



## Effectiveness of an Educational Program on Nurse's Knowledge about Complication for Snake Bite in the Emergency Department

فاعلية برنامج تعليمي في معارف الممرضين حول المضاعفات لدغة الافعى في قسم الطوارئ

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### المستخلص :

**الهدف:** تقييم فعالية برنامج تعليمي مصمم لتحسين فهم الممرضين بالمضاعفات لدغات الثعابين أثناء العمل في قسم الطوارئ.

**المنهجية:** استخدمت الدراسة الحالية التصميم شبه التجريبي، باستخدام منهجية الاختبار القبلي/الاختبار البعدي لتقييم التغيرات بين المجموعة الضابطة والمجموعة الدراسية بعد تنفيذ البرنامج التعليمي. وقد أجري البحث في الفترة ما بين 25 كانون الاول 2023 الى 14 شباط 2024 كان مجتمع الدراسة هو جميع ممرضات قسم الطوارئ 100 ممرض الذين كانوا متواجدين خلال وقت جمع البيانات وعملوا في قسم الطوارئ لأكثر من عام واحد في مستشفى الشامية العام - مديرية صحة الديوانية في العراق.

**النتيجة:** أظهر البرنامج التعليمي تأثيراً ملحوظاً على معارف الممرضات في مجموعة الدراسة، كما يتضح من الفرق الجوهري والدلالي إحصائياً في درجات الاختبار البعدي ( $P < .001$ ).

**الاستنتاج:** بعد التقييم، تم تعزيز معرفة ممرضات قسم الطوارئ فيما يتعلق بالمضاعفات للدغات الأفاعي بعد تنفيذ البرنامج التعليمي.

**التوصية:** التنظيم الدوري وتوسيع عدد البرامج والدورات التعليمية التي تلتزم بالبروتوكولات العالمية المعتمدة من قبل منظمة الصحة العالمية ومنظمة الصحة العراقية من أجل استيعاب أكبر عدد ممكن من الممرضات مع ضمان احتوائهم على المعلومات الحالية.

الكلمات المفتاحية: معرفة طاقم التمريض، المضاعفات، لدغة الثعبان

### Abstract:

**Objective:** Assess the efficacy of an educational programme designed to improve nurses' understanding of complication of snake bites while working in the emergency department.

**Methodology:** The current study employed a quasi-experimental design, utilising a pre-test/post-test methodology to assess changes between the control group and the study group subsequent to the implementation of the educational program. The research was conducted between 25 December 2023 to 14 February the study population was all ED staff nurses 100 nurses who were available during data collection time and worked in ED for more than 1 year in Al-Shamiya General Hospital - Diwanayah Health Directorate Iraq.

**Result:** The educational program demonstrates a remarkable impact on the knowledge of the nurses in the study group, as evidenced by the substantial and statistically significant difference in posttest scores ( $p < .001$ ).

**Conclusion:** At post-evaluation, the knowledge of emergency department nurses regarding complication for snakebite had been enhanced subsequent to the implementation of the educational program

**Recommendation:** Periodically organising and expanding the number of educational programmes and courses that adhere to the global protocols authorised by the World Health Organisation and the Iraqi Health Organisation in order to accommodate the greatest number of nurses possible while ensuring that they contain current information.

**Key words:** Nurse Staffs Knowledge, Complication, Snake bite

## Introduction:

Snakebite is a serious life-threatening health crisis in many parts of the world. Public health is jeopardised, particularly in rural regions where snakes are more prevalent.<sup>(1)</sup> Snakebite is still a major cause of morbidity and mortality especially in areas where a considerable portion of the population works primarily in agriculture, which raises the risk of coming into contact with snakes.<sup>(2)</sup> The statistics of venomous bites for the year 2022 in Iraq reached 5077 males and 4429 females. Venom exposure to the eye may cause blindness, Certain individuals who have experienced acute kidney injury may develop chronic renal failure.<sup>(3)</sup> Ten years after the bite, individuals may experience symptoms including hypothyroidism, fatigue, arrested puberty, and amenorrhoea. Additionally, the prevalence of post-traumatic stress disorder and depression is greater among snakebite survivors than among matched controls. As reported It is crucial to guarantee access to physiotherapy, psychological services, and specialists, when necessary, in order to effectively manage the long-term consequences of a snake bite.<sup>(4)</sup> As tourniquets can obstruct blood flow and exacerbate tissue injury, ultimately resulting in necrosis of the affected area, their use is contraindicated. Nevertheless, it is imperative that a tourniquet remains in place and remains in place until the patient has been admitted to the hospital and antivenom has been administered. Deleting the tourniquet could result in the formation of a venom bolus, which has the potential to rapidly deteriorate the patient's condition and move abruptly. Individuals who have been envenomated by a serpent whose venom is exclusively neurotoxic may find pressure bandages useful on occasion, particularly when transport to a medical facility is delayed.<sup>(5)</sup>

## Methodology:

### Study design:

The current study employed a quasi-experimental design utilising a pre-test/post-test methodology to assess changes between the control group and the study group subsequent to the implementation of the educational program

### Setting and period:

The research was carried out in the training and development hall of the Diwaniyah Health Directorate of Al-Shamiya General Hospital. The

research was conducted between 25 December 2023 to 14 February

### Study Participant:

The study population was all ED staff nurses who were available during data collection time and worked in ED for more than 1 year in Al-Shamiya General Hospital - Diwaniyah Health Directorate Iraq.

### Inclusion and exclusion criteria:

It included all permanent nurses working in the emergency department at Shamiya General Hospital. Inclusion criteria were nurses working in the emergency department for at least 1 year, and being present during the study period. Exclusion criteria: Staff nurses who did not cooperate to fill out the questionnaire administered to newly recruited nurses were excluded

### Sampling and sample size:

The researchers employed non-probability purposive sampling to select one hundred emergency department (ED) nurses from the Diwaniyah Health Directorate of Al-Shamiya General Hospital.

### Study instruments and data collection:

The process of data collection was executed by utilising the research instrument and the educational program application. The execution of the implementation took place at the Al-Shamiya General Hospital emergency department in Diwaniyah Governorate between December 25th and February 14th, 2024. In order to assess the efficacy of the educational program aimed at enhancing the first aid knowledge of emergency department nurses regarding snake bites, which was developed and validated, the researcher modified the questionnaire, added the necessary elements to it, deleted some inappropriate elements, translated and re-translated it from the original English version into Arabic, and used verification tools. The final conclusion of this research work, <sup>(6)</sup> which consists of two parts and includes the following:

Part One: Social and demographic characteristics of nurses. This section was devoted to collecting social and demographic information from nurses using a self-report questionnaire sheet, which contains (five) items such as gender, age, level of education, Years of experience, Marital status. Part Two: Nurses' knowledge of Complication snake bite. This section was used to assess nurses'

understanding of complication for snake bite. with four answer options for each MCQ question with one correct answer ,which contains (6) multiple-choice questions

The program and study instruments' validity is assessed by a panel of thirteen experts, each possessing a minimum of ten years of collective experience in their respective domains.

The study instrument's reliability was examined using the Cronbach's alpha approach, Pearson Correlation and “the Statistical Package for Social Science Program (SPSS) version 26.0. It was determined by assessing (10) nurses in ED AL-Diwaniyah governorate , Iraq. using a test-and-retest procedure”.

The Cronbach’s Alpha analysis shows good evaluation for knowledge scale (0.736) that means the questionnaires had adequate level of internal consistency and equivalence measurability. (7)

The Pearson Correlation analysis in this table shows good evaluation for knowledge scale (0.776) which indicates that the questionnaires had adequate level of reliability and equivalence measurability

For the purpose of scoring scale’s items, a dichotomous scale was used for knowledge scale

and scored as follows: correct answer (1), and incorrect answer (0).

**Ethical considerations:**

The ethical permission (Ethics Committee Permission Number: (21/12/2023- 4320) came from the relevant University of Baghdad, College of Nursing, Clinical Research Ethics Committee, institutional permission from the Faculty of Nursing, and from the selected hospitals' ethical boards before data collection began. Participation was completely voluntary, with written informed consent from nurses, who were assured that their responses would be confidential

**Statistical analysis:**

Descriptive and inferential statistical procedures were conducted. The descriptive analysis was presented with frequency, percentage, and mean and standard deviation. The Chi square test was employed to describes their level of knowledge about first aid and management for snake bite at emergency department, and to determine the effectiveness of an educational program on their knowledge. . Statistically significant when the p-value is < 0.05. All the data were analyzed with SPSS Statistics (version 0. 26)

**Results:**

**Table (1): Distribution of nurses according to their socio-demographic and occupational qualities**

No.	Characteristics	Study group		Control group		
		F	%	f	%	
1	<b>Age (year)</b>	20 – less than 30	28	80	29	82.9
		30 – less than 40	4	11.4	4	11.4
		40 and more	3	8.6	2	5.7
		<b>Total</b>	<b>35</b>	<b>100</b>	<b>35</b>	<b>100</b>
		<b>Mean± SD</b>	<b>26.8 ± 5</b>		<b>26.7 ± 5</b>	
2	<b>Sex</b>	Male	20	57.1	20	57.1
		Female	15	42.9	15	42.9
		<b>Total</b>	<b>35</b>	<b>100</b>	<b>35</b>	<b>100</b>
3	<b>level of education</b>	Secondary school	6	17.1	5	14.3
		Diploma	17	48.6	17	48.6
		Bachelor	10	28.6	11	31.4
		Postgraduate	2	5.7	2	5.7
4	Unmarried	22	62.9	21	60	

	<b>Marital status</b>	Married	13	37.1	14	40
		<i>Total</i>	<b>35</b>	<b>100</b>	<b>35</b>	<b>100</b>
5	<b>Years experience</b>	of 1 – less than 6	25	71.4	27	77.1
		6 – less than 11	7	20	5	14.3
		11 - less than 16	1	2.9	1	2.9
		16 and more	2	5.7	2	5.7
		<i>Total</i>	<b>35</b>	<b>100</b>	<b>35</b>	<b>100</b>
<i>Mean± SD</i>		<b>4.9 ± 5</b>			<b>4.7 ± 5</b>	

**No: number, F: frequency, %: Percentage,SD: Standard deviation**

According to the data presented in Table 1, the mean age of nurses in the study group is 26.7±5 years, while in the control group it is 26.8±5 years. Among the nurses in the control group, 82.9% are between the ages of 20 and 30, which accounts for 80% of the study group. Regarding sex of nurses, more than half of nurses in both groups are males (study= 57.1% and control= 57.1%) while remaining are females.

The findings indicate that the proportion of nurses holding a diploma in nursing is the highest, with

48.6% in the study group and the same percentage in the control group indicating such. The marital status refers to unmarried among 62.9% of nurses in the study group and 60% of nurses in the control group. The average years of experience refers to 4.9±5 years for nurses in the study group and 4.7±5 years for nurses in the control group, 71.4% of them in the study group and 77.1% of them in the control group seen with 1- less than 6 years of experience

**Table (2): Significant Changes between the Control Team and the Participants in the Study Group in Terms of Nurses' Knowledge Regarding the Pre-test and Post-test**

Knowledge	Group	Pre-test						Post-test					
		Mean	SD	t	df	P-value	Sig.	Mean	SD	t	df	P-value	Sig.
Complications	Study	1.23	.973	.712	34	.481	N.S	4.91	1.067	24.191	34	.001	H.S
	Control	1.06	.938					1.20	.901				

**M: mean, t: t-test, df: degree of freedom, p: probability, Sig.: Significance ,HS: High Significant, N.S: Not Significant**

The results indicate that the nurses' knowledge ranges from poor to fair on the pretest, but improves to good on the posttest. Pre-test and post-

test results from the control group indicate that nurses have a deficient understanding of the majority of the items.

**Table (3): Study and Control Group Evaluation of the Efficacy of an Educational Program on Nurses' Knowledge of complication of Snake Bite in the Emergency Department**

Knowledge	Study Group (N=35)						Control Group (N=35)					
	M.	SD	t	Df	p-value	Sig.	M.	SD	t	df	p-value	Sig.
Pre-test	7.91	2.853	43.524	34	.001	H.S	7.46	2.680	2.463	34	.019	N.S
Post-test	30.11	3.367					7.57	2.547				

**m: Mean, t: t-test, df: degree of freedom, p: probability, Sig.: Significance, HS: High Significant,N.S:No Significant**

The table provides empirical support for the claim that the educational program substantially enhances the knowledge of the nurses in the study group, as indicated by the statistically significant and substantial disparity in the posttest scores ( $p$ -value=.001). A discernible disparity in the knowledge of nurses with respect to the posttest is identified in the control group ( $p$ -value = 0.019).

## **Discussion:**

### **Table (1)**

The results of the analysis of the data from the current study, indicate that the average age of nurses in the experimental group is  $26.7 \pm 5$  years, whereas in the control group, it is  $26.8 \pm 5$  years. 82.9 percent of the nurses comprising the control group fall within the age range of 20 to 30 years, which accounts for 80% of the study group.. This result is corroborated by a study conducted by other<sup>(8)</sup>, which found that the majority of respondents (86.4%) fell within the age range of 20 to 25 years. Following this, 8.1% of the respondents were over the age of 25, whereas only 5.5% were below the age of 20. The majority of respondents were . In relation to the gender composition of nurses, the study results indicate that 57.1% of the nurses in both groups are male, while the remaining 57.1 percent are female. (42.9%) while the control group (42.9%) According to this study, which was corroborated by<sup>(9)</sup>, 76.8% of emergency nurses identified as male, while 23.2% identified as female. Additionally, this research contradicts the findings of a study<sup>(10)</sup> which indicated that the proportion of female participants is greater than that of male participants, with 57.1 percent of the participants being female and 42.9 percent being male. With regard to educational attainment, the results of the research suggest that the most substantial percentage of nurses, comprising 48.6% of the study group and the same percentage of the control group, possess a diploma in nursing. The obtained outcome aligned with the conclusions drawn in the study<sup>(11)</sup>, which revealed that a significant proportion of the nurses involved in the research within the emergency departments of hospitals in Baghdad had successfully completed their secondary nursing education . In agreement with the findings of a study conducted by<sup>(12)</sup>, which demonstrated that a higher proportion of Staff of nursing (46.4%) were graduates of secondary nursing school. Furthermore. With regard to marital status, 62.9% of nurses in the study group and 60% of nurses in the control group are

unmarried, This result is consistent with the findings of a study<sup>(13-14)</sup> The outcome illustrates the majority of the study samples (44) A mere 12% were married, while 88% were unmarried. Also contradicts the findings of the study which indicate that the majority of (78%) of the sample were married.<sup>(15)</sup> In relation to years of nursing experience, the findings of the present study indicate that a significant proportion of nurses in both the study and control groups fall within the range of with 1- less than 6 . years of nursing experience. This research confirms findings from a previous study indicating that fifty percent of nurses have between one and five years of experience.<sup>(7)</sup> These results corroborated the findings by<sup>(16)</sup>, which reported that 55.6% of the nursing staff possessed years of experience ranging from one to five.

### **Table (2)**

The nurses' overall understanding of snake bite Complication. The results suggest that the nurses' knowledge ranges from inadequate to adequate on the pretest, but improves to a satisfactory level on the posttest. Consistent with the results of a study by<sup>(16)</sup> which demonstrate that nurses have a low level of knowledge on the majority of items assessed both pre- and post-test, the results of the control group indicate the same. Prior to the training, the average level of knowledge regarding snakebites was quite low. The median score was consistently low, irrespective of the occupation of the attendees. Regardless of occupation, the post-training overall score increased significantly ( $p < 0.001$ ), indicating that all participants' knowledge increased during the training. Concerning the assessment of first aid and the treatment of snakebite victims. The care-related subscore was relatively low. There was a statistically significant increase in knowledge pertaining to first-aid and care following the training ( $p < 0.001$ ). The statistically significant difference between the pre- and post-assessments scores for the interventional group provides support for the study's findings. The control group exhibited no statistically significant variation between the pre-test and post-test of the nurse's knowledge

### **Table (3)**

The educational program significantly improves the knowledge of the nurses in the study group, as evidenced by the substantial difference in scores between the pre-test and the post-test ( $p$ -value=.001). These results are consistent with the

study's finding that indicate improvement in study group Knowledge toward Immunization of Children at Primary Health Care after exposing them to the education program<sup>(17)</sup>. Consistent with the findings of a study conducted by<sup>(18-20)</sup>, which showed that while nursing staff members' pre-test understanding of infection control methods was only moderate, their post-test knowledge had increased as a result of the training program's implementation.

### **Conclusion:**

The majority of the participants are within first age group. Most of the participants are males with average years of experience as seen with one year experience among 77.1% of them in the study group years. Indicating significant changes in the level of knowledge of nurses, The comprehensive evaluation of nurses' knowledge indicates that in t

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he pre-test, nurses in the study group demonstrated inadequate levels of knowledge. However, by the post-test, they had improved to a satisfactory level of knowledge. At post-evaluation, the knowledge of emergency department nurses regarding first aid for snakebite had been enhanced subsequent to the implementation of the educational programme. It demonstrates that the presented programme was highly beneficial and statistically significant.

### **Recommendation:**

Periodically organising and expanding the number of educational programmes and courses that adhere to the global protocols authorised by the World Health Organisation and the Iraqi Health Organisation in order to accommodate the greatest number of nurses possible while ensuring that they contain current information.

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