



Stress among Nursing and Midwifery Students Offering a Top-Up Module in the University of Health and Allied Health Sciences, Ho

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Abstract

Previous studies have posited that students studying in medical-related fields are particularly susceptible to high levels of academic stress with implication for both psychological and physical health. This study set in the environment of a newly established public university in Ghana, seeks to evaluate the levels and component stress among students offering nursing and midwifery in the top-up module in the University of Health and Allied Science, Ho. In descriptive study using a modified version of the pre-validated College Undergraduate Stress Scale, 315 second and third year Midwifery 82 (26.03%), Nursing 155 (49.21%) and Public Health Nursing 78 (24.76%) students obtaining bachelors degree in top-up module were surveyed for this study. Among the total study population, 109 (34.60%) experienced high stress level, 106 (33.65%) experienced moderate stress level and 100 (31.75%) experienced less stress level. Stress levels were higher among the female participants. Participants with children under 13 years and female participants with breastfeeding babies showed higher levels of stress. A majority of students in the sandwich top-up bachelor degree programme experience moderate to high stress mostly due to curriculum overload. Therefore, innovative means should be sought to lessen the level of stress among this category of students. For example, pre-recorded video lectures could be incorporated into the module to lessen the overload in school work.

Subject Areas

Education

Keywords

Stress, Academic Stress, Nursing Education, College Undergraduate Stress Scale, Component Stressors

1. Introduction

Stress has been identified as a 20th century disease and has been viewed as a complex and dynamic transaction between individuals and their environment [1]. The modern stress theory is structured in the evaluation of the meaningfulness of an event(s) to the individuals' psychological or physical well-being and the internal compensatory mechanisms adapted to cope for the perturbations induced by the external event(s) [2]. An individual's response to an event thus depends on whether it is appraised as a challenge which would lead to a positive outcome or as a threat which could lead to distress, anxiety, depression, social dysfunction, ill health and even suicidal tendencies [3] [4].

Stress has become an important topic in academic circle and students have always been perceived as stressed individuals due to the amount of academic workload they bear [5] [6]. Academic stress is conceptualized as interactions between student's environment stressors, cognitive appraisal and coping with physiological and psychological response to stress and stressors related to academics [7] [8]. In the event of a harsh and extended stress, recorded impact includes reduced or compromised academic performance, hindrance to involvement in campus life (Social withdrawal), dropout, increase probability of substance abuse and other potentially destructive behaviours [9] [10].

Previous studies have posited that students studying in medical-related fields are particularly liable to experience high levels of academic stress [4] [6] [11] [12]. According to Jacob and Einstein (2016), attributable causes of higher manifestation of academic stress in healthcare students include the expansion of the knowledge base of such profession and the acquisition of clinical skills which demand a significant amount of both theoretical and education practice hours [12].

Despite the growing interest in academic related stress and advancement in strategies for coping mechanisms and stress management among students in other jurisdictions, there is limited data on stress and its related issues among university undergraduates in general and nursing and midwifery students in particular in the Ghanaian literature. This study, set in the environment of a newly established public university in Ghana, seeks to evaluate the levels and component stress among students offering nursing and midwifery in the top-up module in the University of Health and Allied Science, Ho.

2. Method

2.1. Participants

The study population comprised of Sandwich students in the School of Nursing and Midwifery at the University of Health and Allied Sciences. These students are professionals practicing on the field with the Ministry of Health, Ghana certificates who have enrolled in a three-year part-time top-up programme to obtain bachelor degree in the University.

The total study population was estimated at 374 comprising 297 in the second year and 77 in the third year. The study was descriptive with a self-administered survey instrument administered at one time point. The sampling included all students who were present in their class at the time of the administration of the questionnaire. A total of 315 of the 374 administered questionnaires were completed by participants and returned, making a total response rate of 84.22%. Among these participants, the response rate was 84.85% among those in the second year and 81.82% among those in their third year.

2.2. Tools

The tool used for this study comprised of an inventory that captured the demographic data of participants which included age, gender, marital status, number of children under 13 years and the number of breastfeeding babies. The stress inventory used was a modified version of the pre-validated College Undergraduate Stress Scale (CUSS) [13]. The CUSS is 53 item stress scale that measures the overall stress levels as well as four component stress domains namely Academic stress, Interpersonal stress, Intrapersonal stress and Environmental stress. The CUSS measures the levels of stress with a pre-assigned weighting on each item denoting the degree of stress. The overall cumulative stress score/weight in this modified version was 3656. Among the component stress, academic stress with 27 items had a maximum score of 1852; interpersonal stress (11 items had a maximum score of 795); intrapersonal (6 items had a maximum score of 466); and environmental stress (9 items had a maximum score of 543).

2.3. Procedure

Permission for the conduct of this research was granted by the University's Student Affairs Unit in a letter (UHAS/SA/AD/0036). Prior to responding to the self-administered questionnaires, an interactive orientation briefing was organized with students regarding the purpose of the study and the need to answer all the questions frankly. The study was anonymous and non-linked, participation was voluntary and all participants consented to the study. Confidentiality of participant's information was assured.

2.4. Data Analysis

The sum of weights/scores for each section and the total weight/score of stress were transformed to a percentage scale from 0 to 100 with higher weight/scores

indicating greater severity of stress by applying the generic linear transformation formula [14].

$$\frac{(\text{Gross attained domain stress wieght})}{(\text{Maximum attainable domain stress wieght})} \times 100$$

Since every item in the CUSS is weighted, the attained domain stress weight is the cumulative sum of the assigned weights of all affirmed item in the domain, the maximum attainable domain stress weight is the cumulative sum of assigned weights of all the terms that makeup that domain.

For the purpose of this study a tertile rank of stress was adopted where a participant with a total percentage weight/score below 33.33% was categorized as experiencing low level of stress; a total percentage weight/score of 33.33% to 66.67% was categorized as experiencing moderate level of stress; and a total percentage weight/score above 66.67% was categorized as experiencing high level of stress.

Categorical outcomes were expressed as frequency and percentage and continuous variables as mean \pm standard deviation using Grap hPad Prism version 6.00 statistical package (Graph Pad software, San Diego, California USA, www.graphpad.com) for windows in analysis.

3. Results

All the presentation made in the results section is from data obtained in this study. In this study, three hundred and fifteens and which students with an average age of 30.83 ± 4.06 years were recruited. The study participants included 252 (80.00%) second year and 63 (20.00%) third year students.

The study was made up of a female population of one hundred and ninety-four 194 (61.60%) and a male population of one hundred and twenty-one 121 (38.40%). Majority of the study participants were married 174 (55.24%). This study included participants pursuing Bachelor of Nursing 155 (49.21%), Bachelor of Midwifery 82 (26.03%) and Bachelor of Public Health Nursing 78 (24.76%). Among the female population, 92 (47.42%) reported to have one or more children under the age of 13 years and in addition, 28 (14.43%) were breastfeeding mothers (see **Table 1**).

Among the total study population, 109 (34.60%) experienced high stress level, 106 (33.65%) experienced moderate stress level and 100 (31.75%) experienced less stress level. Academic stress 111 (35.24%) and intrapersonal stress 111 (35.24%) were the highest component stress experienced by students. The least component stress experienced was interpersonal stress 106 (33.65%) (see **Table 2**).

In general, the male students experienced higher percentage stress 44 (36.36%) than their female counterpart 65 (33.51%). The male students experienced more interpersonal 60 (30.93%) and environmental 56 (28.87) component stress than the female students whiles the female students experienced more academic 71 (36.60%) and intrapersonal 72 (37.11) component stress.

Table 1. Socio-demographic characteristics of study population.

Parameter	Total	Female (n = 194)	Male (n = 121)
Total respondents	315 (100)	194 (61.60)	121 (38.40)
Age	30.83 ± 4.06	31.23 ± 4.8	30.25 ± 2.49
Marital status			
Single	141 (44.76)	82 (42.27)	59 (48.76)
Married	174 (55.24)	112 (57.73)	62 (51.24)
Programme of study			
Bachelor of midwifery	82 (26.03)	82 (42.27)	0 (0.00)
Bachelor of nursing	155 (49.21)	63 (32.47)	92 (76.03)
Bachelor of public health nursing	78 (24.76)	49 (25.26)	29 (23.97)
Level of study			
Level 200	252 (80.00)	144 (74.23)	108 (89.26)
Level 300	63 (20.00)	50 (25.77)	13 (10.74)
Number of children under 13 years			
None	177 (56.19)	102 (52.58)	75 (61.98)
One	71 (22.54)	44 (22.68)	27 (22.32)
Two	45 (14.29)	36 (18.55)	9 (7.44)
More than two	22 (6.98)	12 (6.19)	10 (8.26)
Number of breastfeeding children			
None	267 (84.76)	166 (85.57)	101 (83.47)
One or more	46 (14.64)	28 (14.43)	20 (15.24)

Data are presented as figure with percentage in parenthesis, mean ± standard deviation.

Table 2. Stress level of study population.

Parameter	Less stressed	Moderately stressed	Highly stressed
Overall stress level	100 (31.75)	106 (33.65)	109 (34.60)
Academic stress level	100 (31.75)	104 (33.01)	111 (35.24)
Interpersonal stress level	103 (32.70)	106 (33.65)	106 (33.65)
Intrapersonal stress level	80 (25.40)	124 (39.37)	111 (35.24)
Environmental stress level	102 (32.38)	104 (33.01)	109 (34.60)

Data are presented as figure and percentage in parenthesis.

This study also revealed that students who were single experienced higher percentage of stress than students who were married. Similarly, the third-year students also experienced higher percentage of stress than the second-year students.

Students pursuing Bachelor of Nursing were the most stressful group of students. The exception though was found in the academic component stress where the Bachelor of Public Health Nursing recorded the highest 29 (37.18%) (**Table 3**).

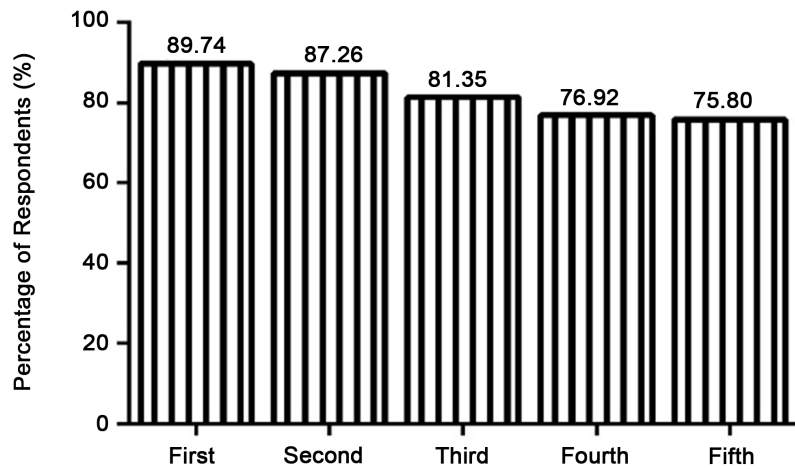
Table 3. Highly stressed levels among study population stratified into gender, marital status, level of study and programme of study.

Gender	Female	Male	
Overall stress	65 (33.51)	44 (36.36)	
Academic stress	71 (36.60)	40 (33.06)	
Interpersonal stress	60 (30.93)	46 (38.02)	
Intrapersonal stress	72 (37.11)	39 (32.23)	
Environmental stress	56 (28.87)	53 (43.80)	
Marital status	Single	Married	
Overall stress	52 (36.88)	57 (32.76)	
Academic stress	51 (36.17)	60 (34.48)	
Interpersonal stress	51 (36.17)	55 (31.61)	
Intrapersonal stress	50 (35.46)	61 (35.06)	
Environmental stress	49 (34.75)	60 (34.48)	
Year of study	Second	Third	
Overall stress	82 (32.54)	27 (42.86)	
Academic stress	83 (32.94)	28 (44.44)	
Interpersonal stress	82 (32.54)	24 (38.10)	
Intrapersonal stress	86 (34.13)	25 (39.68)	
Environmental stress	87 (34.52)	22 (34.92)	
Programme of study	B. Mid	B. Nurs	B. PHN
Overall stress	22 (26.83)	60 (38.71)	27 (34.62)
Academic stress	25 (30.49)	57 (36.77)	29 (37.18)
Interpersonal stress	28 (34.15)	59 (38.06)	19 (24.36)
Intrapersonal stress	28 (34.15)	58 (37.42)	25 (32.05)
Environmental stress	21 (25.61)	61 (39.35)	27 (34.62)

Data are presented as figure and percentages in parenthesis. B. Mid, B. Nurs, and B. PHN means bachelor of midwifery, bachelor of nursing and bachelor of public health nursing respectively.

As shown in **Table 4**, among the top 10 stressors, the top 3 stressors were; sense of overload in school work, late closing of classes and financial difficulties. Out of these top 3 stressors, the first two belongs to the academic component stress and the third belongs to the intrapersonal component stress. Academic component stress made up 70.00% of the top 10 stressors. All the top 10 stressors recorded a response percentage rate of more than 69.00% of total respondents.

As shown in **Figure 1** and **Figure 2**, the lead component stressor in academic stress domain was sense of overload in school work, interpersonal was death of a close friend, intrapersonal was financial difficulties and environmental was difficulties in getting accommodation. Higher stressors values were found in the academic component stress whiles the interpersonal component stress recorded the least.



Academic Stressors

1st = Sense of overload in school work

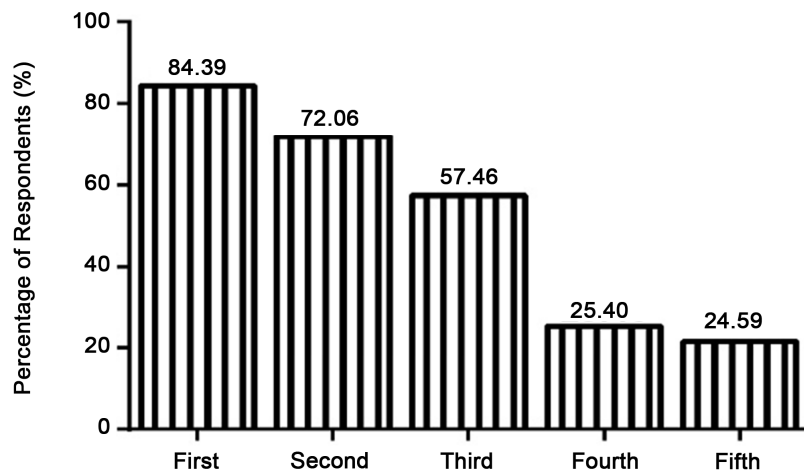
2nd = Late closing of classes

3rd = Thought of examination in the finals week

4th = Final Grades

5th = Concern about my grades

(a)



Intrapersonal Stressors

1st = Financial difficulties

2nd = Lack of sleep

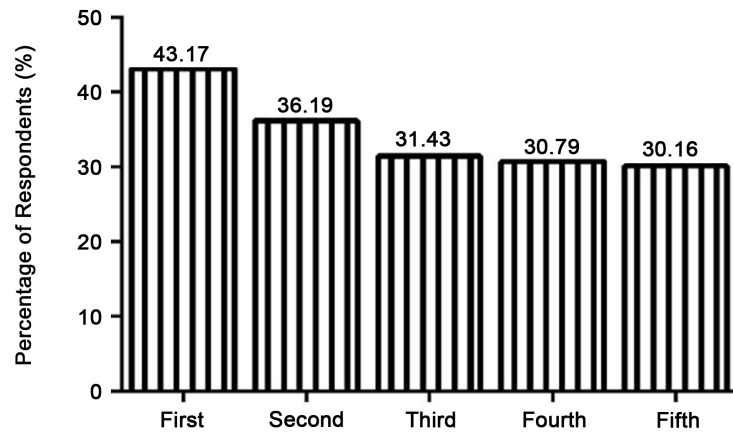
3rd = Getting sick

4th = Concerns about being pregnant

5th = Contracting a sexually transmitted disease

(b)

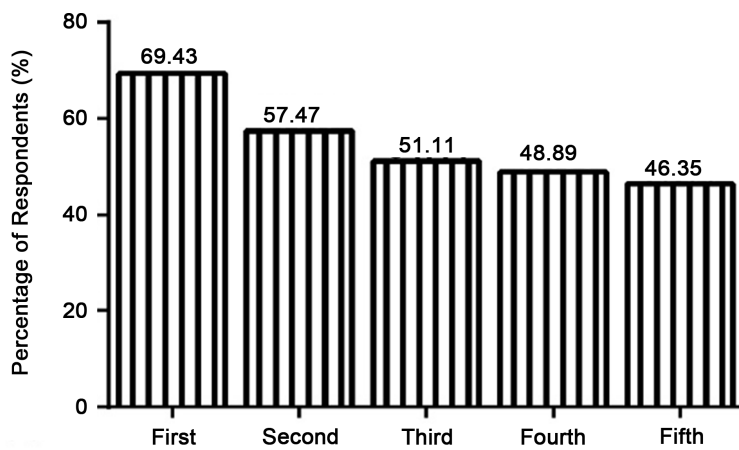
Figure 1. Top component stressors in the academic and intrapersonal stress domains.



Interpersonal Stressors

- 1st = Death of a close family member
- 2nd = Making new friends
- 3rd = Serious illness in a close friend or family member
- 4th = Confrontations with Lecturer(s)
- 5th = Depression or crisis in your best friend

(a)



Environmental Stressors

- 1st = Difficulties in accommodation
- 2nd = Change in housing situation
- 3rd = Commuting to campus
- 4th = Poor classroom Lighting
- 5th = Being away from home

(b)

Figure 2. Top component stressors in the interpersonal and environmental stress domains.

Table 4. Top 10 itemize stressors among the study participants.

Stressors	Category of stressor	Frequency	Percentage
Sense of overload in school work	Academic	280	89.74
Late closing of classes	Academic	274	87.26
Financial difficulties	Intrapersonal	265	84.39
Thought of examination in the finals week	Academic	253	81.35
Final grades	Academic	240	76.92
Concern about my grades	Academic	238	75.80
Registration	Academic	232	74.12
Lack of sleep	Intrapersonal	227	72.06
Too early classes	Academic	219	69.97
Difficulties in getting accommodation	Environmental	218	69.43

Data are presented as figure and percentages in parenthesis.

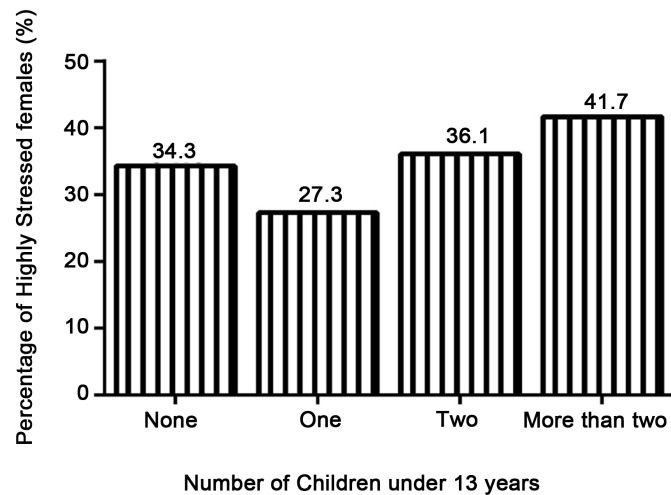
The prevalence of the top five academic, interpersonal, intrapersonal and environmental component stressors ranges from (75.80% to 89.74%), (30.16% to 43.17%), (24.59% to 84.39%) and (46.35% to 69.43%) respectively.

In general, among the female participants who have children under 13 years, stress levels increase with increasing number of children under the age of 13 years and breastfeeding mothers recorded a higher stress level than mothers who were not breastfeeding (see **Figure 3**).

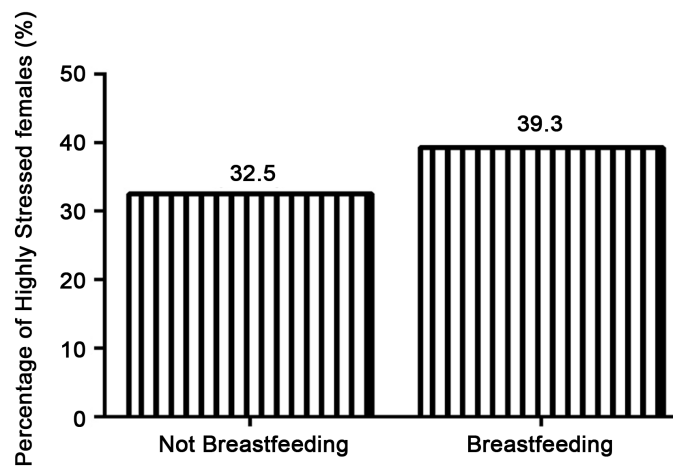
4. Discussion

High levels of stress among students could lead to both psychological and physical health-related problems [15], [16]. In the current study, the prevalence of stress among the respondents was 34.75% high stress and 33.65% moderate level of stress. Varying prevalence of high level of stress among nursing and midwifery students have been reported in other jurisdictions. Among the studies reporting similar levels of stress among students, Kevin *et al.* (2015) in Piparia India, reported that 30% of nursing students in their first years of their bachelors degree programme experienced severe levels of stress [17]. Samson-Akpan, John, Edet, and Ella (2015) reported 33.80% in University of Calabar, Nigeria and Nancy (2011) reported 33.00% in Punjab in India [18]. Higher levels of stress has also been reported by Amr *et al.* (2011), 40.2% in Mansoura University, Egypt [19], Shiferaw *et al.* (2015), 47.7% in Jimma University Ethiopia [20] and Khater, Akhu-Zaheya, and Shaban (2014), 47.82% in Jordan [21].

However, according to the trans-cultural model, it is difficult to compare stress levels between different population in different jurisdictions because the individual's interpretation of a situation to be stressful or not, could be explained by individual's perceptual and cognitive processes [21]. The varying prevalence of high stress level among nursing and midwifery students may be attributed to the differences in socio demographic characteristics, campus environment, teaching curriculum and type of coping strategies used [22].



(a)



(b)

Figure 3. Proportion of highly stressed females with children under 13 years and breast-feeding babies.

In an attempt to explain the reasons for the high stress levels among nursing students in Egypt, Amr, El-Gilany, El-Moafee, Salama and Jimenez (2011) posited that increasing number of students coupled with the passive learning environments which foster memorization by students at the expense of synthesizing, problem solving and creative thinking abilities that impair the clinical skill training may be the malefactor [19]. This assertion could also be said to account for the levels of stress among students in the current study.

Generally, male students relatively experienced more stress (36.36%) than their female counterparts (33.51%). However, for academic and intrapersonal component stress the females experienced more stress (36.60% and 37.11% respectively) than the males (33.06% and 32.23% respectively). Kumar and Bhukar (2013) reported higher levels of stress in female college students than males [23]. Women face a number of chronic burdens in everyday life because of their social status and roles relative to men and this strain could account for the higher levels of stress [24].

This study revealed that female participants who had children under 13 years or who were breastfeeding had higher stress levels than other participants (females not breastfeeding or without children under 13 years). This findings could be attributed to the multiple role and increased work load of such participants (child caring and studying at the same time) as corroborated in the study conducted b [25].

In the present study, the third-year students experienced higher levels of stress than their second-year colleagues. This finding supports that of Elias, Ping and Abdullah (2011) who reported a mean academic stress score among second-year undergraduate students compared to their first-year counterparts [26]. Health science education gets difficult as students progress to higher levels of study [27]. As students move from one level of study to another, there is an increase in academic demands coupled with environmental and personal burden and hence could account for higher percentage stress [26].

Although the difference in the expression of the individual component stress was not profound, the top 10 stressor items was found to make 70% of the Academic stress domain (**Table 3**).

This is in agreement with the findings by [15] [20] [21]. In concordance with these research findings, the sense of overload in school work was the leading itemized stressor. This could be explained by the nature of the sandwich programme which leads to crushed courses within a short period of time.

5. Conclusion

A majority of students in the sandwich top-up bachelor degree programme experience moderate to high stress mostly due to curriculum overload. Therefore, innovative means should be pursued to lessen the level of stress among this category of students. For example, pre-recorded video lectures could be incorporated into the module to lessen the overload in school work.

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Competing Interests

Authors have declared that no competing interests exist.

Authors Contributions

This work was carried out with collaboration between all authors. Authors FWMY, DAD, LAA, AA, EBAP, SF and GAD conceptualized and designed the study. Authors FWMY, DAD and LAA recruited participants and generated the data. Authors FWMY, DAD, LAA, AA, EBAP, SF and GAD analysed the data

and drafted the manuscript. All Authors reviewed the manuscript for intellectual content and each author approved the final manuscript.

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