

Investigation of Adrenaline, Nor-Adrenaline and Complete Blood Count in Nursing Students with Phobia at First Clinical Experience

التقصي عن هرمون الادرينالين ولا ادرنالين وصورة الدم الكاملة لطلبة التمريض في الاختبار السريري الأول المصاحب للخوف

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Abstract

Background: The first clinical experience for nursing students can be tense. The students expressed feelings of irritability, an irrational, intense, persistent fear of a specific object or social situation that cause extreme distress and concern due to reasons such as not being ready for clinical experience, thinking they have inadequate clinical skills, unsupportive health professional staff and clinical learning environment, concerns over patient safety. [1]

Objective (s): To determine the level phobia, CBC, epinephrine and nor-epinephrine. To investigate the association of phobia with CBC, epinephrine and nor-epinephrine and identify the relationship of phobia with CBC, epinephrine and nor-epinephrine.

Materials and methods: A cross-sectional descriptive approach was designed to investigate the adrenaline, non-adrenaline level, Complete Blood Counts, and their association with phobia, in apparently healthy nursing students before and after first clinical experience by using Enzyme Linked Immuno-sorbent Assay (ELISA) technique and utilizing self-report questionnaire. The period of the study is from January / 2017 to March / 2017.

Results: The current study was determined that the majority of age group at age category ≤ 20 by about (84.5%). Concern to gender, female was more than male (77.5%) and (22.5%) respectively. The education was mostly secondary school (97.2%). Additionally, urban was more than rural (78.9%) and (21.1%) respectively. For marital status, single more than married (94.4%). The studied group were can mostly enough income (54.9%). Additionally, the mean and standard deviation of blood tests and hormone level were different before & after first clinical practice of the nursing student. The statistical results were significant for WBC, HB and highly significant for LYM, RBC, MCP, MCHC, PLT, Adrenaline and nor-adrenaline. The levels of all above blood tests parameters were slightly decrease except adrenaline and nor-adrenaline where increase, however these results were statistically significant. The phobia was increased after first clinical practice by about (57.7%). The statistical result was significant at (P-value=0.03%).

Conclusions: The present study concluded that the phobia state in nursing students with first clinical experience had elevated phobia level and increase hormonal level (Adrenaline and nor-adrenaline) and decrease blood cells production when phobia increased.

Keywords: Phobia, Anxiety, Nursing student, Clinical practice, Complete blood counts report, Hormonal level (Adrenaline and nor-adrenaline)

الخلاصة :

يعتبر الاختبار السريري الأول لطلبة التمريض مجهد ومن خلاله يعبر الطلبة عن شعورهم بعدم الارتياح والقلق الشديد وغير مبرر لبعض الأشياء والحالات الاجتماعية التي تسبب اضطراب بعيد المدى والمتعلق بأسباب كثيرة منها يكون الطالب غير مستعد للتجارب السريرية والاعتقاد بانهم لا يمتلكون مهارات سريرية كافية ولا يتوفر كادر صحي يقوم بالإشراف على تجاربهم واختباراتهم في بنية التعليم السريرية التي تتعامل مباشرة مع صحة المريض (1).

الأهداف : لتحديد مستوى الخوف وصورة الدم الكاملة والأدرينالين ونظيره وكذلك معرفة العلاقة بين العوامل المدروسة ومستوى الخوف.

المنهجية: صممت هذه الدراسة للتقصي عن مستوى هرمون الأدرينالين ونظيره وصورة الدم الكاملة ومعرفة علاقتها بالخوف لدى طلبة التمريض من خلال دراسة وصفية عرضية باستخدام تقنية بلمرة الأنزيم الممتاز المناعي وستمارة استبيان مخصصة لتحقيق اهداف الدراسة للفترة من كانون الثاني 2017 الى اذار 2017.

النتائج: وقد حددت الدراسة الحالية أن غالبية الفئات العمرية في الفئة العمرية ≥ 20 بنحو (84.5%). وفيما يتعلق بنوع الجنس، كانت الإناث أكثر من الذكور (77.5 في المائة) و (22.5 في المائة) على التوالي. وكان التعليم في الغالب مدرسة ثانوية (97.2 في المائة). بالإضافة إلى ذلك، كانت المناطق الحضرية أكثر من الريف (78.9%) و (21.1%) على التوالي. كانت المجموعة المدروسة في الغالب كافية للدخل (54.9%). بالإضافة إلى ذلك، كان متوسط والانحراف المعياري لاختبارات الدم ومستوى الهرمون مختلفا قبل وبعد الممارسة السريرية الأولى للطلاب التمريض. وكانت النتائج الإحصائية هامة بالنسبة لفحوصات الدم ، وهي ذات دلالة معنوية وكذلك الأدرينالين ولا الأدرينالين. كانت مستويات جميع اختبارات الدم المذكورة أعلاه انخفاض طفيف باستثناء الأدرينالين ولا الأدرينالين حيث الزيادة، ولكن هذه النتائج كانت ذات دلالة إحصائية. وزاد الخوف بعد الممارسة السريرية الأولى بنحو (57.7%). وكانت النتيجة الإحصائية كبيرة عند قيمة احتمالية تساوي 0.03%.

الاستنتاجات: خلصت الدراسة الحالية إلى أن حالة الخوف في طلبة التمريض الذين لديهم أول تجربة سريرية قد رفع مستوى الخوف وزيادة المستوى الهرموني (الأدرينالين ولا الأدرينالين) وانخفاض إنتاج خلايا الدم عند زيادة الخوف.

Introduction

The acquisition of knowledge and experience in nursing specialties, used for learning experiences, allow these students to acquire increasing levels of skill in practice, and to emerge as expert nurses ready to provide a service of a comprehensive nature [1,2]. Education for professional nurse's services is a crucial element in nursing school, in which clinical practice based on theoretical knowledge is now increasingly emphasized that can be applied in clinical settings. Research has identified nursing as a high stress profession so practical training that cultivates clinical competency in nursing education is an indispensable compulsory course to bring up competent nurses. the importance of clinical experience is to enable student experience a process that applies in nursing course on a patient, that directly accentuate the process of clinical decision making abilities , critical thinking , and obtaining clinical competence and to facilitate and prepare undergraduate nursing students to develop into the professional nurse [3] .In any way, nursing students may experience clinical practice subjected to illogical , intense, persistent fear of a specific object or social situation that cause extreme distress due to the unfamiliar environment of clinical sites, fear and anxiety about mistakes during the practice, excessive tasks, role conflicts and limited knowledge, limitations in the clinical application of theories they have learned at school, unpredictable crisis situations, interpersonal relationships with the patients and their caregivers, and so on [4,5]. Most students indicate the need for practical education; while, they are rarely satisfied with clinical practice, and get increasingly more tensed from the uninstrutive practical environment, limited knowledge, and repetition of simple nursing practice, and get fear, fatigued, and angry instead [6]. Nursing students may get phobic to clinical practices, lose confidence in their abilities consequently, they may become daunted and frustrated badly Moreover, it negatively affect nursing professional values [7]. According to preceding research, an initial clinical practice causes the highest level of phobia regarding nursing procedures. Research acknowledging phobia experienced specifically by nursing students has been extensively reported. The most common theme apparent throughout the literature on phobia in the clinical experience, is that of students worrying about personal inadequacy and the possibility of making errors. The first clinical experience for nursing student can be anxious due to several reasons such as not being ready for clinical experience, thinking they have inadequate clinical skills, unsupportive health professional staff and clinical learning environment, concerns over patient safety, and the gap between the actual

clinical learning environment and the clinical learning environment preferred by students, insufficient expertise confidence. The aim of this study is to determine level of phobia of students in first clinical experience associated with complete blood count and adrenaline and nor-adrenaline according to preceding research, an initial clinical practice causes the highest level of phobia [3].

Methodology

This study presents the research design used in the study, The setting of the study, the sample of the study, the study instrument, data collection, statistical data analysis and of the questionnaire.

Design of the study:-

A cross-sectional descriptive approach was designed to seek for plans to identify the factors that affect the state of phobia among nursing students before and after their first clinical experience by utilizing self-report questionnaires and laboratory analyses. The period of the study is from January 2017 to March 2017.

Setting of the study:-

The study was achieved in Iraq / Al.Najaf City / university of kufa / college of nursing .

Sample of the study:-

A Convenience sample of (47) students was taken in this study.

The study instrument:-

The researchers have adopted the following tool to study the association between phobia and complete blood count and hormonal state (adrenaline & nor-adrenaline) in first clinical experience for nursing college students.

The final copy consists of the following parts;

- Questionnaire :
- student's demographic data form
- Student's phobia question data form [8].
- Serology :

Complete blood count by using Hemoanalyzer 30T and hormones tests (adrenaline, nor-adrenaline) by using ELIZA technique.

Data collection:-

Data were collected by the interview technique and laboratory test with each students as mean of data collection process.

Results

Table (1): Observed Frequencies and Percentages for Demographical Characteristics by using descriptive statistical analysis.

Category	Frequency	Percentage %	
Age Group (years)	<= 20.00	60	84.5
	> 20	11	15.5
Gender	Male	16	22.5
	Female	55	77.5
Educational level	Secondary	69	97.2
	Institute	2	2.8
Residence	Rural	15	21.1
	Urban	56	78.9
Marital status	Single	67	94.4
	Married	4	5.6
Income	Enough	39	54.9
	Enough to some extant	25	35.2
	Not enough	7	9.9
Total	71	100%	

Table (1) shows that the majority of age group at age category ≤ 20 by about 84.5%. Regardless of gender, female more than male (77.5% and 22.5%) respectively. farther more level of education was mostly secondary school(97.2%) . additionally urban more than rural(78.9%) and (21.1%) respectively. for marital status single more than married (94.4%). finally, the studied group were mostly enough income,

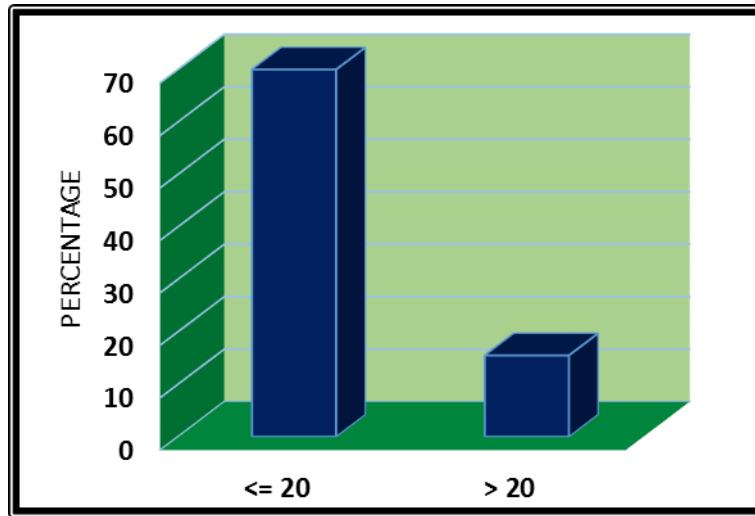


Figure (1): Bar chart of Age group distribution.

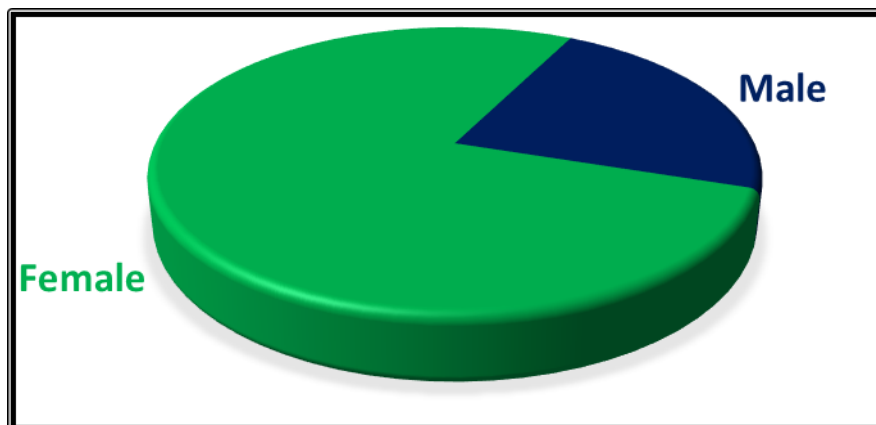


Figure (2): Bar chart of Gender distribution.

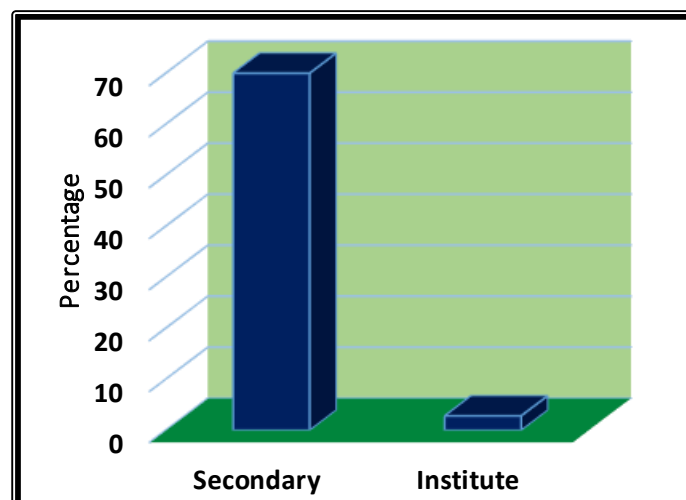


Figure (3): Bar chart of level of education distribution.

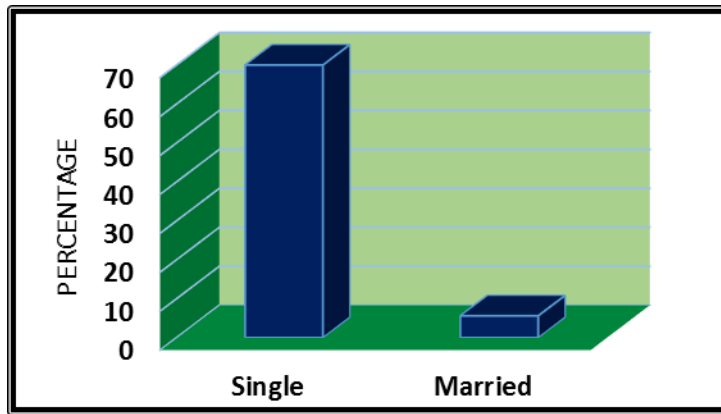


Figure (4): Bar chart of level of residence distribution.

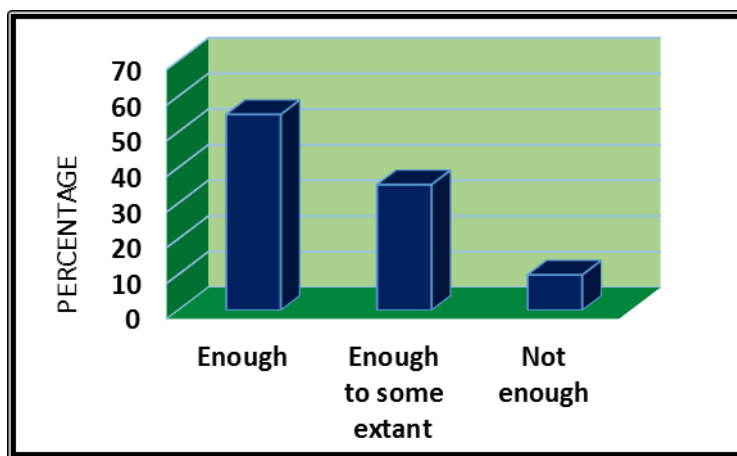


Figure (5): Bar chart of married status distribution.

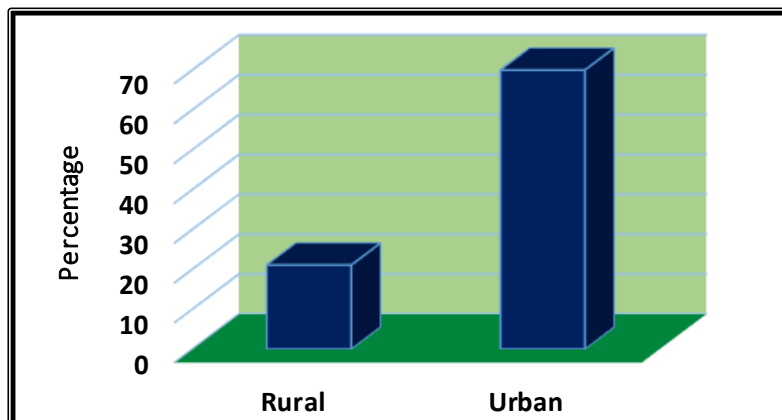


Figure (6): Bar chart of income distribution.

Table (2): relationship of blood test before and after first clinical practice using paired t test.

Blood Test	Before	After	95% Confidence Interval of the Difference		Sig.
	Mean±SD	Mean±SD	Lower	Upper	
WBC	7.14±2.81	6.27±2.47	0.01	1.73	0.046 (S)
LYM	2.48±1.38	1.27±0.43	0.88	1.54	0.0001 (HS)
MON	0.40±0.35	0.32±0.14	-0.01	0.16	0.110 (NS)
GRA	4.23±1.54	4.67±2.34	-1.05	0.16	0.154 (NS)
RBC	8.50±1.78	6.75±1.26	1.24	2.24	0.00001 (HS)
HGB	19.19±2.88	18.01±2.92	0.19	2.16	0.019 S)
MCV	79.73±9.10	88.63±6.40	-11.03	-6.77	0.0001 (HS)
MCH	23.14±3.30	26.90±2.44	-4.57	-2.93	0.0001 (HS)
MCHC	28.99±1.32	30.29±0.97	-1.66	-0.92	0.00001 (HS)
PLT	7343.64±3219.45	3700.29±1766.91	2741.08	4545.61	0.0001 (HS)
Adrenaline	76.10±8.38	123.81±32.19	-55.78	-39.64	0.0001 (HS)
Noradrenaline	431.25±78.60	606.39±73.15	-201.85	-148.42	0.00001 (HS)

WBCs: White blood cells, Hb: Hemoglobin, LYM: Lymphocytes, MON: Monocytes, GRA: Granulocytes, RBCs: Red blood cells, MCH: Mean corpuscular hemoglobin, MCV: Mean corpuscular volume, MCHC: Mean corpuscular hemoglobin concentration, PLT: Platelets, S: Significant, HS: High Significant, NS: None significant.

Table (2) shows the mean and standard of blood test and hormone level before & after first clinical practice of the second stage nursing student. the statistical results were significant for WBC, HB, highly significant for LYM, RBC, MCP, MCHC, PLT, Adrenaline and nor-adrenaline the levels of all above blood tests parameters were slightly decrease except adrenaline and nor adrenaline where increase, however these results were statistically significant.

Table (3): relationship of Phobia scale before and after first clinical practice using chi-square test.

Category		Before		After		Sig.
		Frequency	%	Frequency	%	
Phobia	Does not feel	24	33.8	23	32.4	X ² = 0.010 df=1 P- value= 0.91 (NS)
	Little	22	31.0	25	35.2	
	Sure	13	18.3	14	19.7	
	Can be seen	11	15.5	4	5.6	
	Strong	1	1.4	5	7.0	
Total		71		100%		

X²: chi-square, df: degree of freedom, and NS: Non-Significant.

Table (3) shows the classification of students according to the different categories that indicate the severity of the student's fear and their preparation before and after the clinical trial, as the categories included five axes (do not feel, little, sure, can be seen, strong) Axis (can be seen) where it was reduced by 7 people and in the axis (strong) increased from 1 to 5 Where the results were based on statistical evidence.

Discussion

An academic nursing student has his/her first clinical experience in hospital, he/she is affected by phobia factor for a short period of time and then the effects of this factor on the clinical application of the student disappears. According to our study conducted on a group of students of the Faculty of Nursing / University of Kufa, through which was determined the relationship between adrenaline and Nor-adrenaline and phobia factor before and after the clinical experience. Our study results were as the follow the majority of age group at age category ≤ 20 by about 84.5% regardless of gender, female more than male (77.5% female and 22.5% male) respectively. Farther more level of education was mostly secondary school (97.2%). Additionally urban more than rural (78.9%) urban and (21.1%) rural respectively. For Marital Status single more than married (94.4%) married and (5.6%) single. Finally, the studied group were can mostly enough income (54.9%) .

This result is supported by Lechasseur K., et al. (2011), clarifying the mechanism predisposing people with blood phobia to syncope by investigating the complete hemodynamic response pattern and the underlying hormones level [8,9] . The mean of standard deviation of blood test and hormone level before and after first clinical practice of the second stage nursing student, were signification for WRC, HB, highly signification for HYM, RBC, MCP, PLT, ADRENALINE and OR-ADRENALINE. These findings are in line with Rudnicki, et al. (2010) that stated stress hormone level (Adrenaline and Nor Adrenalineand) increases in people with phobia and affect their performance and behavior [10,11] .

The levels of all above blood tests parameters were slightly decrease except ADRENALINE and NOR-ADRENALINE where increase, however these results were statistically significant. The statistical result was significant at p-value = (0.03%) [12,13]. In our study we found that psychological factors were affected by the immune system, which is common to the bone marrow in a single communication language, which is made of protein chemicals called cytokine. Thus, the effect on the bone marrow is reduced in the rate of production of blood cells [14]. The study also showed that the increase in adrenaline hormone affects the hormone erythropoietin, which is a protein-derived hormone that produces 85% by the kidney and 15% by the liver in the case of total oxidation [15].

It stimulates the secretion of retinal cells from the bone marrow, which ripens to red blood cells. We also found that low rates of blood cells because of high heart rate due to high adrenaline hormone leads to high rate of heart production and thus lead to the rapid flow of blood and will cause imbalance in the process of balance between production and metabolism in the bone marrow[16]. And that the consumption of body energy (ATP) by physical and mental effort affects the bone marrow and thus less production of blood cells and this effect is the rise of adrenaline hormone as well. Which is supported by Shah and Kataria (2008), who studied the influence of stress hormones on emotional memory Relevance for psychopathology [17].

Conclusion

we did not find a significant impact on the student of the psychological factor (phobia) during clinical work, but phobia for a limited period does not exceed the minutes at the beginning of clinical work.

There is a high rise in adrenaline and nor-adrenaline hormone and a clear reduction in blood components. The age group < 20 years was more prone to phobia.

Recommendation

- 1 - Increasing the scientific knowledge of the student at this stage in way of CBT as preventive , which makes him confident of himself and his ability to perform this work professionally and avoid the mistakes that may be located .
- 2-[Cognitive behavioral therapy](#) (CBT) can be beneficial by allowing the nursing with phobia to challenge dysfunctional thoughts or beliefs by being mindful of their own feelings, with the aim that the student will realize that his or her fear is irrational.

- 3- Systematic desensitization and [Eye movement desensitization and reprocessing](#) (EMDR) must become as lecture in syllabus of nursing academic book.
- 4 - Provide all the safety conditions and tools that prevent the transmission of diseases, which will protect the patient and student alike, it will increase the confidence of the student in himself and the patient's confidence in the student
- 5 - Good nutrition before practicing clinical work because the body expends great energy (ATP) by physical and mental effort.

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