

The prevalence of self-reported bleeding tendency symptoms among adolescents in Almadinah Almunawwarah, Kingdom of Saudi Arabia

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ABSTRACT

Bleeding tendency is a common medical problem that is usually caused by either coagulation factors abnormalities, platelets disorders, or vasculopathy. Detection of patients with high bleeding risk through history taking and accurate diagnosis followed by appropriate management will help decreasing chances of significant complications. **Methodology:** A cross-sectional survey of a random sample of adolescent students in the preparatory year at Taibah University in Almadinah Almunawwarah, Saudi Arabia were interviewed using a validated semi-structured condensed bleeding tendency questionnaire generated from Molecular and Clinical Markers for the Diagnosis and Management of (MCMDM-1). **Results:** A total of 680 questionnaires were collected, the phase I data were analyzed to determine participants who gave a positive response to any related question while in *Phase II* respondents with at least one positive response of any bleeding symptom were interviewed. More than half 52.6% (358 out of 680) were positive for any bleeding symptoms. The incidence rose to 70.9% (482 out of 680) if "Mild" symptoms were also included. Epistaxis was positive in 21.8%, Cutaneous symptoms were reported by 22.65%, Bleeding from the oral cavity was reported in 39.6%, Gastrointestinal bleeding was observed by 5.9%, bleeding after the first surgery reported in 21% and Muscle hematomas/hemoarthrosis was observed by 3.2%. Among female population, 16.1% reported having 6-10 "Heavy Days" during their menstrual cycles. **Discussion:** High prevalence of bleeding symptoms having the possibility of the presence of an Inherited Bleeding Disorders were observed in our study in comparison to other studies, this might be attributed to the high percentage of consanguinity marriages in our area. **Recommendations:** Raising awareness among family doctors and pediatricians about the possibility of presence of bleeding tendency utilizing good history taking followed by appropriate examination and laboratory confirmatory testing will help in early detection and managements.

Keywords: Adolescents, bleeding, hereditary, screening

Introduction

Bleeding tendency is a common medical problem that is usually caused by either coagulation factors abnormalities, platelets disorders, or vasculopathy.^[1,2] Clinical presentation of such disorders varies according to the severity of the disease. It could be a very subtle presentation until the patient is challenged with major bleeding like surgery, dental procedure, or the start of menstruation in girls.^[3,4]

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Von Willebrand Disease which is inherited as an autosomal dominant disorder in most of the cases is considered the most common type of inherited bleeding disorder worldwide affecting males and females equally.^[5] The disease is caused by decreased levels, abnormal function, or total absence of the Von Willebrand factor which is a clotting protein required to carry factor VIII. Hematologists in Saudi Arabia are following a large number of cases of (hemophilia A) which inherited as X linked disorder caused by deficiency of factor VIII and less cases of (Hemophilia B) caused by factor IX deficiency and is inherited the same way as hemophilia A. Other factors deficiencies are more rarely encountered but they should be considered in the differential of a bleeding tendency patients especially in young age.

Platelets function disorders are considered rarer though Glanzmann disorder which is inherited as autosomal recessive disorder is quite frequent in our region.^[6]

Detection of patients with high bleeding risk through accurate diagnosis and starting appropriate management will help decreasing their chances of significant complications.^[7,8]

Saudi Arabia in general is known to have a high frequency of consanguinity marriages. Therefore, the population is of high risk to develop different inherited disorders, including hereditary bleeding disorders (HBD).^[9-11] In Saudi Arabia, still there is a lack of wide population-based screening studies exploring the prevalence of hereditary bleeding tendency disorders, although there few studies, but it is mostly hospital-based studies or case-series.^[12] We assume that the Arab populations are of a higher risk to develop HBD compared to Western populations due to the increased rate of consanguinity marriages.^[13-16] Therefore, it is needed to have more population-based surveys and investigations to address the prevalence of HBD in the Arab population. In Saudi Arabia, a population-based study was done in Riyadh aiming to find the prevalence of Von Willebrand disorder (VWBD) among adolescents and it estimated the prevalence of bleeding tendency in the general population to be around 50%.^[17]

In the current survey, we aimed to estimate the prevalence of bleeding tendency symptoms among a sample of adolescent university students in Almadinah Almunawwarah, and we are following the same methodology with permission, as in the study published in 2018 by Owaidah *et al.*^[18] aiming to extend the results to cover another sample of the population in western region of Saudi Arabia.

It is important to raise awareness among family doctors, pediatricians, and internist aiming to detect patients with bleeding tendency symptoms efficiently and as early as possible in order to plan for their investigations and management.

Patients and Methods

In a cross-sectional survey, a random sample of both male and female adolescent students in the preparatory year at Taibah

University in Almadinah Almunawwarah, Saudi Arabia were interviewed. The study was conducted in the period from 2017 to 2018 using a validated semi-structured condensed bleeding tendency questionnaire that was selected for its capability to form a reliable quantifiable data about the studied sample. The questionnaire was adapted from the Molecular and Clinical Markers for the Diagnosis and Management of (MCMDM-1) type 1 VWBD published in 2008,^[19] the questionnaire was translated into Arabic by a professional translators which was conducted and published by another group.^[20]

A shorter version of the questionnaire was derived from the same Arabic version of the MCMDM-1 questionnaire with less details to be used as an initial screening tool.^[18] Our primary outcome was any symptom of bleeding tendency. In this regard, the questionnaire was designed to address the following: Epistaxis, Cutaneous symptoms, bleeding from Minor Wounds, Oral Cavity Bleeding, Gastrointestinal Bleeding, Bleeding after First Surgery, and Muscle Hematomas/Hemoarthrosis.

The original condensed questionnaire was used only if participants gave a positive response to any primary question in Phase I, as described below:

Trained medical students interviewers surveyed 680 preparatory year university students (male/female) at Taibah University in Almadinah Almunawwarah city, Saudi Arabia. The age of students ranged from 17 to 24 years. The sample was selected randomly. Interviews were conducted after obtaining signed informed consent from each student. The phase I data were analyzed to determine participants who gave a positive response to any bleeding related question. Respondents with at least one positive response of any bleeding symptom were contacted again for further detailed questioning about their symptoms.

Statistical analysis

Data was analyzed using IBM Statistical Package for Social Sciences for Windows (IBM-SPSS for Windows Ver. 20). Median with minimum and maximum values are preferred over mean and standard deviation where the data was not in conformity with the normality assumptions tested using Shapiro-Wilk's Test. *P* Values less than 5% were considered to be statistically significant.

Results

A total of 680 questionnaires were collected from students of preparatory year at Taibah University in the City of Almadinah Almunawwarah, Saudi Arabia. Among the interviewed group, 44.4% (302) were male students, and 55.6% (378) were females. The median age at the time of the interview among both genders was 19 years (range 17-24 years) [Figure 1].

More than half 52.6% (358 out of 680) were positive for any of the bleeding tendency symptoms. The incidence rose to 70.9% (482 out of 680) if "Mild" symptoms were also included as a positive response.

Epistaxis was positive in 21.8% (148), with 70.9% having 1-5 episodes per year with spontaneous bleeding reported by 83.1% (n = 123). Most of them 85.1% did not need any medical care [Table 1]. Cutaneous symptoms were reported by 22.65% (154) students, with 83.9% reporting bruises and 14.9% hematomas. Only 14.3% sought medical attention, with a consultation with a medical officer being the most common [Table 2]. A percentage of 14.95 reported a positive response (n = 101) off which 77.6% reported 1-5 episodes per year with bleeding lasting from 1-10 minutes among 85.1% of the respondents. Only 3% consulted a physician for this symptom [Table 3]. Bleeding from the oral cavity was reported by some of

the students (39.6%, n = 269). Most of them 71.5% mentioned that they observed bleeding from the gums after brushing their teeth, followed by spontaneous bleeding from the gum in 17.5%. Only 10% sought medical attention [Table 4]. Gastrointestinal bleeding was observed by 5.9% with hematemesis in 43.6% being the most common symptoms. One fifth of students 21% reported bleeding after the first surgery with 10% after tooth

Table 1: Epistaxis symptoms

	n	Percentage
1. Epistaxis		
Negative	532	78.2%
Positive	148	21.8%
Number episodes/year		
1-5	105	70.9%
6-12	25	16.9%
>12	18	12.2%
No Response/Don't Know	0	-
Duration of the average single episode (min.)		
One minute or less	73	49.3%
One to ten minutes	69	46.6%
More than ten minutes	6	4.1%
No Response / Don't Know	0	-
Spontaneous?		
No	25	16.9%
Yes	123	83.1%
Both Nostrils?		
No	59	39.9%
Yes	89	60.1%
After drug ingestion		
No	145	98.0%
Yes	3	2.0%
Seasonal correlation		
No	81	54.7%
Yes	67	45.3%
Cessation		
Spontaneous	41	27.9%
After short compression	99	67.3%
By medical intervention	7	4.8%
No Response	1	-
Age of maximum severity		
<14 years	79	58.5%
14 to 24 ears	56	41.5%
No Response	13	-
Ever required medical attention		
No	126	85.1%
Yes	22	14.9%
No Response/Don't Know	5	-
Consultation only	6	
Medication	0	
Cauterization/Surgical hemostasis	4	
Packing	7	
Blood Transfusion	0	

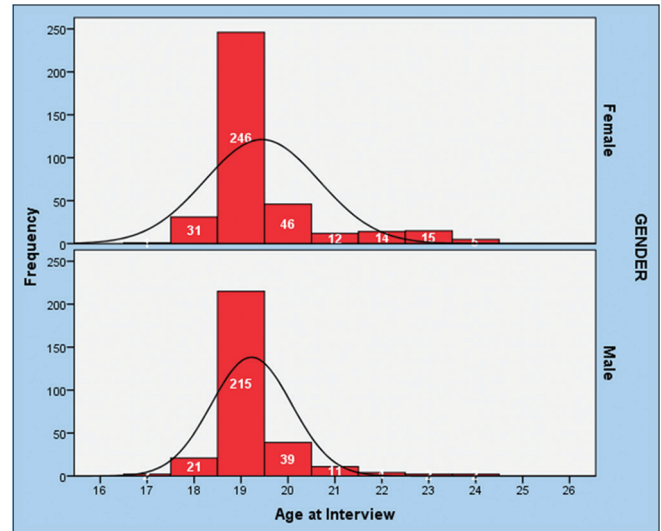


Figure 1: Age distribution of the respondents by gender

Table 2: Cutaneous bleeding symptoms

	n	Percentage
2. Cutaneous symptoms		
Negative	526	77.4%
Positive	154	22.6%
Number episodes/year		
1-5	65	86.7%
6-10	9	12.0%
>0	1	1.3%
No Response / Don't Know	79	-
Type		
Petechiae	0	0.0%
Bruises	73	83.9%
Hematomas	13	14.9%
Bruises + Hematomas	1	1.1%
No Response	67	-
Location of Bruises		
Exposed Sites	55	52.9%
Unexposed Sites	48	46.2%
Both	1	1.0%
No Response	50	-
Ever required Medical Attention?		
No	132	85.7%
Yes	22	14.3%
No Response / Don't Know	8	-
Consultation only	14	
Medication	0	
Surgical hemostasis	0	
Packing	0	
Blood Transfusion	0	

Table 3: Bleeding from minor wounds symptoms

	n	Percentage
3. Bleeding from minor wounds		
Negative	579	85.1%
Positive	101	14.9%
Mild in nature	66	
Number episodes/year		
1-5	52	77.6%
6-12	7	10.4%
More than 12	8	11.9%
No Response	34	-
Duration of the average single episode (min.)		
One minute or less	0	0.0%
One to ten minutes	57	85.1%
More than ten minutes	10	14.9%
No Response	34	-
Location of Bruises		
Exposed Sites	56	93.3%
Unexposed Sites	4	6.7%
Both	0	0
No Response	41	-
Minimal or No Trauma		
No	17	27.0%
Yes	46	73.0%
No response	38	-
Ever required medical attention		
No	98	97.0%
Yes	3	3.0%
No Response / Don't Know	2	
Consultation only	1	
Medication	0	
Surgical hemostasis	0	
Packing	0	
Blood Transfusion	0	

extraction. For the majority of the students, no special medical intervention was carried out. Twelve students mentioned having re-suturing for bleeding after tooth extraction. Of 142 students who had a history of previous surgeries, only 17 (11.9%) had post-surgical bleeding. Muscle hematomas/hemoarthrosis was observed by 3.2% (n = 22), with only 6 students sought medical attention. Desmopressin was given to 2 students and one received replacement therapy. Among females population studied 16.1% reported having 6-10 as "Heavy Days" during their menstrual cycles. Due to recall bias and other associated medical complications, we did not include this symptom while calculating the above-mentioned prevalence of bleeding symptoms.^[20] Positive responses include the "Mild" nature of the symptoms as well.

Discussion

HBD is believed to be one of the most common types of hereditary disorders in Saudi Arabia.^[11] It is diagnosed by the presence of bleeding tendency symptoms, similar family history, and laboratory investigations. In the current survey, we determined that 52.4% of our sample of the all adolescent

Table 4: Oral Cavity Bleeding symptoms

	Number	Percentage
4. Oral Cavity Bleeding		
Negative	411	60.4%
Positive	269	39.6%
Mild in nature	135	
Type of Bleeding (Multiple Choices)		
Tooth eruption	13	4.5%
Gums, spontaneous	51	17.5%
Gums, after brushing	208	71.5%
Bites to lip and tongue	19	6.5%
No Response	0	-
Number episodes/year		
1-5	4	80.0%
6-12	0	0.0%
More than 12	0	0.0%
Daily	1	20.0%
No Response	264	-
Ever required medical attention		
No	242	90.0%
Yes	27	10.0%
No Response/Don't Know	2	
Consultation only	22	
Medication	1	
Surgical hemostasis	2	
Packing	0	
Blood Transfusion	0	

studied population have at least one bleeding symptom. Our sample was a randomly selected university students in Almadinah Almunawwarah province in Saudi Arabia in their preparatory year, which represents a sample of the general adolescent population.

HBD is common among white race. A study from Sweden showed a high prevalence of bleeding symptoms, 73% of the participants had at least one bleeding symptom, while 43% had more than one symptom.^[3] In another study from Turkey that was done in a female university residence, 82/376 (22%) of healthy females reported menorrhagia; after excluding pelvic pathology, 11/76 (14.5%) were found to have an underlying bleeding disorder.^[21] There are also rare reports from other Arab countries reporting small hospital-based studies.^[13-15]

Prior studies from Saudi Arabia reporting the prevalence of bleeding disorders were smaller and hospital-based studies.^[1,9,11,12] Another similar study from Saudi Arabia showed that almost 50% of a randomly selected sample in Riyadh had reported a bleeding symptom with the mucocutaneous bleeding was the most common symptom.^[17]

The current survey represents an epidemiological screening of bleeding disorders based on a validated questionnaire. In this survey, 52.6% of our sample had a history of bleeding tendency with oral cavity bleeding (39.6%), and mucocutaneous bleeding (22.6%) are the most common symptoms reported. This may indicate that the cause of this bleeding symptoms can be

platelet disorders or Von Willebrand Disease VWBD. Taking in consideration the Saudi national registry data that showed platelet disorders to have a higher prevalence of bleeding cases with a prevalence of 1:200000 of the Saudi population.^[6]

Epistaxis was the 3rd most common bleeding symptom in our survey (21.8%), with 83.1% of the cases were spontaneous, and 60.1% of cases were from both nostrils.

Our findings are nearly similar to the findings of bleeding tendency population-based study conducted in Riyadh,^[17] which indicates that our results may be taken as a reference for the prevalence of bleeding tendency symptoms among the Saudi population in the region of Almadinah Almunawwarah.

Physicians practicing in our area should be aware about common bleeding symptoms as young population should be screened for those symptoms aiming to detect patients with HBD.

Quality of life of patients with bleeding tendency is affected from several aspects as documented in deferent reports^[22]

Limitations

The study is questionnaire based with no confirmatory laboratory testing of underlying bleeding tendency disease done in order to make it a more accurate finding but this study aimed to detected symptoms of bleeding mainly at this stage and will be followed by lab investigations. Our study covered only one region of Saudi Arabia though it added to currant available data.

Conclusion and Recommendations

As HBD are common in our population, family physicians and pediatricians are highly requested to be familiar with screening questions for bleeding tendency and get appropriate consultations for work up investigation and management planning. Future studies should be directed for laboratory investigations for the underline cause of HBD in the Saudi population as part of a multicenter project covering all regions in the country, the first step to cooperate with Riyadh group is already done and hopefully will be published soon.

Ethical approval

Approval from ethic board committee was obtained before starting our research. Data was dealt with in high confidentiality standers. It was obtained in January 2017

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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