



EGYPTIAN ACADEMIC JOURNAL OF  
**BIOLOGICAL SCIENCES**  
TOXICOLOGY & PEST CONTROL

F



ISSN  
2090-0791

WWW.EAJBS.EG.NET

**Vol. 15 No. 2 (2023)**

[www.eajbs.eg.net](http://www.eajbs.eg.net)



## Characteristics and Outcome of Snake bite Envenomation Cases Admitted to Banha Fever Hospital

Omima R.Mohamed and Marwa M. M. Fawzy.

Department of Forensic Medicine and Clinical Toxicology, Faculty of Medicine, Benha University, Egypt

\*E-mail: [omimarefaat1331@gmail.com](mailto:omimarefaat1331@gmail.com)

### ARTICLE INFO

Article History  
Received:8/11/2023  
Accepted:24/12/20223  
Available:28/12/2023

### Keywords:

Snakebite, fever  
Hospitals,  
retrospective,  
Neuro-toxic,  
venom, Elapidae

### ABSTRACT

WHO (2018) recorded that every year, about 5.4 million snakebites happen worldwide, which lead to 138,000 deaths, and 400,000 cases of infirmity, Although Snakebite is one of the world's most dangerous neglected tropical toxic hazards, it receives little care from global health agencies, charities or governments. The aim of the study was to assess the hazardous effects of snakebite through a retrospective study of snakebite toxicity. All snakebite cases who arrived at Benha Fever Hospitals, Egypt, from the first of January 2022 to the end of December 2022 were presented in the study. All socio-demographic and clinical data were collected and analyzed. The present study recorded 74 cases of snake bites with the majority (37.84%) of cases aged between 20 and 29 years, 58.11% were males, and 70.27% came from rural areas. 59.45% occurred during summer, the majority of cases (54.06%) were bitten by nonvenomous snakes, most cases (62.16%) occurred outdoors, and 59.45% of patients were bitten between 12 pm and 12 am. 81.08% of patients presented mainly with pain with local edema, 33.8% and 32.4% were treated with wound care and immobilization of the injured extremity and antivenom therapy respectively, and 81.08% were improved and discharged. Conclusion Snake bite is an emergency topic in Egypt among rural males aged between 20-29 years. commonly observed symptoms were pain and local odema; most of the cases were treated symptomatically and most of them improved and discharged.

### INTRODUCTION

There are many species of snakes that live in Egypt; these include Elapidae, Viperidae, Typhlopidae and Colubridae Snakebite is an old medical problem in Egypt as an ancient Egyptian papyrus saved at the Brooklyn Museum in New York revealed a systematic description of 38 snakes and their bites with many remedies and a few spells for those bitten by snakes (Ibrahim *et al.*, 2013).

WHO (2018) demonstrated that every year, about 5.4 million snakebites happen worldwide, which leads to 138,000 deaths, and 400,000 cases of infirmity, snakebites were a neglected, occupational toxic hazards in subtropical & tropical countries in Asia, Africa, and Latin America.

Different species of snakes have different types of venoms which relies on its types, place, habitat, weather, age, etc. According to toxicity venom is divided into three types haemotoxic, cytotoxic and neurotoxic. Haemo-toxic venoms lead to bleeding. Cytotoxic venoms affect specific cellular sites. Neurotoxic venoms lead to respiratory muscle paralysis. Enzymes present in snake venom break down protein and membrane parts which make tissue necrosis and blood clotting (Goswami *et al.*, 2014).

The specific treatment to face snake bite is the usage of anti-venom. The first anti-venom was made by Alberte Calmette to face the Indian cobra (NajaNaja). Anti-venom is synthesized by immunizing mammals such as horses, rabbits and goats with specific snake venom and the specific immunoglobins are separated from the blood (Goswami *et al.*, 2014).

The first clinical presentations of systemic envenomation are often not specific symptoms such as vomiting, nausea, abdominal pain and headache. The presence of the symptoms is an indication for good observation of the appearance of other specific clinical syndromes associated with snake toxicity such as neurotoxicity which is manifested at first by ptosis, diplopia, & bulbar palsy within 10 hours after toxicity. Then symptoms can later increase to dysarthria and respiratory paralysis and in this case, ventilatory support is mandatory for airway protection. In coagulopathy, venom may be either a procoagulant or an anticoagulant, but both show the same coagulation effects rapidly. Overt bleeding signs should be in mind following a snake bite (Morsy *et al.*, 2021).

Snake bite is an environmental, occupational and climatic problem in rural and urban areas of many countries. Snakes may enter the home to get food or to hide for a time. so do not let animals especially chickens in the home as snakes may enter to eat them. Regularly check homes for snakes and, if possible, avoid construction places where snakes will hide in it (Chappuis *et al.*, 2007).

The aim of the study was the assess the hazardous effects of snakebite cases arrived at Banha Fever Hospital from the first of January 2022 to the end of December 2022. The study included the patients referred from other hospitals in Egypt or presented directly at the Banha Fever Hospital emergency department which has the facilities for managing snakebite cases.

## MATERIALS AND METHODS

### **Study Design:**

This is a retrospective cross-sectional study

### **Place and Duration of The Study:**

Participants' medical files were recruited from Banha Fever Hospital during a period of one year from the first of January 2022 to the end of December 2022.

### **Study Sample:**

The medical files of 74 cases and cases were all cases with snakebite that arrived at Benha Fever Hospital. Egypt; was studied.

Inclusion criteria cases with recent isolated snakebite injuries with delay less than 24h who were admitted to a fever Hospital. Exclusion criteria are cases with no confirmative history of snakebite, cases with delay >24 h period, and cases with medical history of bleeding tendency, neurological disease, or chronic debilitating disease.

### **Study Methods:**

All data were received from the cases' medical records from arrival to discharge regarding:

- I- Socio-demographic characteristics include age, sex, residence and marital state.
- II- Circumstances of poisoning include seasonal differences, site of exposure, the time of hospitalization, delay time between intoxication and hospital arrival and suspected species of the snake. It is difficult to know the species of snake by the physicians, as accident is often accidental the victim can't describe the snake. The physicians rely on the clinical features and laboratory findings of envenoming to infer the biting species. The reported snake species were classified into venomous and nonvenomous species based on toxicity and symptomatic identification.
- III- Symptoms, Investigations and Hospital Treatment:
- 1-Symptoms include the presence of pain, local edema, anxiety, abnormal coagulation ptosis, descending paralysis, or respiratory arrest.
  - 2-Investigations are needed repetitively every 4-6 hours in symptomatic cases, including prothrombin time, and international normalized ratio (INR).
  - 3- Hospital treatment: On admission to the hospital, all snakebite cases received supportive treatment including treatment of wounds by padding and stabilization above the level of the heart to avoid dependent edema. Symptomatic cases treated intravenous fluids, anxiolytics, analgesics, antibiotics, Hydrocortisone and antivenom therapy (polyvalent lyophilized powder antsnake serum vials produced by VACSERA, Egypt (Gouda, *et al.*, 2017) initial dose 5–10 vials by slow intravenous infusion after dilution with normal saline at a rate of 5–10 ml/kg body weight over 1 h. A second dose of five vials of antiserum was administered if signs and symptoms of toxicity were present until improvement of symptoms.
  - 4- Patient's outcome: included (improvement, Admission to ICU, Duration of stay in the ICU (days), Mechanical ventilation and Fate (survival)).

**Ethical Approval:** All available data were evived from the medical files of the cases in the archive of Banha Feve Hospital after obtaining approval from Benha Research Ethical Committee of Scientific Research, Faculty of Medicine, Benha University (code: RC-22-5-2023).

**Consent:** Authors took the permission from the authority members of Benha Fever Hospital.

**Statistical Analysis:** Data entry, coding, and analysis were undergone using PSW (20), IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp. Data of this study was qualitative type, expressed in frequency (number), and percent (%).

❖ **The Chi-Square ( $X^2$ ) goodness of fit test non-parametric test** was used to investigate if the observed values of a phenomenon are significantly different from the expected value and probability distribution.

❖ **Fisher Exact test (FEX)** was used as a test of the significance of association between two categories whenever more than 20% of expected values were less than 5.

The level of significance of our data was 95%, so,  $p\text{-value} > 0.05$  was considered a non-statistically significant difference, while  $p\text{-value} < 0.05$  was considered a statistically significant difference and  $p\text{-value} < 0.01$  was considered a statistically highly significant difference.

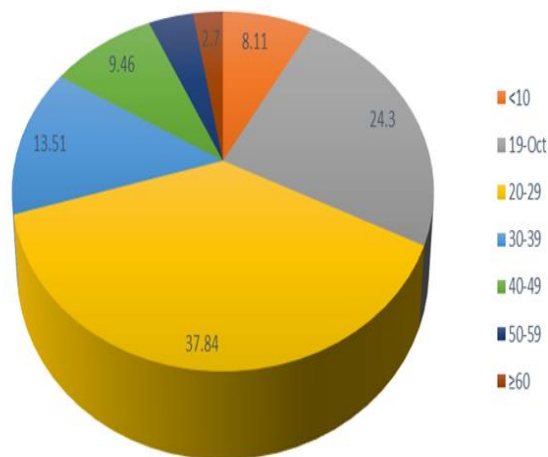
## RESULTS

Table 1. shows that the age of the patients enrolled in this study ranged from less than 10 years to 60 years with the majority (37.84%) of cases aged between 20 and 29 years, 58.11% were males, 59.46% were unmarried and 70.27% were lived in rural areas (statistically highly significant).

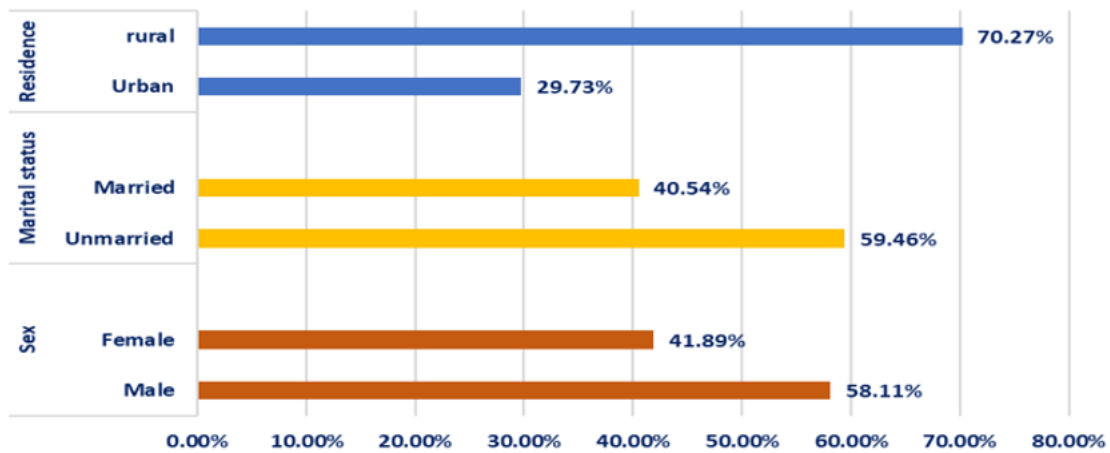
**Table 1.** Socio- demographic characteristics of the studied groups.

	Variables	Total (n=74)	%	X2 Goodness of fit test	P value
Age/years	<10	6	8.11	49.541	<0.001**
	10-19	18	24.3		
	20-29	28	37.84		
	30-39	10	13.51		
	40-49	7	9.46		
	50-59	3	4.05		
	≥60	2	2.70		
Sex	Male	43	58.11	1.956	0.163
	Female	31	41.89		
Marital status	Unmarried	44	59.46	2.649	0.104
	Married	30	40.54		
Residence	Urban	22	29.73	12.162	<0.001**
	rural	52	70.27		

\*\* : statistically highly significant. Total number (74)



**Fig.1.** Distributin of age categorized of the study group.



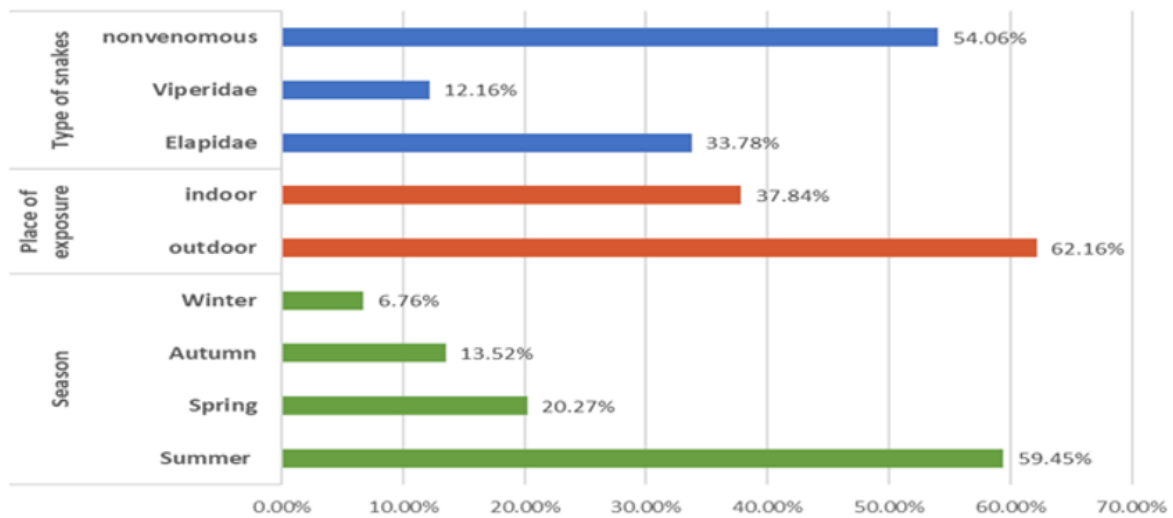
**Fig. 2.** Socio-demographic characteristics of the study group.

As shown in Table 2. there were seasonal differences at the time of poisoning as 59.45% occurred during summer, and the majority of cases (54.06%) were bitten by nonvenomous snakes (statistically highly significant). Most cases (62.16%) happened outdoors, and the delay time among the majority of cases (62.12%) was one to two hours (statistically significant). Many patients (59.45%) arrived at the hospital after the poisoning between 12 pm - 12 am.

**Table 2.** Circumstances of poisoning of the studied groups.

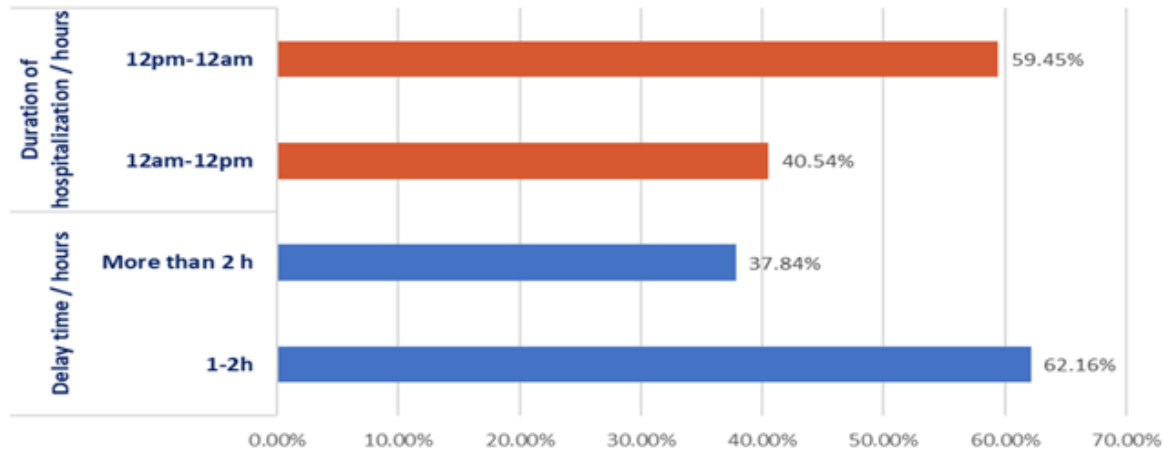
	Variables	Total (n=74)	%	X2 Goodness of fit Test	P value
Season	Summer	44	59.45	49.568	<0.001**
	Spring	15	20.27		
	Autumn	10	13.52		
	Winter	5	6.76		
Place of Exposure	Outdoor	46	62.16	4.378	0.036*
	Indoor	28	37.84		
Type of snakes	Elapidae	25	33.78	19.486	<0.001**
	Viperidae	9	12.16		
	nonvenomous	40	54.06		
Delay time/hours	1-2h	46	62.16	4.378	0.036*
	More than 2 h	28	37.84		
Time of hospitalization/hours	12 am-12 pm	30	40.54	2.649	0.104
	12 pm-12 am	44	59.45		

\*\* : statistically highly significant, \* : statistically significant.



**Fig. 3.** Circumstances of poisoning of the study group.





**Fig. 4.** Delay time and time of hospitalization of the study group.

Table 3. showed that 81.08% of patients symptomatized mainly with pain and local edema 33.8%, 32.4% were treated with wound care and the injured extremity was immobilized and antivenom therapy, only 12.2% of patients had abnormal prothrombin time and INR during the investigation, 81.08% were improved and discharged while 13.51% were admitted to ICU and only 4.1% died (highly statistically significant). Regarding admitting to the ICU, there was Only 13.51% of the study group admitted (statistically highly significant) with no significant difference in duration of admission.

**Table 3.** Symptoms, treatment and outcomes among the studied groups.

	variable	No	%	X <sup>2</sup> Goodness of fit test	P value
Symptoms	Pain	60	81.08		<0.001**
	Ptosis	25	33.78		
	Descending paralysis	25	33.78		
	Abnormal coagulation	9	12.16		
	Local edema	60	81.08		
	Respiratory arrest	3	4.05		
Treatment	The wound was cared and the injured extremity was immobilized	25	33.8	8.486	0.037*
	Symptomatic and supportive treatment (intravenous fluids, analgesic, anxiolytic, antibiotics and Hydrocortisone)	15	20.3		
	Antivenom therapy	24	32.4		
	Mechanical ventilation	10	13.5		
Investigations	prothrombin time, and international normalized ratio (INR).	9 case abnormal	12.2	42.378	<0.001**
Outcomes	Improved and discharged	60	81.08	76.649	<0.001**
	Admission on ICU	10	13.51		
	Discharged against medical advice	4	5.41	94.162	<0.001**
	Discharged (not admitted into ICU)	64	86.48		
Duration of stay in the ICU	Stay less than 2 days	6	8.11		
	Stay more than 2 days	4	5.41		
Fate (survival).	Died	3	4.1	62.486	<0.001**

\*\* : statistically highly significant, \* : statistically significant.

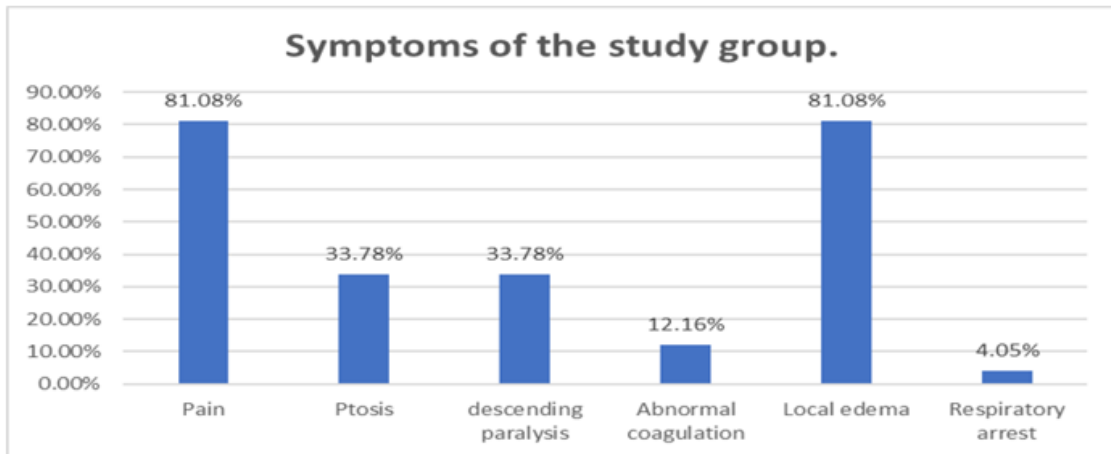


Fig. 5. Symptoms of the study group.

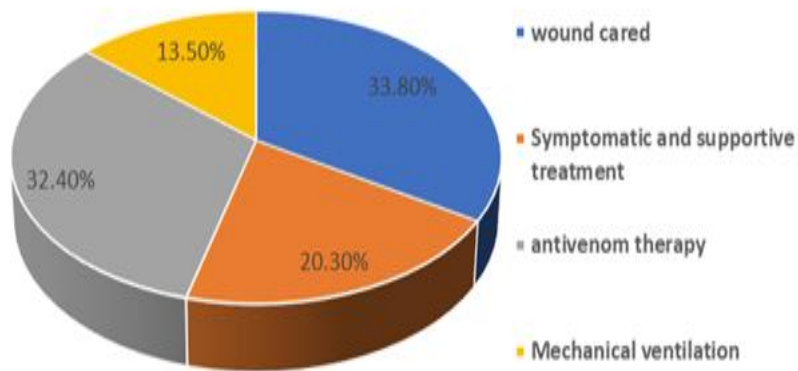


Fig. 6. Distribution of treatment in the study group.

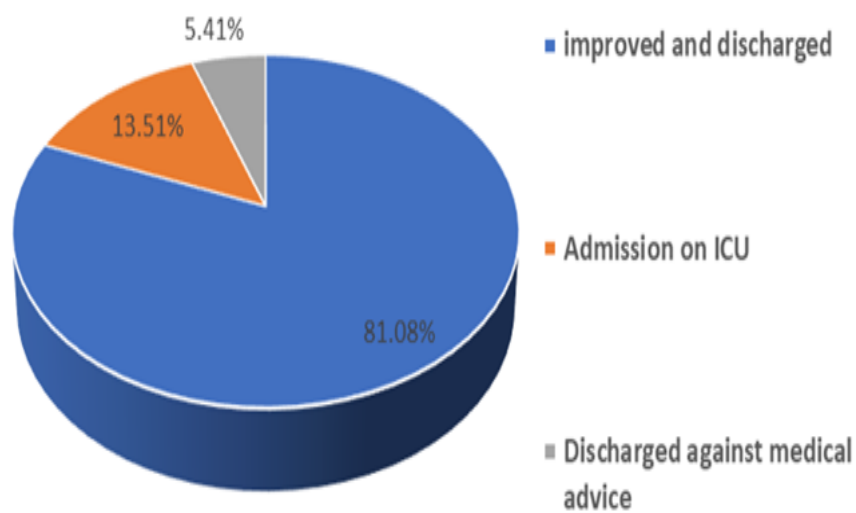


Fig. 7. Distribution of outcome in the study group.



Table 4. showed that there was a statistically highly significant difference between the outcomes and the patient's symptoms as 50% of the improved and discharged, 75% of discharged patients with advice and 40% of the ICU admitted patients were complaining of both pain+ and local edema. Also, it revealed that antivenom therapy was the most presented line of treatment in 40% of the improved and discharged and 100% of the ICU admitted patients had mechanical ventilation while 100% of patients discharged with advice had wound cared and the injured extremity was immobilized (statistically highly significant).

**Table 4.** Outcomes in association with the clinical results of the studied groups.

Variable		improved and discharged N=60		Discharged against medical advice N=4		Admission to ICU N=10		Fischer exact test	P value
		N	%	N	%	N	%		
Symptoms	Pain+ Local edema	30	50	3	75	4	40	7.826	0.005**
	Ptosis+ descending paralysis	24	40	1	25	0	0		
	Abnormal coagulation	6	10	0	0.0	3	30		
	Respiratory arrest	0	0.0	0	0.0	3	30		
Treatment	The wound was cared and the injured extremity was immobilized	21	35	4	100	0	0.0	52.586	<0.001**
	Symptomatic and supportive treatment (intravenous fluids, analgesic, anxiolytic, antibiotics and Hydrocortisone)	15	25	0	0.0	0	0.0		
	Antivenom therapy	24	40	0	0.0	0	0.0		
	Mechanical ventilation	0	0.0	0	0.0	10	100		

\*\* : statistically highly significant.

As shown in Table 5. concerning the outcomes of poisoned patients and the season there was no significant difference between 56.7% of cases improved and discharged, 50% of discharged patients with advice and 80% of those who were admitted to the ICU were in the summer. concerning the outcomes of poisoned patients and place of biting there was no significant difference as 60% of, those who were improved & discharged, 50% of discharged patients with advice and 80% of those who were admitted to ICU, were poisoned outdoors. concerning the outcomes of poisoned patients and the type of snake there was no significant difference as 56.7% of the improved & discharged, 25% of discharged patients with advice and 50% of the ICU admitted patients, were bitten by nonvenomous. concerning the outcomes of poisoned patients and delay time there was no significant difference as 61.7%, who were improved & discharged, 75% of discharged patients with advice and 60% of those who were admitted to ICU, needed one to two hours to reach hospital the. Concerning the outcomes of poisoned patients and the time of hospitalization there was no significant difference as 56.7%, of the improved & discharged, 75% of discharged patients with advice and 70% of the ICU admitted patients, were admitted at 12 pm-12 am.

**Table 5.** Outcomes in association with the circumstances of poisoning of the studied groups.

Variable		Improved and discharged (N=60)		Discharged against medical advice (N=4)		Admission to ICU (N=10)		Fischer exact test	P value
		N	%	N	%	N	%		
		Season	Summer	34	56.7	2	50.0		
	Spring	13	21.7	1	25.0	1	10.0		
	Autumn	8	13.3	1	25.0	1	10.0		
	Winter	5	8.3	0	0.0	0	0.0		
Place of Exposure	outdoor	36	60.0	2	50.0	8	80.0	FEX=1.099	0.315
	indoor	24	40.0	2	50.0	2	20.0		
Type of snakes	Elapidae	19	31.7	2	50.0	4	40.0	FEX=2.586	0.627
	Viperidae	7	11.6	1	25.0	1	10.0		
	nonvenomous	34	56.7	1	25.0	5	50.0		
Delay time/hours	1-2h	37	61.7	3	75.0	6	60.0	FEX=0.352	0.998
	More than 2 h	23	38.3	1	25.0	4	40.0		
Time of hospitalization/hours	12 am-12 pm	26	43.3	1	25.0	3	30.0	FEX=0.842	0.359
	12pm-12am	34	56.7	3	75.0	7	70.0		

## DISCUSSION

Although Snakebite is one of the world’s most dangerous tropical toxic exposure, it receives little care from global health agencies, charities, or governments and the best example is that the World Health Organization (WHO) currently omits snakebite from their formal list of neglected tropical diseases (Harrison & Gutierrez, 2016). In the present study, we studied the pattern of snakebite poisoning by analyzing retrospectively collected data of 74 cases of snakebite admitted to Benha Fever Hospitals, Egypt, from the first of January 2022 to the end of December 2022.

As regards the socio-demographic data of the studied cases, 37.84% of cases aged between 20 and 29 years and 58.11% were males and these results were similar to that of a study carried out in Brazil on patients represented with snake bite (Feitosa *et al.*, 2015) who found that the most affected (54.6%) age group was between 16 and 45 years. These results can be attributed to the fact that this age is the age of working and activity, especially in farming. Mourad *et al.*, (2023) found that The age group between 20 and 40 years represented approximately half of the patients. Most patients were typically males with a median age of 30.4 years due to more exposure of males to fieldwork (Asif and Fkk, 2015).

Our study showed that most (59.46%) of cases were unmarried and 70.27% were lived in rural areas. Chafiq *et al.*, (2016) also found that rural regions reported more snakebites (74%) than anywhere else because of more intense agricultural activities. Mourad *et al.*, (2023) found more than half of all patients represented with snake bites cases were from rural areas of Kom Hamada in El Behera governorate.

In our study, most cases 59.45% occurred during summer Most cases (62.16%) occurred outdoors. Most cases of snakebite occur during the summer season (May–October) and particularly in the evening similar to other studies (Seifert *et al.*, 2009) Worldwide, snakebites occur most frequently in the hot weather when humans are out of houses and snakes are active as they come out of their shelters (Asif and Fkk, 2015). Higher incidence of envenomation occurred during hot months owing to an increase in agriculture activities and flaring up of envenomation as they hibernate in the winter (Touloun *et al.*, 2001).

In this study many patients (59.45%) have arrived at the hospital after the bites between 12 pm and 12 am Table (2) and Figure (3). Mourad *et al.*, (2023) found that the highest number of snake bites (62.5%) occurred during daytime. The larger percentage of snake bites during daytime may be explained by the fact that human activity and working time are usually diurnal.

In our study, the majority (54.06%) of cases were bitten by nonvenomous snakes and the delay time among the majority (62.12%) of cases was one to two hours. Most cases showed no clinical manifestations of envenomation. No systemic symptoms are characteristics of nonvenomous species. Gouda *et al.*, (2017) found that (82%) had anxiety symptoms even if they were bitten by non-venomous species as many people believe that any bite from any snake will lead to envenomation; however, 64.4% of all snakebites in this study did not lead to envenomation.

In our study 81.08% of patients presented mainly with pain and 33.8% of them presented with local edema as nonvenomous species which were dry bites not contain venom are characterized by the absence of systemic symptoms. (Alirol *et al.*, 2010) found that edema and bite marks were present in approximately one-third of the studied patients, whereas erythema occurred in 16.7% and tenderness in 11%. Harshavardhana *et al.* (2014) found that the commonest local sign of patients represented by snake bites was edema followed by bite marks.

In our study descending paralysis, ptosis and respiratory arrest were the most common snakebite neurotoxic syndromes (33.7%, 33.7%, and 4.05% respectively) attributed to bites of Elapidae species. Ranawaka *et al.*, (2013) found that the first sign was ptosis, followed by facial and bulbar involvement extended to paralysis of the respiratory muscles and peripheral weakness in severe cases nine patients (10.3%) presented with neurotoxic respiratory arrest due to respiratory muscles paralysis, which required endotracheal intubation, ventilatory support, and early antivenom treatment. These effects may be due to delay of case presentation to NECTR or ineffective first aid treatment with sufficient antivenom at the referring medical center. also Kumar *et al.*, (2014) reported that neurological manifestation was found in 27.5%. Neurotoxins make paralysis by their effect on the neuromuscular junction at presynaptic or postsynaptic levels. Presynaptic neurotoxins stop the release of acetylcholine from the presynaptic neuron. Postsynaptic neurotoxins are three-finger protein complexes, that have a curare-like action, which block receptors. Some venoms contain two types of neurotoxins, leading to complex blockages of neuromuscular transmission.

In this study abnormal coagulation was detected in 12.2% of patients who had abnormal prothrombin time and INR during investigation. Coagulopathy was a common snakebite complication resulted from Viperidae species (11.5%) (Gouda, *et al.*, 2017). The venom leads to the depletion of major coagulation factor fibrinogen, as it leads to the activation of prothrombin continuously, formation ensues, and fibrinolysis is activated which leads to hypofibrinogenemia and elevation of fibrinogen degradation products levels. Evidence of anticoagulant coagulopathy is an important investigation of envenoming (Hifumi *et al.*, 2015).

In our study, 81.08% of cases were improved and discharged while 13.51% were admitted to ICU, and only 4.1% died. LoVecchio and DeBus, (2001) showed that no mortalities were found in studied cases with a similar sample size, where no mortality was reported. Mourad *et al.*, (2023) found that All patients survived after effective management. In patients who presented with snake bites, two (3.6%) patients were admitted to ICU, whereas three (5.4%) patients died. The mortality rate was 5.4% of patients who presented with snake bites. This finding was near similar to (Halesha *et al.*, 2013).

In this study 33.8 of cases were treated with wound care and the injured extremity was immobilized (table 3 and Fig. 6), Supportive treatment was the main line of treatment. These data were in agreement with those (Ogunbanjo, 2009). In our study, the percentage of patients received antivenom therapy (32.4%) Table (3). given antivenom to nonvenomous snakebite is not preferred as it is expensive and may lead to anaphylaxis and allergic reactions. There is a tendency among physicians to use too small doses of antivenom over high doses for the treatment of cases of severe snake envenoming, to avoid the appearance of allergic reactions compared to the high doses. (Gouda, *et al.*, 2017) found that Antivenom was administered to 59% of hospitalized patients.

### Conclusion

From our results, we can conclude that snake bite is an emergency topic in Egypt among males aged between 20-29 years and living in rural areas, and the commonly observed symptoms were pain and local edema; most of the patients were treated symptomatically and most of them improved and discharged

### Recommendation

1. Epidemiological studies for the different types of snakes and their clinical manifestation should be done in all Egyptian regions.
2. Physicians in rural and first aid centers must be oriented and well-trained on snakebite diagnosis and treatment.
3. Setting a snakebite treatment protocol should be generalized in the Ministry of Health, emergency departments, and caregivers.

**Conflicts of Interest:** The authors have declared that no conflict of interest exists.

**Funding:** The paper did not receive funding from any source.

## REFERENCES

- Ahmed, S. G., Nagla, A., Elnabarawy, S. M., Badawy (2017) A Study Snakebite Envenomation Cases Admitted to Egyptian National Poisoning Center National Center for Clinical and Environmental Toxicology, Faculty of Medicine, Cairo University, Giza, Egypt. *Acta Medica International Journal*, 4(2):34 IP: 10.232.74.27.
- Alirol, E., Sharma, S.K., Bawaskar, H.S., Kuch, U., Chappuis, F. (2010) Snake bite in South Asia: A review. *PLOS Neglected Tropical Diseases Journal*, 4: 603.
- Asif, N., and Fkk, A. (2015) A study of ninety snake bite cases at Pakistan Air Force (PAF) Hospital, Shorkot, Pakistan. *Pakistan Armed Forces Medical Journal*, 65:333.
- Basma, A., Mourada, A.I.A., Maklada, Nihal, S., Abd El-Hay, S., Aliaa, A.E. (2020) Assessment of patients with snake bite and scorpion sting attending Poison Control Unit of Tanta University Hospital. *Tanta Medical Journal*, 48:46–52.
- Chafiq, F., El Hattimy, F., Rhalem, N., Chippaux, J.P., Soulaymani, A., Mokhtari, A., et al. (2016) Snakebites notified to the poison control center of morocco between 2009 and 2013. *Journal of Venomous Animals and Toxins including Tropical Diseases*, 22:8.
- Chappuis, F., Sharma, S.K., Jha, N., Loutan, L., Bovier, P.A. (2007) Protection against snake bites by sleeping under a bed net in southeastern Nepal. *American Journal of Tropical Medicine and Hygiene*, (1):197-9.
- Feitosa, E.L., Sampaio, V.S., Salinas, J.L., Queiroz, A.M., da Silva, I.M., Gomes, A.A. (2015) Older age and time to medical assistance are associated with severity and mortality of snake bites in the Brazilian Amazon: a case-control study. *PLoS ONE Journal*, 10(7): 10:0132237.

- Goswami, et al. (2014) snake venom, antisnake venom & potential of snake venom International. *Journal of Pharmacy and Pharmaceutical Sciences*,6(5). ISSN- 0975-1491.
- Halesha, B.R., Harshavaardhan, L., Lokesh, A.J., Channaveerappa, P.K., Venkatesh, K.B.J. (2013) A study on the clinico-epidemiological profile and the outcome of snake bite victims in a tertiary care centre in Southern India. *Journal of Clinical and Diagnostic Research*, 7:122–126.
- Harrison, R. & Gutierrez, J. (2016) Priority actions and progress to substantially and sustainably reduce the mortality, morbidity and socioeconomic burden of tropical snakebite. *Toxins Journal*, 8, 351.
- Harshavardhana, H.S., Pasha, I., Srinivasa Prabhu, N.C., Ravi, P. (2014) Snake bite induced coagulopathy clinical profile and predictors of poor outcome. *International Journal of Sciences*, 2:2–5.
- Hifumi, T., Sakai, A., Kondo, Y., Yamamoto, A., Morine, N., Ato M, et al. (2015) Venomous snake bites: Clinical diagnosis and treatment. *Journal of Intensive Care*, 3:16.
- Ibrahim, N.M., El-Kady, E.M., Katamesh, R.A., El-Borei, I.H., Wahby, A.F. (2013) Identification and discrimination of snake venoms from Egyptian elapids. *Toxicon Journal*, 63:88-97
- Kasturiratne, A., Wickremasinghe, A.R., de Silva, N., Gunawardena, N.K., Pathmeswaran, A., Premaratna. R., et al (2008) The global burden of snakebite: A literature analysis and modelling based on regional estimates of envenoming and deaths. *PLOS Medicine Journal*, 5: 218.
- Kumar, M.R., Veeraprasad, M., Babu, P.R., Kumar, S.S., Subrahmanyam, B.V., Rammohan, P. A. (2014) retrospective review of snake bite victims admitted in a tertiary level teaching institute. *Annals of African Medicine Journal*, 13:76–80.
- LoVecchio, F., and DeBus, D.M. (2001) Snakebite envenomation in children: A 10-year retrospective review. *Wilderness & Environmental Medicine*, 12:184-9.
- Ogunbanjo, G.A. (2009) Management of snake bites at a rural South African hospital. *The South African Family Practice Journal*, 51:224–227.
- Ranawaka, U.K., Lalloo, D.G., de Silva, H.J. (2013) Neurotoxicity in snakebite – The limits of our knowledge. *PLOS Neglected Tropical Diseases*,7: e2302.
- Seifert, S.A., Boyer, L.V., Benson, B.E., Rogers, J.J. (2009) AAPCC database characterization of native U.S. Venomous snake exposures, 2001-2005. *Clinical Toxicology (Philadelphia) Journal*, 47:327-35.
- Tosson, A. M., Mai, k. A., and Ahmd, K.E. (2021) princible mangement of Snake bites with reference to Egypt. *Journal of the Egyptian Society of Parasitology*,51(2): 333 - 342 (Online: 2090-2549)
- Touloun, O., Slimani, T., Boumezzough, A. (2001) Epidemiological survey of scorpion envenomation in southwestern Morocco. *Journal of Venomous Animals and Toxins including Tropical Diseases*, 7:199–218.
- WHO, (2018) Guidelines for the Production, Control and Regulation of Snake Antivenom Immunoglobulins. Geneva, Switzerland (accessed on 2 July 2019). Available online: <https://www.who.int/bloodproducts/snake>.

## ARABIC SUMMARY

خصائص وحصيلة حالات التسمم بلدغة الثعبان التي تم إدخالها إلى مستشفى حميات بنها

أميمة رفعت محمد السيد- مروة محمد مراد فوزى  
قسم الطب الشرعي والسموم الاكلينيكية - كلية الطب - جامعة بنها

أفادت منظمة الصحة العالمية (2018) أنه في كل عام، تحدث حوالي 5.4 مليون لدغة أفاعي في جميع أنحاء العالم، مما تسبب في ما يصل إلى 138000 حالة وفاة، و400000 حالة من العواقب أو الإعاقة، وعلى الرغم من أن لدغات الأفاعي هي واحدة من أكثر الأمراض الاستوائية المهمة فتكًا في العالم، إلا أنها لا تحظى باهتمام كبير من الوكالات الصحية أو الجمعيات الخيرية أو الحكومات. **هدف العمل:** دراسة وتقييم الآثار الخطيرة للدغات الأفاعي من خلال دراسة استرجاعية للتسمم الحاد بلدغات الأفاعي. **طرق البحث:** تم تضمين جميع مرضى لدغات الأفاعي الحادة الذين تم إدخالهم إلى مستشفيات حميات بنها، مصر، في الفترة من الأول من يناير 2022 إلى نهاية ديسمبر 2022 في الدراسة. تم جمع وتحليل جميع البيانات الديموغرافية والسريرية. **النتائج:** أظهرت الدراسة الحالية أن أعداد لدغات الثعابين الحادة بلغت 74 حالة، وكانت أغلبية الحالات (37.84%) تتراوح أعمارهم بين 20 و29 سنة، 58.11% منهم ذكور، و70.27% أتوا من المناطق الريفية. حدثت 59.45% خلال فصل الصيف، وكانت غالبية الحالات (54.06%) بسبب لدغات الثعابين غير السامة. وحدثت معظم الحالات (62.16%) في الهواء الطلق. وقد تم إدخال العديد من المرضى (59.45%) إلى المستشفى بعد التسمم بين الساعة 12 ظهرًا و12 صباحًا. 81.08% من المرضى أصيبوا بشكل رئيسي بألم مع وذمة موضعية، و33.8% و32.4% عولجوا بالعناية بالجروح وتم تثبيت الطرف المصاب والعلاج بمضادات السموم، وتم تحسن 81.08% وخرجوا من المستشفى. **الاستنتاج:** لدغة الثعبان هي مشكلة طارئة في مصر بين الذكور الريفيين. العمر الشائع للأشخاص الذين تتراوح أعمارهم بين 20-29 سنة كانت الأعراض الشائعة هي الألم والوذمة الموضعية؛ تم علاج معظم المرضى من الأعراض وتحسن معظمهم وخرجوا من المستشفى.