Level of Stress and Coping Strategies among Nursing Students at Damanhour University, Egypt

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Abstract Stress has been recognized as a 20th century disease and donates to health problems worldwide, nursing students are exposed to numerous stressors during their studies and clinical training. Determining stress and coping strategies among them will have significant consequences for the nursing career. **Aims:** to illustrate level of stress and identify coping strategies among nursing students at Damanhour University, Egypt. **Research design:** A descriptive cross-sectional study was used. **Setting:** the study was conducted at faculty of nursing, Damanhour University, Egypt. **Subjects and methods:** A systematic random sampling of 400 nursing students at academic year 2018-2019. **Results:** Students perceived moderate level of stress, most commonly attributed to transportations and academic. The most frequently used coping mechanism was religious and acceptance. The study found that gender and living with family are good predictors of coping strategies. **Conclusion:** The nursing students were exposed to moderate stress due to different stressors. In response, they frequently used different strategies for coping and recommended the need for stress management programs and the provision of suitable support.

Keywords: stress, coping strategies, student, nursing

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1. Introduction

Stress is a global phenomenon of modern life styles and has been found to have bad health impact and unfavorably affect the learning of students as well as it is acknowledged as one of the most important issues in the modern world. In addition, stress refers to a dynamic interaction between the individual and the environment. In this interaction, demands, limitations and opportunities related to work may be perceived as threatening to surpass the individual's resources and skills. In case of disarrangement, this interaction may lead to cognitive, emotional and behavioral alterations [1,2].

During nursing education and training, nursing students are frequently exposed to various stressors which may directly or indirectly impede their learning, performance and overall well-being of their body and mind. Moreover, the practical components of the educational program made the program even more stressful than other programs [3]. Furthermore, Nursing is an emotionally demanding and highly stressful profession as nurses have to deal with different people, in various situations and different times of the day. During their everyday work, they have to cope with extremely emotionally charged and rapidly changing circumstances. In addition, students through nursing

training face both physical and psychosocial risks because they have clinical duties related to patient care in clinical environments. In turn, stress is associated with organizational-level issues, such as increased absenteeism, decreased quality of work and decreased productivity [4,5,6].

Three main groups of stressors have been identified: (i) academic stressors (testing and evaluation, fear of failure in training, problems with workload, etc.), (ii) clinical stressors (work, fear of making mistakes, negative responses to the death or suffering of patients, relationships with other members of the organization, etc.), and (iii) personal/social stressors (economic problems, imbalance between house work/school work, etc.) [7,8].

Coping strategies are fundamental elements of nurses' stress reactions and become constant factor which important as the stressful event itself. So, nursing students requisite to cope with academic and clinical stress by removing the stressor through manipulating the environment, developing specific responses or search for diversion from the stressor [9,10]. Active coping strategies include an awareness of the stressor, followed by attempts to diminish the negative outcome. By contrast, avoidant coping is characterized by ignoring the issue, often resulting in activities that help in the denial of the problem (e.g., sleeping and isolating). Everyone employs one or more coping strategies to overcome stress, but it may not

be effective and suitable to deal with the situation. Effective coping strategies help students to achieve markedly better in regards to their studies and aid in relieving their stress [11].

1.1. Significance of Study

Diverse studies accompanied worldwide stated the prevalence of stress among medical students ranging from 30% to 78% [12]. Additionally, study done in Egypt (2011) on nursing students' revealed that prevalence of high stress level; anxiety and depression were 40.2%, 46.6% and 27.9%, respectively [13]. Learning to cope with stress is a beneficial skill for a nursing career and life ahead. By setting priorities, planning ahead and by organizing, self, one can minimize the impact of stress. Some degree of studies have investigated the perception of stress and coping strategies among Egyptian nursing students.

1.2. Aim

To illustrate level of stress and identify coping strategies among nursing students at Damanhour University, Egypt.

1.3. Research Question

What are level of stress and coping strategies experienced by the nursing students at Damanhour University, Egypt?

2. Material and Methods

2.1. Research Design

A descriptive cross sectional study design was adopted in order to fulfill the current study.

2.2. Setting

The study was conducted in faculty of nursing, Damanhour University, Egypt.

2.3. Subjects

The target populations for this research were nursing students who were studying in the above mentioned setting during the academic year (2018-2019) who are enrolled in first, second, third and fourth year.

2.4. Sample

The total numbers of nursing students in year 2018/2019 were 1131 students. The students at each level were chosen using a systematic random sampling technique from first to fourth academic years.

Sample size

According to Epi Info 7 sample size estimation program using the following parameter:

1. Population size (1131 students)
2. Expected frequency (50%)

3. Margin of error (5%)
4. Confidence co. efficient (95%)
5. Minimum sample size (400 students)

The students will be selected from the previously selected setting according to the following table (Table 1);

Table 1. Sample size estimation table

Student's grade/level	Total number of students /grade or level	Proposed sample size
First year	228	$(228 \times 400) \div 1131 = 81$
Second year	328	$(328 \times 400) \div 1131 = 116$
Third year	338	$(338 \times 400) \div 1131 = 120$
Fourth year	237	$(237 \times 400) \div 1131 = 84$
Total	1131	400

2.5. Inclusion Criteria

- Boys and girls students
- Who willing to participate in the study
- Free from chronic diseases.

2.6. Data Collection Tools

Data was collected using the following study tools

Tool (I): Students profile structured self-administered questionnaire:

This was developed by the researchers after reviewing the recent literature to collect necessary data included the following parts:

Part I: Personnel and demographic data: It included age, academic year, gender, marital status, place of residence, availability of playing time and recreational activities, coffee intake and smoking.

Part II: Socio demographic data of students' parents: It included parent's educational level, parent's occupation, live with family or not, time spends in transportation to faculty and family income.

Part III: Working and academic experience: It included the students working hours, working in night shifts, working in multiple shifts, academic and job satisfaction

Part IV: Academic performance of students during last term.

Part V: Health profile of students: It included the following:

- Presence of health problems such as allergy in the nasal sinuses, headache, abdominal pain and blurred vision.
- Consequences of identified stressors like anxiety, depression, sleeping disorders, difficult in paying attention in class and low self-esteem.

Part VI: Anthropometric measurements:

Anthropometric measurements were estimated using standardized procedures and calibrated equipment. Height was measured using a non-stretching measuring tape in centimeters to the nearest 0.1 cm. Weight was measured using a standardized weighing scale in kilograms to the nearest 0.5 kg and Body Mass Index (Kg/m^2) was estimated using standardized weighting and height equation. The calculated Body Mass Index (BMI) was compared with the reference value and interpreted as following was estimated using standardized weighting and height equation of WHO 2011 as following:-

Less than 18.5 kg/cm² (underweight)
 18.5 – 24.9 kg/cm² (normal weight)
 25.0 – 29.9 kg/cm² (overweight)
 30.0 – 34.9 kg/cm² (obesity) [14].

Tool (II): Stress assessment scale questionnaire

It was developed by the researchers after reviewing of literatures to assess the types and level of stress among nursing academic students. A total of 64 potential stressors were listed and grouped as academic, interpersonal, psychosocial and transportation. The students were asked to indicate if any of the stressors had been affecting them. For each potential stressor, the scored frequency of occurrence was classified as never, rarely/sometimes, and often/always and is scored as 0, 1, and 2, respectively. The total score of stress level was obtained for each student (0-128). Percent of the total stress score was calculated as follows:-

Mild < 64 (< 50%)
 Moderate 64 < 96 (50 - < 75%)
 Sever ≥ 96 (≥ 75%)

Tool III: Coping Orientation to Problems Experienced (COPE) inventory questionnaire

This tool was used to find out the coping responses of the nursing students. The tool was developed by Dr. Charles Carver, to determine the response of people when confronted with difficult or stressful events in their lives [15]. It composed of 24 items and assessed the following scales: Self-distraction - items 1 and 19; active coping - items 2 and 7; denial - items 3 and 8; ; use of emotional support - items 5 and 15; behavioral disengagement - items 6 and 16; venting - item 9 ; use of instrumental support - items 10 and 23; positive reframing - items 12 and 17; self-blame - items 13 and 26, planning - items 14 and 25; humor - item 18; acceptance - items 20 and 24; religion - items 22 and 27. the scored frequency of occurrence was classified as; usually don't do this at all, , usually do this a little bit, usually do this a medium amount and usually do this a lot and is scored as 0, 1, 2 and 3 respectively. The total coping strategies score were obtained for each student (0-72). Percent of the total score was calculated as follows:-

Poor < 36 (< 50%)
 Fair 36 < 54 (50 - < 75%)
 Good ≥ 54 (≥ 75%)

3. Methods of Data Collection

3.1. Ethical Considerations

- The students were asked for an oral consent to participate in the study.
- Oral consent obtained from the head of scientific departments that included in the study after explanation of the aim of the study and assure them that collected data will be used only for the study purpose.
- Confidentiality of students' response was guaranteed.

3.2. Administrative Process

- Official letters to the dean of Faculty of Nursing, University of Damanhour to inform about the study aim and to seek permission to conduct the study in faculty.

- Meetings were held with the head of the scientific departments of first, second, third and fourth year to explain the aim of the study, set the date and time of data collection, assure them that collected data were used only for the study purpose, and to gain their approval and cooperation during data collection.

3.3. Development of Study Tools

Tool (I) and (II) were developed by the researchers after reviewing recent literatures in order to collect the obligatory data from the undergraduates' students.

3.4. Validity and Reliability

- Tool (I) and (II) were revised by Jury composed of (three) experts in the field of community health nursing and nursing education for content validity and their recommended modifications were done accordingly.
- Tool (III) was translated in to Arabic language, revised by Jury composed of (three) experts in order to ascertain that language is clear.
- Reliability of the Tool (I) and (II) were assessed using Cronbach's Alpha Coefficient: tool I (.895); and tool II (.924).

3.5. Pilot Study

The Pilot study was carried out on a sample of 40 students who were excluded from the study. Accordingly, minor changes were made. The data obtained from the pilot study were analyzed. Based on the findings of the pilot study, some questions were clarified and few others added.

3.6. Field Work

- Students were invited to complete a self-administered questionnaire; the questionnaires were administered and collected by the researchers. Students were given detailed instructions on how to complete the questionnaire and informed about the aim of the study.
- At the beginning of the meeting with students, the researchers were introduced themselves, clarify the purpose of study, and ensure the anonymity and confidentiality of the collected data.
- Weight was measured by a standardized weighing scale, in kilograms to the nearest 0.5 kg and height was measured by a non- stretching measuring tape, in centimeters to the nearest 0.1 cm, to calculate (BMI) based on WHO 2011 [14]. The structured questionnaire time took approximately from 10 to 15 minutes for each student.
- Data about students' academic performance were obtained from their faculty records in the last term.
- Data was collected by the researchers over a period of 2 months at the academic year 2018/2019.

4. Statistical Analysis

- After data collection, it was coded and transferred into especially designed format to be suitable for computer feeding.

- Data was entered into and analyzed using the statistical package of social science (SPSS) version 20.
- After data entry, data was checked and revised through frequency analysis, cross tabulation, and manual revision to discover any error during data entry.
- Variables were analyzed using the descriptive statistics which included: percentages, frequencies, range (minimum and maximum), arithmetic mean, and standard deviation (SD).
- The level of significance selected for this study was $p \leq 0.05$.
- Chi square test (X^2) was used for testing the relationship between categorical variables.
- ANOVA test(F) was used to compare between sample means for quantitative data with normal distribution
- Linear Regression model was used to indicate the predictors of stress and coping strategies among students, the model was statistically significant ($p \leq 0.05$).
- Graphs were done for data visualization by using Microsoft Excel program.

5. Results

Table 2 displays that the student's age ranged from 19 to 23 years old with a mean of 20.7 ± 1.1 years. It was observed that the majority of students in the current study were single females (91.4% and 84.5% respectively). More than two thirds (67.8 %) of them were urban residence, nearly less than half (41.5%) did not practice any recreational activities, furthermore about half (48%) of them had less than 2 hrs/ day to practice any recreational activities and only 16% of them had more than 4 hrs / day for play and recreational activities ,whereas almost all students didn't smoke and less than half (40.7%) had daily coffee intake.

Table 3 illustrates that nearly half (46.2%, 48.8%) of the father and mother respectively had obtain diploma education. Regarding fathers' job, it was observed that more than half (59.8%) of them were employees while about one fifth (18%) had free work compared to approximately less than one quarter (23%) of mothers were working and more than three quarters (77%) of them were house wife. Majority of students living with their family and more than half (51.5%) of them spend 50 minutes or more in transportation to faculty. In relation to family income it was observed that nearly half (45.8%) of the studied students had enough income without saving.

Table 4 reveals that, nearly one fifth (18.5%) of the students working all the year, among those who working around two thirds (67.7%) of them reported that they work more than 6 hours /day while more than half (52.6%) of them had more than one shift / day and nearly less than three quarters (71.7%) of them had night shifts.

With regard to the student's academic performance during the last term; Figure 1 portrays that, around one third (32.3%, 34.3 %) of students obtain excellent and very good score respectively, while only 5.4 % and 1.5 % obtain pass and poor score respectively .

Table 5 portrays that minority (7.0%) of the students complains of health problem; among them, around half (42.9%) where complains of allergy in the nasal sinuses, followed by headache that was reported by around one

third (32.1%) of them. Besides, more than half (57%) of the students suffering from problems of identified stressors, the majority of them complains of anxiety, depression, sleeping disorders, and difficult in paying attention in the class (98.7%, 83.8%, 81.6% and 67.5% respectively).

Figure 2 display Body Mass Index (BMI) classification among students, about tenth (10.4%), of the students were underweight while slightly more than one third (35.3%) were normal weight and (48.5% and 5.8%) were overweight and obese respectively.

Table 2. Distribution of undergraduates' students along with their personal and demographic characteristics

Personal and demographic characteristics	Frequency (400)	%
Age (years)		
- 19	62	15.5
- 20	97	24.3
- 21	156	39.0
- 22 and more	85	21.2
Mean $\pm$ SD	20.7 $\pm$ 1.1	
Min -Max	19-23	
Academic year		
- 1 st year	81	20.3
- 2 nd year	116	29.0
- 3 rd year	120	30.0
- 4 th year	84	21.0
Gender		
Male	62	15.5
Female	338	84.5
Marital status		
- Single	366	91.4
- Married	33	8.3
- Divorced	1	.3
Place of residence		
Rural	129	32.2
Urban	271	67.8
Availability of recreational activities		
No	166	41.5
Yes	234	58.5
Hours of recreational activities / day		
Less than 2 h / day	192	48.0
2-4 h /day	144	36.0
More than 4 h / day	64	16.0
Daily coffee intake		
No	237	59.3
Yes	163	40.7
Smoking		
No	396	99.0
Yes	4	1.0

Table 3. Distribution of students' parents along with their socio demographic characteristics

Parents socio demographic characteristics	Frequency (400)	%
Father education		
Illiterate	33	8.2
Primary	25	6.3
Secondary	31	7.8
Diploma	185	46.2
University	126	31.5
Father job		
Retired	40	10.0
Manual work	37	9.2
Employee	239	59.8
Free work	72	18.0
Private work	12	3.0
Mother education		
Illiterate	72	18.0
Primary	30	7.5
Secondary	30	7.5
Diploma	195	48.8
University	73	18.2
Mother work		
House wife	308	77.0
Working	92	23.0
Living with family		
Yes	376	94.0
No	24	6.0
Time spends in transportation to faculty		
50 minutes or more	206	51.5
30 -50 minutes	118	29.5
< 30 or less	76	19
Family income		
Enough and save	159	39.8
Enough and no save	183	45.8
Not enough	58	14.4

Table 4. Distribution of undergraduates' students along with their working and academic experience

Working and academic experience	Frequency (400)	%
Student Working experience		
Working during vocation only	78	19.5
Working all year	74	18.5
Didn't work	248	62.0
Working hours/day	n(152)	
6 hours	49	32.3
More than 6 hours	103	67.7
Have night shift		
No	43	28.3
Yes	109	71.7
Have more than one shift / day		
No	72	47.4
Yes	80	52.6
Academic and job satisfaction		
Satisfied	260	65.0
Not satisfied	140	35.0

Figure 1. Academic performance during last term among undergraduates' students**Table 5. Distribution of undergraduates' students along with their health profile**

Health profile	frequency	%
Presence of health problem		
No	372	93.0
Yes	28	7.0
#Type of health problem	n(28)	
Allergy in the nasal sinuses	12	42.9
Headache	9	32.1
Abdominal pain	10	35.7
Blurred vision	8	28.6
Consequences of identified stressors		
No	172	43.0
Yes	228	57.0
# types		
Anxiety	225	98.7
Depression	191	83.8
Sleeping disorders	186	81.6
Difficult in paying attention in class	154	67.5
Low self esteem	137	60.1

More than one answer

Figure 2. Body mass indexes among undergraduates' students

Table 6. Types and mean percent of stressors perceived by undergraduates' students

Stressors	Maximum allowed scores	Mean $\pm$ SD	Mean% $\pm$ SD
Academic stress	62	32.9 $\pm$ 9.6	53.2 $\pm$ 15.5
Inter personal stress	32	14.1 $\pm$ 6.0	44.1 $\pm$ 18.9
Social stress	28	11.7 $\pm$ 4.7	42.0 $\pm$ 16.9
Stress related to Transportation	6	4.2 $\pm$ 1.7	70.1 $\pm$ 29.0
Total stress	128	63.1 $\pm$ 17.9	49.3 $\pm$ 14.0

Table 7. Distribution of stress level perceived by undergraduate students

Stressors	Frequency	%
Academic stress		
Mild	111	27.8
Moderate	200	50.0
Severe	89	22.2
Personal stress		
Mild	111	27.8
Moderate	199	49.8
Severe	90	22.4
Social stress		
Mild	142	35.5
Moderate	170	42.5
Severe	88	22.0
Stress related to Transportation		
Mild	125	31.3
Moderate	149	37.3
Severe	126	31.4
Total stress		
Mild	114	28.5
Moderate	193	48.3
Sever	93	23.2

Figure 3. Coping strategies mean percent score among undergraduates' students

Figure 4. Coping strategies total score classification among undergraduates' students

Table 8. Classification of stressors scores of undergraduates' students in relation to their coping strategies

Stressors	Coping Strategies						Test of significance
	Poor		Fair		Good		
Academic stressors							
Mild	44	39.6%	53	47.7%	14	12.6%	X ² : 20.952 P:<0.001*
Moderate	44	22.0%	103	51.5%	53	26.5%	
Severe	14	15.7%	50	56.2%	25	28.1%	
Personal stressors							
Mild	26	23.4%	62	55.9%	23	20.7%	X ² : 9.999 P:0.052*
Moderate	60	30.2%	100	50.3%	39	19.6%	
Severe	16	17.8%	44	48.9%	30	33.3%	
Social stressors							
Mild	47	33.1%	70	49.3%	25	17.6%	X ² : 12.222 P:0.002*
Moderate	43	25.3%	84	49.4%	43	25.3%	
Severe	12	13.6%	52	59.1%	24	27.3%	
Transportation stressors							
Mild	45	36.0%	62	49.6%	18	14.4%	X ² : 15.204 P:<0.001*
Moderate	35	23.5%	76	51.0%	38	25.5%	
Severe	22	17.5%	68	54.0%	36	28.6%	
Total stressors							
Mild	33	28.9%	63	55.3%	18	15.8%	X ² : 9.133 P:0.005*
Moderate	53	27.5%	95	49.2%	45	23.3%	
Severe	16	17.2%	48	51.6%	29	31.2%	

X²: chi-square, * significant at p value ≤0.05.

Table 9. Distribution of students along with their socio demographic characteristics, mean stress percent and mean coping strategies percent

Socio-demographic	Mean stress %	Test of significance	Mean coping strategies %	Test of significance
Age (years)				
- 19	48.7±15.8	F:2.952 P:0.033*	49.6±14.8	F:1.073 P:0.361
- 20	47.0±13.5		53.9±17.0	
- 21	51.2±13.8		51.7±14.1	
- 22 and more	51.8±13.0		51.5±14.9	
Gender				
Male	54.16±13.9	F:8.795 P: 0.003*	59.4±15.3	F: 18.751 P:<0.001*
Female	48.4±13.8		50.5±14.7	
Marital status				
- Single	49.6±13.7	F:0.917 P: 0.433	52.1±15.4	F:0.669 P:0.572
- Married	45.7±10.6		51.0±13.6	
- Divorced	52.3±0.00		65.3±0.00	
Place of residence				
Rural	48.1±16.3	F:1.440 P:0.231	52.0±13.0	F:0.006 P:0.939
Urban	49.9±12.7		51.8±16.0	
Living with family				
Yes	49.5±14.1	F:1.529 P:0.217	52.2±15.3	F: 2.414 P:0.121
No	45.9±10.2		47.2±11.2	
Family income				
Enough and save	44.3±14.9	F:21.317 P:<0.001*	51.3±16.0	F:0.239 P:0.788
Enough and no save	51.5±11.5		52.4±13.6	
Not enough	56.1±13.8		51.7±17.2	

F: ANOVA test, * significant at p value ≤0.05.

Table 10. Significant between working and academic experience among undergraduates' students with mean stress percent and mean coping strategies percent

Working and academic experience	Mean stress %	Test of significance	Mean strategies %	Test of significance
Student Working experience				
Working during vocation	50.1±11.6	F:0.680 P:0.507	53.1±13.6	F:0.363 P:0.696
Working all years	50.6±15.8		51.0±18.0	
Didn't work	48.7±14.1		51.7±14.6	
Working hours/day				
6 hours	49.7±12.2	F:0.735 P:0.0480	53.3±15.8	F:0.735 P:0.480
More than 6 hours	50.6±14.5		51.5±16.0	
Have night shift				
No	53.8±10.0	F:3.958 P:0.048*	49.1±15.1	F:2.134 P:0.146
Yes	49.0±14.8		53.3±16.1	
Have more than shift				
No	52.4±14.4	F:2.975 P:0.087	49.7±15.6	F:3.190 P:0.076
Yes	48.5±13.0		54.2±16.0	
Academic level during the last term				
Excellent	47.8±15.3	F: 2.019 P:0.075	50.3±15.2	F:4.491 P:0.001*
Very good	48.5±13.3		49.1±15.5	
Good	52.6±13.1		58.1±13.1	
Pass	46.3±10.8		51.2±11.7	
Poor	48.7±15.6		50.6±14.5	
Pass with subjects	54.0±13.0		54.7±17.1	

F: ANOVA test, * significant at p value ≤ 0.05 .

Table 11. Multivariate Analysis Logistic Regression for stress level and coping strategies among undergraduates' students

Variables	Stress level				Coping strategies			
	OR	Sig.	95% Confidence Interval		OR	Sig.	95% Confidence Interval	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
Academic year	.206	.650	-.375	.601	.158	.691	-.593	.393
Age	.692	.406	-.903	.365	.206	.650	-.774	.483
Gender	11.301	.001*	.391	1.485	12.809	.000*	.449	1.535
Family income	26.075	.000*	-2.199	-.979	.103	.749	-.683	.491
Living with family	1.724	.189	-.258	1.305	3.794	.051*	-.005	1.577
Health problems	1.269	.260	-1.188	.321	.566	.452	-1.032	.459
BMI	3.755	.053*	-.006	.972	4.829	.028*	-1.048	-.060
Coffee intake	3.489	.062	-.018	.766	1.558	.212	-.635	.141
Smoking	.162	.687	-2.379	1.568	.517	.472	-1.246	2.691

OR: Odds ratio, * significant at p value ≤ 0.05 .

Table 6 presents the ranking of stressors from the students perspective, where stress related to transportation was ranked firstly followed by academic stress, inter-personal stress and finally social stress with a mean percentage of 70.1±29.0, 53.2±15.5, 44.1±18.9, and 42.0±16.9 respectively.

Table 7 shows the stress level as perceived by the students. Where nearly half of the students (50.0% and 49.8%) had moderate academic and personal stress respectively, whereas, around two fifth (42.5% and 37.3%) of the students suffering from moderate social and transportation related stress respectively. Finally around half (48.3%) of the students have moderate total stress level.

Figure 3 portrays the coping strategies used by the students, religious related strategies comes firstly with a

mean of 84.7±24.1 followed by acceptance, self-blaming, positive reframing and planning strategy with a mean of 66.1±32.5, 62.8±32.4, 62.1±29.6 and 61.3±29.5 respectively. While venting, denial and behavioral disengagement reported by less than forty percent of the students (39.7±28.6, 38.6±32.7 and 38.4±28.7 respectively).

Figure 4 portrays that more than half (52%) of the students had fair coping strategies, compared to one quarter(25%) who classified as poor coping strategies.

Table 8 shows a significant between types and level of stress among the students, academic, inter- personal, social or transportation related stress. Where there is a significant differences observed between students, academic, personal, social or transportation and coping strategies among the undergraduates' students.

Table 9 shows a significant difference between age, gender and family income and the level of stress among the students, where there is a significant observed between gender and coping strategies among the students.

Table 10 shows a significant between working and academic experience of students with level of stress and coping strategies, where there was a significant differences observed between students working in night shifts and their level of stress. On the other hand there was a significant differences observed between academic level of students during last term and their coping strategies.

Table 11 spectacles the multivariate analysis logistic regression for stress level and coping strategies among undergraduates' students, it was observed that family income affecting the stress level by (26.075 times) followed by gender (11.301 times) and body mass index (BMI) (3.755 times) with a statistical significant relation. Additionally, gender affecting the coping strategies by (12.809 times) followed by body mass index (BMI) (4.829 times) and living with family (3.794 times) with a statistical significant relation.

6. Discussion

Stress in nursing education is the foremost crucial problems within the present time. It may be distinctive as a twentieth century disease and has been viewed as a posh and dynamic between individual and their environments. Furthermore it may be considered a psychological threat during which the individual perceives a situation as a potential threat [15].

Nursing students are susceptible to stress because of the nature of faculty life. High levels of stress are believed to have an effect on student health and educational functions. If the stress isn't dealt effectively, Feelings of loneliness, nervousness, sleeplessness and worrying might result. Knowledge of the stressors and their harshness among nursing students can be obliging in effective management and counseling of the students on how to cope and adapt to stressor. [16]. So the current study aimed to illustrate level of stress and identifying the coping strategies among students at Faculty of Nursing, Damanhour University.

Unwelcome stress happens in circumstances with a great level of external burdens in mixture with a low level of individual control. This is possibly the case in overloaded departments and therefore explains why the students experienced an increased level of stress there. The existing study give a clear picture of 400 nursing students their age ranged from 19-23 years. They were nominated from four academic years both boys and girls. On the topic of residence two thirds of the students were living in urban and majority of them living with their family and travel from residence to faculty, 51.5% took more than 50 minutes followed by 29.5% travel 30 to 50 minutes and 19% spend only < 30 minutes. These explain that highest mean percent of stressors in current study observed in stress related transportations. This is strike down with study done in china by Zhao, F et al., [17] who found that stress from assignment and workload was one of the major stresses experienced by more than 300 nursing students.

Parents have certain value system and norms which they want their sibling to track, students experienced academic stress arising from both their own expectations to excel as well as expectations arising from their parents. The incidence of reported parental pressure differed by parental education levels and their occupation .Academic stress may be due to pressure of parents for academic achievement [18,19]. The current study displayed that two thirds of students had obtain excellent and very good score in their academic performance although more than half of parents had diploma education it may be attributed to that parents from lower and middle class social strata want their children to do well in studies since this is often the only means to an honorable vocation for them .These findings are consistent with findings from a study done by Deb et al., [20] who reported that 60% of students experienced academic pressure mainly from their parents

Challenges are a part of nursing education and whether they are taken positively or negatively depend on countless factors like personal resources, social support available, study skills, transition to clinical curriculum, staying away from home, change of language, working environment, interpersonal conflicts, personal competence and work overload etc. All this leads to lifestyle changes like lessened leisure and recreational activity, reduced physical activity and sleep deprivation which then has an impact on the emotional well-being of them. High level of stress may have a negative effect on cognitive functioning and learning of students in nursing collages [21,22].

The present study revealed that minority of the students reported health problems like allergy in the nasal sinuses ,headache and abdominal pain on the other hand , more than half of the studied faculty students suffered from psychological stress, anxiety ,depression , sleeping disorders and low self-esteem. It may be attributed to nursing students susceptible to long hours of study, frequent examination and assignments, fear of failure, frequent contact with debilitated and dying patients. These finding come to an agreement with study done in Nepal [23] which specified that about half of nursing students suffer from psychiatric problems. Besides the results be at variance with another study done by Risal et al., [24] Which detailed that only few students had psychological problems as disturbed sleep and anxiety.

The current study itemized that about half of the students had moderate stress level related to academic, inter personnel and social stressors while nearly quarter of them had severe stress. It may be attributed to multiple reasons as nearly less than half of students in this study did not had availability of play and recreational activities and these findings showed that nursing students as they are newly exposed to a clinical environment mutual with the stress of completing new unfamiliar assignments and procedures could have higher stress. Other investigations identified clinical sources of stress, such as lack of knowledge and professional ability, lack of familiarity within history and medical terms, being in an unfamiliar situation, and mistakes with patients or handling of technical instruments [25,26].

This finding is consistent with the findings of previous studies accompanied in India by kumar R [27] out of 180 nursing students nearly one third of them had moderate

stress whereas 32.8% had high stress respectively. In contrary to these findings a study done in India by Vajrала B et al., [28] who discovered that nursing students experience high levels of stress. Moreover study done by Daengthorn L [29] who definite that 2nd and 3rd year students during their clinical practice were at high level of stress 53.2%, followed by 22.7% at moderate level. Conversely, stress level was mild among Greek student nurses and this mild stress level is helpful to the individual's health, particularly when confronted with challenge and responsibility [30].

This study found that there is a significant differences between some demographic variables and overall perceived stress level among students as age, gender, family income and students worked in night shifts, some studies agreed with current results while other studies declared that this positive significant were found only between level of stress and age (Chan et al., 2009; Shaban et al., 2012) [31,32] In disparate to these finding study done in Saudi Arabia (2017) also found no significant differences in stress with regard to gender among undergraduate students [33].

In the present study, it was not a surprise that family income was a first significant indicator for students stress levels, as the income increased the level of stress reduced by 26 times. When tracing the profile of students, family income was enough in majority of them and helps for performing a paid activity such as research, semester work and even working "on duty shifts, while those in lower socioeconomic levels experience greater levels of stress and experience more stress-related health problems [34].

Likewise this current research found that the girls' gender has higher perceptions of stress compared to boys. Girls nursing students have an overall stress of 48.4 ± 13.8 which concurs with the result of the regression analysis. This means that the female gender among the other demographic variables is positively associated with the perceived stress of the nursing students with odd value of 11.301. This is harmonized by Bonneville-Roussy [35] where girls in universities experienced higher levels of stress and mostly affected by disengagement-oriented coping. In study conducted in Menoufiya University, Egypt [36] stress was significantly associated with gender, residence, perceived socioeconomic standard, feeling loneliness, and sharing family in social activities.

Additionally the current study discovered that age had a significant effect on students' stress level. The nursing students of age group less than 21 might perceive stress more than those of age group more than 21 due to younger students tend to experience emotional symptoms as a response to stress compared to that older students. This may be due to fact that as students get older, they expanded not only better knowledge and clinical expertise but also with problem solving skills and stress defensive strategies crucial when confronted with various stressors. This result is familiar with the study of Bam et al., [37] who found that the older nursing students enrolled in the nursing program for a period of time have a tendency to have a lower level of stress.

When the smoking behavior was associated positively with higher consumption of coffee, [38] the finding of present study disagree with that in which the majority of student did not smoke and nearly half of them drink coffee

daily. It may be due the habitual consumption has been significantly related to increased self-reported alertness, improved performance of tasks and fewer intervals of attention, and improved long-term memory [39]. Shepard JD et al., [40] reported similar findings in a study on nursing students, and showed that both the quantity and frequency of caffeine use increased from the first year to the final year of the curriculum. It was amazing that coffee intake was a significant indicator for students stress level by 3.5 times in this study.

Some studies found positive association between obesity and psychiatric morbidity (depression and/or anxiety), especially among girls, but others didn't find association between obesity and mental health [41,42]. The present study, demonstrated that more than half of students were overweight and obese; it was not astonishment that body mass index (BMI) was a momentous indicator for students stress levels, a higher stress scores was detected among obese and overweight than normal students. These findings are in accordance with some findings of study performed in Jizan University which conveyed that factors such as BMI showed statistical significant differences with stress [43].

Shift work is considered critical to safeguard stability of care in hospitals. Expressly, the night shift is one of the most frequent causes for the disturbance of daily rhythms, causing major alterations of sleep and biological functions that can affect physical and psychological well-being and negatively impact on work productivity [41]. The current study given away that nearly fifth of students working in private hospitals all year, more than three quarters of them had night shifts and more than half of them had more than one shift per day. Statistical significant difference was observed among students who had night shifts and their stress level. These results in line with study done on Italy by Ferri P et al., [44] which propose that RNS night shift work signifies a stress factor which can lead to chronic discomfort and mild somatic alterations. It may be due to night shift work can frequently induce sleep disorder which can denote a risk factor for poor mental and physical health predisposing to the development of psychological and physical diseases.

Coping strategies imply the specific efforts both behavioral and psychological, that people employ to master, reduce tolerate or minimize stressful events. Coping with stress for a student nurse is a dynamic and ongoing process, aimed at survival, growth and maintenance of the individual integrity. Coping is a momentous mediator of stress and illness. Nursing students should develop active strategies for coping with the new stressors that they experience. Studying coping strategies in nursing students and their contributing factors is therefore necessary for performing any kind of primary intervention directed to them [45].

Present study publicized that more than half of students use fair coping strategies while one quarter of them using poor coping. It may be attributed to that nearly two thirds of students in this study reported academic and job satisfaction. Other studies on nursing students have also confirmed the relationship between academic satisfaction and positive coping strategies [46]. Another study done by Khater et al., [47] also confirmed the lower levels of stress among nursing students who were interested in studying

nursing and participants who were more sociable and had better communication skills stated that this attribute made them better cope with clinical stress.

Additionally, the students in the current study were found to use different coping strategies to cope with stress. Majority of the students 84.7% used religious coping mechanisms and 66.1% of them used acceptance strategies for coping mechanism. The nursing students were found to use self-blame, positive reframing, planning, active coping mostly rather than behavioral disengagement, self-distraction and denial. It might be because it is easy to be cope using emotional strategies than problem based strategies for their comfort. This finding is reliable with a recent study done in Negeria [48] and study done by Sami-Abdo et al (10.4%) in Malaysia [49]. On the other hands, Study from Japan [50] recounted that medical students often resort to alcohol, tobacco and drug use as a coping strategy, these discrepancy as the result of culture and religious factors between two countries. In opposition, Shaban et al., [32] found that avoidance was the most commonly used mechanism among students in dealing with different stresses. Avoidance is generally familiar as only a temporary measure and not a maintainable solution to address underlying stressor. Furthermore, in a Taiwanese study done by Demir *et al.*, [51] staying optimistic was more frequently used than other coping strategies. Other coping strategies stated in study done by Rinsky et al., [52] that include effective communication strategies, prevention of management conflicts and perceived control.

Additionally, the study done in India [53] displayed that most commonly used strategy by the students was ventilating feelings as complaining to their friends (36.7%) and crying (22.8%), listen to music, stereo or radio (36.7%), engaged in day-dreaming (23.3%) hobby (14.1%) eat food (13.9%) try to think of or see good things (26.7%), try to organize their life (19.4%) and try to make their own decisions (18.3%). Around 32% of the students tried to cope with the stress by helping other people in solving their problems or by blaming others for their problems respectively.

The current study reported that there was no significant difference between coping strategies and age, place of residence, living with family and family income. However, the gender and academic performance were significant association feasible to student to cope with stress. Moreover, gender, BMI and living with family were good predictors for coping strategies. Chan et al., [31] found that the main predictor of coping mechanism was years of study and religion.

Awareness of the stressors and their severity among nursing students in the nursing training faculty can be helpful in effective management and counseling of the students on how to cope and adapt to stressors. This results information is also useful for nursing management and nursing teachers to identifying students' needs, effective planning, facilitating their learning in the academic and clinical setting, to reduce or prevent stress during their education and training. Additionally, strengthening nursing students' positive coping skills may be helpful for them to effectively deal with various stressors during their educational experiences while maximizing learning [54].

7. Conclusion

It has been concluded that half of the nursing students had felt moderate stress due to transportations, academic, interpersonal and social factors. It was found that the perceived stress level was statistically significant with age, gender, family income and students worked at night shifts. Further, the nursing students were found to use religious and acceptance for coping rather than denial and behavioral disengagement.

8. Recommendations

- The findings of this study indicate a need for stress management programs in all nursing faculties as an immediate measure to address stress, and its effectiveness with consideration of families and peers as well as nursing students themselves
- Conduct workshops on stress and effective coping strategies through the academic years. The presence of counsellors among the faculty may help students overcome stressful conditions.
- Nursing educators and curriculum designers should consider the optimization of curriculums to offer a less stressful experience for students (e.g. ensuring low-intensity academic requirements when students undertake clinical placements
- Establish a counselling center in each university to deal with psychological problems confronted students.
- Further research should explore the particular factors exacerbating the experience of stress among students relative to curriculum design.

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Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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