The correlates of stress, coping styles and psychiatric morbidity in the first year of medical education at a Nigerian University

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Abstract
Objectives: This study was prompted by the heightened concerns about the stress inherent in medical education evident from the incessant requests for suspension of studies due to psychological problems. The objectives of the study were to: (i) survey the students for possible psychological problems at admission, and follow them up till exit for possible changes in morbidity, and (ii) ascertain possible risk factors, and coping strategies. **Method:** This is a preliminary 2-stage cross-sectional report, which is part of a longitudinal survey. It involves first year medical students of the College of Health Sciences of University of Ilorin between March and April, 2011. Questionnaires used included socio demographic, sources of stress, the general health questionnaire-12 (GHQ-12), Maslach's burnout inventory (MBI), and Brief COPE. Data were analysed using SPSS version 15 at 5% significance level. Chi-square, frequency distributions, Pearson's correlation, Odd ratios, and Confidence Intervals were calculated to determine the levels of risk. **Results:** 79 students returned completed questionnaires. 12 (15.2%) were ghq-12 cases (i.e., scored ≥ 3). Students who had morbidity were 9 times at risk of being stressed consequent upon 'competing with their peers' and 4 times at risk due to 'inadequate learning materials'. Morbidity was significantly more likely to engender use of 'religion', 4 times less likely to engender use of 'positive reframing' with a trend in the use of 'self blame' as coping strategies. **Conclusion:** Aside from psychosocial/ personal issues in this cohort, academic demand was an additional source of psychological problems thereby causing those who had morbidity to utilize 'religion' and 'positive reframing' to cope. There is therefore an apparent need to incorporate the principle of mental health promotion in medical education.

Keywords: Stress; Coping styles; Psychiatric morbidity; Medical education; Nigeria

Introduction
Stress in medical schools has resulted in classifying medical students as being intermediate- in symptom severity - between outpatients and the general population with identifiable psychological impairments (e.g., anxiety, and depression).[1-8] Several factors (e.g., poor employment prospects, financial problems, workload, and examinations) could act as catalysts for psychological morbidity.[2,3,9,10] Aside from the immediate morbidity, distress during medical school could predict later problems in physicians with possible personal suffering of the doctor and poor patient care.[7]

The growing concern about such stress has resulted in the describing of 'medical students' disease', based on the demands of the training.[4,11-13] Although an optimal level of stress enhances learning ability, too much affects learning and memory, with resultant morbidity.[5,14] A few studies both in Nigeria and other parts of the world have reported high rates of psychiatric morbidity among students.[1,2,3,5,7,15] Studies have shown that medical education at various stages of training is characterized by varying levels of morbidity; while some studies reported high morbidity in the first year[5,9,10,16,17], or earlier in the career (i.e., pre-clinical)[2,3], others have reported morbidity in later years.[1,10,18,19]

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Generally, sources of stress are classified into three: academic, social, and financial; and while some studies have implicated medical training[10,12,16,20], others have cited personal (or social) problems.[1-3,8,18] The academic sources of stress include relationships with teachers, as well as dealing with death and suffering among others. Social causes include the effects of being a medical student on personal life, leisure activities, and social relationships.[2,18] Some factors such as workload, overwhelming information, examinations, family, and financial problems are regarded as being further preoccupations amongst medical students.[2,3,10,20]

Whereas the stressors in medical students vary with the stage of the course[2,5,21], concerns about workload, performance, and personal competence seem particularly marked in the first year, when students may have significant lifestyle changes (e.g., diminished leisure and recreational activity, and sleep deprivation) resulting in reduced emotional wellbeing. With advancing academic programmes, some inherent factors (e.g., dealing with patients, disease and death; relationships with consultants; and effects on personal life) become manifest, with attendant increase in stress and mobilization of coping resources.[12] For instance, Firth[16] reported a morbidity of 31.2% in his cohort and suggested that the greatest stress occurred during the later years of medical education. Miller & Surtees[1] however, reported high levels of neurotic symptoms at the beginning of the academic year in a half of their cohort, and similar symptoms at follow-up 6 months later in one-third of their cohort. Similarly, Guthrie et al10 reported a high rate of morbidity in first year medical students which they also attributed to the medical training.

In a comparative study of different academic levels by Stewart et al,20 2nd year medical students reported higher anxiety and depression than the 1st year. Incidentally, some studies have attributed medical students' stress to individual differences (e.g., gender, personality variables, worrying about the future, examination pressure, and concerns about school environment).[1-3,8,10,12,18,20] Thus, in addition to the stressful nature of university education, a stressful environment can exert a negative effect on psychological health.[22] The problem of professional socialization - when incoming 1st year medical students begin to acquire the attitudes, values, behaviours, and lifestyles of physicians - are said to occur in an academic environment regarded as rigid, and dehumanizing.[9]

Although, many studies have focused on stress and the correlates in medical education, these have also revealed other research issues: whether there are possible risks and correlates of developing morbidity following exposure to stress, and the coping strategies utilized. The University of Ilorin's emphasis on excellence, might stimulate students developing to their fullest potential, but could also endanger their psychological well-being. There are increasing requests for suspension of studies as a consequence of psychological ill-health. Hence, the authors planned and began a 6-year longitudinal survey of medical students of the College of Health Sciences (COHS), University of Ilorin – commencing i 2011, to ascertain how perceived stress could impact on their psychological health.

Whilst there have been studies on medical students in many countries[10,20,22] including Nigeria[2,3], they have been restricted to the students' psychosocial problems. The current study has focused on the various stressors (psychosocial and academic) in medical school in relation to psychiatric morbidity, and the management of such situations by the cohorts. The current paper reports on the cross-sectional component (1st stage) of first year medical students. Whilst the second stage is documented for a complete understanding of the research undertaken - interviews conducted using the Mini International Neuropsychiatric Interview (MINI) are not reported on, nor is the data derived from the Manslach's Burnout Inventory (MBI)- noted in the ''Method'' section which follows.

Method
Study setting and participants
The data presented form part of the cross-sectional component related to psychiatric morbidity among the 1st year students (n=89) of the COHS, University of Ilorin, Nigeria, conducted between March and April, 2011 (i.e., during the second semester - the University runs a two-semester system). It is the initial (base-line) report of a longitudinally designed survey of first year medical students who will be followed-up to their final year of medical education (i.e., the 6th year). In addition, it forms a part of a larger study involving all the medical students in the College. The College is structured into 3 sections: first year students are offered basic science courses (e.g., physics, and chemistry); pre-clinical (2nd and 3rd years) students are offered the basic medical sciences (e.g., anatomy, and physiology), and attract between 1-5 course credits; and clinical (4th - 6th years) students are offered clinical courses (e.g., internal medicine, obstetric and gynaecology, and surgery).[23]

Study design
The study was a 2-staged, cross-sectional analytical survey, using structured, self-administered questionnaires, and conducted over 8-weeks period (for the distribution/retrieval of the questionnaires, and the conduct of the interview). The first stage was questionnaire-based involving all the 1st year students (n=89). Having retrieved the students' class lists, they were approached during their lecture hours to explain the purpose and to give assurance of confidentiality of the study.

The questionnaires were given to the class representatives for distribution to, and retrieval from colleagues. For ease of identification subsequently, the questionnaires were numbered ('0001' to '1350'), and the initial 100 were distributed among this class. Distribution/retrieval was according to their serial/matriculation numbers, to enable appropriate matching at the subsequent surveys especially, the 1st year students who were planned for a longitudinal survey. Using a cut-off point of 3 in line with previous studies among students and occupational groups in this environment[24-27], students who scored ≥3 on General Health Questionnaire-12(ghq-12) were regarded as having psychiatric morbidity (i.e., 'ghq-12 cases')[24-27], and those who scored <3, were regarded as having no morbidity (i.e., 'ghq-12 'non-cases').

The 'cases' (n=12) and a proportion (10%) of the 'non-cases' (n=7) were interviewed privately (at the second stage) by YAD, APO, IBA, and BION; and psychiatric diagnoses ascribed. Each interview session took on the average, 60-80minutes; 8 students were seen in a day (between the hours of 10:00am and 4:00pm), and it lasted for 3 days. The inter-rater reliability performed by the authors on selected subjects gave a Kappa score of 0.91. This data, as mentioned, is not reported.

Ethics
All the students in the college were invited to participate, with such participation being voluntary. Verbal consent was obtained, and approval of the University of Ilorin Teaching Hospital (UITH) ethical and Research Committee was received.

Instruments
General Health Questionnaire-12 (GHQ-12)
The GHQ-12[28] is a screening instrument to detect current, diagnosable psychiatric disorders, and is intended for use in general practice and community settings. The GHQ scoring method (0–0–1–1) was adopted, and a cut-off point of 3 was used in accordance with previous studies (and is noted as ''psychiatric morbidity'' in the Results section).[2,3,24-27,29-33]

Sources of stress questionnaire
The 28-item source of stress questionnaire previously used by Sreeramareddy et al[17] was adapted with subtle adjustments to the contents (e.g., substituting 'cafeteria' for 'hostel' in item 1, and 'clinical rotation' for 'practical' in item 19). The questionnaires were pre-tested among 20 first year Laboratory Medical students for face and content validities. It listed the potential stressors and grouped them into academic, psychosocial, and health-related. The frequency of occurrence of each potential stressor was rated as 'never', 'rarely', 'sometimes', and 'always'; and scored using Likert scale as 1, 2, 3, and 4. To allow for inferential statistical calculation, the 4-way Likert responses were reduced to binomial responses of 'No' (i.e., 'never'/'rarely') and 'Yes' (i.e., 'often'/'always').

COPE questionnaire (Brief COPE)
The Brief COPE, an abridged version of the COPE inventory[34] was used. It presents fourteen scales all assessing different coping dimensions (e.g., 'venting', 'positive reframing', 'humor', 'denial', 'acceptance', 'religion', and 'substance use').[35] The students were asked to indicate how they have been responding to stressors in the previous weeks. The response choices range from (1) 'I have not been doing this at all' to (4) 'I have been doing this a lot'. It can be used to assess trait coping (the usual way people cope with stress in everyday life), and state coping (the particular way people cope with a specific stressful situation). The instrument has been used in health-relevant studies.[35] Similarly, the 4-way Likert responses were reduced to binomial responses of 'No' (i.e., 'I have not been doing this at all'/'I have been doing this a little') and 'Yes' (i.e., 'I have been doing this sometimes'/'I have been doing this a lot').

Manslach's Burnout Inventory (MBI)
The MBI[36] has been used and validated in health care settings, and in medical students. It includes 22 statements of work-related feelings. Respondents rate how frequently they experience these feelings on a scale of '0' (never) to '6' (every day). The MBI includes three subscales which are reported separately: emotional exhaustion (MBI-EE), depersonalization (MBI-DP), and personal accomplishment (MBI-PA). Higher scores on the MBI-EE and MBIDP subscales and lower scores on the MBI-PA subscale indicate more burnout.

Mini International Neuropsychiatric Interview (MINI)
The 2nd stage of the study involved interviewing with MINI.[37] MINI was designed as a brief structured interview for the major axis I psychiatric disorders in DSM-IV and ICD-10. It has acceptable validity and reliability, and clinicians require relatively brief training session. It has previously been used among student populations.[24-27]

Data analysis
Data were analysed using SPSS version 15, with level of significance set at 5%. Chi-square, Pearson's correlation, Odd ratio, and Confidence Intervals were calculated to determine the levels of risk.

Results
Of the 89 students in the 1st year class to whom questionnaires were given, 79 returned completed questionnaires (i.e. a response rate of 88.8%). Their mean age was 18.6±2.3 (range 15-28 years), 59.5% were males, 98.7% were single, 54.4% were Muslims, and 41.8% were from Kwara (Table I).

Table I: Sociodemographic characteristics (N=79)	
Variables	*N (%)*
Age-group (years):	
15-18	42 (53.2)
19-22	32 (40.5)
23-26	4 (5.1)
>26	1 (1.3)
Gender:	
male	47 (59.5)
female	32 (40.5)
Marital status:	
single	78 (98.7)
married	1 (1.3)
Religion:	
christianity	36 (45.6)
islam	43 (54.4)
Parents' marital status:	
married	71 (89.9)
separated/divorced	8 (10.1)
Number of siblings:	
≤2	3 (3.8)
3-5	56 (70.9)
>5	20 (25.3)

Sources of stress as perceived by the students
Psychosocial (e.g., 'experiencing high expectation from parents' (86.1%), 'feeling concerned about the expectation of being a doctor' (65.8%), 'feeling worry about the future' (58.2%), and being 'bothered about the political situation in the country' (55.7%)); and academic concerns (e.g., 'worried about the lack of special guidance from the college' (58.2%), and 'dissatisfaction with the lecturers' (53.2%)) were commonly perceived as sources of stress by the students (Table II). Top on the list of the commonly used coping

strategies were 'religion' (2.9±1.2), and 'active coping' (2.5±1.0), while the least utilized was the 'use of substances' (1.4±0.8) (Table III).

Risk factors for stress, the coping styles and psychiatric morbidity
Ghq-12 scores and socio-demography
The mean scores on ghq-12 was 1.2±1.7 (range= 0-7). Twelve (15.2%) students scored ≥3 on the ghq-12 and were considered as having psychological morbidity. These

Table II: Sources of stress in the students		
Sources of stress	*Frequency of occurrence*	
	Never/Rarely	*Sometimes/Always*
Experiencing high expectation from parents	13.9	86.1
Feeling concerned about the expectation of being a doctor	34.2	65.8
Being bothered about the political situation in the country	44.3	55.7
Having cordial relationships with opposite sex	53.2	46.8
Feeling lonely	55.7	44.3
Being worried about lack of special guidance from the college	41.8	58.2
Being disturbed about competing with friends	48.2	41.8
Feeling worried about the future	41.8	58.2
Being satisfied about the quality of food	31.7	68.4
Being bothered about non-availability of adequate learning materials	54.4	45.6
Being worried about performance in the practical posting	64.5	35.4
Feeling concerned about lack of time for recreation	57.0	43.0
Feeling that the academic curriculum was too vast	54.4	45.6
Being worried about the living conditions in the hostel	63.3	36.7
Having difficulty journeying back home	69.6	30.4
Being bothered about the frequency of examinations	72.2	27.8
Having sleep difficulties	62.0	38.0
Having dissatisfaction with the lectures	46.8	53.2
Lack of time for entertainment/recreation	70.9	29.1
Having difficulties adjusting to roommates	67.1	32.9
Having difficulties with accommodation	78.5	21.5
Financial instability in the family	84.8	15.2
Having any illness affecting performance in class examinations	88.6	11.4
Having any difficulties in reading textbooks	88.6	11.4
Inability to socialise with peers	77.2	22.8

Table III: Coping styles deployed by students				
Coping styles	*Overall*	*Ghq-negative (N=67)*	*Ghq-positive (N=12)*	*Friedman ANOVA*
	Mean (SD)	*Mean (SD)*	*Mean (SD)*	
Use of religion	2.9 (1.2)	2.7 (1.2)	3.6 (0.5)	X^2=2, df=2, p=0.4
Planning	2.4 (1.1)	2.3 (1.1)	2.8 (1.4)	X^2=2, df=2, p=0.4
Acceptance	2.4 (1.2)	2.4 (1.2)	2.8 (1.4)	X^2=1.5, df=2, p=0.5
Self blame	2.2 (1.0)	2.2 (1.0)	2.8 (1.0)	X^2=1.5, df=2, p=0.5
Use of positive reframing	2.0 (1.2)	2.0 (1.2)	2.7 (1.3)	X^2=1.5, df=2, p=0.5
Use of active coping	2.5 (1.0)	2.5 (1.0)	2.5 (1.0)	X^2=0.0, df=2, p=0.5
Use of instrumental support	2.4 (1.2)	2.4 (1.2)	2.4 (0.9)	X^2=0.0, df=2, p=1.0
Use of denial	2.4 (1.3)	2.4 (1.3)	2.1 (1.2)	X^2=1.5, df=2, p=0.5
Use of humor	2.3 (1.2)	2.3 (1.2)	2.4 (1.3)	X^2=1.5, df=2, p=0.5
Use of self distraction	1.9 (1.0)	1.9 (1.0)	2.0 (0.9)	X^2=1.5, df=2, p=0.5
Use of emotional support	1.6 (0.97)	1.6 (0.95)	1.8 (1.0)	X^2=1.5, df=2, p=0.5
Venting	2.0 (1.2)	2.0 (1.2)	1.8 (1.1)	X^2=1.5, df=2, p=0.5
Use of behavioural disengagement	1.8 (0.95)	1.8 (0.9)	1.8 (1.1)	X^2=0.0, df=2, p=1.0
Use of substances	1.4 (0.8)	1.3 (0.8)	1.5 (1.0)	X^2=2, df=2, p=0.4

students who had morbidity were all single (100%) whereas 66 (98.5%) were single among those without morbidity; 7 (58.3%) of those with morbidity were in the 15-18year age-group compared with 35 (52.2%) who were without morbidity. In addition, the gender distribution was equal (6 or 50% each) among those with morbidity compared with a predominance of males (41 or 61.2%) among those without morbidity. Nine (75%) of mothers of those who had morbidity were mostly public servants compared to 43 (64.2%) of those without morbidity, while fathers were public servants of 5 (41.7%) of those with morbidity compared with 35 (52.2%) of those without morbidity. Indigenes (i.e., from Kwara) constituted 33.3% (4/12), followed by those from the south-western neighbouring states of Oyo (2 or 16.7%). One (8.3%), and 1 (1.5%) of those with morbidity, and those without morbidity, respectively had personal and family histories of emotional disorders, 9 (75%), and 47 (70.1%) of those with morbidity, and those without morbidity, respectively, had 3-5 siblings, and 10 (83.3%), and 61 (91.0%) subjects with morbidity, and those without morbidity, respectively, had their parents living together. There were no significant relationships between these variables and psychiatric morbidity (Table IV).

Ghq-12 scores and sources of stress
Students with morbidity compared to those with no morbidity demonstrated some significant differences - as assessed on the ghq-12 scores i.e. they were nine times more likely to report problems related to competition with peers (X^2=10.0, p=0.002, r=0.4, OR=9.6, CI=1.9-47.4) as well as four times more likely to report inadequate learning materials (X^2=4.9, p=0.026, r=0.2, OR=4.4, CI=1.1-17.9). In addition, there were non-significant differences related to feeling worried about the future (X^2=3.7, p=0.056, r=0.2, OR=4.3, CI=0.8-21.2), as well as financial difficulties (X^2=3.6, p=0.057, r=0.2, OR=3.7, CI=0.9-15.1).

Ghq-12 scores and the coping strategies deployed by the students
The coping strategies commonly utilized by those who had morbidity included among others 'religion' (mean=3.6, sd=0.5), 'planning' (mean=2.8, sd=1.1), 'acceptance' (mean=2.8, sd=1.4), 'self blame' (mean=2.8, sd=1.0), and 'positive reframing' (mean=2.7, sd=1.3). They however utilized less of 'substance use' (mean=1.5, sd=1.0) as ca oping strategy, although none of these attained any significant levels of utility (Table III).

Table IV: Ghq-12 categorizations and socio-demographic variables

Socio-demographic Variables	Ghq non-case (N=67)	Ghq cases (N=12)	X^2	p-value
	n (%)	n (%)		
Age group (years):				
15-18	35 (52.2)	7 (58.3)	0.97	0.8
19-22	27 (40.3)	5 (41.7)		
23-26	4 (6.0)	-		
>26	1 (1.5)	-		
Gender:				
male	41 (61.2)	6 (50)	0.03	0.85
female	26 (38.8)	6 (50)		
Marital status:				
single	66 (98.5)	12 (100)	0.20	0.67
married	1 (1.5)	-		
Religion:				
christianity	30 (44.8)	6 (50.0)	0.11	0.74
islam	37 (55.2)	6 (50.0)		
Number of children in the family:				
≤2	3 (4.5)	-		
3-5	47 (70.1)	9 (75.0)	0.57	0.75
>5	17 (25.4)	3 (25.0)		
Parents marital status:				
married	61 (91.0)	10 (83.3)	0.66	0.42
separated/divorced	6 (9.0)	2 (16.7)		
Relations receiving treatment for emotional disorders:				
yes	1 (1.5)	1 (8.3)	1.93	0.16
no	66 (98.5)	11 (91.7)		
Individual being treated for emotional disorder:				
yes	1 (1.5)	1 (8.3)	1.93	0.16
no	66 (98.5)	11 (91.7)		

Table V: Ghq-12 categorizations and sources of stress				
Sources of stress	*Ghq non-cases (N=67)*	*Ghq cases (N=12)*	*X^2*	*p-value*
	n (%)	*n (%)*		
Disturbed about competing with friends: never/rarely (no) sometimes/always (yes)	44 (65.7) 23 (34.3)	2 (16.7) 10 (83.3)	10.0 (df=1)	0.002 (r=0.36, OR=9.6, CI=1.9-47.4)
Bothered about non-availability of adequate learning materials: never/rarely (no) sometimes/always (yes)	40 (59.7) 27 (40.3)	3 (25.0) 9 (75.0)	4.9 (1)	0.026 (r=0.2, OR=4.4, CI=1.1-17.9)
Worried about the living conditions in the hostel: never/rarely (no) sometimes/always (yes)	44 (65.7) 23(34.3)	6 (50.0) 6 (50.0)	1.1 df=1)	0.3
Worried about performance in practical examinations: never/rarely (no) sometimes/always (yes)	45(67.2) 22 (32.8)	6 (50.0) 6 (50.0)	1.3 (df=1)	0.2
Worried about the future: never/rarely (no) sometimes/always (yes)	31 (46.3) 36 (53.7)	2 (16.7) 10 (83.3)	3.7 (1)	0.056 (r=0.2, OR=4.3, CI=0.8-21.2)
Financial difficulties in the family: never/rarely (no) sometimes/always (yes)	59 (88.1) 8 (11.9)	8 (66.7) 4 (33.3)	3.6 (1)	0.057 (r=0.21, OR=3.7, CI=0.9-15.1)
Having any illness affecting performance in examinations: never/rarely (no) sometimes/always (yes)	61 (91.0) 6 (9.0)	9 (75.0) 3 (25.0)	2.6 (1)	0.1
Experiencing high expectation from parents: never/rarely (no) sometimes/always (yes)	8 (11.9) 59 (88.1)	3 (25.0) 9 (75.0)	1.4 (1)	0.2
Concerned about expectation of becoming a doctor: never/rarely (no) sometimes/always (yes)	24 (35.8) 43 (64.2)	3 (25.0) 9 (75.0)	0.5 (1)	0.5
Bothered about the political situations in the country: never/rarely (no) sometimes/always (yes)	31 (46.3) 36 (53.7)	4 (33.3) 8 (66.7)	0.7 (1)	0.4
Having cordial relationship with opposite sex: never/rarely (no) sometimes/always (yes)	35 (52.2) 32 (47.8)	7 (58.3) 5 (41.7)	0.1 (1)	0.7
Feeling lonely: never/rarely (no) sometimes/always (yes)	37 (55.2) 30 (44.8)	7 (58.3) 5 (41.7)	0.0 (1)	0.8
Worried about lack of special guidance from the college: never/rarely (no) sometimes/always (yes)	28 (41.8) 39 (58.2)	5 (41.7) 7 (58.3)	0.0 (1)	1.0
Satisfied with the quality of food: never/rarely (no) sometimes/always (yes)	20 (29.8) 47 (70.2)	5 (41.7) 7 (58.3)	0.6 (1)	0.4
Dissatisfied with the lecturers: never/rarely (no) sometimes/always (yes)	30 (44.8) 37 (55.2)	7 (58.3) 5 (41.7)	0.7 (1)	0.4
Lack of time for recreation: never/rarely (no) sometimes/always (yes)	37 (55.2) 30 (44.8)	8 (66.7) 4 (33.3)	0.5 (1)	0.5
Felt that academic curriculum too vast: never/rarely (no) sometimes/always (yes)	37 (55.2) 30 (44.8)	6 (50) 6 (50)	0.1 (1)	0.7
Bothered about frequency of examination: never/rarely (no) sometimes/always (yes)	50 (74.6) 17 (25.4)	7 (58.3) 5 (41.7)	1.3 (1)	0.2
Worried about the living condition in the hostel: never/rarely (no) sometimes/always (yes)	44 (65.7) 23 (34.3)	6 (50) 6 (50)	1.1 (1)	0.3
Difficulties adjusting to roommates: never/rarely (no) sometimes/always (yes)	43 (64.2) 24 (35.8)	10 (83.3) 2 (16.7)	1.7 (1)	0.2
Having sleep Difficulties: never/rarely (no) sometimes/always (yes)	44 (65.7) 23 (34.3)	5 (41.7) 7 (58.3)	2.5 (1)	0.1
Having any difficulties in reading textbooks: never/rarely (no) sometimes/always (yes)	61 (91.0) 6 (9.0)	9 (75.0) 3 (25.0)	2.6 (1)	0.1
Inability to socialize with peers: never/rarely (no) sometimes/always (yes)	53 (79.1) 14 (20.9)	8 (66.7) 4 (33.3)	0.9 (1)	0.3
Difficulties with accommodation away from home: never/rarely (no) sometimes/always (yes)	54 (80.6) 13 (19.4)	8 (66.7) 4 (33.3)	1.2 (1)	0.3
Difficulty with journey back home: never/rarely (no) sometimes/always (yes)	49 (73.1) 18 (26.9)	6 (50) 6 (50)	2.6 (1)	0.1
N.B.: r= Pearson's correlation, OR= Odds ratio, CI= Confidence Interval.				

Psychiatric morbidity consequent upon these perceived stress was significantly more likely to engender the use of 'religion' (X^2=8.2 (df=1), p<0.004, r=0.3, OR=1.3, CI=1.1-1.5), and about 4 times less likely to engender the use of 'positive reframing' (X^2=4.5, df=1), p<0.04, r=0.2, OR=3.8, CI=1.0-14.1) as coping strategies. However, there was a trend in the use of 'self blame' (X^2=3.2 (df=1), p<0.07, r=0.2, OR=3.1, CI=0.8-10.8) as a coping strategy (Table VI).

Table VI: Ghq-12 categorizations and coping styles deployed by students.				
Coping styles	*Ghq non-cases (N=67)*	*Ghq cases (N=12)*	*X^2 (df)*	*p-value*
	n(%)	*n (%)*		
Self distraction: no yes	50 (74.6) 17 (25.4)	9 (75.0) 3 (25.0)	0.00 (1)	1.0
Substances: no yes	62 (92.5) 5 (7.5)	10 (83.3) 2 (16.7)	1.1(1)	0.3
Instrumental support: no yes	34 (50.7) 33 (49.3)	6 (50.0) 6 (50.0)	0.00 (1)	0.1
Positive reframing: no yes	44 (65.7) 23 (34.3)	4 (66.7) 8 (33.3)	4.5(1)	0.04 (r=0.2,OR=3.8, CI=1.0-14.1)
Religion/Spirituality: no yes	29 (43.3) 38 (56.7)	- 12 (100)	8.2 (1)	0.004 (r=0.32, OR=1.3, CI=1.1-1.5)
Denial: no yes	35 (52.2) 32 (47.8)	8 (66.7) 4 (33.3)	0.8 (1)	0.35
Venting: no yes	42 (62.7) 25 (37.3)	10 (83.3) 2 (16.7)	1.9 (1)	0.2
Self blame: no yes	46 (68.7) 21 (31.3)	5 (41.7) 7 (58.3)	3.2 (1)	0.07 (r=0.2, OR=3.1, CI=0.8-10.8)
Planning: no yes	36 (53.7) 31 (46.3)	4 (66.7) 8 (33.3)	1.7 (1)	0.2
Acceptance: no yes	38 (56.7) 29 (43.3)	5 (58.3) 7 (41.7)	0.9 (1)	0.33
Active coping: no yes	34 (50.7) 33 (49.3)	7 (58.3) 5 (41.7)	0.2 (1)	0.6
Humor: no yes	37 (55.2) 30 (44.8)	7 (58.3) 5 (41.7)	0.04 (1)	0.8
Behavioural disengagement: no yes	48 (71.6) 19 (28.4)	8 (66.7) 4 (33.3)	0.1 (1)	0.7
Emotional support: no yes	51 (76.1) 16 (23.9)	10 (83.3) 2 (16.7)	0.3 (1)	0.6
N.B.: r= Pearson's correlation, OR= Odds ratio, CI= Confidence interval.				

Discussion

Several findings emerged from this study. Consistent with previous findings[4,6,38], that reported low level of health anxiety and worry in first year medical students, our finding of a lower morbidity could be that students enrolling in medical schools have little psychological distress pre-admission, and their possible freshness in the new environment. This low morbidity could be that the supposed negative effects of the stringent medical school programs might not have impacted on the cohort - perhaps because they were yet to comprehend the enormous tasks ahead. In addition, the low morbidity could be due to the proximity of the majority of our cohort to their parents/guardians perhaps with fewer problems of home-sickness common with students studying away from their localities with the attendant poor family support networks and the need to contend with new academic environment.[10,22,39,40] The observed equal distribution of morbidity between the genders was contrary to previous findings that reported higher stress in female medical students[5,10,41], or that of Shaikh et al[19] who reported higher stress in male students. The reasons for our finding may be difficult to explain. However, some factors such as cultural similarities and psychological disposition of our cohort, as well as the shared experience by both gender of being medical students might be at play here. Further studies may be needed to clarify this finding.

The low morbidity level contrasted with the findings of studies that have variously reported high rates in the 1st year[1,10,17], attributed to the process of adjustment to educational setting. However, differences in study methods might not allow for strict comparison. For instance, while Miller & Surtees[1] used the ghq-30, Darlin et al[7] used a Higher Education Stress Inventory (HESI). In addition, Sreeramareddy et al[17], and Ko et al[22] used a cut-off of 4/5 for ghq-12 while the present study used 3. Therefore, the differences in the perceived stress in medical students in various studies could be due to the differences in each medical school setting and the curriculum or the instruments and the ratings adopted.[14] Similarly, our finding contrasted with that of Ko et al[22] on the aspect of parents' occupation/profession. The reported high morbidity among students whose parents were medical doctors was attributed to the high expectation from parents who were doctors. The reason for the present finding therefore could not be readily conjectured. Expectations from public servant parents might be more realistic.

Sources of stress

Contrary to previous studies that identified academic issues as more common sources of stress to medical students[5,14,17,18,21,22], the current study observed that both psychosocial (e.g., 'experiencing high expectations from parents', 'feeling concerned about expectations of becoming doctors'), and academic issues (e.g., 'being worried about lack of special guidance from the college', and 'dissatisfaction with the lecturers') were common to the cohort. However, consistent with the earlier findings academic issues (i.e., 'being disturbed about competing with peers' and 'being worried about lack of special

guidance from the college') were particularly of concern among students who had morbidity.[5,14,17,18,21,22] The prevailing poor employment prospects in the country might be sources of concern and worry for citizens generally, including students. This could inform the observed 'high expectation from parents' which might necessitate such parents' exploration of other sources for fund (e.g., loans, thrifts) in order to see their indigent wards through medical school, and possible redemption after graduation; or possibly because of societal glamour attached to having medical graduates in one's household. These could exert undue pressures on the students with possible negative psychological consequences, thus.explaining why the 'expectation of becoming a doctor' was also perceived as stressful, perhaps, due to the impending social obligations/demands. Surprisingly though, our cohorts (and those who had morbidity) expressed no financial difficulties which perhaps contributed to the reduced risk reported in this study despite previous reports of association of financial concerns and debts with psychological distress.[2,3,6,7,42] This finding could possibly mean that the parents/guardians of our cohort might have taken pre-emptive measures, perhaps through the local thrifts to prevent early manifestation of financial difficulties. The cumulative negative impact of undue preoccupation about indebtedness, coupled with poor employment prospects for the impending medical graduates could be of serious concern to parents. These issues could increase their worry about the future, and more especially coming from the background of public servant parents. This contrasted with the finding of Sreeramareddy et al[17] of significantly high morbidity among students whose parents were doctors, and attributed to the 'high expectation from parents'. Medical education often restricts socialisation[21] which could further engender poor relationships with the opposite sex, which could have been responsible for the observed 'perceived loneliness' in this sample. Arguably, because this study was concurrent with the nation's general elections with the attendant societal tensions, the students might not be insulated from the events around them. This might explain the stressful impact of the 'political situation', and thus re-affirming the view that besides educational demands, social factors constitute reasons for psychological disturbance in university students.[18]

Because medical students are an assemblage of individual best students from various schools in and outside Nigeria, coupled with the belief that the 1st year period is one of sifting, one should not rule out competition as a source of stress.[22] The concourse of academically excellent entrants competing for limited available space could engender continuous competition, with the attendant stress, and thus concurred with previous studies that the fear of failure could be devastating to students who have been top of their originating schools.[10,43] The practical classes have similarly been identified as stress-laden for 1st year medical students, to which they are said to have evolved different coping styles.[10] Thus, those who might not be able to withstand such intellectual competition might be weighed down,

especially given the limited infrastructural facilities. This could further explain the impact of 'non-availability of adequate learning materials' particularly on those with morbidity; as well as 'lack of special guidance from the college', and 'dissatisfaction with the lecturers', generally within the cohort. Perhaps, stress levels might be lower with a smaller student population more readily accommodated by the available facilities.

Coping styles

Coping has both cognitive and behavioural elements in efforts to master, reduce, or tolerate the internal and external demands created by stressful transactions.[34,44] With the myriad of stressors confronting our cohort, 'religion' and 'positive reframing' featured very prominently among the coping styles deployed. This might not be too surprising because the study centre is located in a predominantly Islamic state with a very high religiousness. Our cohort might have internalized the prevailing religious values of the host community, thus confirming the finding of Ko et al[22] that a substantial percentage of medical students turned to religion for emotional support. This might also explain why the least utilized coping was 'use of substances', which is similar to the finding of Sreeramareddy et al[17] but contrary to that of Liselotte et al[42] who reported increased use of substances by 1st year medical students.

The use of positive reframing and effective utilization of coping styles for the encountered stress could have also contributed to the low morbidity recorded. Studies have shown that when faced with problems, many students would turn to friends and classmates for support while others would turn to family, and religion, while others would keep the problems to themselves, or engage in sports, music, sleeping or going into isolation.[19,22]

Limitations

The following limitations should be noted: (i) the responses at the 1st stage were self-report and therefore subject to reporting bias; (ii) the non-participation of some students for reasons of bulkiness of questionnaires, fear of identification and stigmatisation might have affected the study's sample size; and (iii) not comparing the cohort with any other professional course, as well as the use of 3 as cut-off for ghq-12 may make generalisation of our inferences a bit difficult. We believe that the appropriate matches (both in content and duration) for medical education in Nigeria could have been veterinary medicine (both focusing on living things), and pharmacy (being closer in duration). However, these courses were at take-off stages in the University during the period of our study. In addition, the use of 3 as our cut-off for ghq-12 was in conformity with several studies in this environment, and had always reduced the probability of including false positives.

Conclusion

It is noteworthy that besides the psychosocial/personal issues, academic demands were additional sources of psychological problems in our cohort who generally, used more of 'religion', and 'active coping', to cope. The

students with morbidity more often utilised 'religion', and less often 'positive reframing' as coping styles. This was indicative of the effectiveness of religion in the study location. Our findings underscored the imperative of an improved educational system, establishment of social/recreational facilities, counselling and mentoring programmes as well as moral values. The incorporation of the principles of mental health promotion in our medical education could mitigate future psychological problems in our medical doctors, and by extension, ensure quality health care delivery.

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