

Well-being and Burnout among Pre-clinical Medical Students in a Caribbean Medical School

Yuliya Modna^{*a}, Dev Kumar Shah^a, & Steven Stanton^b

* Corresponding author:

Email: ymodna@tmsu.edu.vc

a. Department of Physiology, Trinity Medical Sciences University, St. Vincent and Grenadines.


b. Medical student, Trinity Medical Sciences University, St. Vincent and Grenadines.

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ABSTRACT

Evaluate well-being and burnout among preclinical medical students in a Caribbean medical school and identify the associated factors. It was a questionnaire-based, cross-sectional study which was conducted among preclinical medical students of Trinity Medical Sciences University (TMSU), Saint Vincent & the Grenadines. Medical Student Well-Being Index and Maslach Burnout Inventory-Student Survey were used. The total number of participants who gave informed consent was 82. For statistical analyses, internal consistency of the instruments was tested by Cronbach's alpha. The Student t-test, Fisher's exact test, Pearson correlation and multivariate regression model were used. The analysis of well-being index (WBI-MS) showed that during the past month 78% of participants experienced burnout due to emotional exhaustion and 61% due to depersonalization, 63.4% felt depression, 19.5% experienced fatigue, 65.9% suffered from stress. The significant association was found between well-being index, credit hours allotted for the semester, and depersonalization/cynicism. Also, there was significant negative correlation among academic efficacy and cynicism. The analysis also showed that once a week or more often 58.5 % of participants experienced emotional exhaustion, 34.2% depersonalization and 26.8% low professional efficacy. But the level (severity) of emotional exhaustion was less in comparison with depersonalization score. Our study revealed that 65.9% of participants had a low well-being index and high level of burnout with very increased score of cynicism, which negatively affected their academic efficacy. The possible causes of the obtained results were identified and necessary strategies will be implemented to improve the outcomes.

KEYWORDS

Well-being; burnout, stress; medical students; cynicism; academic efficacy.

INTRODUCTION

Burnout is characterized by emotional exhaustion, depersonalization and an inadequate sense of personal achievement due to stressful work conditions (Dyrbye, 2019). Burnout, mental sickness, and substance use are more predominant in medical students compared to the common population due to intemperate scholarly, individual, and societal stressors. All these have eventually a negative effect on the student's scholastic execution, physical health, and person well-being (Ahmed et al., 2009; Harrison et al., 2022).

Research suggested a item of different components inside learning environment instead of the inborn qualities of a learner alone as a cause of diminished well-being of medical students (Slavin, 2019). Disappointment with the learning environment, lack of faculty support, sex discrimination, non-ethnic minority status, high educational debt, disintegration of social ties, and individual relationship are a few of the causes distinguished for burnout among medical students (Dyrbye & Shanafelt, 2016; Vidhukumar & Hamza, 2020). Due to the distance from home and friends, the amount of coursework, and the workload, students always have a difficult time adjusting to the environment of Caribbean medical schools (Dyrbye et al., 2006).

Ranasinghe et al. (2022) found emotional exhaustion, depersonalization and depressive symptoms were found significantly higher in the 2nd, 3rd, and 4th year medical students compared to the 1st year at a private medical school in Maryland. Approximately 85.6% of medical students at the University of Karbala suffered from severe emotional exhaustion, 77.8% suffered from severe cynicism, and 32.5% exhibited poor professional efficacy (Yahya MS et al., 2021). Brazeau et al. (2014) reported burnout in 27.3% and depression symptoms in 26.2% of matriculating medical students. Dyrbye and Shanafelt (2016) found nearly 50% of medical students to have burnout and also showed the increasing trend with the training level in medical school. Burnout, from a student's point of view, is an emotional experience that often arises when the success of becoming a physician is outweighed by its drawbacks and stress (Morcos & Awan, 2023). This could have both personal and professional consequences. Personal consequences include termination of relationships, substance abuse, health deterioration and decline in physical vigor. Academic dishonesty, a decline in empathy and ethics, a decline in academic performance, a negative impact on a person's choice of specialty, an increase in the likelihood of medical errors, and negative effects on patient safety are all professional consequences (Dyrbye et al., 2006). Therefore, early identifying and addressing the causes of burnout and diminished well-being of medical students is utmost importance for their overall health, success and also for patient safely.

The purpose of this study was to assess the well-being and burnout of preclinical medical students at a Caribbean medical school and to identify the contributing factors. This assessment would help the school administration identify the challenges faced by the students, support those who most need it, and help prevent negative outcomes by addressing student suffering. The school would also be able to monitor its learning environment and

create successful programs to promote the well-being of students if it could identify the pertinent causes of student's distress.

METHODS

The online study using Google form was conducted at Trinity Medical Sciences University (TMSU), Saint Vincent & the Grenadines. The study was approved by the institutional review board of the university. All students in preclinical years (Terms 1 to 4) were invited to participate in this study. Each term in preclinical years is of 15 weeks duration. This study was conducted after the mid-term examination between the 8th to 9th weeks of the term. All participants provided their informed consent after choosing to participate in the study voluntarily. Excluded from this study were students who refused to provide their consent and those who filled out the questionnaire insufficiently.

Study measures

The survey included standardized validated Medical Student Well-Being Index (MSWBI) (Dyrbye et al., 2010; Dyrbye et al., 2011) and Maslach Burnout Inventory-Student Survey (MBI-SS) (Maslach et al., 1996).

Participants were also asked to provide information regarding their age, gender and university identification number to find out credit hours allotted for the semester and grade point average (GPA).

Medical Student Well-Being Index (MSWBI)

The 7-items MSWBI is considered as a reliable tool for screening the psychological well-being of the individuals and has been validated to predict and help identify students with severe distress for early intervention. The first two items of the instrument evaluate burnout (emotional and depersonalization), 3rd item- depression, 4th item- fatigue, 5th item- stress and the last two items- qualities of life (mental and physical). This questionnaire consists of 7 yes/no items and responders receive a score from 0 to 7 based on responses. According to earlier research, the MSWBI's specificity for identifying students in extreme distress ranged from 87% to 91% percent at a threshold score of ≥ 4 , and its sensitivity ranged from 59% to 93%. The students who were identified were thought to be at risk for low mental QOL, suicidal ideation, or serious thoughts of quitting medical school, all of which call for recognition and special attention (Dyrbye et al., 2010, Dyrbye et al., 2011). We also used this threshold score to interpret the results.

Maslach Burnout Inventory-Student Survey (MBI-SS)

The 16-items MBI-SS was used for assessing burnout of our medical students (Maslach et al., 1996). This questionnaire was designed to evaluate the emotional exhaustion (5 items: 1, 2, 3, 4 and 6), depersonalization or cynicism (5 items: 8, 9, 13, 14 and 15), and professional efficacy (6 items: 5, 7, 10, 11, 12 and 16). The Emotional exhaustion (EE) subscale evaluates the complaints about feeling on edge and exhausted by work. The depersonalization or cynicism (DP/CY) subscale measures impersonal responses and lack of empathy during professional

activity, while the professional efficacy (mentioned as academic efficacy, AE) subscale evaluates the feelings of competence and achievement of success at university.

Participants rate each item on the MBI-SS using a 7-point Likert scale, with 0 being "never" and 6 being "every day." As suggested by previous study, high scores on the EE and DP/CY subscales and low scores on the AE scale indicated the presence of burnout in participants (Schaufeli et al., 2002). We used the reference from previous study which suggested scores of ≥ 27 for EE and/or ≥ 10 for DP/CY as threshold to identify students with high level of burnout and having at least one symptom of burnout (Shanafelt et al., 2012; Shanafelt et al., 2015). In addition, we categorized the EE and DP/CY as low (indicated by score 0 to < 10), moderate (score 10 to < 20) and high (score 20 to 30).

Statistical analysis

Collected data were inputted into a Microsoft Excel spreadsheet before exported to SPSS version 20. Internal consistency of the instruments was measured in terms of Cronbach's alpha. Descriptive statistics were calculated. Fisher's exact test to check the association and Pearson correlation to establish the relationship between independent variables were used. Mean scores of variables were compared using independent sample t tests. Multivariate regression model was used to identify predictive factors related to the variables of interest.

RESULTS

The response rate for online survey was 69%. Among the total number of participants (82), 34.1% were male and 65.9% female. The mean age of the participants was 27.4 ± 5.9 years (varying from 20 to 55 years).

Internal consistency of the instruments and subscales used in our study to measure medical students well-being and burnout are shown in Table 1.

Table 1.

Internal consistency of the instruments and subscales used in our study

Instruments and subscales	Cronbach's alpha
1. Well-being index	0.668
2. Maslach Burnout inventory	0.741
Exhaustion index	0.904
Cynicism	0.803
Professional efficacy	0.844

Descriptive analysis of well-being index of medical students (WBI-MS) suggested that during the past month 78% of the participants experienced burnout due to emotional exhaustion, 61% had burnout related to depersonalization, 63.4% felt depression, 19.5%

experienced fatigue, 65.9% suffered stress, 80.5% had negative effect on mental quality of life and 29.3% had negative effect on physical quality of life (See Table 2).

Table 2.

Medical Students Well-Being Index (WBI-MS) responses obtained from participants of TMSU

Questions	Domain and Subdomain	No of participants who responded "yes" to the provided item
1. During the past month, have you felt burned out from medical school?	Burnout- Emotional exhaustion	64 (78%)
2. During the past month, have you worried that medical school is hardening you emotionally?	Burnout- Depersonalization	50 (61%)
3. During the past month, have you often felt bothered by feeling down, depressed, or hopeless?	Depression	52 (63.4 %)
4. During the past month, have you fallen asleep while sitting inactive in a public place?	Fatigue	16 (19.5%)
5. During the past month, have you felt that all things you had to do were piling up so high that you could not overcome them?	Stress	54 (65.9%)
6. During the past month, have you been bothered by emotional problems (such as feeling anxious, depressed, or irritable)?	Quality of life- Mental	66 (80.5%)
7. During the past month, has your physical health interfered with your ability to do your daily work at home and/or away from home?	Quality of life- Physical	24 (29.3%)

Out of maximum possible score of 7, mean score for WBI-MS of the participants was 3.98 ± 1.8 . Fisher exact test revealed no association of well-being index of participants with their age, gender, emotional exhaustion, cynicism, academic efficacy, self-reported different stresses. However, the test showed the significant association between well-being index and credit hours allotted for the semester ($p=0.006$).

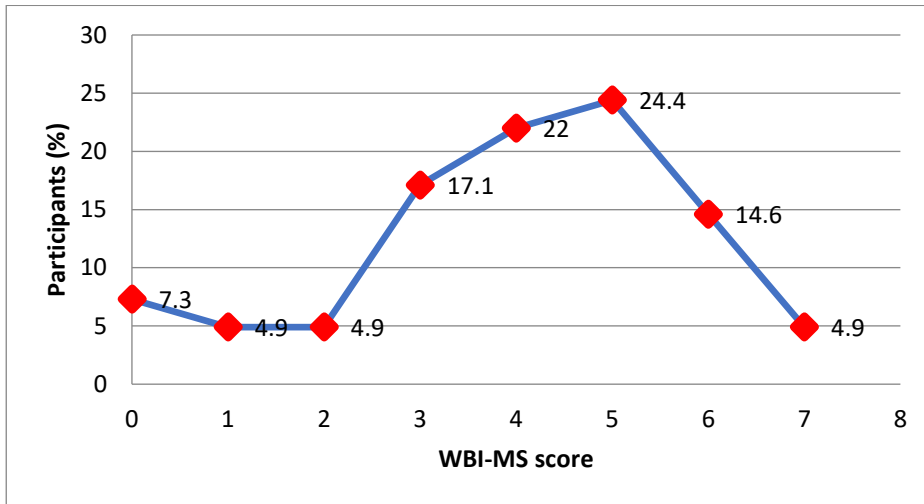
Considering threshold score ≥ 4 in WBI-MS, we found 65.9% of the students had severe stress and at risk for low mental quality of life, suicidal ideation, or serious thoughts of dropping out of medical school and need individualized interventions. In Fisher exact test, these individuals with severe stress (score ≥ 4) showed a significant association with their depersonalization/cynicism ($p=0.017$) and credit hours allotted for the semester ($p=0.000$).

However, these individuals did not show significant association with their age, gender, emotional exhaustion, academic efficacy and semester GPA of the participants.

The WBI-MS score of the participants is shown in Figure 1.

Figure 1.

Well-being index (WBI-MS) score of the medical students at TMSU



Pearson correlation revealed significant positive correlation among well-being index, emotional exhaustion and cynicism. We found academic efficacy was negatively correlated with well-being index, emotional exhaustion and cynicism however the correlation was significant only with cynicism ($p= 0.001$).

Correlations between total well-being index and subscales of MBI are shown below in table 3.

Table 3.

Pearson correlation among well-being index, emotional exhaustion, cynicism and academic efficacy

		Well-Being Index total	Emotional exhaustion	Cynicism or Depersonalization	Academic efficacy	
Well-Being total	Index	Pearson Correlation	1	.603**	.439**	-.174
		Sig. (2-tailed)	.000	.000	.004	.276
Emotional exhaustion		Pearson Correlation	.603**	1	.676**	-.157
		Sig. (2-tailed)	.000	.000	.000	.328
Cynicism or depersonalization		Pearson Correlation	.439**	.676**	1	-.484**
		Sig. (2-tailed)	.004	.000	.000	.001
Academic efficacy		Pearson Correlation	-.174	-.157	-.484**	1
		Sig. (2-tailed)	.276	.328	.001	

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

In medical students MBI out of 30 maximum possible score, the mean score for emotional exhaustion and cynicism subscales were 18.9 ± 6.1 and 14.5 ± 6 respectively. For academic efficacy, the mean score was 23.4 ± 7 out of maximum possible score of 36. In 0-6

Likert scale, the average score for emotional exhaustion, cynicism and academic efficacy were 3.7, 2.9 and 3.9 respectively. (see table 4)

Table 4.

Participants score on different subscale of medical students MBI

	Maximum possible score	Mean of total score	Average score in terms of how often (0-6 scale)
Emotional exhaustion	30	18.9 ± 6.1	3.7
Cynicism	30	14.5 ± 6	2.9
Academic efficacy	36	23.4 ± 7	3.9

Note: In 0-6 scale, 0= never, 1= a few times a year or less, 2= once a month or less, 3= a few times a month, 4= once a week, 5= a few times a week and 6= every day.

There were no significant differences between male and female in relation to their mean scores of emotional exhaustion, cynicism and well-being index (WBI). However, significant difference ($p=0.028$) in mean score of academic efficacy was noted between male and female (20.1 ± 7.7 vs. 25.1 ± 6.1) in an independent samples *t* test. (See table 5)

Table 5.

Gender differences in score of well-being index (WBI) and subscales of medical students MBI

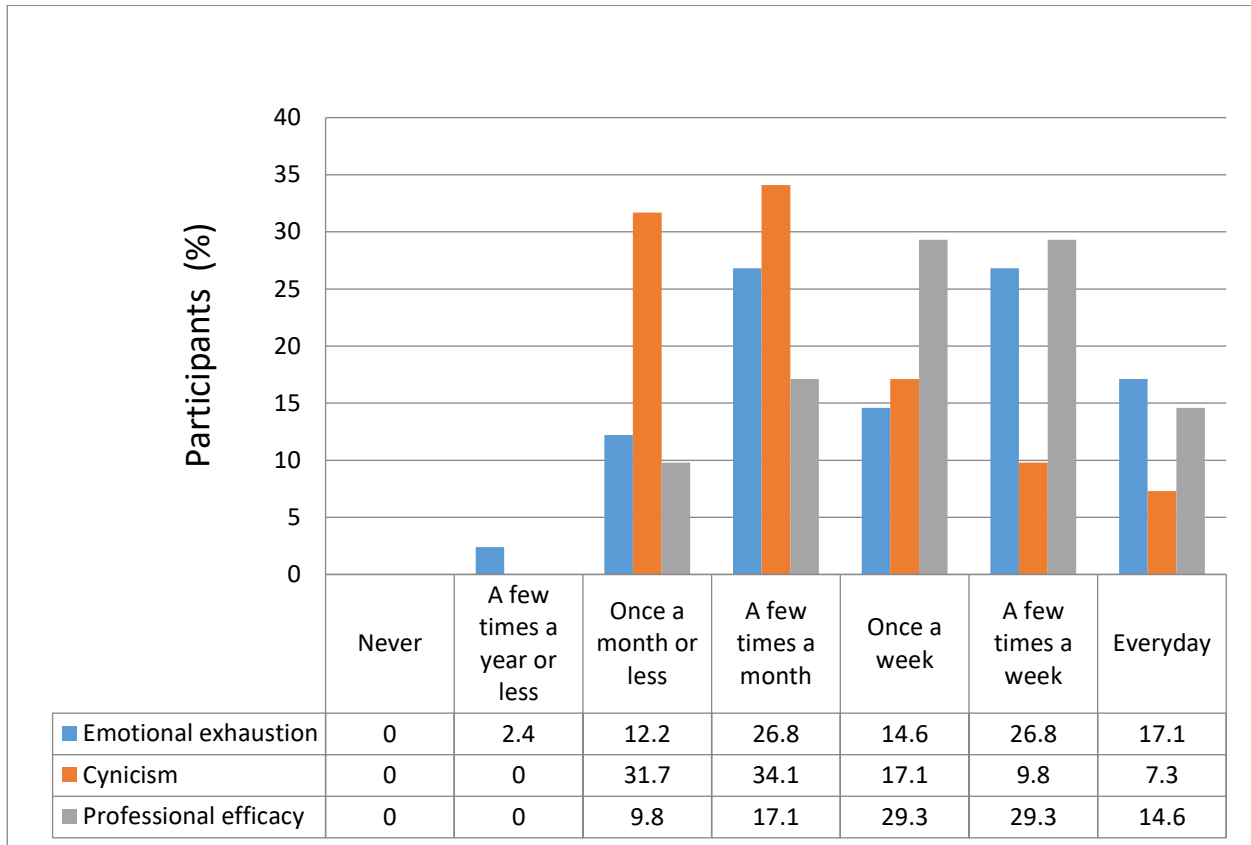
Variables	Mean score ± SD		p value
	Male	Female	
Well-being index	3.64 ± 2.1	4.15±1.6	0.407
Emotional exhaustion	16.43±6.3	20.19±7.0	0.102
Depersonalization (Cynicism)	13.93±5.6	14.85±6.3	0.650
Academic efficacy	20.14±7.7	25.19±6.1	0.028

Frequency analysis of MBI-MS showed that the Emotional Exhaustion (EE) was experienced by 17.1% of students every day, 26.8%- a few times a week, 14.6% once a week, 26.8%- a few times a month, 12.2%- once a month or less and 2.4%-a few times a year. Depersonalization or cynicism, which corresponds to impersonal responses and lack of empathy during professional activity, was reported in 7.3% of students every day, 9.8%- a few times a week, 17.1%- once a week, 34.1%- a few times a month and 31.7%- once a month or less. Professional Efficacy, which reflects feelings of competence and achievement of success at work, was indicated by 14.6% of students every day, 29.3%- few times a week, 29.3%- once a week, 17.1%- a few times a month and 9.8%- once a month or less.

How often the participants experienced the emotional exhaustion, cynicism and professional efficacy is shown in figure 2.

Figure 2.

Frequency of experienced emotional exhaustion, cynicism and professional efficacy by participants



Scores of ≥ 27 for emotional exhaustion and/or ≥ 10 for depersonalization in Maslach Burnout Inventory (MBI) indicates high level of burnout and they are considered to have at least one symptom of burnout according to previous studies. In our study, we found 13.6% participants had score ≥ 27 for emotional exhaustion and 81.5% of participants scored ≥ 10 for depersonalization (cynicism) indicating to have high level of burnout and at least one symptom associated with it according to previous studies (Shanafelt et al., 2012; Shanafelt et al., 2015). At threshold of ≥ 10 for depersonalization, Fisher exact test showed significant association between cynicism and well-being index of the participants ($p=0.005$).

The distribution of number of participants (%) as per scores of emotional exhaustion, cynicism and academic efficacy in MBI is shown in figures 3-5.

Figure 3.

The distribution of number of participants (%) as per scores of emotional exhaustion

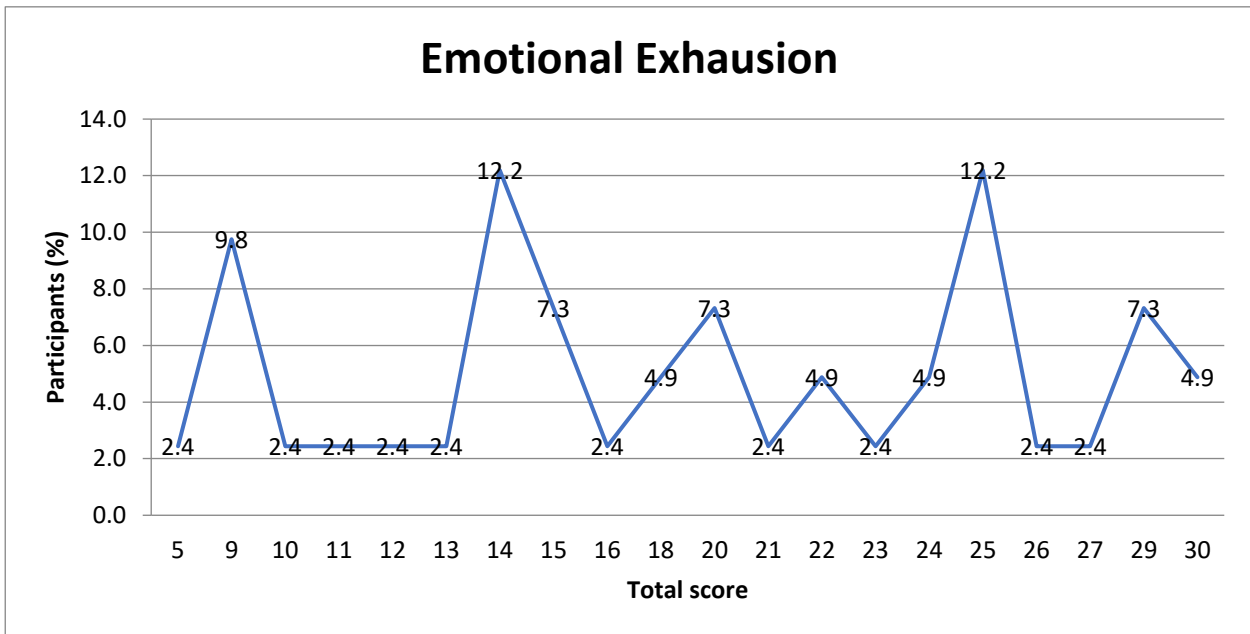


Figure 4.

The distribution of number of participants (%) as per scores of cynicism

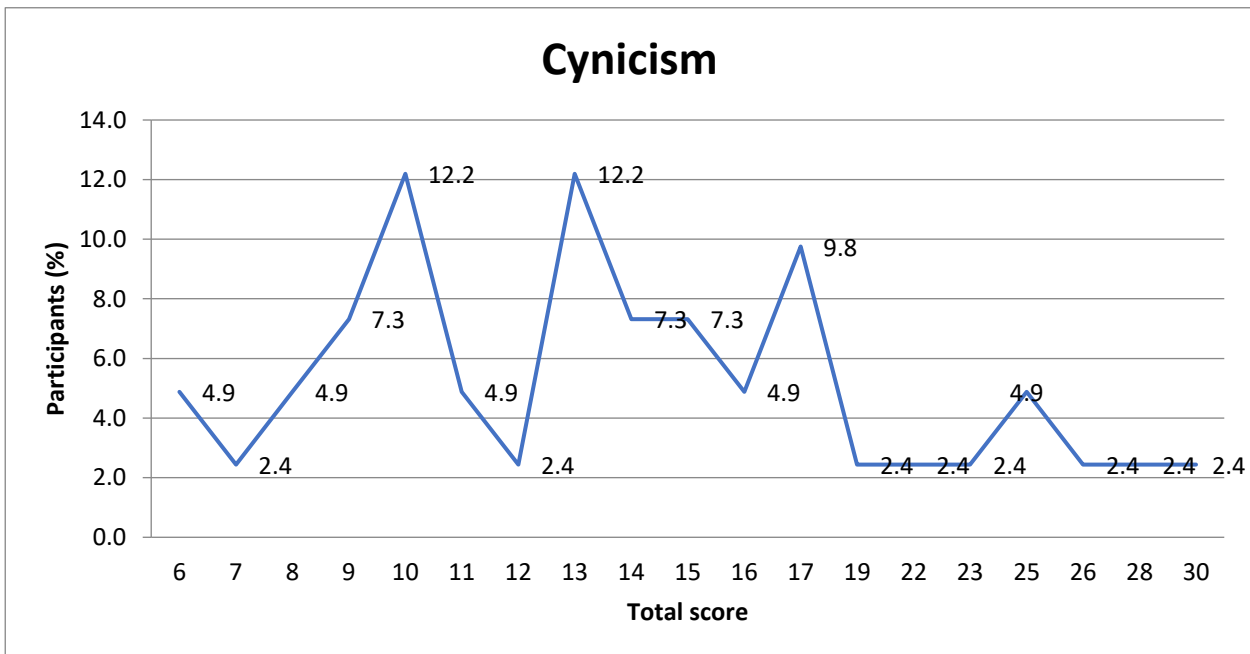
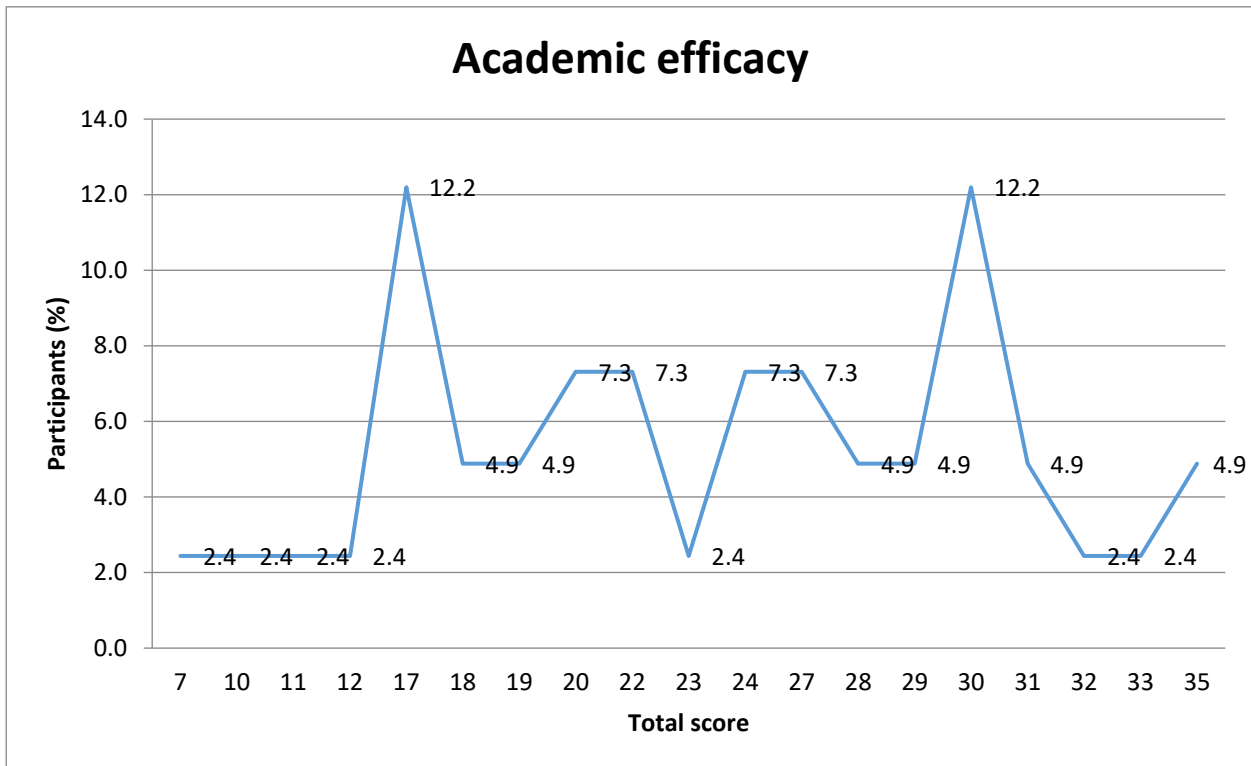


Figure 5.

The distribution of number of participants (%) as per scores of academic efficacy



We used the following threshold values to categorize the level of emotional exhaustion and cynicism in our participants MBI (shown in table 6).

Table 6.

Threshold value for different levels of emotional exhaustion and cynicism and distribution of participants

Threshold value	Emotional exhaustion		Cynicism	
	Level	Participants (%)	Level	Participants (%)
0 to <10	Low	12.2	Low	19.5
10 to <20	Moderate	36.6	Moderate	63.4
20-30	High	51.2	High	17.1

At these threshold values, different levels of emotional exhaustion and cynicism showed significant association ($p < 0.01$) with severe stress indicated by WBI-MS score ≥ 4 . According to these threshold values, 85.7% of participants with high level of emotional exhaustion and cynicism separately had severe stress as indicated by WBI score ≥ 4 . The analysis also revealed 53.3% and 76.9% participants with moderate emotional exhaustion and cynicism respectively also had severe stress (WBI score ≥ 4).

DISCUSSION

Term “well-being” reflects the “life satisfaction” and “relies on the standards of the respondent to determine what is the good life” (Dodge et al., 2012). Well-being depends on several factors such as mental health, nutrition, fitness/active life, study skills, goal setting and time management (Karmiyati et al. 2020; Tamba & Iancu, 2023). There are some stress factors which affect well-being, and one of them is an academic stress created by course workload, long teaching hours and limited time for social relaxation.

Our study revealed that 65.9% of our students had low well-being index. The significant association was found only between well-being index and credit hours allotted. It can be explained by the lack of resilience, lack of time to relax to be able to withstand to stress. In the paper of 2021, Merrick et al., stated that at the University of Nottingham with the attempt to support student well-being in the Bachelor of Medical Sciences programme implemented an intensive support services and unique well-being approach that is successfully incorporated within the curriculum (Merrick et al., 2021). Their students are encouraged to focus more on own physical health/activities, do some extracurricular activities, which are believed have a positive effect on well-being. Also they encourage students to freely discuss and evaluate their personal well-being (out 10) during the meetings with their personal tutors.

Bhurga (2021) stated that as an important solution to deal with stress is developing resilience. It is an ability to manage stress-facing fear by different methods, such as physical activity, yoga, meditation. Also a having a good role model to follow and be mentored by, mental support of the family, friends and peers can help to strengthens confidence in the stressful situations. (Bhurga et al., 2021).

Our study indicated that the students with severe stress (score ≥ 4) showed a significant association with their depersonalization/cynicism.

A study by Pöhlmann et al., which was conducted at the universities of Bern, Freiburg and Dresden revealed that the depersonalisation was predominant in 28% of participants (Pohlmann et al., 2005). Depersonalisation is characterized by impaired perception of oneself and may manifest itself as a lack of empathy, loss of motivation, sense of isolation, and even as a disease in response to negative and stressful everyday situations. It can also adversely affect the contact with patients. (Michal et al., 2004; Trueman, 1984). The usual reaction to this feeling is a low sense of work efficacy (Bhurga et al., 2021).

The results of our study also proved this statement and showed that academic efficacy had a significant correlation with cynicism, however there were no significant correlation between emotional exhaustion and academic efficacy.

Also we noticed the significant difference between male and female academic efficacy scores. Gender differences showed that females are more confident with academic efficacy. Despite they are having higher score in well-being index, emotional exhaustion and cynicism though not significant. They are more positive in terms of personal accomplishment/evaluation, they have more power when dealing with problems in comparison with males.

Probably it is related to a higher level of resilience or motivation. The study of Prinz (2012) and authors shows that symptoms of burnout, anxiety, depression and depersonalisation are serious issues both for students of dentistry and human medicine. The proportion of students who showed elevated values was 22.7% for emotional exhaustion and 25% for the depersonalisation scale (Prinz et al., 2012). In our study the corresponding percentages of these values were 13.6% and 81.5%. The number of participants with higher score (≥ 10) for depersonalization is much higher in comparison with the previous study but the number of participants with higher score (≥ 27) for emotional exhaustion is less. Probably that is why our study showed that academic efficacy had a significant correlation only with cynicism, because the majority of our students (81.5%) had a high score for cynicism, but there was no correlation between emotional exhaustion and academic efficacy. As only 13.6% of our students experienced severe emotional exhaustion.

Cynicism (depersonalization dimension) refers to negative, rigid, and/or unemotional attitudes and behaviors of a person against others in the interaction. While the emotional exhaustion dimension is described as feelings of busyness, tiredness, exhaustion, and overload (Bhugra et al., 2021).

Also our analysis showed that once a week or more often 58.5 % of our students experienced emotional exhaustion, 34.2% depersonalization and 26.8% low professional efficacy. But the level (severity) of EE was less in comparison with depersonalization score. Those students (85.7%) who had a high level of emotional exhaustion and cynicism separately had severe stress as indicated by WBI score ≥ 4 . Students with a moderate emotional exhaustion (53.3%) and cynicism (76.9%) also had severe stress (WBI score ≥ 4).

Our study also revealed that around 63.4% of our participants felt depression and 80.5% of students had feeling of anxiety and irritability. This data also corresponds with the results of Newbury-Birch et al. (2002) and Prinz et al (2012). Their researches indicated that 67% of dental students showed elevated values for the subscales of anxiety and depression.

According to the study of Duru et al., 2014 burnout happens in gradual steps: emotional burnout, cynicism, and then low personal accomplishment (Duru et al., 2014). Also, student burnout relates to the self-regulation skills: personal expectations and control level, regulation of emotions and thoughts.

Therefore, the results of our study may be explained in the following way, that the students with high level of self-regulation skills have a low score of depersonalization (cynicism) and higher academic efficacy. Our study was conducted during the time of a severe Covid-19 pandemic, when students experienced different types of stress. Therefore, the factors which increase the stress level and burnout at the same time lower our students' well-being maybe the following:

- academic stress: adjustment to the online education (online exams and lectures)
- financial stress (unstable worldwide economic/financial situation (fear to be able to pay a school tuition),

- health condition (Covid-19 illness, loss/death of relatives/friends due to Covid-19)
- social factors (physical and social isolation, time of the uncertainty).

All these factors created a high level of burnout and tremendously affected the quality of students' life and their well-being. As a medical education is accompanied by a high academic workload, students are required to develop a self-discipline (time management, study plan, sleep schedule), self-regulation skills, and strong resilience (Modna & Scott, 2017; Modna et al., 2019). Academic stress can be minimized by introduction of spaced or deaccelerated learning program, which will reduce a workload and, possibly, prevent burnout. The institutional social support is very important in a medical education, it will help to lower level of the students' depersonalization (cynicism) and increase their academic efficacy. Encouraging students to participate in clubs and social activities may also improve their quality of life in a medical school. As we return back from online teaching to "in person" class settings, we will actively invite students to attend our lectures regarding "Stress management", guide students how to smartly organize time between study hours and extracurricular activities, encourage them to seek help if needed in academic advisors, peers, school psychologists (Modna, 2020). We will implement the block of lectures about the importance of sleep and physical activities in the student's life as well as how to build resilience and work on self-regulation skills to prevent burnout.

CONCLUSION

The results of our study showed that 65.9% of our students had a low well-being index and high level of burnout with very increased score of depersonalization (cynicism), which negatively affected their academic efficacy. Once a week or more often 58.5 % of our students experienced emotional exhaustion, 34.2% depersonalization and 26.8% low professional efficacy. The possible causes of the obtained results were identified and necessary strategies will be implemented to improve the outcomes.

Limitation of study

The study was conducted during the Covid-19 pandemic when students had all classes online. That could affect negatively well-being and increased students' burnout due to an experienced stress of pandemic. Also, the small sample size limits this study's generalizability.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of Interest

The authors have no conflict of interest to declare.

Ethical Approval

This study was approved by the Institutional Review Board of Trinity Medical Sciences University, St. Vincent and Grenadines (Ref. No. 148/26)

Consent

Students included in this study provided informed consent to participate before completing the questionnaire.

Authors' contributions

Y.M. conceptualized and designed the study, contributed to data collection, and the writing of the original draft and final version of the manuscript; D. K.S. assisted in drafting the manuscript and reviewed the manuscript. S. S. contributed to data collection. 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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