedua Tahun Akademik 2024–2025. Data dikumpulkan menggunakan versi adaptasi daripada instrumen yang telah disahkan, iaitu Inventori Stres Akademik, Skala Stres Kewangan, dan Skala Kebimbangan, yang semuanya menunjukkan kebolehpercayaan yang memuaskan (Cronbach's  $\alpha = .765-.943$ ). Analisis statistik yang digunakan merangkumi statistik deskriptif, korelasi Pearson, dan analisis regresi linear berganda. Dapatan kajian menunjukkan bahawa pelajar mengalami tahap tekanan akademik yang tinggi (min keseluruhan = 3.64), khususnya dalam domain berkaitan ujian dan subjek (min = 3.94). Tekanan kewangan pula berada pada tahap sederhana (min keseluruhan = 2.62), manakala tahap kebimbangan juga berada pada tahap sederhana (min keseluruhan = 2.62). Analisis korelasi menunjukkan hubungan positif yang signifikan antara kebimbangan dengan tekanan akademik ( $r = .633, p < .001$ ) serta tekanan kewangan ( $r = .358, p < .001$ ). Analisis regresi linear berganda pula menunjukkan bahawa tekanan akademik merupakan peramal signifikan kepada tahap kebimbangan ( $\beta = .605, p < .001$ ), manakala tekanan kewangan tidak menunjukkan kesan ramalan yang signifikan ( $\beta = .057, p = .390$ ). Secara keseluruhannya, dapatan kajian ini

menunjukkan bahwa tekanan berkaitan akademik merupakan faktor utama yang mempengaruhi tahap keseimbangan dalam kalangan pelajar Teknologi Radiologi, sekali gus menekankan keperluan intervensi akademik dan psikososial yang bersasar bagi menyokong kesejahteraan pelajar.

Kata Kunci: Kebimbangan, pelajar teknologi radiologi, tekanan akademik, tekanan kewangan

## INTRODUCTION

Radiologic Technology education is characterized by a unique combination of rigorous academic instruction, technical skill development, and high-stakes clinical responsibilities. Students are required to master radiation safety protocols, precise imaging techniques, patient positioning, and the operation of advanced diagnostic equipment, all while ensuring patient safety. These demands create a highly pressurized learning environment that may contribute to elevated levels of academic stress (Trigueros et al. 2020). Academic stress arises when educational demands exceed a student's perceived ability to cope and is commonly associated with examinations, subject complexity, classroom performance, and fear of failure (Pascoe, Hetrick & Parker 2020). In Radiologic Technology programs, stress is intensified by competency-based assessments and clinical exposure, where errors may have direct implications for patient outcomes (Ho et al. 2022).

In addition to academic demands, financial stress is an important factor influencing student well-being, particularly in low- and middle-income settings such as the Philippines. Many students rely on family support, scholarships, or limited financial resources to sustain their education. Financial strain has been associated with emotional distress, reduced academic engagement, and increased anxiety, especially among students facing uncertainty regarding tuition and daily expenses (Bernardo et al. 2019; Heo, Cho & Lee 2020; McCloud & Bann 2019). Despite the growing body of literature on stress and anxiety among healthcare students, there remains a paucity of research focusing specifically on Radiologic Technology students. Furthermore, limited studies have examined the predictive contribution of academic stress and financial stress in explaining anxiety within this population. Guided by the Conservation of Resources Theory, which posits that stress occurs when individuals perceive a threat to valued resources such as time, energy, and financial security (Hobfoll et al. 2018).

This study aims to determine whether academic stress and financial stress significantly predict anxiety levels among Radiologic Technology students. Its findings provide valuable insights for students, educators, academic institutions, and mental health practitioners, guiding the development of targeted interventions and support systems to improve student well-being and academic performance.

## MATERIALS AND METHODS

This section describes the research design, participants, instruments, data collection procedures, and statistical analyses employed in the study.

### STUDY DESIGN AND PARTICIPANTS

This study employed a quantitative descriptive-predictive research design conducted in selected higher education institution Davao City, Philippines. A total of 187 Radiologic Technology students were selected using stratified random sampling technique. The distribution of participants was based on identified strata, which included first year ( $n = 76$ ), second year ( $n = 53$ ), third year ( $n = 40$ ) and fourth year ( $n = 18$ ) yielding a total sample size of 187 respondents out of 360 population using raosoft.com calculator. Participants were included if they were officially enrolled Radiologic Technology students, aged 18 years and above, present during the data collection period, and willing to provide informed consent. Students who submitted incomplete responses or declined participation were excluded from the study. The respondents were generally within the age range of 18 to 22 years and included both male and female students across all year levels, providing a comprehensive representation of the student population.

### RESEARCH INSTRUMENTS

The study utilized three adapted and validated instruments, namely the Academic Stress Inventory developed by Pizze and Kraemer (2019) to reflect the specific context of Radiologic Technology education, particularly in relation to classroom demands, personal stress, and examination pressures, the APR Financial Stress Scale developed by Heo, Cho, and Lee (2020) assessed affective, relational, and physiological responses to financial strain, while the Anxiety Scale captured common anxiety experiences encountered in academic and performance-based situations, and Anxiety Scale developed by Raykov and Martinelli (2019) to measure academic-related anxiety domains such as test anxiety, writing anxiety, public speaking anxiety, and group work anxiety. All instruments utilized a five-point Likert scale ranging from strongly disagree to strongly agree. The instruments demonstrated acceptable internal consistency with Cronbach's alpha values academic stress (15 items,  $\alpha = .765$ ), financial stress (24 items,  $\alpha = .943$ ), and

anxiety level (12 items,  $\alpha = .962$ ).

#### DATA GATHERING PROCEDURES

Data were collected through a self-administered survey conducted during the second semester of Academic Year 2024–2025. The questionnaire was administered either in paper-based and via google form depending on accessibility and availability of respondents. Prior to data collection, participants were informed about the purpose of the study, and informed consent was obtained.

#### DATA ANALYSIS

Descriptive statistics measures academic stress, financial stress, and anxiety levels. Pearson correlation examined relationships among variables, while multiple linear regression assessed the predictive effects of academic and financial stress on anxiety at a 0.05 significance level. Assumptions of normality, linearity, and absence of multicollinearity were checked prior to analysis.

#### ETHICAL CONSIDERATIONS

Ethical approval was obtained from the San Pedro College Research Ethics Committee with Certificate Approval No. 2025-0073. Participation was voluntary with informed consent secured from all respondents.

### RESULTS AND DISCUSSION

This section presents the results and discussion on the levels of academic stress, financial stress, and anxiety among the respondents. It also includes correlation and predictive analyses examining the relationships among these variables and the influence of stress on anxiety, interpreted in relation to the study objectives and relevant literature.

The Table 1 presents the distribution of respondents according to year level. The majority were first-year students (41%), followed by second-year (28%), third-year (21%), and fourth-year students (10%). This indicates that lower-year students comprised a larger proportion of the sample, which may influence the overall stress and anxiety levels reported. Early-year students often experience adjustment challenges related to academic workload, learning environment, and expectations, which may heighten their stress levels. In contrast, senior students, although fewer in number, may experience different stressors such as clinical responsibilities and career preparation.

The Table 2 indicate that respondents experienced a high level of academic stress ( $M = 3.64$ ,  $SD = 0.65$ ). Among the domains, test- and subject-related stress recorded the highest mean ( $M = 3.94$ ), followed by personal ( $M = 3.66$ ), while

classroom-related stress was moderate ( $M = 3.33$ ). This suggests that evaluation-driven demands, such as examinations, complex subject content, and fear of inadequate preparation, are the primary contributors to academic stress. These findings are consistent with prior studies (Pascoe et al., 2020; Ho et al., 2022), which emphasize that academic workload and performance expectations are major sources of psychological strain among healthcare students. From a theoretical perspective, the Conservation of Resources Theory explains that continuous academic demands may deplete students' cognitive and emotional resources. Frequent assessments and high expectations require sustained effort, leaving students vulnerable to stress when resources such as time, energy, and coping mechanisms are insufficient.

The Table 3 shows the financial stress among respondents was found to be moderate, based on the overall mean of 2.62 ( $SD = 0.79$ ). It is important to clarify that the previously stated value of 3.06 refers only to the affective reaction domain, not the overall level—this discrepancy has now been corrected. Among the indicators, affective reactions ( $M = 3.06$ ) were moderate, suggesting that students experience emotional concerns related to finances. However, relational/interpersonal ( $M = 2.40$ ) and physiological responses ( $M = 2.41$ ) were low, indicating that financial stress may not strongly manifest in social behavior or physical symptoms. This pattern suggests that while students are aware and concerned about financial challenges, these concerns may be partially mitigated by external support systems such as family assistance, scholarships, or institutional resources. This supports the idea that financial stress may operate as a secondary or interacting stressor, rather than a primary driver of anxiety in this population. Similar findings were reported by Bernardo et al. (2019), who observed that financial stress negatively affects well-being but often interacts with academic pressures rather than acting independently.

The Table 4 shows level of anxiety among respondents was high ( $M = 3.48$ ,  $SD = 1.00$ ). Moreover, domain-specific analysis shows that public speaking anxiety ( $M = 3.93$ ) and test/exam anxiety ( $M = 3.77$ ) were high, while writing ( $M = 3.30$ ) and group work anxiety ( $M = 2.95$ ) were moderate. This suggests that performance-based academic situations are among the primary sources of anxiety for students. These findings align with previous research (Krispenz et al., 2019), which highlights that evaluative and public performance contexts commonly associate anxiety in university settings. In Radiologic Technology, students are frequently exposed to oral presentations, practical exams, and clinical evaluations. These high-stakes situations may intensify anxiety due to fear of failure, negative evaluation, or inadequate preparation. This aligns

with global evidence indicating that evaluative and performance-based academic situations commonly trigger anxiety among university students (Krispenz, Gort & Schultze 2019).

The Table 5 shows the correlation analysis revealed significant positive relationships between anxiety and both academic stress ( $r = .633$ ,  $p < 0.001$ ) and financial stress ( $r = .358$ ,  $p < 0.001$ ). All subdomains of academic and financial stress also showed significant correlations with anxiety. This indicates that as levels of stress increase, anxiety levels also tend to increase. Notably, test- and subject-related stress ( $r = .634$ ) showed the strongest association with anxiety, further reinforcing the role of academic demands as a key factor influencing students' psychological well-being. This finding supports earlier research indicating that academic-related demands exert a stronger and more immediate influence on student anxiety than financial concerns (Trigueros et al. 2020; Pascoe et al. 2020).

The Table 6 shows the multiple regression analysis revealed that academic stress is a significant

predictor of anxiety ( $\beta = .605$ ,  $p < 0.001$ ), while financial stress is not a significant predictor ( $\beta = .057$ ,  $p = 0.390$ ). The model explained approximately 40.3% of the variance in anxiety ( $R^2 = .403$ ), indicating a substantial effect. This finding suggests that although financial stress is related to anxiety, it does not independently influence anxiety when academic stress is taken into account. One possible explanation is that academic stress is more immediate, constant, and embedded in students' daily experiences, whereas financial stress may fluctuate and be buffered by external support systems. From the Conservation of Resources Theory perspective, academic demands may result in continuous resource depletion, making them a stronger predictor of anxiety compared to financial concerns, which may not exert the same persistent pressure (Hobfoll et al. 2018). Additionally, contextual factors such as enrollment in a private institution may imply that some students have access to financial resources or support, reducing the direct impact of financial stress on anxiety.

TABLE 1. Demographic Profile of the Respondents

| Year Level           | Frequency  | Percentage  |
|----------------------|------------|-------------|
| First-Year Students  | 76         | 41%         |
| Second-Year Students | 53         | 28%         |
| Third-Year Students  | 40         | 21%         |
| Fourth-Year Students | 18         | 10%         |
| <b>Total</b>         | <b>187</b> | <b>100%</b> |

TABLE 2. Level of Academic Stress among Radiologic Technology Students

| Indicators          | Mean        | Std. Dev.   | Interpretation |
|---------------------|-------------|-------------|----------------|
| Personal            | 3.66        | 0.70        | High           |
| Classroom           | 3.33        | 0.80        | Moderate       |
| Test and Subject    | 3.94        | 0.85        | High           |
| <b>Overall Mean</b> | <b>3.64</b> | <b>0.65</b> | <b>High</b>    |

**Legend:** 4.21–5.00 = 5 (Very High), 3.41–4.20 = 4 (High), 2.61–3.40 = 3 (Moderate), 1.81–2.60 = 2 (Low), 1.00–1.80 = 1 (Very Low) adapted from Vagias (2006)

TABLE 3. Level of Financial Stress among Radiologic Technology Students

| Indicators                        | Mean        | Std. Dev.   | Interpretation  |
|-----------------------------------|-------------|-------------|-----------------|
| Affective Reaction                | 3.06        | 0.18        | Moderate        |
| Relational/Interpersonal Behavior | 2.40        | 1.02        | Low             |
| Physiological Responses           | 2.41        | 1.18        | Low             |
| <b>Overall Mean</b>               | <b>2.62</b> | <b>0.79</b> | <b>Moderate</b> |

**Legend:** 4.21–5.00 = 5 (Very High), 3.41–4.20 = 4 (High), 2.61–3.40 = 3 (Moderate), 1.81–2.60 = 2 (Low), 1.00–1.80 = 1 (Very Low) adapted from Vagias (2006)

TABLE 4. Level of Anxiety Level among Radiologic Technology Students

| Indicators              | Mean        | Std. Dev.   | Interpretation |
|-------------------------|-------------|-------------|----------------|
| Test/Exam Anxiety       | 3.77        | 0.98        | High           |
| Writing Anxiety         | 3.30        | 1.12        | Moderate       |
| Public Speaking Anxiety | 3.93        | 1.02        | High           |
| Group Work Anxiety      | 2.95        | 0.91        | Moderate       |
| <b>Overall Mean</b>     | <b>3.48</b> | <b>1.00</b> | <b>High</b>    |

**Legend:** 4.21–5.00 = 5 (Very High), 3.41–4.20 = 4 (High), 2.61–3.40 = 3 (Moderate), 1.81–2.60 = 2 (Low), 1.00–1.80 = 1 (Very Low) adapted from Vagias (2006)

TABLE 5. Correlation Analysis of Academic Stress, Financial Stress and Anxiety Levels of Radiologic Technology Students

| Anxiety Levels                  | Correlation Coefficient | p-value   | Interpretation |
|---------------------------------|-------------------------|-----------|----------------|
| <b>Academic Stress</b>          | .633**                  | p < 0.000 | Significant    |
| Personal                        | .382**                  | p < 0.000 | Significant    |
| Classroom                       | .530**                  | p < 0.000 | Significant    |
| Test and Subject                | .634**                  | p < 0.000 | Significant    |
| <b>Financial Stress</b>         | .358**                  | p < 0.000 | Significant    |
| Affected Reaction               | .274**                  | p < 0.000 | Significant    |
| Relation/Interpersonal Behavior | .311**                  | p < 0.000 | Significant    |
| Physiologic Responses           | .403**                  | p < 0.000 | Significant    |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

TABLE 6. The Variables that Best Predict the Anxiety Level Among Radiologic Technology Students

| Model             | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------------------|-----------------------------|------------|---------------------------|-------|------|
|                   | B                           | Std. Error | Beta                      |       |      |
| (Constant)        | .758                        | .251       |                           | 3.018 | .003 |
| 1 Academic Stress | .719                        | .078       | .605                      | 9.210 | .000 |
| Financial Stress  | .042                        | .049       | .057                      | .861  | .390 |

R=.635; R<sup>2</sup>=.403; R<sup>2</sup> Adjusted =.397; f value=62.190; p=0.000

## CONCLUSION

This study highlights the central role of academic stress in shaping anxiety among Radiologic Technology students, emphasizing that pressures related to examinations, subject difficulty, and performance expectations are the most influential contributors to students' psychological well-being. While financial stress remains a relevant concern, its influence appears to be secondary and context-dependent, suggesting that academic demands are more immediate and pervasive in students' daily

experiences. These findings underscore the importance of fostering supportive academic environments within healthcare education. Institutions should move beyond general mental health initiatives and implement targeted strategies such as balanced assessment practices, structured academic support, mentoring programs, and stress management interventions tailored to the academic context. Strengthening these areas can help mitigate anxiety and promote both student well-being and academic success. Future research may explore longitudinal designs to better understand causal relationships between stress and anxiety, as well as

include participants from multiple institutions to enhance generalizability. Additionally, examining moderating factors such as socioeconomic status, coping mechanisms, and institutional support systems may provide deeper insight into how different forms of stress interact and influence student outcomes.

### LIMITATIONS OF THE STUDY

This study has several limitations that should be acknowledged. First, the data were collected from a single institution, which may limit the generalizability of the findings to other populations. Second, reliance on self-reported measures may introduce response bias. Future research may consider longitudinal designs, multi-institutional samples, and mixed-method approaches to provide a more comprehensive understanding of student stress and anxiety.

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