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ORIGINAL RESEARCH

Exploring the Relationship Between Stress and Satisfaction During Clinical Training Among Respiratory Therapy Students: A Nationwide Cross-Sectional Survey

Rayan Siraj[1], Abdulelah M Aldhahir[2], Jaber S Alqahtani[3], Samah Bakhadlq[3], Saeed Alghamdi[4], Abdullah A Alqarni[5], Turki M Alanazi[6,7], Abdullah Alruwaili[6,7], Saleh S Algarni[8,9], Abdulrhman S Alghamd[10], Mushabbab Alahmari[11], Abdulmajeed Baogbah[12], Nawaf A Alsolami[13], Mufleh Alrougi[14], Kamal Hamed Al Khodidi[15], Fahad Alahmadi[16]

[1]Department of Respiratory Care, College of Applied Medical Sciences, King Faisal University, Al-Ahasa, 31982, Saudi Arabia; [2]Respiratory Therapy Department, Faculty of Applied Medical Sciences, Jazan University, Jazan, 45142, Saudi Arabia; [3]Department of Respiratory Care, Prince Sultan Military College of Health Sciences, Dammam, 34313, Saudi Arabia; [4]Department of Clinical Technology, Respiratory Care Program, Faculty of Applied Medical Sciences, Umm Al-Qura University, Makkah, Saudi Arabia; [5]Department of Respiratory Therapy, Faculty of Medical Rehabilitation Sciences, King Abdulaziz University, Jeddah, 22254, Saudi Arabia; [6]College of Applied Medical Sciences, King Saud Bin Abdulaziz University for Health Sciences, Al Ahsa, 31982, Saudi Arabia; [7]King Abdullah International Medical Research Center, Al Ahsa, 31982, Saudi Arabia; [8]Department of Respiratory Therapy, College of Applied Medical Sciences, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia; [9]King Abdullah International Medical Research Center, Riyadh, Saudi Arabia; [10]Department of Rehabilitation Science, College of Applied Medical Sciences, King Saud University, Riyadh, Saudi Arabia; [11]Department of Respiratory Therapy, College of Applied Medical Sciences, University of Bisha, Bisha, Saudi Arabia; [12]Department of Respiratory Therapy, Byrdine F. Lewis College of Nursing and Health Professions, Georgia State University, Atlanta GA, 30303, USA; [13]Department of Respiratory Therapy, East Jeddah Hospital, Jeddah, Saudi Arabia; [14]Department of Respiratory Care, King Abdulaziz Specialist Hospital, Taif, Saudi Arabia; [15]Respiratory Therapy Unit, Children's Hospital, Taif, Saudi Arabia; [16]Respiratory Therapy Department, College of Medical Rehabilitation Sciences, Taibah University, Madinah, Saudi Arabia

Correspondence: Rayan Siraj, Department of Respiratory Care, College of Applied Medical Sciences, King Faisal University, Al-Ahasa, 31982, Saudi Arabia, Email rsiraj@kfu.edu.sa

Background: Although clinical training is an important component of healthcare education, it is nevertheless a significant source of stress for students. There is limited information on stress and satisfaction perceived by clinical-level undergraduate students studying respiratory therapy (RT) in Saudi Arabia.

Methods: A descriptive, cross-sectional study design with an online questionnaire was employed to conduct this study. Data collection occurred during the academic year 2022–2023 among RT students throughout Saudi Arabia. Patricians responded to demographic questions, the Students Stress Scale and Students Professional Satisfaction questionnaires. Descriptive, inferential, and correlational statistics were used to analyze the collected responses.

Results: A total of 1001 undergraduate RT students completed the online survey. RT students and interns had an overall moderate to high stress level (mean (SD); 3.55 (0.49)), while satisfaction was perceived as mild to moderate (mean (SD): 2.56 (0.65)). In addition, 38% of the study participants have considered quitting the RT program. Female students showed higher stress levels in the following domains: inadequate knowledge and training, adverse and embarrassing experiences, clinical supervision, patients' pain, and Education–reality conflict ($p<0.005$) compared to male students. Additionally, students who considered quitting the RT program revealed higher stress levels in all domains ($p<0.005$). There were negative correlations between satisfaction and stress domains: inadequate knowledge and training ($r = -0.32$; $p = 0.001$), adverse and embarrassing experience ($r = -0.31$; $p = 0.025$), close supervision ($r = -0.24$; $p = 0.001$), insufficient hospital resources ($r = -0.30$; p 0.002), patients' pain and suffering ($r = 0.28$; $p = 0.04$), and education – reality conflict ($r = -0.30$; $p = 0.001$).

Conclusion: During clinical training, respiratory therapy students experience moderate to high-stress levels and low satisfaction. There need to be tailored interventions to reduce stress and intention to quit and increase students' clinical experience satisfaction.

Keywords: stress, satisfaction, clinical training, intention to quit

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Introduction

Stress is a state of anxiety or mental tension caused by challenging events, requiring individuals to react or adapt through physical, mental, and emotional responses.[1] A prolonged period of stress is associated with severe impacts on physical and psychological health.[2–5] Students across healthcare disciplines are prone to significant stress due to academic and clinical demands, leading to a decline in classroom participation, clinical practice, overall satisfaction with their academic performance,[6,7] and even considering dropping out of school.

Healthcare education mainly consists of two main components: theoretical and practical (clinical); both go hand in hand. The theoretical aspect is primarily delivered through lectures, case studies and in-class discussion, while the practical component allows the students to develop strong clinical skills to produce well-trained and qualified healthcare practitioners to improve public health and provide high standards of patient care.[8] Although clinical training is essential for healthcare students, it nevertheless can be a major source of stress.[9] This is because students in the clinical phase have many difficulties, such as concern about making mistakes,[10] anxiety about failing, inadequate knowledge or clinical skills,[11] being unfamiliar with the history, diagnosis or treatment of the patients[12] and taking care of patients who are dying or critically ill;[13,14] all of which contribute to an increased level of stress.

The respiratory therapy (RT) program is one of the medical specialties which offers students a high-quality education and clinical practice in respiratory therapy so they can specialize in the field and treat patients with cardiopulmonary disorders using a comprehensive range of respiratory services. Stress is prevalent during the professional education and training of many students in the health sciences.[15] Indeed, the impact of stress on satisfaction has long been acknowledged among students in the healthcare disciplines in clinical practice.[6,7] Further, a national study conducted in Saudi Arabia by Siraj et al revealed that the amount of burnout among RT students increases as they progress through their academic levels.[16] Given that RT students are handling critically ill patients and observing deaths during their clinical practice may put them under extreme stress levels. The frequency of burnout syndrome among RT students is significantly high.[16] Therefore, RT students' level of stress and satisfaction regarding the quality of clinical practices need to be strongly considered in assessing the quality of clinical practice.

To date, no studies have assessed the stress and satisfaction of RT students during clinical training in Saudi Arabia. Therefore, this study aims to answer whether there is an association between perceived stress and satisfaction among clinical-level RT students in Saudi Arabia. The main objective of the study is to investigate the perceptions of stress and satisfaction of undergraduate RT students during the stages of clinical training across the Kingdom of Saudi Arabia.

Methods

Design

A self-administered cross-sectional survey was employed to explore the relationship between stress and satisfaction during clinical training among RT students. Distribution of the questionnaires was done through an electronic platform (Survey Monkey).

Settings and Study Participants

Data was collected during the academic year 2022–2023, starting on 01-03-23 and ending on 31-05-23. Respiratory Therapy students were recruited to study using a non-probability sampling strategy (convenience) from all RT programs (governmental and private) in the country. Faculty members at RT programs distributed the questionnaires to undergraduate RT students. All respiratory therapy programs are unified across countries (5 years); the first is the preclinical year, where no clinical component is involved. The following years (second, third, and fourth) are considered the clinical years. The internship (year 5) is the final year, where students spend the entire year rotating across different clinical venues.

The questionnaire begins with a cover letter which explains the aim of the study and the identity of the principal investigator. Participation in the study was optional, and participants had the right to continue or withdraw at any moment without consequence. It was made clear that no personal information would be obtained, and all gathered data would be kept confidential. By selecting "yes" in response to the following question: "Do you agree to participate in the study?",

all participants gave informed consent to voluntarily continue the study. Participants were encouraged to submit a complete questionnaire, and once the questionnaire had been filled in and submitted, data were transferred into an Excel sheet for analysis. The questionnaire took between 5–7 minutes to complete.

Instrument

Data was collected using socio-demographic questions, a stress scale for students, and the professional satisfaction of students. The socio-demographic questions include age, gender, geographical region, academic level, and current GPA.

Students Stress Scale

Stress was measured using Nursing Students Stress Scale (NSSS).[17] The questionnaire was modified to suit the RT profession. Adaptations and modifications to the questions were made by a group of expert clinical academicians in the respiratory field. After that, a pilot study was conducted, including 10 RT students, to assess the validity of the questionnaire. Final modifications were then made according to the pilot group's feedback, and the participants from the pilot study were not included in the original study.

The modified students' stress scale aims to measure specific situations RT students encounter during their clinical involvement. The questionnaire consists of six domains, including a total of 30 elements as follows: 1) inadequate knowledge and training (nine elements), close supervision (three elements), adverse and embarrassing experiences (eight elements), patient's pain and suffering (three elements), insufficient hospital resources (four elements), and education-reality conflict three elements). The questionnaire used a five-point Likert scale as follows: 1) lowest stress; 2) mild stress; 3) moderate stress; 4) high stress; and 5) highest stress). The NSSS has an overall very good internal consistency reliability, as estimated by Cronbach's alpha coefficient (0.920 for the overall scale) and a range of 0.703–0.921 for the included six domains.

Satisfaction

Students' satisfaction was adopted and modified from the nursing students' professional satisfaction (NSPS) questionnaire.[18] There were three domains included in the questionnaire, consisting of 21 elements as follows: satisfaction with RT studies (9 elements), satisfaction with the clinical experience (5 elements), and the choice of RT profession (7 elements). Satisfaction was measured using a 5-point Likert scale, ranging from 1 (least satisfied) to 5 (most satisfied). Internal consistency was estimated using Cronbach's alpha, showing a high consistency result at 0.910.

Statistical Analysis

The collected data were managed and analyzed by using STATA (version 16.0 software StataCorp LP, College Station, TX, US). Demographics were presented as means (SD) and frequency (%) as appropriate. The normality of the data was assessed by using histograms so that appropriate statistical tests could be determined. The mean difference in stress and satisfaction among different groups was explored using an independent sample *t*-test and One-way analysis of variance (ANOVA). Pearson's correlation was used to assess the correlation between perceived stress and satisfaction. A P value <0.05 was considered significant.

Ethical Consideration

This study has been granted ethical approval by an independent ethics committee at King Faisal University, Saudi Arabia, before proceeding with the data collection process. The ethical approval number is (KFU-REC-2023-APR-ETHICS761).

Results

A total of 1500 questionnaires were sent to potential participants, of whom 1200 agreed to participate. Initial screenings revealed non-responses and incomplete questionaries (n=199); thus, they were excluded from the analyses, Figure 1. The study population had a mean (SD) age of 22 (2.2) years, and there were more males (58%) than females. Second and third-year students comprised more than half of the study participants. More than one-third (38%) had thought about leaving school. Demographics are presented in Table 1.

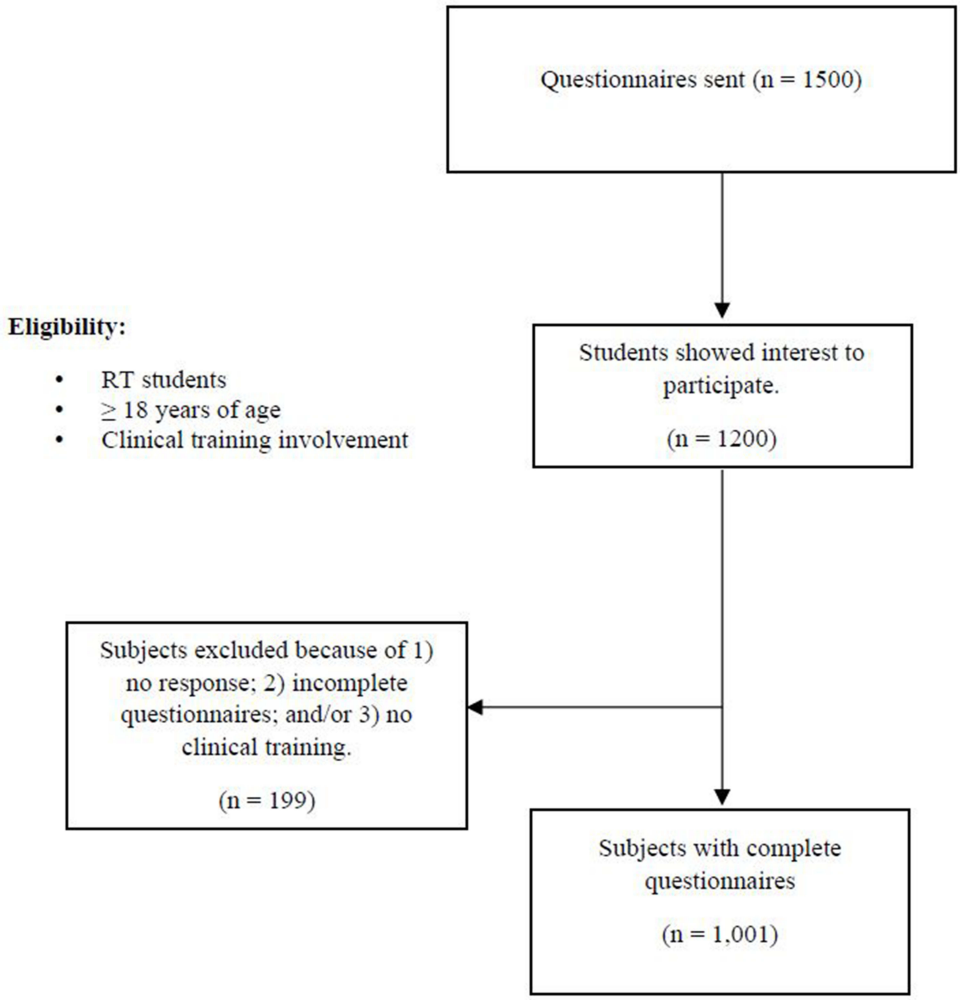

Figure 1 Flow chart of the included study participants.

RT Students' Stress During Clinical Practice

The overall level of stress among RT students was moderate to high (mean (SD); 3.55 (0.49)). Of the domains constituting stress, inadequate knowledge and training were the most stressful (3.61 (0.62)), followed by embarrassing experience during RT care (3.57 (0.64)), clinical supervision (3.56 (0.80)), education - reality conflict (3.56 (0.83)), patients' pain and suffering (3.45 (0.89)), and insufficient hospital resources (3.40 (0.63)).

We investigated demographic factors associated with stress domains among RT students, Table 2. Females scored higher in inadequate knowledge and training (3.67 [SD 0.61] vs 3.52 [SD 0.62]; $p<0.005$), adverse and embarrassing experience (3.63 [SD 0.63] vs 3.48 [SD 0.66]; $p<0.005$), clinical supervision (3.85 [SD 0.78] vs 3.42 [SD 0.82]; $p<0.005$), patients' pain (3.55 [SD 0.85] vs 3.30 [SD 0.93]; $p<0.005$), and Education – reality conflict (3.63 [SD 0.82] vs 3.46 [SD 0.80]; $p<0.005$) compared to male students. Students who ever thought about leaving the RT programs had higher stress levels across all stress factors, $p<0.005$. No significant differences were observed across GPAs.

Most stressful situations related to constituting each stress domain were also assessed. Of the perceived stressful events related to inadequate knowledge and training, students ranked "Required to perform RT tasks without adequate training" as the most stressful situation. Further, treating patients with physical deformities was classified as the most stressful situation related to adverse or embarrassing experiences. In the clinical supervision domain, students ranked "Received no verbal feedback after you completed a task for the first time" as the number 1 stressful situation. In addition, students found that establishing priorities when performing many tasks simultaneously is very stressful in the

Table 1 Demographic Data of Study Participants (n=1001)

Variable	
Age, years (Mean (SD))	22 (2.2)
Gender, (male %)	521 (52%)
Geographical Region, n (%)	
Central	291 (29%)
Eastern	269 (27%)
Western	263 (26%)
Northern	29 (3%)
Southern	149 (15%)
Academic level, n (%)	
2nd year	341 (34%)
3rd year	358 (36%)
4th year	221 (22%)
Intern	81 (8%)
Current GPA, (n %)	
≥ 4.51	279 (28%)
4.00–4.50	384 (39%)
3.51–3.99	193 (19%)
3.0–3.50	53 (5%)
< 3.0	92 (11%)
Have you ever thought about quitting the RT program? n (%)	
Yes	384 (38%)
No	617 (62%)

Note: Data are presented as n (%) or mean SD.
Abbreviations: GPA, Grade Point Average; RT, Respiratory Therapy.

Table 2 Factors Associated with Stress Domains

Baseline Characteristics	Inadequate Knowledge and Training	Adverse and Embarrassing Experience	Close Supervision	Insufficient Hospital Resources	Patients' Pain and Suffering	Education – Reality Conflict
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
Gender						
Male	3.52 (0.62)	3.48 (0.66)	3.42 (0.82)	3.42 (0.82)	3.30 (0.93)	3.46 (3.80)
Female	3.67 (0.61)	3.63 (0.63)	3.58 (0.78)	3.44 (0.62)	3.55 (0.85)	3.63 (0.82)
P value	**0.002**	**0.001**	**0.018**	**0.014**	**<0.001**	**0.018**
Academic level						
2nd	3.47 (0.78)	3.32 (0.69)	3.42 (0.89)	3.23 (0.70)	3.33 (0.96)	3.36 (0.99)
3rd	3.55 (0.67)	3.53 (0.66)	3.57 (0.71)	3.39 (0.64)	3.42 (0.92)	3.50 (0.78)
4th	3.65 (0.55)	3.63 (0.58)	3.65 (0.76)	3.41 (0.63)	3.47 (0.84)	3.55 (0.86)
Intern	3.71 (0.56)	3.64 (0.66)	3.70 (0.79)	3.49 (0.57)	3.53 (0.86)	3.65 (0.79)
P value	**0.002**	**0.011**	**0.028**	**0.022**	0.282	**0.011**
Intention to quit.						
Yes	3.63 (0.62)	3.64 (0.65)	3.62 (0.76)	3.44 (0.60)	3.48 (0.69)	3.61 (0.80)
No	3.46 (0.59)	3.47 (0.59)	3.36 (0.85)	3.33 (0.68)	3.37 (0.92)	3.34 (0.88)
P value	**<0.001**	**0.001**	**<0.001**	**0.004**	**0.021**	**0.002**

Note: A p <0.005 is considered significant.

insufficient hospital resources domain. RT students ranked "Treated a patient experiencing pain" as the most stressful situation under the stress factors related to patients' pain and suffering. The most stressful situation related to education-reality conflict was "Difficulty in accepting an RT's behaviour contrary to what was learned."

RT Students' Satisfaction

The satisfaction level was assessed based on three domains: satisfaction with the RT profession, RT studies, and clinical experience. The overall satisfaction level was mild to moderate (mean (SD): 2.56 (0.65)). Of the three satisfaction subscales, students scored the highest in the RT profession (mean (SD): 2.58 (0.86)), followed by clinical experience (mean (SD): 2.56 (0.78)) and RT studies (mean (SD): 2.55 (0.79)).

Compared to females, the choice of the RT profession was more satisfying to male students. (2.63 [SD 0.79] vs 2.47 [SD 0.75]; p = 0.001), RT studies (2.63 [SD 0.82] vs 2.43 [SD 0.74]; p = 0.001)., and clinical experience (2.65 [SD 0.88] vs 2.49 [SD 0.93]; p = 0.004). Similarly, male students were more satisfied with RT studies and clinical experience, Table 3. Furthermore, satisfaction with the RT profession, RT studies, and clinical experience also differed across academic levels. Students who had the intention to quit were less satisfied with the RT profession (2.85 [SD 0.85] vs 2.40 [SD 0.73]; p < 0.001), RT studies, (2.87 [SD 0.76] vs 2.35 [SD 0.75]; p < 0.001), and clinical experience (2.88 [SD 0.85] vs 2.40 [SD 0.81]; p < 0.001).

We have also looked at which element students were the least satisfied with in each subscale. Of the elements constituting "RT Profession" students were the least satisfied with their patient care responsibilities. The least satisfied situation within the RT studies domain was "The clinical experience coordination." In the clinical experience domain, students were the least satisfied with their "progress rate."

Relationship Between Stress and Satisfaction Among RT Students

The overall satisfaction level was negatively associated with Inadequate knowledge and training (r = −0.32; p = 0.001), adverse and embarrassing experiences, (r = −0.31; p = 0.025), Close supervision (r = −0.24; p = 0.001), Insufficient hospital resources (r = −0.30; p 0.002), Patients' pain and suffering (r = 0.28; p = 0.04), and Education – reality conflict (r = −0.30; p = 0.001). The associations between each satisfaction subscale and stress domains were also assessed, Table 4.

Table 3 Factors Associated with Satisfaction

Baseline Characteristics	RT Profession	RT Studies	Clinical Experience
	Mean (SD)	**Mean (SD)**	**Mean (SD)**
Gender			
Male	3.67 (0.61)	3.63 (0.63)	3.65 (0.88)
Female	3.52 (0.62)	3.48 (0.66)	3.49 (0.83)
P value	**0.001**	**0.001**	**0.004**
Academic level			
2nd	2.56 (0.73)	2.53 (0.79)	2.55 (0.85)
3rd	3.52 (0.73)	2.54 (0.77)	2.56 (0.79)
4th	3.45 (0.83)	2.39 (0.83)	2.43 (0.90)
Intern	2.75 (0.68)	2.77 (0.61)	2.76 (0.81)
P value	**<0.001**	**0.005**	**<0.001**
Intention to quit.			
Yes	2.85 (0.78)	2.87 (0.76)	2.88 (0.85)
No	2.40 (0.73)	2.35 (0.75)	2.40 (0.81)
P value	**<0.001**	**<0.001**	**<0.001**

Note: A p <0.005 is considered significant.

Table 4 Correlations Between Satisfaction and Stress Subscales

Stress Domains	RT Profession (r; p-value)	RT Studies (r; p-value)	Clinical Experience (r; p-value)
Inadequate knowledge and training	−0.31; 0.011	−0.34; <0.001	−0.32; <0.001
Adverse and embarrassing experience	−0.29; 0.21	−0.30; 0.023	−0.28; <0.001
Close supervision	−0.32; 0.0014	−0.27; <0.001	−0.39; 0.001
Insufficient hospital resources	−0.35; 0.002	−0.28; 0.007	−0.29; 0.004
Patients' pain and suffering	−0.01; 0.862	−0.24; 0.041	−0.15; 0.61
Education – reality conflict	−0.29; 0.032	−0. 31; <0.001	−0.32; 0.002

Discussion

Our study aims to assess stress and satisfaction among clinical-level undergraduate RT students in Saudi Arabia. Findings showed that stress is significantly common among RT students and even higher in the advanced academic years. High-stress levels were associated with quitting the RT program and lower satisfaction in clinical training.

Stress significantly impacts healthcare students, affecting their academic attainment and professional and personal development.[19] Evidence has shown that nursing and medical students experience high stress levels,[20–23] consistent with the findings of our study. Several reasons could explain the increased stress level during clinical training; such include fear of harming patients (because of inadequate training), dealing with critically ill patients, and even observing death incidents.[21,24,25] Further, students are also required to recall and apply what has been learned in the classroom, and the lack of integration between the two components (theoretical and practical skills) may impose confusion and doubt; all of which contribute to a significant amount of stress.[14,25,26] Moreover, we found that stress is associated with academic levels, meaning that the prevalence increases as students move to a higher clinical phase, concordant with medical students' studies.[21] Our findings that RT interns experienced the highest stress level, compared to other academic levels, is because they are expected to act as independent therapists (with no or minimum supervision) with heavy workloads, which may put them under extreme stress.[27]

Current evidence shows that stress is associated with leaving practice.[28,29] Similarly, we found that RT students with high-stress levels were prone to consider quitting RT programs. Adverse and embarrassing experiences were the most stressful situations attributed to the intention to quit, followed by inadequate knowledge and training. A possible explanation may be attributed to being exposed to private body parts during routine care (embarrassing experiences domain), the fear of making mistakes (inadequate knowledge and training domain), and consequently being criticized or even humiliated during clinical rotations. Indeed, a previous study conducted among nursing students showed that the negative attitudes of other healthcare professions toward nursing students were a significant source of stress.[21] Furthermore, lack of supervisor feedback also puts students under stress,[5] which may leave them feeling rejected or incompetent. This, therefore, highlights the need to develop strategies to improve clinical environments for students.

In clinical practice, satisfaction is a measure of staff contentment with their role, and it has a significant impact on the quality of their performance and attitude toward the profession.[18] This study assessed satisfaction levels based on three domains: the RT profession, RT studies, and clinical experience. Disappointingly, our findings showed that RT students had low to moderate satisfaction levels. Although this may seem surprising at first glance, it is expected given the increased stress level. Indeed, high stress and low satisfaction were also linked to the intention to quit.[28,29] Moreover, our findings showed that RT students are more satisfied with the RT profession as opposed to the RT studies. This may be attributed to the high demand for RTs and job opportunities in the country once students complete the RT program.

Although male and female RT students are exposed to similar environments during clinical training and classrooms, we found that, compared to their male peers, female students reported higher levels of stress and low satisfaction. A possible explanation for our result showing gender differences in perceiving stress is that female students, for instance, have been shown to complain more about the excessive curriculum.[30] However, in this study, females reported

inadequate knowledge and training as the highest source of stress, which might create a sense of unpreparedness and encounter difficulties balancing theoretical and practical knowledge and skills. Another possible explanation might be that female predominance in investing intense emotions (deeply emotionally involved) when encountering critically ill patients.[31,32] Additionally, it is crucial to note that in the Saudi context, the RT profession is predominantly managed by males. This might be particularly pertinent when experiencing stress, as female RT students may face gender bias and possible discrimination; thus, they may postulate encountering several challenges being a minority in a male-managed profession lowering their opportunities for professional advancement and creating a hostile work environment. Moreover, in addition to working in a male-dominated workplace, society's perception of working females and scepticism about their abilities to balance professional and family commitments arise and/or intensify stress.

Our findings demonstrated that there is an overall negative correlation between stress domains and students' satisfaction. This is in agreement with the findings of an Israeli study,[18] which has shown an inverse association between students between students' satisfaction in clinical placement with stress domains (inadequate knowledge and training; insufficient resources; and close supervision).[18] Similarly, another study conducted among South Korean nursing students also reported that negative association in clinical training between stress and satisfaction.[33] Therefore, given that our findings were significantly correlated overall, interventions to understand and support students experiencing stress with designed instructional strategies are needed to enhance students' performance and patient care.

Across all stress domains, the intention to drop out was relatively high. To address these issues, efforts need to be put in place to implement strategies at RT programs to mitigate stress, for instance, bridging the theory-practice gap to enhance students' performance. In this context, employing academicians to participate in students' clinical practice and/or assessing preceptorship competencies in professional RT to further enhance the students' clinical experiences and satisfaction.

Strengths and Limitations

The main point of strength of the present study is that it is the first in the field of respiratory therapy profession to investigate the relationships between stress with clinical satisfaction, and intention to quit among RT students in Saudi Arabia. Students were recruited from across the country; thus, the results may be generalized to a broader population. However, this study has some limitations. First, given that the study's design was cross-sectional, the present study cross-sectional nature of this cause-and-effect relationship cannot be ascertained. Second, this study utilized a convince sampling approach, which may have introduced a selection bias.

Conclusion

Respiratory therapy students have moderate to high levels of stress and mild to moderate clinical satisfaction experience. Increased stress was correlated with higher quitting intention and lower clinical satisfaction. There needs to be tallied interventions to reduce stress and increase clinical stratification. This will not only help reduce the impacts on mental health and intention to quit but more importantly, will help provide better patient care.

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Disclosure

The authors report no conflicts of interest in this work.

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