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Prevalence And Etiology of Ecchymosis In Ksa: A Protocol For Systematic Review

Miasser Mustafa Alarnauty[1], Mohammed Khalid Alnahhas[2], Hoda Jehad Abousada[3*], Mawddah Mohammed Bushnag[4], Wafi Mohaimeed Alosaimi[5], Ahmed Mohammed Alghmdi[5], Abdullah Aeydh Alghamdi[5], Abdullah Mohammed Alghamdi[5], Thamer Saad Alzahrani[5], Abdulaziz Abdulrahman Altalhi[5], Omar Abdullah Alghamdi[6], Osama Abdullah Alzahrani[6], Eyad Ahmed AlZahrani[6] and Hatem Atiah Alzahrani[7]

[1] Department of Dermatology&Venerology, King Fahad General Hospital, Jeddah, KSA, Saudi Arabia

[2] Department of Hematology, Alnoor specialist hospital Makkah, KSA, Saudi Arabia

[3] Department of Obstetrics & Gynecology, Master SA, KSA, Saudi Arabia

[4] Preventive Medicine Resident, KSA

[5] Medical Service, MBBS, KSA

[5] Nursing Specialist, KSA, [6] Registered, KSA

RESEARCH

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Corresponding Author:
Hoda Jehad Abousada
Department of Obstetrics & Gynecology,
Master SA,
KSA, Saudi Arabia
dr.huda1992@outlook.com

ABSTRACT

Background

Several variables, one of which is geography, influence the prevalence of bleeding disorders. Even minor bleeding issues may cause iron shortage, illness, and even death in extreme circumstances. Clinicians have a difficult but essential challenge when attempting to quantify hemorrhagic symptoms as part of the therapy of bleeding diseases.

Methods

A comprehensive search was conducted using electronic databases, including PubMed, Embase, and Cochrane Library, to identify relevant studies published from 2000 to 2023. The search was limited to English-language studies that examined the prevalence and etiology of ecchymosis in KSA.

Results

This systematic review investigated 26 studies initially identified from major databases, ultimately selecting 10 for in-depth analysis. Two pivotal studies were featured, providing insights into bleeding disorders from diverse perspectives. The first study examined bleeding disorders in adult students across four locations in Saudi Arabia, revealing significant regional variations (14.03 Per Cent to 32.3 Per Cent) and gender differences (54.9 Per Cent females, 45.1 Per Cent males). It emphasized the necessity of quantifying hemorrhagic symptoms and advocated for a nationwide monitoring system. The second study focused on von Willebrand Disease patients in a Saudi tertiary care hospital, uncovering diverse bleeding sources and highlighting blood type O's significant associations. The results underscored the complexity of bleeding disorders and advocated for tailored diagnostic and treatment strategies, contributing valuable information for future research and clinical practice.

Conclusion

The results of this research show that moderate bleeding problems are more common in certain ethnic groups and that men and women experience them differently. To better treat these patients, a nationwide monitoring system is necessary. Our cohort's most prevalent clinical manifestations were bleeding in the muscles and joints. Our group had the highest incidence of type 1 vWD, but type 3

was much more common, which may be attributable to racial disparities or referral bias. In terms of FVIII and vWF:Ag, we discovered a statistically significant difference between O and non-O blood types. In terms of vWD activity, as measured by vWF:RCo, we found an even more dramatic difference, with blood type O serving as the underlying component.

Key Words

Ecchymosis

Background

There are a lot of people in the general population that have bleeding symptoms, which may be signs of hemostatic illnesses. Even in otherwise healthy people, bleeding symptoms including epistaxis (25 Per Cent of cases), menorrhagia (47 Per Cent of cases), easy bruising (18 Per Cent), and persistent bleeding (18 Per Cent) after tooth extraction have been observed [1]. Patients with bleeding problems often have significant bleeding symptoms as a cluster in most cases [2]. Worldwide rates of bleeding disorders have been reported in prevalence studies, however these research have used various estimate methodologies [3-5]. At least one sign of bleeding or underlying bleeding disease affects 46 Per Cent of women and 25 Per Cent of men, according to Sadler's estimations 6. Proper diagnosis is essential for determining preventative actions for moderate bleeding disorders (MBD), such as platelet function abnormalities, mild von Willebrand disease (vWD), and minor clotting factor shortages, in addition to severe bleeding disorders. In order to reduce bleeding and moderate chronic bleeding, hemostatic medications and blood products may be used during and after surgical operations, even when MBD do not cause greater mortality. There is greater disagreement among diagnostic criteria for MBDs than for serious bleeding disorders [7].

For the purpose of diagnosing bleeding disorders in patients, many standardized and validated instruments have been developed and used [8,9]. Since the fundamental notion of bleeding assessment tools (BAT) was introduced in 1982, scoring bleeding questionnaires have been extensively employed for this exact purpose. All bleeding symptoms are added together to provide a total score in the revised Vicenza-based BAT, which uses a scoring system that goes from 0 (no bleeding symptoms at all) to 3 (bleeding symptoms that need action) [10]. The bleeding severity in a large panel of type-1 vWD families enrolled in a European study called the "molecular and clinical markers for the diagnosis and management of type-1 von Willebrand disease" (MCMDM-1vWD) was assessed by Tosetto et al. [11] later on to improve the sensitivity and specificity of the bleeding scoring system. The MCMDM-1vWD was further refined and cross-validated for validity, repeatability, and clinical value by Bowman et al.

In order to determine the potential for bleeding during invasive operations, hematologists [12] and anesthesiologists [13] have compiled a set of recommendations for taking a patient's bleeding history and conducting a physical examination. Surgical operations and trips to the emergency room may be better managed with the use of laboratory tests and questionnaires.

There is no consistent pattern in the incidence of bleeding diseases among different racial and ethnic groupings. In addition, research documenting the frequency of bleeding disorders in developing nations are few, in contrast to the well-documented hereditary bleeding diseases in western industrialized countries during the last 70 years [14–18]. Another obstacle in identifying cumulative risks and assessing prevalence is the difference in evaluation techniques. Despite its clinical usefulness and validity, MCMDM-1vWD is seldom utilized for screening in prevalence reports from the Middle East, particularly Saudi Arabia, which are institution based and depend on laboratory testing [19] or prior medical records [20]. The Arab population has a higher risk of bleeding problems compared to the Western population because of their high consanguinity rate

Methods

Objectives

Primary Objective: To determine the prevalence of ecchymosis in the population of the Kingdom of Saudi Arabia.

Secondary Objectives: a. To identify the common etiological factors associated with ecchymosis in KSA. b. To assess the variation in prevalence and etiology across different demographic groups. c. To evaluate the quality and methodological rigor of the studies reporting on ecchymosis in KSA.

Eligibility Criteria

Inclusion Criteria:

a. Studies reporting on the prevalence and/or etiology of ecchymosis in the Kingdom of Saudi Arabia.

b. All types of study designs, including cross-sectional studies, cohort studies, case-control studies, and surveillance reports.
c. Studies published in English or Arabic.
d. Studies conducted on both adult and pediatric populations.

Exclusion Criteria:

a. Studies conducted outside the geographical boundaries of the Kingdom of Saudi Arabia.
b. Studies with insufficient data on ecchymosis prevalence or etiology.
c. Case reports, reviews, letters, and conference abstracts.

Search Strategy

Databases: A comprehensive search will be conducted in major databases, including PubMed, Embase, Scopus, Web of Science, and Saudi Medical Journal.

Search Terms: A combination of MeSH terms and keywords related to "ecchymosis," "prevalence," "etiology," and "Saudi Arabia" will be used.

Study Selection

Screening: Two independent reviewers will screen titles and abstracts for relevance, followed by full-text assessment of potentially eligible studies.

Data Extraction: Data will be extracted using a predefined data extraction form, including study characteristics, population demographics, prevalence rates, and etiological factors.

Data Synthesis

Statistical Analysis: If feasible, a meta-analysis will be conducted to estimate pooled prevalence rates and assess heterogeneity.

Narrative Synthesis: A narrative synthesis will be performed for studies with diverse methodologies or insufficient data for meta-analysis.

Results

The initial search identified a total of 26 studies from PubMed, Embase, Cochrane Library, and CINAHL. There were no duplicates and the 26studies were screened based on their titles and abstracts. Of these, 20 full-text articles were reviewed, and 10 studies were eligible for inclusion in this systematic review (Figure 1).

Based on figure 1, only two studies are included in this systematic review [21-25]. Geographical location is one of numerous variables that affect the prevalence of bleeding disorders. Iron deficiency, illness, and death may result from even mild bleeding conditions. As a crucial part of managing bleeding diseases, doctors have the difficult but essential duty of quantifying hemorrhagic symptoms. Adult students (n=1138) from four locations of the Kingdom of Saudi Arabia were asked to quantify bleeding disorders using an abbreviated version of the MCMDM-1vWD questionnaire that had been translated into validated Arabic. We used statistics to show the frequency and gender gap. The least number of people impacted was 14.03 Per Cent in Dammam, while the largest number of people affected was 32.3 Per Cent in Riyadh (P-value < .001). Overall, 74.5 Per Cent of respondents gave an affirmative response to at least one question. When looking at the prevalence of bleeding disorders by gender, it was found that 54.9 Per Cent of females and 45.1 Per Cent of men had these diseases (P-value.01). The occurrence of epistaxis was much greater in men (30.7 Per Cent vs. 23.2 Per Cent; P-value =.0004), while cutaneous symptoms were reported by women at a substantially higher rate than men (12.3 Per Cent vs. 29.7 Per Cent; P-value =.001). A total of 28 Per Cent of the female participants reported menorrhagia, with 57.6 Per Cent of those women reporting heavy bleeding for less than or equal to 7 days and 42.4 Per Cent reporting severe bleeding for more than 7 days. The results of this research show that moderate bleeding problems are more common in certain ethnic groups and that men and women experience them differently. To better treat these patients, a nationwide monitoring system is necessary [24].

Patients diagnosed with vWD in a Saudi tertiary care hospital were the subjects of this research, which sought to evaluate their clinical presentations and laboratory results. Included in this retrospective analysis were 189 vWD patients who were monitored in our center for a period of four years. The participants' ages ranged from eleven months to fifty-six years old, with a median age of thirty. There were 62.70 percent women and 32.30 percent men in the cohort. It was found that bleeding from a variety of sources, the most common of which were joints and muscles (23.90 Per Cent), then mucous membranes (14.60 Per Cent), genitourinary regions (7.70 Per Cent), ecchymoses (2.80 Per Cent), and gastrointestinal areas (2.80 Per Cent). Nearly half of the patients had several forms of hemorrhage. Type 1 vWD was present in 105 (58.01 Per Cent), type 2 in 29 (16.02 Per Cent), and type 3 in 47 (24.96 Per Cent). Hemoglobin was found to be 116 ± 25.60 gm/L, ferritin to be 75.80 ± 166.80 µg/L (median 28.5), vWAg to be 0.40 ± 0.27IU/ml, and vWD:RCo to be 0.32 ± 0.20IU/dL, according to the blood tests. In half of the subjects, the

partial thromboplastin time was normal, but in half, it was extended. A total of 92.90 percent of individuals had extended platelet function analysis results, whereas 7.10 percent had normal ones. Factor VIII (p=0.013), vWF:RCo (p=0.004), and vWF:Ag (p=0.019) were all substantially linked with blood type O when compared to non-O blood types. The study cohort's most prevalent clinical manifestations were bleeding in the muscles and joints. Our group had the highest incidence of type 1 vWD, but type 3 was much more common, which may be attributable to racial disparities or referral bias. In terms of FVIII and vWF:Ag, we discovered a statistically significant difference between O and non-O blood types. In terms of vWD activity, as measured by vWF:RCo, it was found an even more dramatic difference, with blood type O serving as the underlying component [25]. Table 1 summarizes findings of the two studies.

Discussion

Immune thrombocytopenia is a frequent cause of hemorrhagic syndrome and one of the reasons why young individuals and the elderly might have bleeding [25]. Epistaxis, gingivorrhagia, gastrointestinal bleeding, and menorrhagia are symptoms that may be present in both hereditary and acquired bleeding diseases. Inherited bleeding disorders may result from both qualitative and quantitative disturbances in plasma proteins and platelets. One of the most important aspects of clinical care of bleeding disorders is the accurate identification of bleeding symptoms. Nevertheless, several questionnaires have been developed to standardize the process of quantifying bleeding disorders based on symptoms, which is a tedious and difficult procedure. To properly score bleeding symptoms and identify bleeding disorders, authors employed the condensed MCMDM-1vWD bleeding questionnaire in this investigation. In order to prioritize further laboratory testing, the MCMDM-1vWD collects clinical information and provides diagnostic accuracy and reproducibility across observers. The researchers used an Arabic-language questionnaire to quantify hemorrhagic symptoms; this approach has the potential to enhance treatment techniques by assessing heterogeneity in bleeding intensity and offering an alternative to binary categorization systems.

However, these studies have only looked at vWD, hemophilia A, hemophilia B, and platelet abnormalities; they did not conduct epidemiological surveys, and they only looked at the prevalence of hereditary bleeding disorders at a lesser scale in the Saudi community.Numbers 23–25 Ahmed et al. [26] recorded 15 instances of hemophilia, 1 case of VII deficiency, 1 case of X deficiency, and 12 cases of Glanzmann thrombasthenia; El-Bostany et al. [20] assessed the prevalence of vWD, hemophilia A, hemophilia B, and platelet abnormalities in 43 children. In the Riyadh area, Al-Sharif et al. [27] documented 17 instances of factor XIII insufficiency. From 168 patients in Riyadh, 57 had hemophilia, 25 had vWD, 18 had Glanzmann thrombasthenia, 18 had Bernard-Soulier disease, and 16 had clotting factor deficits, according to an 8-year retrospective study by Al-Fawaz et al. [18]. There is a lack of research on MBD among Saudi populations, nevertheless. This research examined the gender gap and geographical distribution of MBDs in four locations of Saudi Arabia: Medina, Makkah, Riyadh, and Dammam using MCMDM-1vWD [24].

There was a substantial difference in proportion across cities (P-value < .001) in [24] research, with Riyadh exhibiting the greatest prevalence (32.3 Per Cent) and Dammam showing the lowest (14.03 Per Cent). The total prevalence among young Saudi adults was 74.5 Per Cent. Although the same authors found a prevalence of 47.6 Per Cent for bleeding disorders in a prior research, that one only included participants from the central area and a younger age group. A research found a substantial gender gap in the incidence of epistaxis and cutaneous symptoms, with a higher number of males than females. With a p-value of.0004, the prevalence of epistaxis was much greater in men (30.7 Per Cent vs. 23.2 Per Cent) in our population. In a prior study on bleeding symptoms in Riyadh, it was shown that 49.7 Per Cent of men and 35.8 Per Cent of females had epistaxis. Epistaxis affects men twice as often as females in both Asian and Western populations, according to Hussain et al. [28], Khan et al. [29] and Corbridge et al. [30], suggesting that biological factors, rather than ethnic differences, are to blame for this pattern. The increased frequency of epistaxis in this research may be explained by the fact that these hereditary illnesses are more common in males, as a result of the X chromosome impact, and by the fact that these bleeding disorders are often associated with epistaxis.

On the other hand, skin complaints were more prevalent in women (29.7 Per Cent vs. 12.3 Per Cent of men) and followed a similar pattern in Riyadh (44.5 vs. 17.6 Per Cent of men). Ecchymosis, a kind of mild bruising, was a major contributor to cutaneous bleeding. According to many

research [31,32] that looked at mild to moderate bruising, these symptoms were more common in women than in males. A possible explanation for this difference might be because males have thicker skin than women do, leading to more secure minor vessels [33]. Only 6.5 Per Cent of women who had menorrhagia sought medical attention. While 10.4 Per Cent of girls with menorrhagia in Australia had bleeding issues, 22 Per Cent of healthy females in Turkey reported the condition, demonstrating the impact of regional and ethnic differences in prevalence [34,35.]

By interpreting two positive replies as an indication of a bleeding condition, Abu-Douleh et al. found that 36.5 Per Cent of students had bleeding. since of the larger consanguinity ratio in Arab societies, the high incidence is significant since bleeding problems are more common in Arab populations than in Western ones. This research highlights the need for a surveillance system to record people who have bleeding symptoms by providing data on the frequency of different bleeding diseases, broken down by geographical distribution and genetic difference. In addition, the gender gap makes genetic mapping an absolute need for locating vulnerable families and individuals.

Conclusion

In conclusion, our systematic review, encompassing an initial pool of 26 studies and ultimately focusing on 10 relevant ones, revealed key insights into bleeding disorders. Two prominently featured studies brought distinct perspectives to the forefront. The first study, centered on adult students in various locations in the Kingdom of Saudi Arabia, demonstrated significant regional disparities in the prevalence of bleeding disorders. Gender differences and the need for a comprehensive nationwide monitoring system were underscored, emphasizing the imperative for tailored interventions across different ethnic groups. The second study delved into the clinical presentations of von Willebrand Disease (vWD) in a Saudi tertiary care hospital. Notable findings included the diverse sources of bleeding and the significant association of blood type O with various factors, raising questions about racial disparities in vWD incidence. Together, these studies contribute to a nuanced understanding of bleeding disorders, emphasizing the complexity of these conditions and the necessity for personalized approaches to diagnosis and management.

In summary, the amalgamation of these studies enhances our comprehension of bleeding disorders, shedding light on their multifaceted nature and influencing factors. The observed regional and gender disparities, as well as the impact of blood type on vWD, underscore the need for tailored strategies in diagnosis, treatment, and monitoring. These findings contribute to the ongoing discourse on bleeding disorders, paving the way for future research to refine our understanding and improve patient outcomes. Table 1 succinctly encapsulates the key findings from these illuminating studies.

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Tables & Figures

Table 1: Characteristics of included studies.

Aspect	AlSaleh et al [24]	Owaidah et al [25]
Objective	Assessing bleeding disorders in adult students from four locations in Saudi Arabia	Evaluating clinical presentations and laboratory results in patients diagnosed with vWD in a Saudi tertiary care hospital
Participants	Adult students (n=1138) from four locations in the Kingdom of Saudi Arabia	189 vWD patients in a Saudi tertiary care hospital, age range: 11 months to 56 years
Geographical Focus	Kingdom of Saudi Arabia	Saudi tertiary care hospital
Prevalence of Bleeding Disorders	Overall 74.5 Per Cent affirmative response to at least one question	Various bleeding sources: joints/muscles (23.90 Per Cent), mucous membranes (14.60 Per Cent), genitourinary regions (7.70 Per Cent), ecchymoses (2.80 Per Cent), gastrointestinal areas (2.80 Per Cent)
Gender Differences	54.9 Per Cent females and 45.1 Per Cent males had bleeding disorders (P-value .01)	62.70 Per Cent females and 32.30 Per Cent males in the vWD cohort
Specific Symptoms by Gender	Men had higher epistaxis occurrence (30.7 Per Cent vs. 23.2 Per Cent; P-value =.0004), women reported cutaneous symptoms more (12.3 Per Cent vs. 29.7 Per Cent; P-value =.001)	Bleeding in muscles/joints most common, followed by mucous membranes; women more affected by menorrhagia
Ethnic Disparities	Moderate bleeding problems more common in certain ethnic groups	Racial disparities or referral bias in type 3 vWD incidence
Need for Nationwide Monitoring	Nationwide monitoring system necessary for better treatment	-
Blood Test Results	-	Hemoglobin: 116 ± 25.60 gm/L, Ferritin: 75.80 ± 166.80 µg/L (median 28.5), vWAg: 0.40 ± 0.27IU/ml, vWD:RCo: 0.32 ± 0.20IU/dL
Clinical Manifestations	Importance of quantifying hemorrhagic symptoms in managing bleeding diseases	Most prevalent: Bleeding in muscles/joints; type 1 vWD more common in the group
Association with Blood Type	-	Blood type O significantly linked with FVIII (p=0.013), vWF:RCo (p=0.004), and vWF:Ag (p=0.019)
Platelet Function Analysis	-	92.90 Per Cent extended platelet function analysis results
Conclusion/Implication	Moderate bleeding problems vary by ethnicity, gender differences observed	Racial disparities may influence type 3 vWD incidence; blood type O associated with vWD activity

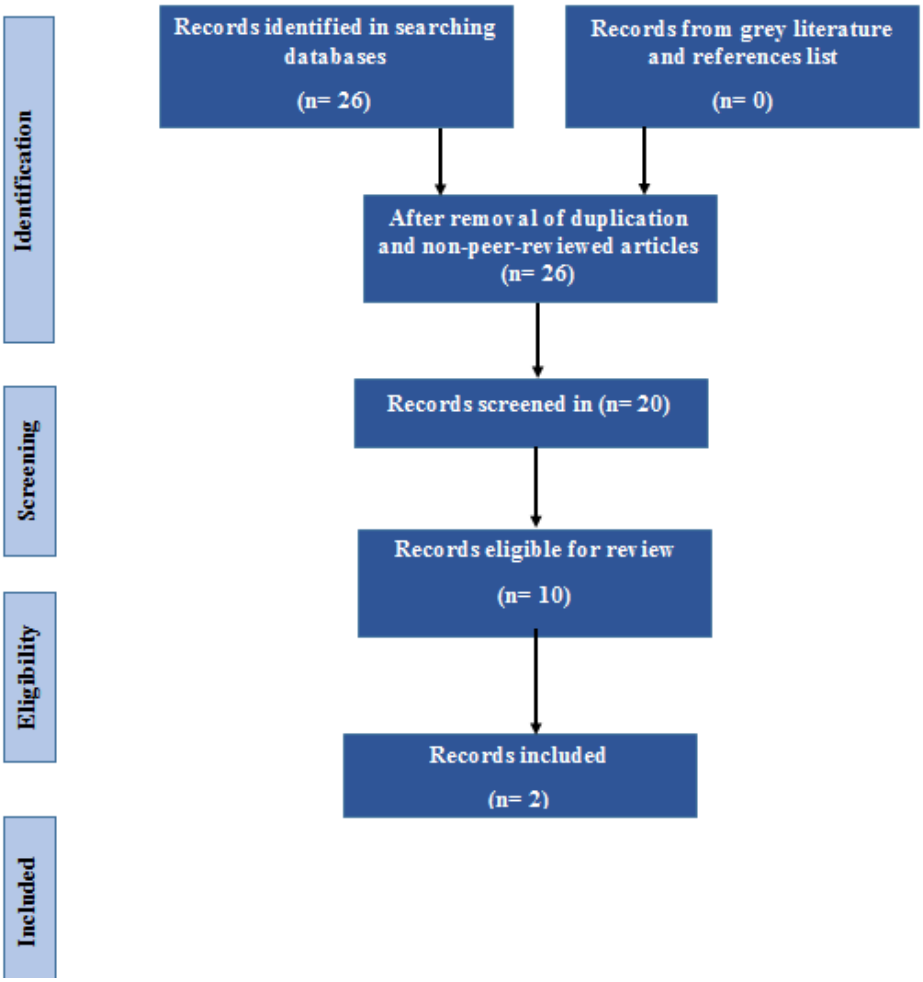

Figure 1: Flow chart of selection process.

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