Title: Awareness of the Saudi population in Medinah about the complications of sickle cell disease

Running title: Awareness of the Saudi population in Medinah

Type: Original article

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Abstract:

Background: The prevalence of Sickle Cell Disease (SCD) in the Kingdom of Saudi Arabia (KSA) is 1.4%. Studies have found that most cases result from consanguine marriage; thus, SCD incidence can be drastically reduced. Therefore, increasing general population awareness about its complications is important.

Methods: An observational cross-sectional study was conducted between January 2020 and March 2020 through an online questionnaire, which was announced and distributed to the general population in Medinah city by the team members via multiple social media.

Results: Out of the 492 participants, only 408 were included in the study. More than half of the included subjects, 211 (51.7%), showed a good level of awareness regarding the complications of SCD. There was a significant correlation (P= 0.029) between age and the level of awareness in the age group between 18-30. Furthermore, another significant correlation was found amongst the medical field respondents (P <0.001).

Conclusion: The population sample in Medinah showed an acceptable level of knowledge about SCD complications. However, to further increase the awareness of the complications of the disease in the community, videos, educational visits, and community activities are among the preferred methods needed.

Keywords: Awareness, complications, Medinah, Saudi Arabia, sickle cell disease
Introduction

Sickle Cell Disease (SCD) is a type of genetically inherited hemolytic anemia that is characterized by the presence of the abnormal hemoglobin “S”. In response to several stimuli, the Red Blood Cells (RBCs) become abnormally sickle-shaped. These sickled RBCs hemolyze easily and cause anemia. Besides, they clump together, which can block small arteries leading to ischemia. The pathophysiology behind this is the exchange of valine amino acid for glutamic acid at the sixth position of the β-chain [1]. SCD affects all body systems, which leads to devastating complications. The cardiovascular, nervous, gastrointestinal, respiratory, renal, ocular, skeletal, and genital systems [2]. It also shortens patients' life expectancy, negatively impacts their quality of life, and leads to recurrent hospital admissions with high costs [3]. The main treatment in SCD is the prevention of SCD complications. Adherence to hydroxyurea and blood transfusions plays a major role in achieving this [1].

SCD is a highly widespread disease in Saudi Arabia (KSA) due to consanguine marriages, which range between 60-90% of the population. Meanwhile, the carrier state of SCD in the KSA ranges between 2-27%, with a disease prevalence of 1.4%, according to a study done in 2018 [1]. Team members noticed that many people attending premarital counseling sessions regarding SCD were not aware of the complications of the disease. The team members also could not find any quantitative studies on the Medinah community regarding SCD complications. Therefore, this study aims to assess the level of knowledge of the Saudi population in Medinah about the complications of SCD [1].
Subjects and methods:

Ethical approval was obtained from the Research and Ethical Committee at the College of Medicine at Taibah University in Medinah city in the KSA. All participants were made aware of the aim and nature of the study via obtained informed consent. This study is an observational cross-sectional study carried out and conducted among the general population of Medinah city between January 2020 and March 2020. The study sample contains a non-probability sample -convenience sampling- obtained via an online multiple-choice questionnaire in Arabic, approved by a hematologist, announced, and circulated to the public via social media and other means, such as word of mouth. It consisted of five sections: personal data, awareness about SCD, awareness about SCD complications, awareness about the causes and impact of SCD complications, and future awareness, which circulated through social media applications, including a paragraph of consent and other ethical considerations.

The sample size was determined using the (Sampsize website) with a 50% ± 5% level of awareness at a confidence level of 95%. This yielded that the sample size should be at least 385 participants. Saudis 18 and above living in Madinah city were included since the study is based and designed for the Saudi adult population in Madinah. Based on the fact that we are assessing the awareness of SCD complications, we excluded participants who have never heard of SCD before. The data collected was entered and analyzed using the Statistical Package for the Social Sciences (SPSS), software version 27. The descriptive data were presented as frequencies and percentages. To calculate the median score of knowledge, one was given for each correct answer and zero for wrong answers, then the total score was calculated for each participant. Any score above the median value was considered good knowledge, while a score below was considered poor knowledge. A Chi-square test was used to assess the relationship between the different variables (p<0.05 was considered significant).
Results

The return of the online questionnaires yielded 492 responses. Out of those, eighty-four indicated they had never heard of SCD before, were eliminated as part of the exclusion criteria. Table 1 shows the demographics of participants. The main part of the questionnaire was composed of multiple response questions about the complication of SCD. Figure 1 demonstrates the participant's awareness of each complication. As mentioned earlier in the methodology section, participants who scored 11 and above on the questionnaire were considered aware of the SCD complications. Females 190 (52.9%) were found to be slightly more aware than males 21 (42.9%) (P= 0.186) (Table 3). The awareness scale of the age groups was as follows: 18-30: 122 (57.5%) (P= 0.029), 31-45: 39 (50.0%) and 50 (42.4%) above 45. Regarding the educational level of the participants, Ph.D. holders 5 (62.5%) were the most aware, followed by university graduates 169 (53.3%), high school diploma 23 (51.1%), other 2 (50.0%), Master degree 11 (35.5%) and finally middle school certificate 1 (33.3%) (P= 0.495). 308 (75.5%) participants were not in the medical field, 133 (43.2%) of them had good awareness, while the rest did not 175 (56.8%). Meanwhile, 78 (78%) of the 100 (24.5%) participants from the medical field showed good awareness, while 22 (22%) did not (P< 0.001). Among those in the medical field, 58 (58%) were students: 47 (81%) had good awareness, while 11 (19%) did not. And 42 (42%) of the participants in the medical field were graduates: 31 (73.8%) had good awareness, and 11 (26.2%) did not (P=0.389). This shows that in the medical field, students had more awareness than graduates. As shown in Table 4, 68 participants have affected family members with SCD: 34 (50%) showed good awareness, and 34 (50%) didn’t (P= 0.756). Furthermore, 5 of the participants had SCD 3 (60%) showed good awareness while 2 (40%) didn’t (P= 0.709). Figure 2 shows participants awareness about factors associated with developing complications of SCD. 195 (47.8%) participants believed that decreased oxygen can lead to sickle cell complications, followed by dehydration 122 (29.9%), cold weather 119 (29.2%), not taking medications 119 (29.2%), infection 117 (28.7%), and high altitude 92 (22.5%).

When asked about how they would like to be educated about SCD in the future, participants varied in their preferences: those aged between 18-30 preferred videos 136 (64.2%), those aged between 31-45 and above 45 preferred to be educated via health awareness visits to schools, 47 (60.3%) and 65 (55.1%) respectively. See Table 5.
**Discussion**

SCD is an autosomal recessive disorder that impacts hemoglobin, the molecule in red blood cells that transfers oxygen to body cells. People with this disorder have atypical hemoglobin $S$, which can deform red blood cells into a crescent or a sickle shape [4]. Recent studies have found an increase in pervenance of SCD, more being in the **Eastern Province** [1]. These patients experience different forms of complications that are directly proportional to age. Therefore, the present study aims to assess awareness and knowledge about the complications of SCD among the general population in Medinah city in the KSA. Of all the study participants, 52% were aged between 18-30, the costumery age of marriage. In general, 48% of the participants were single. The research team believes that both married and single are a good target for measuring and raising awareness of SCD complications. Furthermore, most of the participants in the study were not in the medical field (75.5%), which strengthens the study and its objective.

As shown in Table 2, most of the participants recognized the nature of SCD. Most of them agreed that consanguine marriage and a positive family history of SCD are risk factors. Interestingly, a study in Medinah found that 44% of SCD patients have consanguine parents [5]. Such finding encourages us to concentrate the awareness on consanguine marriage amongst the general population of Medinah in specific and the KSA in general to decrease SCD prevalence. Results also show us that there is lacked awareness about other risk factors such as ethnic groups and increased maternal age.

Blockage of blood vessels is one of the cardiovascular complications of SCD, which was found to be the most common cause of medical admissions in Medinah, as demonstrated by Hawsawi et al. [6]. This complication was identified by 29.9% of the participants. A similar study in Dammam demonstrated 48.9% of its participants were able to identify this kind of complication [7]. More than half (56.9%) of the participants recognized stroke as a complication of SCD, which is similar to the findings of the Dammam study (51.2%) [7]. On the other hand, a study done in Jeddah [1] showed that only (9.9%) of its participants could identify this. Infection is one of the SCD complications that can be life-threatening. This study revealed that 40.2% of the participants were aware of that, which complies with similar findings reported in studies done in Jeddah and Bahrain [1,8]. Vision can also be affected by SCD, damaging the retina of SCD patients. Around 58.3% of the participants in this study identified retinal damage as an SCD complication. Meanwhile, Alshehri et al. found that only 38.6% were aware of this in their study [9].
There was no significant difference between males and females regarding the overall awareness of SCD complications, identified by ≥ 11 points. Findings of a study done in Jeddah show that females were significantly more aware than males [1]. This study found age inversely proportional with awareness, with the most aware age group being 18-30. In addition, being in the medical field showed a significant role in increased awareness, as shown in Table 5. However, there was no significant difference between students and graduates in the medical field. The majority of participants (57.6 %) agreed that SCD could have a negative impact on the quality of children's lives in different aspects, including school and work performance. Compared to the Al-Ahsa study, 82.4% were aware of such impact [10]. However, the results in both studies reflect a good appreciation of the severity of psychosocial complications of the condition, which emphasizes that SCD patients should receive multidisciplinary care.

Despite the favorable level of knowledge shown by the sample of this study regarding the nature of SCD, there is a gap in the knowledge about the risk factors evoking SCD complications. low Oxygen level, dehydration, cold weather, noncompliance to medication, and high altitude are considerable risk factors that evoke SCD acute complications. This shows that more education is needed amongst the community, since these factors are preventable and greatly impact patients' quality of life. Therefore, it is highly suggested that SCD education units focus on risk factors awareness to educate patients and their families. According to the findings, to spread awareness about SCD and its complications in the future, (55%) of the participants in this study suggest using videos as a means of visual information for the Medinah community since it is faster and more accepted.

On the other hand, some participants (11.8%) preferred to spread awareness about SCD and its complications via social media since it is considered one of the main sources of community education in the KSA. These findings guide us to plan and implement better ways and ideas to spread awareness about SCD, its cause, and its complications. For further and future research, it is highly recommended to include a larger population sample that includes both suburban and rural areas of Medinah, as well as other cities in the KSA.

To ensure the validity and reliability of the research, data collection, and its results and analysis, several methods and procedures were chosen in appropriation of the time constraints and limitations. First, a survey was created and sent out to three experts in the field of pediatric hematology to be validated. To ensure ease and save time and expenses, the survey was conducted via electronic means of
Google Survey. Second, the team met with a statistician to use the appropriate methods to manipulate the collected data and several types of analysis, ensuring that the respondents' cut off age of marriage is 18 yrs. of age. Finally, according to the research team's knowledge, this is the first research assessing the awareness about SCD complications in Medinah.

The study sample was limited to Medinah city population and not Medinah Province, which gave limited results. Furthermore, eliminating 20.3% of the participants in the medical field in the exclusion criteria would have resulted in a better understanding of the general populations’ awareness of SCD complications. Reaching out to the larger population of Medinah should not be limited to one medium, but rather via different mediums: interviews, pen and paper, and other means. Another factor that could have given better results in regard to gender awareness of SCD complications, would be to match the number of male and female respondents. Finally, results of the research cannot be generalized except to the participant in this study, and further research should be conducted.
Conclusion

This study was conducted to assess the general population's awareness in Medinah city regarding complications of SCD. Even though the population sample of this study in Medinah showed an acceptable level of knowledge about SCD and its complications, there is a greater need to further educate, Medinah community in particular and the Saudi population at large, via multiple and innovative ways and mediums to increase public awareness of and about SCD, its nature, risk factors, complications, and preventive measures. From the participant's point of view, videos, school educational visits, and community activities are most preferred. Finally, one of the interesting findings yielded in this study was the correlations between the age groups, level of education, and level of awareness of the participants' from the medical field; students vs. professionals, which indicated that students were not less aware, in fact showing more awareness than some of their graduate and practicing counterparts.

Acknowledgment

The authors would like to thank the faculty of medicine at Taibah University, Medinah, for the opportunity to make this study. The team Acknowledges the help of Dr. Abeer Abd Elmoneim.

List of Abbreviations

KSA Kingdom of Saudi Arabia
RBC Red Blood Cells
SCD Sickle Cell Disease
SPSS Statistical Package for the Social Sciences

Conflict of Interests:

The authors declare that there is no conflict of interest regarding the publication of this article.
Funding:

None.

Consent to Participate:

Informed consent was obtained from all the participants.

Ethical Approval

The study was approved by the Research and Ethical Committee at the College of Medicine at Taibah University in Medinah city in the KSA. (Please provide approval and date of approval.)

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https://doi.org/10.4103/0256-4947.65256


https://doi.org/10.4103/meajo.MEAJO_200_18

Table 1: Demographical data

<table>
<thead>
<tr>
<th></th>
<th>N=408</th>
<th>N %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-30</td>
<td>212</td>
<td>52%</td>
</tr>
<tr>
<td>31-45</td>
<td>78</td>
<td>19.1%</td>
</tr>
<tr>
<td>Above 45</td>
<td>118</td>
<td>28.9%</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>49</td>
<td>12%</td>
</tr>
<tr>
<td>Female</td>
<td>359</td>
<td>88%</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>196</td>
<td>48%</td>
</tr>
<tr>
<td>Married</td>
<td>192</td>
<td>47.1%</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td>4.9%</td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Middle school</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>High school</td>
<td>45</td>
<td>11%</td>
</tr>
<tr>
<td>University</td>
<td>317</td>
<td>77.7%</td>
</tr>
<tr>
<td>Master</td>
<td>31</td>
<td>7.6%</td>
</tr>
<tr>
<td>PhD</td>
<td>8</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-medical field</td>
<td>308</td>
<td>75.5%</td>
</tr>
<tr>
<td>Medical field</td>
<td>100</td>
<td>24.5%</td>
</tr>
<tr>
<td><strong>If in medical field</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>58</td>
<td>58%</td>
</tr>
<tr>
<td>Graduate</td>
<td>42</td>
<td>42%</td>
</tr>
</tbody>
</table>
Table 2: Awareness about SCD

<table>
<thead>
<tr>
<th>True about sickle cell disease</th>
<th>Count</th>
<th>Count %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A blood disorder</td>
<td>298</td>
<td>73%</td>
</tr>
<tr>
<td>Hereditary disease</td>
<td>266</td>
<td>65.2%</td>
</tr>
<tr>
<td>Abnormal shape of red blood cells</td>
<td>257</td>
<td>63%</td>
</tr>
<tr>
<td>I don’t know</td>
<td>11</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk factors of developing sickle cell</th>
<th>Count</th>
<th>Count %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consanguine marriage</td>
<td>298</td>
<td>73%</td>
</tr>
<tr>
<td>Ethnic group</td>
<td>114</td>
<td>27.9%</td>
</tr>
<tr>
<td>Increased maternal age</td>
<td>12</td>
<td>2.9%</td>
</tr>
<tr>
<td>Family history of sickle cell disease</td>
<td>186</td>
<td>45.6%</td>
</tr>
<tr>
<td>I don’t know</td>
<td>59</td>
<td>14.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Where did you hear about sickle cell</th>
<th>Count</th>
<th>Count %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media (TV, community activities, videos)</td>
<td>226</td>
<td>55.5%</td>
</tr>
<tr>
<td>School</td>
<td>187</td>
<td>45.9%</td>
</tr>
<tr>
<td>Premarital counselling</td>
<td>62</td>
<td>15.2%</td>
</tr>
<tr>
<td>Affected family member</td>
<td>68</td>
<td>16.7%</td>
</tr>
<tr>
<td>Diagnosed with sickle cell</td>
<td>5</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

*The percentages do not add up to a hundred as these are multiple response questions.*
### Table 3: Level of awareness regarding gender

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Not aware</td>
<td>49</td>
<td>100.0%</td>
</tr>
<tr>
<td></td>
<td>359</td>
<td>100.0%</td>
</tr>
<tr>
<td>Aware</td>
<td>21</td>
<td>42.9%</td>
</tr>
<tr>
<td></td>
<td>190</td>
<td>52.9%</td>
</tr>
</tbody>
</table>

### Table 4: Level of awareness in people with an affected family member/diagnosed with SCD

<table>
<thead>
<tr>
<th>Affected family member</th>
<th>Diagnosed with sickle cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Count</td>
<td>N %</td>
</tr>
<tr>
<td>Count</td>
<td>N %</td>
</tr>
<tr>
<td>Not aware</td>
<td>340 100%</td>
</tr>
<tr>
<td></td>
<td>68 100%</td>
</tr>
<tr>
<td>Aware</td>
<td>177 52.1%</td>
</tr>
<tr>
<td></td>
<td>34 50%</td>
</tr>
</tbody>
</table>

### Table 5: Methods of future awareness and age

<table>
<thead>
<tr>
<th>Age</th>
<th>18-30</th>
<th>31-45</th>
<th>Above 45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>N %</td>
<td>Count</td>
<td>N %</td>
</tr>
<tr>
<td>Count</td>
<td>N %</td>
<td>Count</td>
<td>N %</td>
</tr>
</tbody>
</table>
### How would you like to be educated about SCD

<table>
<thead>
<tr>
<th>Method</th>
<th>Options</th>
<th>Education</th>
<th>School visits</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social media</td>
<td>25</td>
<td>11.8%</td>
<td>8 10.3%</td>
<td>15 12.7%</td>
</tr>
<tr>
<td>Videos</td>
<td>136</td>
<td>64.2%</td>
<td>39 50%</td>
<td>46 39%</td>
</tr>
<tr>
<td>Leaflets</td>
<td>72</td>
<td>34%</td>
<td>32 41%</td>
<td>53 44.9%</td>
</tr>
<tr>
<td>Community activities</td>
<td>112</td>
<td>52.8%</td>
<td>43 55.1%</td>
<td>52 44.1%</td>
</tr>
<tr>
<td>School educational visits</td>
<td>109</td>
<td>51.4%</td>
<td>47 60.3%</td>
<td>65 55.1%</td>
</tr>
</tbody>
</table>

*The percentages do not add up to a hundred as these are multiple response questions.*

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### Complications of Sickle Cell disease

- **Aneurysm**: 78.2%
- **Destruction of RBCs**: 64.5%
- **Blockage of blood vessels**: 29.9%
- **Heart failure**: 56.9%
- **Stroke**: 57.6%
- **Gallbladder stones**: 40.7%
- **Splenectomy**: 48.3%
- **Acute chest syndrome**: 58.5%
- **Infection**: 52.2%
- **Blood in urine**: 36.3%
- **Kidney failure**: 18.4%
- **Retinal damage**: 27.9%
- **Severe bone pain**: 14.8%
- **Bone infection**: 14.8%
- **Bone tissue death**: 14.8%
- **Prolonged erection**: 14.8%

*Percentages are approximate and may vary.*

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Figure 1. Awareness about SCD complications
Figure 2. Factors in developing complications
Figure 3. Future awareness
Awareness of the Saudi population in Medinah about the complications of sickle cell disease

We are fifth year medical students from Taibah university. The following questionnaire is for research purposes only, and participation is completely optional. Information given will be confidential. Participants must be 18 years old and above. Thank you.

○ Do you agree on participating in this questionnaire?
  - Yes
  - No

Section 1: Personal data

○ Age
  - 18-30
  - 31-45
  - Above 45

○ Gender
  - Male
  - Female

○ Marital status
  - Single
  - Married

○ Educational level
  - Primary school
  - Middle school
  - High school
  - University
  - Master
  - PhD

○ Occupation
  - Medical field
    - Student
Section 2: Awareness about sickle cell disease

- Have you ever heard about sickle cell disease?
  - Yes
  - No
- Which of the following is true about sickle cell disease?
  - A blood disorder
  - Hereditary disease
  - Has different types
  - Abnormal shape of red blood cells
- What are the risk factors of developing sickle cell anemia?
  - Consanguine marriage
  - Ethnic group
  - Increased maternal age
  - Family history of sickle cell disease
- Where did you hear about sickle cell anemia?
  - Media (TV, community activities, videos)
  - School
  - Premarital counselling
  - Affected family member
  - Diagnosed with sickle cell

Section 3: awareness about sickle cell disease complications

Which of the following is a complication of sickle cell disease?

- Blood and cardiovascular complications
  - Anemia
  - Destruction of red blood cells
• Blockage of blood vessels
• Heart failure
• Affect other blood cells

○ Nervous system
  • Stroke

○ GI
  • Gall bladder stones
  • Splenic infarction
  • Severe abdominal pain

○ Lung
  • Infection
  • Acute chest syndrome

○ Kidney
  • Blood in urine
  • Kidney failure

○ Eyes
  • Retinal damage

○ Bones
  • Severe bone pain
  • Bone infection
  • Bone tissue death

○ Genitalia
Section 4: Awareness about the causes and impact of sickle cell disease complications

- Could sickle cell disease complications affect:
  - Life expectancy
  - Daily activities
  - School/work performance

- Do you think that sickle cell complications are preventable?
  - Yes
  - No

- Which of the following is a factor in developing complications?
  - Not taking medications
  - Dehydration
  - Decreased oxygen
  - High altitude
  - Cold weather
  - Infection

- Do you know how to avoid sickle cell disease?
  - Premarital screening
  - Minimize consanguinity marriage

Section 5: future awareness

- How would you like to be educated about sickle cell complications?
  - Social media
  - Videos
  - Leaflets
  - Community activities
  - School educational visits
دراسة مدى وعي المجتمع السعودي في المدينة المنورة بمضاعفات مرض الأنيميا المنجلية

نحن طالبات طب من جامعة طيبة في السنة الخامسة. هذا الاستبيان لأغراض بحثية، والمشاركة فيه اختيارية. أي معلومات معطاه سيتم التعامل معها بسرية تامة. يجب أن يكون سن المشاركين 18 عاماً فما فوق. شكرًا

هل توافق/ي على المشاركة في هذا البحث؟
- نعم  
- لا

القسم الأول: المعلومات الشخصية

العمر
- 18-30
- 31-45
- 45-أكبر

الجنس
- ذكر
- أنثى

الحالة الاجتماعية
- أعزب/عزباء
- متزوج/ة

المستوى الدراسي
- ابتدائي
- متوسط
- ثانوي
- جامعي
- ماجستير
- دكتوراة
- أخرى

العمل
- في المجال الطبي
القسم الثاني: مدى الوعي بمرض الأنيميا المنجلية

هل سبق وسمعت/ي عن مرض الأنيميا المنجلية؟
- نعم
- لا

أي من الآتي صحيح عن مرض الأنيميا المنجلية؟
- مرض في الدم
- مرض وراثي
- له أنواع مختلفة
- شكل كريات الدم الحمراء في الدم غير طبيعي

ما هي العوامل التي تؤدي إلى الإصابة بمرض الأنيميا المنجلية
- زواج الأقارب
- المجموعة العرقية
- تقدم سن الأم
- وجود شخص مصاب في العائلة

أين سمعت/ي عن الأنيميا المنجلية؟
- وسائل الإعلام (التلفزيون، الأنشطة المجتمعية، فيديو)
- الدراسة
- الاستشارة ما قبل الزواج
- شخص في العائلة مصاب بالأنيميا المنجلية
- أنت/ي مصاب/ة بالأنيميا المنجلية

القسم الثالث: مدى الوعي بمضاعفات مرض الأنيميا المنجلية

أي من المضاعفات التالية تعتقد/ي أن الأنيميا المنجلية تسببها
- مضاعفات الدم والقلب
- فقر الدم
• تكسر خلايا الدم الحمراء
• انسداد الأوعية الدموية
• الفشل القلبي
• يؤثر على خلايا الدم الأخرى
• الجهاز العصبي
• الجلطة الدماغية
• الجهاز الهضمي
• حصوات في المرارة
• احتشاء الطحال
• الرئة
• التهاب رئوي
• متلازمة الرئة الحادة
• الكلى
• دم في البول
• فشل كلوي
• العيون
• اعتلال في الشبكية
• العظام
• الم شديد في العظام
• التهاب في العظام
• احتشاء العظام
• الأعضاء التناسلية
• الانتصاب الدائم

القسم الرابع: مدى الوعي بأسباب وأثر مضاعفات مرض الأنيميا المنجلية

هل تؤثر مضاعفات مرض الأنيميا المنجلية على
• متوسط العمر المتوقع
• الأنشطة اليومية
• الأداء المدرسي و العملي

هل تقصد أن مضاعفات مرض الأنيميا المنجلية يمكن تجنبها؟
• نعم
• لا
أي من العوامل التالية يساعد على حدوث مضاعفات مرض الأنيميا المنجلية؟

- عدم أخذ العلاج
- الجفاف
- نقص الأكسجين
- المناطق المرتفعة
- الطقس البارد
- العدوى

كيف يمكن تجنب الإصابة بمرض الأنيميا المنجلية؟

- تحليل ما قبل الزواج
- التقليل من زواج الأقارب

القسم الخامس: نشر الوعي في المستقبل

كيف تريد/ي أن تتلفق/يق عن مضاعفات مرض الأنيميا المنجلية

- مواقع التواصل الاجتماعي
- العروض
- المشورات
- الأنشطة الاجتماعية
- الزيارات المدرسية التعليمية