



Sources of Stress and Psychosocial Correlates of Wellbeing among Medical Student's at the Kwame Nkrumah University of Science and Technology (KNUST)

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ABSTRACT

Objective: Medical training is generally perceived to be arduous. Student's experience of challenges makes them susceptible to mental and emotional conditions that compromise wellbeing. This study examined sources of stress and the psychosocial correlates of wellbeing among medical student's at the Kwame Nkrumah University of Science and Technology (KNUST) for the promotion of mental health and wellbeing among medical student's as future health practitioners.

Method: A total of three hundred and six (306) medical student's participated in this cross-sectional survey using the Ryff Wellbeing Scale (RWS), the Rosenberg Self-Esteem Scale (RSES), the Worry and Emotionality Questionnaire (WEQ) for test anxiety, and the Sources of Stress Questionnaire (SSQ) to assess psychological wellbeing and sources of stress among the medical student's. Descriptive analyses, including correlations, were performed to examine the associations between psychological wellbeing indices, test anxiety, and sources of stress.

Results: Findings showed that student's with more robust psychological wellbeing and self-esteem had fewer stressors and were less anxious in examinations as evidenced by significant negative correlations. Higher and varied sources of stress compromised all indices of wellbeing such as autonomy, self-acceptance, positive relationships, sense of purpose, and personal growth. Poor dietary health was associated with higher stress. Environmental mastery and self-acceptance were significantly predictive of test anxiety, explaining approximately 19% of the variance in test anxiety.

Conclusion: This study is informative for addressing psychological needs of medical student's at the KNUST in a context-specific fashion. Implications for innovative initiatives and supportive interventions for the promotion of mental health and greater wellness among medical student's at KNUST are discussed.

Keywords: Psychological wellbeing; Stress; Medical student's; Anxiety

INTRODUCTION

There is a general notion that medical training is particularly stressful and that majority of medical student's suffer from anxiety, unhappiness and dissatisfaction during their training [1-3]. Several studies have sought to highlight the enormous distress that medical education brings on medical student's [3-5]. Some studies have reported as high as 61.8% level of stress among medical student's [6].

This distress, inadvertently, can have dire negative consequences such as poor academic performance, substance abuse, instability in relationships, attribution from professional incompetency, and poor mental health [7,8]. More recent evidence suggests

that academic stress is not uncommon among medical student's [9], aside other sources of stress [10]. Rigors of academic work combined with extracurricular activities present a challenge for many medical student's making them susceptible to emotional and mental health issues.

In the process of coping with the high academic stress and other stressors, some student's neglect or compromise their health and subjective wellbeing in a bid to succeed in the training program. The result is the manifestation of less adaptive emotional and psychological conditions such as depression and anxiety seen among medical student's [11-17]. Even suicidal ideation has been observed among medical student's [18], suggestive of compromised subjective or psychological wellbeing.

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Psychological or subjective wellbeing can be conceptualized as the absence of undesirable negative emotional states, such as depression, and the experience of more positive moods and emotions [19]. It also refers to the way people perceive and evaluate their lives [20]. As a construct, wellbeing can be globally assessed or examined in detail from its hallmarks or specific indices. Ryff's measure of psychological wellbeing permits both global assessment of wellbeing and specific indices. He outlines six domain specific measures of wellbeing that evaluate areas of functioning such as positive relationships, personal growth, sense of purpose and autonomy that are essential for psychological health and wellbeing [21,22]. A psychologically healthy person can be expected to have positive attitude toward self and others, give and receive support, have the ability to build trusting relationships, and be committed to continued self-development [22].

Medical student's in Ghana are not unlike their counterparts elsewhere. They too experience high levels of stress [14,23]. Aside these empirical findings of prevalence of depressive symptoms and other stress indicators among medical student's, our clinical observations over the years show that medical student's experience varied levels of severity in both subclinical and clinical forms of depression and anxiety; sometimes co-morbid with suicidal ideation and or attempts.

Research on, and interest in, the quality of life and sources of stress among medical student's is both timely and relevant to the promotion of good mental health among these future health practitioners. The health of the future medical practitioner, physical and mental, is essential to the delivery of quality health service to the populace. As the saying goes, "one cannot give what one does not have". If the health of the medical practitioner, particularly mental and emotional health, is compromised, it is likely that the quality of health care delivery would be negatively impacted as well. Therefore, it is critical for medical educators to understand the prevalence and correlates the potential adverse impacts of student's distress and also to identify the factors that influence student's mental health in order to be helpful for the affected student's, even when they are under training, so that their formation (acquisition of good coping skills) can be positively impacted.

The School of Medical Sciences (SMS) at the Kwame Nkrumah University of Science and Technology (KNUST), now the School of Medicine and Dentistry (SMD), was established in 1975; being one of Ghana's four medical schools. The other medical schools are at the University of Ghana (UG), University of Cape Coast (UCC) and the University of Development Studies (UDS). Since its foundation, the school has produced over two thousand medical doctors who have made great contributions to Ghana's health care and beyond and continues to train medical student's.

In an effort to improve the quality of life of medical student's at the faculty of medicine, some laudable supportive interventions have been initiated by the faculty's leadership to assist student's during their medical training. These include the student's mentoring program and counselling services aside the leadership training and financial support initiatives for student's.

Aside the paucity of research on the subject in Ghana, to the best of the knowledge of authors to date no study has examined or delineated the sources of stress and psychological wellbeing, and the associations with worry and emotionality about examinations, among medical student's at the KNUST. Yet, an evidence-based

supportive intervention would be more effective. Furthermore, we believe that understanding medical student's sources of stress and the correlates of psychological wellbeing would enhance the efficacy of existing supportive interventions and initiatives of the school. Interventions, when they are context-specific and evidence-based, are more likely to be effective for our setting instead of an adoption of some foreign 'wholesale, one-size-fit-all' sorts of interventions.

Therefore, the two-fold questions investigated by this study are: What are the sources of stress for medical student's at the KNUST? What variables are associated with greater subjective or psychological wellbeing; and the relationship of these to academics (test anxiety)? We believe that findings would inform appropriate psycho-social interventions for better support and promotion of mental health and wellbeing among student's. In a word, the study seeks to understand what the issues are (needs assessment and correlates of wellbeing) so as to inform an evidence-based supportive response intervention.

Therefore, the study's objectives: First, it seeks to identify the sources of stress for the medical student's at the KNUST. Second, it examines the correlates of psychological wellbeing among the medical student's and how these are related to test anxiety. We believe that delineation and understanding of sources of stress for student's and the associated risks and buffering correlates, would inform existing supportive services and potentially generate more innovative ideas for medical training to enable a good tailoring of supportive services to student needs. Furthermore, we are inclined to believe that student's participation in the study could promote an enhanced self-awareness (of own life stressors and cognitive appraisals) for more adaptive coping response.

MATERIALS AND METHODS

Design

The study was a cross-sectional survey conducted among the medical student's of the KNUST. A quantitative, non-experimental, correlational design was used to examine relationships among interested variables. Medical student's (pre-clinical and clinical) of the school of medicine and dentistry were solicited from their classes to participate in the study within the months of April-June, 2022.

Setting

The school of medicine and dentistry at the KNUST is one of the four government or public medical training schools in Ghana. The school is nested in the college of health sciences, which is one of the six colleges of the KNUST and founded in 1975 with an original mandate to train physicians, medical scientists, and medical laboratory technologists. Over the years, the school has expanded to include the school of public health, within which the medical laboratory technology program is currently run in the faculty of allied health sciences with other allied health science programs such as nursing and midwifery. Included in the school's mission is the provision of a conducive environment for community-based professional and academic medical training, research and support for health care delivery in Ghana and beyond. Since the foundation, the medical school has produced over two thousand medical doctors and continues to admit about two hundred student's every year for medical training.

Participants and procedure

Medical student's were solicited from their classes, through convenient sampling, with no particular efforts for an even gender

presentation. Using Tabachnick, et al. [24], method to determine sample size, where 'm' represents number of independent variables in the study, the sample size N needed is: $N > 50 + 8m$. Given that there are four independent variables in the study, a minimum of eighty-four (84) participants would suffice.

A total of three hundred and six (306) medical student's participated in the study; having been solicited from their classes. Consenting student's were given adequate information about the study and the potential benefits of greater self-awareness. Verbal consent was obtained and those who participated did so willingly without any coercion and they could withdraw from participation without any negative consequences to themselves. The questionnaire was brief and took less than twenty minutes to complete; with no known risks for participants. Anonymity was ensured and there was no identifying information linking responses to participants in any way. Data was coded and entered into a computer program (Statistical Package for Social Sciences-SPSS) for analysis. In the data management and cleaning, significantly incomplete data were excluded in the analysis.

Ethical clearance

Ethical clearance for the study was sought and obtained (Ref.#: CHRPE/AP/577/22) from the committee on Human Research and Publications Ethics (CHRPE) of the School of Medicine and Dentistry (SMD) at the Kwame Nkrumah University of Science and Technology (KNUST).

Measures/Instruments

Psychological instruments used in the study included the Ryff's Psychological Wellbeing scale (PWB), Rosenberg Self-Esteem Scale (RSE) and the Worry and Emotionality Questionnaire (WEQ). In addition to these, there were questions on influence on medical career decision (that is, information on persons who played a key role in the decision to study medicine), sources of stress, demographic information of participants, and their general perception of dietary health.

All instruments used in the study have good psychometric properties as well as cross-cultural usage validity. The Ryff psychological wellbeing scale has demonstrated good construct validity [25], and cross-cultural usage suitability [26], with internal consistency and test-retest reliability coefficients ranging from 88 to 81. The Rosenberg Self-Esteem (RSE) [27-29], and the Worry and Emotionality Questionnaire (WEQ), Khaledian M, [30], both have shown good psychometric properties and suitability for use in cross-cultural settings.

The Ryff psychological wellbeing scale (short version) was used in this study. As a measure of psychological wellbeing, the construct consists of six core dimensions of self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. Participants rate self on items using a 5 point-Likert scale ranging from strongly disagree (1) to strongly agree (5). Negatively worded items are reversed scored. High score suggests greater wellbeing on a dimension. A high total mean score indicates greater global psychological wellbeing.

The Rosenberg Self-Esteem (RSE) is a 10-item scale on which five items are reversed scored. Participants rate self on the items on a 4 point-Likert scale ranging from strongly disagree (1) to strongly agree (4). High total mean scores indicate greater perception of self-worth.

The Worry and Emotionality Questionnaire (WEQ) was used to assess student's experience of test anxiety. It measures two

components of test anxiety-worry and emotionality which are believed to be the key components of test anxiety [30]. Worry refers to cognitive concerns about things like level of performance (eg. Thoughts of doing poorly interfere with my performance on examinations). Emotionality refers to the self-perceived visceral or negative physiological arousal (eg. I feel very panicky when I have to take an exam). Participants rate themselves on a 5-point Likert scale (1-very typical of me, 5-not at all typical of me). Given the inverse direction of the rating, lower mean scores indicate high test anxiety while higher scores indicate lower test anxiety.

The source of stress questionnaire is a fifteen-item questionnaire which include questions such as lack of enough sleep, lack of time for socialization, fear of making a mistake on work, uncertain about career choice, feeling academically overwhelmed, loneliness, and lack of money. On these questions, student's were asked to rate themselves on a 5-point Likert scale ranging from not at all true for me (1) to always true for me (5). Higher scores indicate numerous and varied sources of stress [31].

Predictions

Based on existing literature, we expected that student's with more robust global psychological wellbeing and self-esteem would evidence less stress or have better ways of coping with stressors and therefore exhibit less anxiety and emotionality. Thus, positive correlations between self-esteem and global psychological wellbeing and negative associations with the sources of stress and anxiety (worry and emotionality) variables were expected.

RESULTS

A total of three hundred and six (306) medical student's participated in the study by completing the questionnaire. Participants age ranged from 17 years to 28 years of age (Mean=21.62, SD=1.87). Student's were mostly in their third year of medical training (192, 63.0%) and sixth year (110, 36.1%). Two incomplete questionnaires were excluded from the data analysis (2, 0.9%). The student's were also predominantly Ghanaian medical student's (285, 94.7%), with a few foreign student's (16, 5.3%). There were a few others who failed to indicate their nationality status (5, 1.6%).

In gender distribution, there were slightly more females (165, 53.9%) than male (141, 46.1%) participants. While many of the student's indicated that they were single and not in a relationship (221, 72.5%), a few others indicated that they were in an unmarried relationship (84, 27.5%). None was married.

Responses to the question on what influenced their decision to study medicine showed that student's differed in their reasons for the pursuit of medicine. Although a majority indicated that the decision was own or self-motivated (158, 51.7%), there were others who indicated that it was influenced solely by parents (45, 14.7%), or it was a decision made by themselves and their parents (21, 6.9%). A few others stated that it was because they had a good academic aggregate (14, 4.6%). There were very few others (between 1 and 7 participants) who had a combination of reasons for pursuing medicine such as the influence of friends, parents, their good academic aggregate and the fact that they were science student's. These constituted approximately 16% (51) of the participants. As part of their demographic or background information, we also sought to know if student's had family members in the medical profession already. Over fifty percent of the student's (60.1%, 184) had a parent (24, 7.8%), siblings (30, 9.8%), relatives (108, 35.3%), or any combination of these

(parents, siblings, and relatives-24, 7.8%) who were already in the medical profession. However, there were a sizable number of student's (122, 39.9%) who indicated that they did not have any family member in the medical profession. Demographic characteristics of participants are presented in Table 1.

Table 1: Socio-demographic characteristics of participants.

Variable	N	%	Mean	SD
Age	304		21.62	1.87
Gender				
Male	141	46.10%		
Female	165	53.90%		
Marital status				
Single	221	72.20%		
In a relationship	84	27.50%		
Year				
Third year	192	63.00%		
Sixth year	110	36.10%		
Nationality				
Ghanaian	285	94.70%		
International	16	5.30%		
Influence				
Own decision	158	51.70%		
Parents	45	14.70%		
Parents and self	21	6.90%		
Good aggregate	14	4.60%		
A combination of reasons	51	16.60%		
Family member in medicine				
Parents	24	7.80%		
Siblings	30	9.80%		
Relatives	108	35.30%		
A combination of family members	24	7.80%		

A descriptive analysis (frequencies) was used to examine student's endorsement of their sources of stress. On almost all of the fifteen items on sources of stress, the mode of response (most frequent occurring choice) was student's indication that they sometimes experienced these intrapersonal and interpersonal forms of stress. Most student's indicated that they sometimes experienced stress related to feelings of loneliness, lack of time for family and friends, feeling academically over worked, lack of money, lack of adequate sleep, and uncertainties about achieving goals. Generally, student's endorsed multiple sources of stress with higher endorsement on some sources of stress than others. Some indicated more frequent experience of stress from fears of performing poorly or making mistakes in work.

Sources of stress that received significant endorsement (were endorsed by more than half of the participants as often true or always true of their experience) included feeling academically overworked (52.9%), being unable to learn everything (51%), lack of sleep (51.6%), and fear of making mistakes on work (52%).

Next to these were stressors from inadequate time to prepare for examinations (47.7%). Frequency of endorsement of the various sources of stress is presented on Table 2.

A correlational analysis was performed to examine the relationships among student's sources of stress, global psychological wellbeing, self-esteem, and their test anxiety (worry and emotionality in examinations). Results are presented on Table 3. As predicted, there are a significant positive correlation between student's sources of stress and their test anxiety. This means that student's who had high and varied sources of stress were more anxious in examinations. In other words, as student's levels of stress increased, their test anxiety also increased.

Conversely, student's with more robust psychological wellbeing and self-esteem had less stressor in their lives and were less anxious in examinations, as evidenced by the negative correlations between psychological wellbeing, self-esteem, and the test anxiety variable. Basically, greater psychological health or wellbeing was associated with lower examination anxiety; just as greater sense of self-worth was also associated with lower examination anxiety. A significant positive correlation between the global psychological wellbeing variable and the self-esteem variable suggests that a greater psychological wellbeing is associated with a greater sense of self-worth and buffers against anxiety.

For a greater understanding of which aspect of psychological wellbeing influenced test anxiety and sources of stress, a correlational analysis among the six domains of psychological wellbeing (self-acceptance, positive relationships, autonomy, mastery, purpose and growth), sources of stress and test anxiety was conducted. Results are presented on Table 4.

As shown on Table 4, all correlations were significant and in the predicted direction. That is, negative correlations were observed between wellbeing indices (domains), stress and test anxiety. As sources of stress increased, wellbeing domains of self-acceptance, positive relationships, autonomy, mastery, purpose in life, and personal growth decreased. In other words, all aspects of student's wellbeing are negatively affected when stressors increase. Similar pattern of negative associations was observed for test anxiety. Conversely, increases in wellbeing indices, suggestive of greater psychological wellness, were associated with increases in self-esteem.

Multiple linear regressions were used to examine if wellbeing, stress, and self-esteem significantly predicted test anxiety. The overall regression was statistically significant; ($R^2=219$, $F [3,302]=28.24$, $p<0.000$). It was found that sources of stress ($\beta=0.251$, $p<0.000$) and self-esteem ($\beta=-213$, $p<0.003$) significantly predicted test anxiety. However, wellbeing (as a global index) did not significantly predict test anxiety ($\beta=-0.115$, $p<0.122$). Results are presented on Table 5.

Although taken together global wellbeing did not significantly predict test anxiety, for a clearer understanding of the relationship of the criterion variable (test anxiety) to the specific wellbeing indices (domains of wellbeing), test anxiety was regressed on the wellbeing indices (self-acceptance, positive relationships, autonomy, environmental mastery, purpose in life and growth) to examine if any domain of wellbeing would significantly predict test anxiety. The overall regression was statistically significant ($R^2=0.185$, $F [6,299]=11.33$, $p<0.000$); however, only two domains of wellbeing significantly predicted test anxiety. These were self-acceptance ($\beta=-0.300$, $p<0.000$) and environmental mastery ($\beta=-0.165$, $p<0.021$); explaining approximately 19%

($R^2=0.185$) of the variance in test anxiety. In other words, student's test anxiety is significantly influenced by differences in student's level of self-acceptance and environmental mastery. The result also indicates that there are other variables, other than self-acceptance and environmental mastery, that influence test anxiety since the observed variance, although significant, is under twenty percent.

We examined student's sources of stress and their general perception of dietary health with a bivariate correlation and found that increases in stressors was associated with poorer dietary health as evidenced by a negative correlation ($r=0.232$) at a 0.01 significance level (2-tailed). The finding suggests that when student's struggle with high and varied sources of stress, they are likely to neglect personal care and exhibit poorer eating habits.

Table 2: Frequency of students endorsement of sources of stress.

Sources of stress	Percentage				
	1	2	3	4	5
Lack of time for socializing	29 (9.5%)	47(15.4%)	154 (50.3%)	65(21.2%)	11(3.6%)
Lack of time for family/friends	43 (14.1%)	86(28.1%)	125 (40.8%)	45(14.7%)	7(2.3%)
Unable to learn everything	17 (5.6%)	37(12.1%)	96 (31.4%)	78(25.5%)	78(25.5%)
Lack of enough sleep	15 (4.9%)	33(10.8%)	100 (32.7%)	98(32.0%)	60(19.6%)
Inadequate time for exams prep	13 (4.2%)	43(14.1%)	104 (34.0%)	91(29.7)	55(18.0%)
Fear for making mistakes in work	21 (6.9%)	41(13.4%)	85 (27.8%)	86(28.1%)	73(23.9%)
Uncertain about achieving goals	60 (19.6%)	74(24.2%)	96 (31.4%)	53(17.3%)	23(7.5%)
Feeling lonely	77 (25.2%)	70(22.9%)	93 (30.4%)	36(11.8%)	30(9.8%)
Feeling academically overworked	15 (4.9%)	28(9.2%)	101 (33.0%)	86(28.1%)	76(24.8%)
Lack of money	53 (17.3%)	68(22.2%)	81 (26.5)	51(16.7%)	53(17.3)
Sometimes unsure if I have chosen the right profession	97 (31.7)	73(23.9%)	81 (26.5%)	29 (9.5%)	26(8.5%)
Competition for grades or rank in class	129(42.2%)	86(28.1%)	59(19.3%)	25(8.2%)	7(2.3%)
Having to perform excessive extra curricula activities	89(29.1%)	96(31.4%)	81(26.5%)	26 (8.5%)	14(4.6%)
Lack of time for interaction with students of other discipline	39(12.7%)	61(19.9%)	94(30.7%)	81(26.5%)	31(10.1%)
Lack of library space and necessary resources including computers	93(30.4%)	88(28.8%)	59(19.3%)	32(10.5%)	34(11.1%)

Note: 1=not at all true for me, 2=rarely true for me, 3=sometimes true for me, 4=often true for me, 5=always true for me.

Table 3: Correlations among stress, anxiety, wellbeing and self-esteem variables.

Variable	Stress	Anxiety	Wellbeing	Self-esteem
Sources of stress	-	0.376**	-0.424**	-0.360**
Test anxiety		-	-0.372**	-0.385**
Global wellbeing			-	0.708**
Self-esteem				-

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

Table 4: Correlation between sources of stress, self-esteem, test anxiety, and indices (domains) of well-being.

Variables	Values								
	1	2	3	4	5	6	7	8	9
Sources of stress	-								
Self-esteem	-0.36**	-							
Test anxiety	0.38**	-0.39**	-						
Self-acceptance	-0.42**	0.64**	-0.40**	-					
Positive relationships	-0.27**	0.32**	-0.19**	0.36**	-				
Autonomy	-0.19**	0.38**	-0.17**	0.24**	0.13**	-			
Mastery	-0.43**	0.57**	-0.36**	0.60**	0.31**	0.35**	-		
Purpose in life	-0.25**	0.53**	-0.19**	0.47**	0.22**	0.24**	0.50**	-	
Personal growth	-0.13**	0.42**	-0.20**	0.39**	0.31**	0.25**	0.39**	0.493**	-

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

Table 5: Regression of test anxiety on stress, self-esteem, and wellbeing (global).

Regression Statistics						
Multiple R	0.468					
R square	0.219					
Adjusted R square	0.211					
Standard error	0.717					
Observations	305					
ANOVA						
	df	SS	MS	F	Sig. F	
Regression	3	43.65	14.55	28.24	0	
Residual	302	155.63	0.515			
Total	305	199.29				
	Coefficients	Standard Error	t-Stat	p-value	Lower 95%	Upper 95%
Intercept	3.53	0.486	7.27	0		
Stress	0.357	0.08	4.44	0		
Self-esteem	-0.342	0.116	-2.94	0.003		
Wellbeing (global)	-0.18	0.116	-1.55	0.122		

DISCUSSION

Evidence shows that the pursuit of higher education is generally challenging and student's mental health is consequently affected. Recent studies reveal that over 60% of college student's meet criteria for at least one mental health problem [32]. A good number of student's experience varied levels of severity in depression [18,23,33-35]. Medical training, being particularly stressful, would be no exception to this observation.

This study examined the sources of stress for medical student's at KNUST and sought to understand the factors associated with psychological wellbeing. A total of three hundred and six (306) medical student's participated in the study by completing questionnaires that examined their psychological wellbeing, self-esteem, sources of stress and test anxiety (worry and emotionality) in addition to the provision of some demographic information and general impression of personal dietary health.

There were more females than male participants in this study. This finding is similar to that observed in earlier studies on medical student's [36,37]. It is also consistent with the observation of the authors that there are more females, than males, in each class of the medical school which may explain the larger female participants in the study. The finding that none was married is likely due to the age range of the participants, averaging 21 years of age.

Some aspects of student's demographic characteristics observed are noteworthy. While some student's reported that the decision to pursue medicine was self-motivated, many others indicated that they were influenced by parents, friends, good academic grades or being science student's. Student's responses on choice of the medical career differed from those reported in a study in Hungary where first year medical student's gave reasons reflecting own decisions for greater career opportunities, better financial status, possibilities of working abroad and the desire to be scientists [38]. However, it is fair to observe that the first-year medical student's in Europe were relatively older in age having completed a first degree before entrance into medical school unlike those in Ghana who are predominantly high school graduates and therefore could be less mature. Also, in the present study the question on motivation hinged on 'who' and not 'what' influenced decision into medical school which may explain the difference of responses observed in this study.

Another interesting characteristic of the participants was that more than fifty percent (60.1%, 184) had either parents or some other close family member already in the medical profession. Could it be that student's having been influenced by family members or parents in the decision for medical training, without adequate personal discernment, would exhibit greater worry and emotionality or performance anxiety in the bid to please parents or family members? A situation of the sort is likely to affect student's level of stress and emotionality when the rigors of the medical training begin to take a toll. It is also likely to affect the confidence and self-esteem of such student's with consequent poor mental health outcomes.

The findings on student's wellbeing revealed a significant positive correlation between student's sources of stress and test anxiety indicating that student's with high and varied sources of stress experienced more worry and emotionality (test anxiety) during examinations. In other words, as student's sources and levels of stress increased, their test anxiety also increased. Competitive

stress of medical school is associated with anxiety symptomatology in medical student's [18].

The negative correlations observed between psychological wellbeing, self-esteem, and test anxiety indicated that student's with more robust psychological wellbeing and self-esteem had less stressor in their lives and were less worried or anxious in examinations. A significant positive correlation between the psychological wellbeing variable and the self-esteem variable suggests that a greater psychological wellbeing is associated with a greater sense of self-worth and buffers against anxiety. Summarily, these results indicated that a robust psychological wellbeing was associated with better self-esteem, less test anxiety and fewer sources of stress.

The negative correlations observed between the wellbeing indices (domains), stress and test anxiety also indicate that as sources of stress increased, all aspects of a student's wellbeing (self-acceptance, positive relationships, autonomy, mastery, purpose in life, and personal growth) decreased. High and varied sources of stress affect many spheres of functioning, including academic (examination) performance. It is not surprising that several studies examining medical student's mental health and wellbeing have reported high rates of burnout [33,35,39] and stress-related depression [18]. Symptoms of anxiety and depression are prevalent among medical student's, and related to stress. High levels of stress were associated with poor dietary health, as observed in this study [36].

Our findings suggest that self-acceptance and environmental mastery were predictive of test anxiety (worry and emotionality) is both informative and revealing. This finding suggests that medical student's academic performance is associated with some level of self-acceptance and self-efficacy beliefs (mastery). Mastery of the environment requires some level of self-knowledge and acceptance of strengths and limitations. A belief in one's ability to control or properly manage stressful environmental happenings (including fear of examinations) appears important to good academic performance.

Causal inferences cannot be made, aside the observed associations, given the study design and method of analysis. Participants of the study were mainly third and sixth-year medical student's of the KNUST, these being at the cusp of the preclinical and clinical medical training phases. Therefore, findings may not be generalizable to other medical student's elsewhere or at different level of training. These could be considered limitations of the study.

CONCLUSION

The limitations notwithstanding, the findings of the study have implications for clinical practice (counselling of student's, for example) and medical training. Supportive interventions aimed at boosting student's self-confidence and perceptions of control (mastery) would be a step in the right direction to enhance their management of stressors. Other efforts that help to reduce the many stressors of medical training (eg. Provision of adequate study aids and adequate time to prepare for examinations, intentional efforts to reduce fears associated with failure or mistakes, and financial assistance) would mitigate the high levels of stress that are associated with reduction of psychological wellbeing. Opportunities that assist and challenge medical student's to make a more discerning choice of the profession (devoid of undue parental and familial influences) would be positively formative as

this might ameliorate stress and academic performance anxiety.

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