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Медицинские новости Грузии
საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

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www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и http://www.nlm.nih.gov/bsd/uniform_requirements.html В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректур авторам не высылаются, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned
Requirements are not Assigned to be Reviewed.**

ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრაფიების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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CHARACTERISTICS, CLINICAL PRESENTATION AND MANAGEMENT OF PATIENTS WITH SNAKE BITES TREATED AT AL-DHAID HOSPITAL IN UNITED ARAB EMIRATES: TWELVE YEARS' EXPERIENCE

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Abstract.

Background: Snakebite envenomation stands as a neglected tropical disease which creates major health and economic challenges that affect mostly people who work in agriculture and rural areas. The UAE has low snakebite incidence rates but the dangerous systemic effects of snakebites require knowledge about local epidemiology and clinical presentation and treatment results.

Objective: The study analyzed snakebite cases from Al-Dhaid Hospital in UAE during twelve years to identify patient characteristics and clinical indicators and evaluate treatment effectiveness and identify variables that caused longer hospital stays.

Methods: The study analyzed all confirmed snakebite cases which occurred from January 2012 through December 2023. The researchers used structured forms to obtain demographic information along with clinical and laboratory data. Statistical analyses were performed using SPSS version 25, employing Fisher's exact test and independent-sample t-tests to identify associations between patient variables and length of hospital stay (LOS).

Results: Out of 153 patients, 91% were male, and 90% were aged between 19 and 60 years. The majority (57%) presented to the hospital within 24 hours of the bite, and 54% had a hospital stay shorter than 24 hours. Lower limbs were the most frequent bite site (43%). Local pain (82%) and swelling (36%) were the predominant symptoms, while 88.9% received antivenom. The most affected nationalities were Pakistani (56.9%) and Bangladeshi (17.7%). A prolonged hospital stay was found to be associated with an age of the patient of 60 or older ($p = 0.04$), an elevated INR of 1.5 or greater ($p = 0.04$) and a prolonged prothrombin time of 15 seconds or greater ($p = 0.001$). Sex differed significantly between LOS groups; male patients were more frequently observed in the short-stay group ($p = 0.002$), indicating shorter hospitalization among men in this cohort. No mortality was recorded during the study period.

Conclusion: Snakebite incidents in Al-Dhaid predominantly affected young male agricultural workers, with most cases being mild and successfully treated through early hospital access and timely antivenom administration. Coagulopathy emerged as the primary morbidity and was linked to longer hospital stays. Strengthening preventive education, promoting protective gear use, and sustaining rapid-response medical systems remain key to minimizing snakebite morbidity in the UAE.

Key words. Snakebite envenomation, antivenom therapy, coagulopathy, hospital stay, occupational hazard, United Arab Emirates.

Introduction.

Snakebite envenoming stands as a major tropical emergency which medical professionals have not fully addressed throughout the world. The medical field has made progress in toxicology and emergency medicine yet snakebites remain a major public health issue in rural and agricultural areas. The 2023 World Health Organization (WHO) report shows snakebites occur 4.5–5.4 million times yearly which leads to 1.8–2.7 million envenomation cases and 130,000 fatalities and permanent disabilities among survivors [1]. The World Health Organization declared snakebite as a neglected tropical disease in 2017 which demanded immediate establishment of surveillance systems and standardized treatment protocols and preventive measures throughout all affected areas.

The dangerous medical emergency of snakebite envenoming occurs because of neurotoxicity and coagulopathy and tissue necrosis pathophysiological mechanisms. The successful treatment of severe outcomes depends on immediate antivenom administration following severe outcome prediction. The protection of people from systemic complications and disabilities depends on early intervention as a vital treatment approach [2,3].

The incidence of snakebites affects poor rural areas most severely because these areas do not have sufficient healthcare services or antivenom supplies [4,5]. The United Arab Emirates (UAE) reports low snakebite cases because its arid environment and restricted snake populations lead to this result. Nonetheless, sporadic cases continue to occur, especially in desert and semi-desert habitats surrounding agricultural settlements such as Al-Dhaid. The UAE is home to four main snake species which include *Echis pyramidum* (Saw-scaled viper), *Cerastes cerastes* (Horned desert viper), *Psammophis schokari* (Sand racer) and *Platyceps rhodorachis* (Wadi racer) that live in arid environments of rocky areas and wadis and farmlands but stay away from human settlements [3,6].

The eastern location of Al-Dhaid in Sharjah creates a unique environmental setting that combines desert climate with high levels of agricultural production. The combination of sandy plains and low humidity and irrigation-based farming creates conditions which increase the likelihood of human-snake encounters mainly affecting manual laborers. The lack of

previous regional data requires researchers to study the clinical and epidemiological aspects of snakebite cases in this area.

The risk of snakebites depends on two main factors which include human population traits and human activities. The research shows that working men between 19- and 60-years old face the highest risk of exposure because they work in agricultural and livestock handling and outdoor construction [7,8]. The severity of outcomes in children and adolescents increases because their bodies are smaller and diseases tend to appear later in life. The natural environment determines snake habitats through seasonal patterns and exposure timing and geographical position which affects how their venom affects human beings [9,10].

Snakebites present with two main types of symptoms which include local reactions like pain and swelling and systemic problems that result in blood clotting disorders and organ system collapse [11]. The extent of envenomation depends on multiple elements which include the snake species and venom dose and bite location and victim's current health status. Local tissue reactions that first appear will trigger systemic complications which need urgent medical intervention to treat hypotension and neurological problems and hemorrhagic syndromes [12,13].

Multiple healthcare areas experience adverse effects because of modern medical breakthroughs combined with traditional treatment methods and delayed hospital visits which lead to deteriorating patient outcomes [14]. Standard first aid for limb injuries demands two essential steps which include immobilizing the injured area and avoiding any cuts or tourniquet application and obtaining immediate medical assistance. The administration of antivenom for venomous bites leads to better survival outcomes and shorter recovery times when patients receive treatment promptly [15,16].

The study examines snakebite cases at Al-Dhaid Hospital in the United Arab Emirates through a 12-year review of patient information and medical signs and treatment outcomes. The research studies snakebite patterns in the Arabian Peninsula, the research team focused on achieving four main investigation goals, establish the demographic characteristics of snakebite victims based on their age range and gender distribution and their national origin; record all clinical signs which appear at the bite site and throughout the body as well as the time span between the bite incident and hospital admission. The evaluation process must assess how often and when antivenom should be given as well as the methods for supportive care and laboratory tests. The research investigates which elements result in longer hospital stays (length of stay, LOS) by analyzing their relationship with patient characteristics and laboratory test outcomes and therapeutic methods.

Materials and Methods.

Study design and setting: The study took place at Al-Dhaid Hospital which operates as a secondary referral center under Emirates Health Services (EHS). The study encompassed all snakebite cases presented between January 2012 and December 2023. The desert area of Al-Dhaid in Sharjah's eastern plain contains agricultural settlements that exist in a semi-arid environment which makes the local people more likely to encounter snakes. The hospital serves both Emirati citizens and expatriate agricultural workers, making it an appropriate site for epidemiological assessment of snakebite envenomation in the United Arab Emirates.

Case identification and data collection: The research took place at Al-Dhaid Hospital which operates as a secondary referral center under Emirates Health Services (EHS).

The hospital obtained medical records through a structured keyword search of its digital and manual archives for snakebite diagnosis codes and antivenom prescriptions. The research focused on confirmed snakebite cases which presented either fang marks or documented evidence of local or systemic envenomation symptoms. The research team omitted cases of suspected bites and non-venomous bites because these cases lacked sufficient diagnostic information.

- The research team developed a standardized data abstraction form to obtain vital information which included:
 - The form obtained demographic data which included age and sex and nationality and occupation when available in the records.
 - The form recorded clinical presentation data (Table 1) which included bite location and time of arrival and local symptoms such as pain and swelling and erythema and necrosis and systemic symptoms including hypotension and tachycardia and neurological deficits and bleeding tendency.
 - The research team obtained laboratory results which included white blood cell count and platelet count and prothrombin time (PT) and international normalized ratio (INR) and activated partial thromboplastin time (APTT).
 - The research team documented all treatment procedures including antivenom administration types and schedules and additional therapeutic approaches and supportive care measures.
 - The research team recorded three main outcome variables which included total hospital duration and complications and patient survival status.

Variables and Definitions.

- The length of stay in hospital was classified into short term (less than 24 hours) and long term (24 hours or more) according

Table 1. Spectrum of clinical presentation of snakebite envenomation.

Severity	Local Signs	Systemic Symptoms	Coagulation Findings
Minimal	Swelling or erythema confined to bite site	No systemic symptoms	Normal coagulation profile
Moderate	Swelling extends beyond bite site	Mild hypotension, nausea, vomiting, paresthesia	Mild coagulation abnormalities
Severe	Rapid swelling and ecchymosis involving full limb	Hypotension, altered sensorium, respiratory distress	Severe coagulopathy, thrombocytopenia <20,000/cmm

to the median length of stay of the patients in this study. The classification was implemented to enable comparison between patients who just need a short stay in hospital and those who require longer periods under medical supervision.

- **Coagulopathy** was defined as elevated PT (>15 seconds), INR (>1.2), or APTT (>35 seconds).

- **Systemic envenomation** included hemodynamic instability, bleeding, or neurotoxic manifestations.

- **Local envenomation** comprised swelling, discoloration, or tissue necrosis confined to or extending beyond the bite site.

Data quality control: Two independent researchers cross checked every data entry to confirm its accuracy and completeness. When inconsistencies appeared the original patient charts were consulted to resolve them. Cases missing laboratory or clinical information were omitted from the analysis yet they remained in the descriptive epidemiology to preserve the sample's representativeness.

Statistical analysis:

The data were examined using the SPSS statistical package (version 25.0, IBM, New York, USA). Variables which were categorical in nature were detailed by percentages and frequency and the groups of patients with short and long lengths of stay were compared using Fisher's exact test or the chi-square test appropriately. Assessments for normality were conducted on continuous variables via the Shapiro-Wilk test and by inspecting Q-Q plots visually. The data which follows a normal distribution are presented in the form of mean \pm S.D. and so the t-test was employed for its analysis. Data which are not normally distributed are presented as median (interquartile range) and have been compared using the Mann-Whitney U test. All statistical tests conducted were two-sided, with any probabilities below .05 being considered a statistically significant outcome.

Ethical considerations: Ethical clearance was secured from the Research Ethics Committee of the Ministry of Health and Prevention (MOHAP) the Emirates Health Services (EHS) Quality Department and the administration of Al Dhaid Hospital. Throughout the study we vigilantly protected confidentiality stripping all identifiers and limiting data use strictly to research purposes. The project was conducted in accordance, with the 2013 revision of the Declaration of Helsinki.

Results.

Demographic characteristics: A totally of 153 snake bite admissions amassed at Al Dhaid Hospital across the years 2012-2023. Close to ninety percent of those treated were, between 19 and 60 years of age a pattern that unmistakably points, to snakebites primarily afflicting the cohort. The study included 6% of patients between 4 and 18 years old and 4% patients who were older than 60 years. The majority of patients were male (91%) because their work involved agricultural and outdoor activities (Table 2).

The majority of patients (57%) visited medical facilities for treatment during the first 24 hours after their bite occurred because of good healthcare access and public knowledge about the area. The hospital stay duration for 54% of patients remained under 24 hours because their envenomation symptoms were not

Table 2. Characteristics of study participants (n=153).

Age 4–18 years	9 (6%)
Age 19–60 years	138 (90%)
>60 years	6 (4%)
Male	139 (91%)
Female	14 (9%)
Duration < 1 day	87 (57%)
Duration > 1 day	66 (43%)
LOS < 1 day	83 (54%)
LOS > 1 day	70 (46%)
Lower limb bites	66 (43%)
Upper limb bites	60 (39%)
Local pain	125 (82%)
Antivenom received	136 (89%)

Table 3. Distribution of snakebite cases by nationality (n=153).

Nationality	Cases, n (%)
Pakistani	87 (56.9%)
Bangladeshi	27 (17.7%)
Emirati	16 (10.5%)
Egyptian	5 (3.3%)
Sudanese	5 (3.3%)

severe and received proper treatment. The majority of bites occurred on the lower limbs (43%) followed by upper limbs (39%) and other body areas (18%) which supports the theory that farm workers experience most bites (Table 2).

The demographic distribution of snakebite victims is illustrated in Figure 1.

Clinical and hemodynamic findings: The most common signs of local manifestations included local pain which occurred in 82% of cases and erythema or redness in 51.5% of cases and local edema in 36% of cases. The majority of patients experienced mild to moderate envenomation since only 6.5% of patients presented with local bleeding or systemic hemorrhagic signs. The study found that tachycardia above 100 bpm occurred in 19% of cases and blood pressure readings below 139/80 mmHg were present in 70% of patients. The observed hemodynamic changes fall within normal ranges because they result from the body's typical response to hemotoxic venom. The facility used an active treatment method because antivenom therapy was administered to 88.9% of all patients.

Nationality distribution: The distribution of nationalities matched the population makeup of agricultural workers in Al-Dhaid. The Pakistani community made up 56.9% of the population while Bangladeshi residents accounted for 17.7% followed by Emirati nationals at 10.5% and smaller numbers from Egypt, Sudan, Ethiopia, Iraq and other countries (Table 3). The pattern shows that snakebites in this area mainly affect foreign manual workers who perform physical labor which matches the overall Gulf region's snakebite statistics [17].

Predictors of length of hospital stay (LOS): The research data showed that hospital stay duration affected patient outcomes through different effects on results based on age and gender and coagulation test results and antivenom treatment (Table 4).

Age: The patients who needed extended hospital stays were older with an average age of 39.19 years compared to patients

Table 4. Association between demographic, laboratory, and treatment variables and length of hospital stay (LOS).

Variable	Short LOS (<24 h)	Long LOS (≥24 h)	p-value
Age, years	35 (31–41)	39 (33–45)	0.04
Male sex	63 (75.4%)	42 (63.6%)	0.002
Prothrombin time (seconds)	12.0 (11.2–13.1)	15.3 (13.9–17.4)	0.04
INR	1.0 (0.9–1.1)	1.1 (1.0–1.3)	0.001
Antivenom administered	61 (73.8%)	41 (62.2%)	0.001

The numerical data were expressed as mean (SD) or median (inter-quartile range, IQR), and the categorical data as the number (percentage of total) of subjects in each category. The appropriate non-parametric continuous data was tested using the Mann-Whitney U test, whilst parametric data was tested by independent samples t-test. Categorical variables were assessed using either a chi-square test or Fishers exact test. Statistical significance was assumed at the 95% confidence interval, $p < 0.05$.

Figure 1. Demographic and Clinical Distribution of Snakebite Cases (2012–2023)

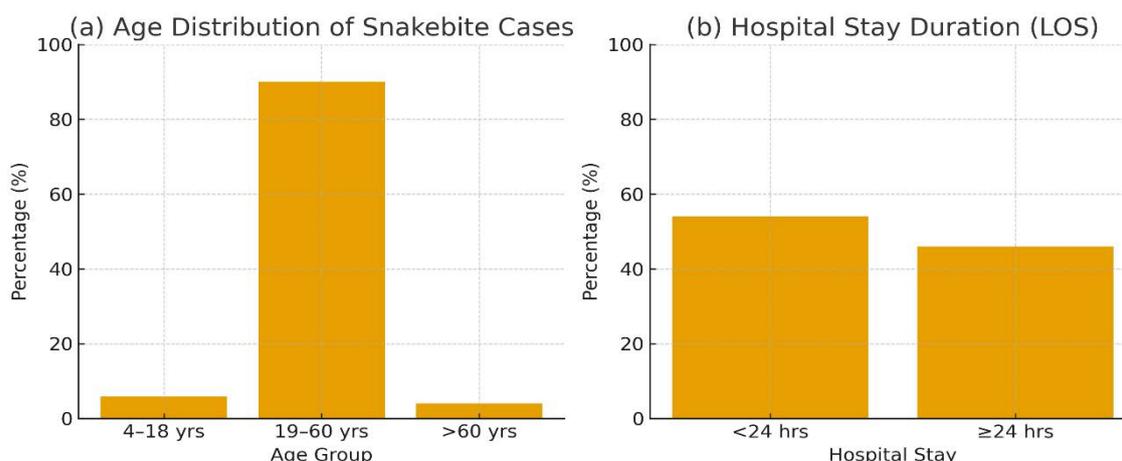


Figure 1. Demographic and Clinical Distribution of Snakebite Cases (2012–2023). (a) Age distribution of snakebite patients treated at Al-Dhaid Hospital. (b) Duration of hospital stay (LOS) among admitted patients. Most victims were aged 19–60 years, and 54% of patients stayed in hospital for less than 24 hours).

who required shorter stays at 35.36 years ($p = 0.04$). The longer hospital stays of older patients indicated either extended recovery periods or more serious physiological complications.

Gender: In both groups, male patients outnumbered females in terms of snake bites. Although males constituted the majority of snakebite cases in both groups, a statistically significant difference was observed between LOS categories. Male patients were more prevalent in the short-stay group (75.4%) compared with the long-stay group (63.6%) ($p = 0.002$), indicating shorter hospitalization among men in this cohort.

Coagulation parameters: Both PT and INR rose significantly in the long-stay group ($p = 0.04$ and $p = 0.001$ respectively).

Conversely the anatomical location of the bite the leukocyte count, the platelet tally and the activated partial thromboplastin time failed to exhibit a relationship, with length of stay suggesting that systemic hematologic irregularities were not uniformly observed across the cohort.

Summary of clinical outcomes:

The 12-year research study did not show any death-related results. The hospital presented the patient early and had polyvalent antivenom available and proper clinical management protocols at Al-Dhaid Hospital which led to this exceptional outcome. The main disease complication of coagulopathy continued to be the primary cause of illness in patients who

received delayed treatment or had higher venom exposure.

The current treatment methods have proven successful because most patients experience a gentle disease course and fast recovery while the UAE needs to keep its antivenom supply chain operational for rural healthcare facilities.

Discussion.

The research provides a twelve-year analysis of snakebite cases treated at Al-Dhaid Hospital in the United Arab Emirates which adds essential regional data to a field that lacks sufficient research in the Arabian Peninsula. The study results show no deaths during the entire research duration which stands in opposition to Al-Lawati et al. [18]. The positive results in Al-Dhaid stem from various factors which include easy access to medical care and fast referral systems and continuous supply of excellent polyvalent antivenom and low venom toxicity of local snakes.

Ninety one percent of the individuals involved in this study who had been bitten by a snake were male and fell into the age range of 19 to 60 years. This is similar to the demographics found in rural agricultural labour in the area studied. Work outdoors that is manual is most likely to result in a person coming across a snake. This is especially the case where employees do not wear protective gloves or boots. Across regions with significant agricultural labour forces, similar demographic

trends have been observed, including in Kenya [7], Qatar [17], and Oman [3]. Despite males representing the predominant proportion of snakebite victims due to occupational exposure, sex demonstrated a statistically significant association with hospital stay duration. Male patients exhibited shorter lengths of hospitalization compared with females. This finding may reflect earlier presentation, fewer comorbid conditions, or more rapid clinical stabilization among working-age men; however, the retrospective nature of the study precludes definitive causal inference. Many people in their later years who had been bitten by a snake, had to stay longer in hospital, for several reasons. Firstly, a person's metabolism slows down as they get older which results in their bodies being slower to clear out snake venom.

More than half of the patients arrived at the hospital within 24 hours after the bite occurred which differs from the delayed presentations that have been documented in South and East Asian regions [4,5]. The study demonstrates that the UAE rural healthcare system together with emergency transportation networks operate successfully. The patient requires urgent medical care because venom absorption and systemic distribution through lymphatic channels happens fast and delayed medical response results in worsening systemic toxicity.

The main symptoms of envenomation included pain together with erythema and swelling which indicates that most envenomation resulted in mild to moderate severity. The low rate of severe systemic complications including hypotension and coagulopathy and neurotoxicity aligns with Riyadh and Jerusalem study findings which demonstrated that prompt antivenom treatment restricted venom spread [11,19,20]. The high number of lower-limb bites (43%) supports the occupational nature of the bites because it shows how fieldwork and being barefoot increase the risk of bites and how protective clothing can help prevent them in agricultural settings.

The UAE facilities followed a standardized treatment approach by giving antivenom to 89% of their patients. Research shows that early antivenom treatment leads to reduced hospital stays ($p < 0.05$) because studies from Taiwan and India prove that fast venom neutralization decreases treatment complications and shortens hospital stays [15,21]. The patients who showed elevated PT and INR levels required longer hospital stays because venom-induced coagulopathy from hemotoxic bites of *Cerastes gasperettii* and *Echis pyramidum* species presented a major clinical challenge.

The venom proteases from these patients cause blood clotting factor damage through fibrinogen depletion and factor X activation which results in consumptive coagulopathy and microvascular bleeding [12,22]. The coagulation parameters in this cohort showed a moderate increase compared to the significant alterations found in the Indian study conducted by Saravu et al. [9]. The current practice of running coagulation tests on all suspected cases should continue because it allows for the identification of subclinical envenomation at its earliest stages.

The longer hospital stays of elderly patients indicate their bodies heal at different rates because of natural aging processes which affect liver function and existing health problems

that slow down venom removal. A predisposition in male subjects in the study group was noted; this may be ascribed to occupational hazards in the industry they were engaged in. The majority of male patients were agricultural workers in a young to middle-aged demographic. They were possibly admitted to the hospital earlier, had fewer health problems, and had been given antivenom promptly. These factors combined to reduce the length of their hospital stays.

They stress how vital it is to distinguish between the risk of contact with the disease and the severity of the illness. Male sufferers of the bites frequently find themselves in these situations more often because their jobs or work environments increase their risk of being bitten, rather than the fact that men's bites tend to be worse. Research findings show that migrant agricultural workers require training for occupational safety as well as targeted health education programs. The positive clinical results from snakebites do not translate to proper reporting in rural UAE because people treat themselves and there is no system to track these incidents. The study finds that pairing documentation, with an emergency-preparedness plan can dramatically slash mortality. Consequently public-health policies should zero in on the priorities that follow.

1. The educational programs ought to nudge people into heading to a hospital when needed while also showing them how to avoid cultural practices.

2. The farm's safety policy mandates that every worker wear boots and gloves.

3. The web of connections linking hospitals and their surrounding communities was shored up with support enabling transport and ensuring a generous cache of antivenom.

Because the investigation was confined to a center and relied on a look, at existing records it suffers from two fundamental drawbacks: the inevitable selection bias inherent in such designs and a limited capacity to generalize the conclusions to settings, beyond Al-Dhaid. In addition, the study could not definitively identify the snake species involved since clinicians administered a polyvalent antivenom, which precludes any species-specific correlation. Moreover, the patient charts lack an accounting of antivenom dosages and any attendant adverse reactions rendering a pharmacovigilance assessment impossible. The data serves as a vital resource for healthcare planning in the area and demonstrates that evidence-based protocols can achieve exceptional results in rural settings with restricted resources.

The choice of a 24-hour cut-off for hospital stay was based on the distribution of patients in this study rather than any particular clinical rule. Although there are varying definitions of coagulopathy in the literature, the decision to perform a prothrombin time on patients on warfarin involves a pragmatic distinction between patients who can be managed on a non-observation status and those who are going to be placed on a higher level of care. Further research may be necessary to determine whether variations in patients' decisions to seek health care, the patients' health issues at the time of admission, or the time patients first came to the hospital were more responsible for the length of stay than the patients' being female. Additionally, the study lacked detailed data on comorbidities, occupational roles, and timing of antivenom administration stratified by sex,

which limits interpretation of the observed sex-based differences in length of hospital stay.

Conclusion.

The occupational risk of snakebites in Al-Dhaid exists as a preventable danger which mostly impacts young male agricultural workers. The current management strategies work effectively because patients show only light symptoms and short hospital stays while receiving fast medical treatment according to established antivenom protocols. Healthcare providers need to check laboratory results frequently and start treatment right away because coagulopathy continues to be a major health issue. Sex-related differences in hospitalization duration were observed, with male patients demonstrating significantly shorter hospital stays, although the underlying determinants of this difference warrant further investigation.

Future nationwide prospective studies in the UAE need to include species identification and venom typing and outcome registries to create improved treatment protocols and enhance public health readiness for snakebite management across the Gulf region.

Ethical Approval.

This study was approved by the Emirates Health Services Research Ethics Committee 2023, and conducted in accordance with the Declaration of Helsinki (2013 revision).

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Conflict of interest.

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