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Original Research

Awareness of dental students in Riyadh Elm University about oral manifestations of Anemia

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ABSTRACT

Aims: This study aimed to evaluate the level of awareness of the dental student in Riyadh Elm University (REU) of early intraoral manifestation of iron deficiency anemia (IDA); to educate them and emphasize the significant role of dentists in early detection of the IDA and helping patients seek medical counseling for early management and treatment of such depleting condition.

Materials and Methods: A cross-sectional study design was used. A questionnaire survey was conducted among 100 dental students between 18 and 30 years of age from REU. The questionnaire consisted of 23 questions which were formulated to evaluate the students' awareness of intra oral signs of anemia. Data collected were subjected to statistical analysis using SPSS.

Results: Female students were found to have a higher awareness levels of signs and symptoms of IDA with general health. Moreover, two-way cross-tabulation showed that females and participants between ages of 25-30 years are more likely to have a better knowledge.

Conclusions: Within the limitations of our study, there is sufficient levels of awareness of IDA among REU students. Educating dental students about the symptoms and signs of anemia in oral cavity is very important and REU showed promising awareness among its students in different clinical levels, reflecting great oral diagnosis educational levels.

INTRODUCTION

Anemia is acquaint as a condition of decreased hemoglobin (Hb) level in the body. Rareness due free red blood cells to hold adequate oxygen to your body tissues and can create you sense tired and weak. Anemia is a condition where the body is incapable of making RBC due to the absence of Vitamin B12.[1] The oral manifestations of stomatitis and glossitis in nutritional deficiency have long been recognized. Iron deficiency anemia (IDA) is the most common type of anemia.[2] There is a prevalence of 2–5% of IDA among adult men and postmenopausal women in the developed world.[3] IDA has been reported as the third leading cause of disability-adjusted life year for females aged 15–44-year-old.[4]

Patients with IDA may have characteristic systemic symptoms such as fatigue, weakness, lightheadedness, shortness of breath, and palpitations. A higher incidence of Ida has been reported in pregnant and premenopausal women.[5] Oral symptoms and signs may include atrophic glossitis (AG), generalized oral mucosal atrophy, and tenderness or burning sensation of oral mucosa.[6] However, there are many signs and symptoms in the oral cavity that could be warning the hematologist and the dental surgeon to the possibilities of asynchronous hematological disorder or a hidden one that may then clear itself.

1. Salivary Ferritin is significantly increased in IDA. It highlights the fact that controlling anemia in children could considerably reduce the complications in older

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age.[7] In a recent study, very few dental students correctly answered regarding the diagnosis of anemia although most were not aware about the management.[8] Hence, this study aimed to evaluate the level of awareness of the dental student in REU of early intraoral manifestation of IDA; to educate them and emphasize the significant role of dentists in early detection of the IDA and helping patients seek medical counseling for early management and treatment of such depleting condition.

Materials and Methods

2. This cross-sectional survey was conducted using. Online questionnaire was designed consisting of two parts: demographic characteristics and questions on knowledge and awareness of manifestations of IDA. Informed consent was obtained from all the participating students. Confidentiality and anonymity were assured. The study was approved by the Institutional Ethics Committee. To determine the reliability of the questionnaire, a pilot study was conducted on 20 participants who were not the part of the final study. Validity of the questionnaire was determined by sending it to experienced researchers in REU and no changes were made. Survey was conducted online using Google Forms. Data was analyzed using IBM SPSS Version 22. Cronbach's coefficient alpha was 0.71. Descriptive analysis were performed to present the overview of the findings. Inferential statics was conducted using Chi-square test.

Results

A total of 100 Students took the survey and the majority were females (88%) and between the age of 20-25 years (90%). Approximately half the respondents were from level 12 (Table 1). The majority of the participants were aware of the signs and symptoms of IDA related to general health. However, only one third (33.0%) were aware that IDA was not caused by genetics (Table 2).

Table 2 shows the awareness of signs and symptoms of IDA related to oral health. On the multiple response question on the treatment for IDA, the majority reported correcting the deficiency state (75.0%) and providing fluids and nutrients to promote healing (58%) (Figure 1).

Table 3 shows the association between awareness of signs and symptoms of IDA with general health by demographics. Two-way cross-tabulation showed that females, participants between ages of 25-30 years, and students are more likely to have a better knowledge. However, Chi-Square test showed that the associations were statistically not significant ($p>0.05$).

Table 4 shows the association between awareness of signs and symptoms of IDA with oral health by demographics. Similar to the awareness of signs and symptoms of IDA with general health, two-way cross-tabulation showed that females and participants between ages of 25-30 years are more likely to have a better knowledge. However, there was no difference in the awareness between student and intern. Furthermore, Chi-Square test showed that the associations were statistically not significant ($p>0.05$).

Discussion

Anemia can lead to change on the manifestations of oral cavity, which differs from patient to patient and these changes are not pathognomonic.[9] In our study, approximately half the students expected to find intra oral abnormalities and assumes that anemia patient may suffer of dry mouth. Most of the students think that IDA my causes gingivitis and 59% periodontitis.

IDA patients had significantly lower mean Hb level, RBC count, iron level, and Vitamin B12 level.[6] Over half of the students believed that anemia was due to the deficiency of iron while over one-third of assumed that

Table 1. Awareness of signs and symptoms of IDA with general health

		%
Gender	***Male***	**12.0**
	Female	**88.0**
Age (in years)	***20 -25***	**90.0**
	25-30	**10.0**
Level	***L8***	**7.0**
	L9	**6.0**
	L10	**13.0**
	L11	**7.0**
	L12	**48.0**
	Intern	**19.0**

Table 2. Awareness of signs and symptoms of IDA with oral health

	(%)		
	Yes	**No**	**Don't know**
Do you think that IDA causes dry mouth?	**53**	**20**	**27**
Do you think that IDA causes gingivitis?	**66**	**14**	**20**
Does IDA cause burning sensation?	**50**	**28**	**22**
Is dysphagia a symptom of IDA?	**32**	**24**	**44**
Do you think IDA causes cavities or decay?	**49**	**24**	**27**
Is pale mucosa a sign of IDA?	**70**	**7**	**23**
May angular cheilitis be present in patient with IDA?	**44**	**18**	**38**
Do you think IDA may cause reducing biofilm bacteria?	**15**	**43**	**42**
Do you think IDA affects salivary gland?	**43**	**27**	**30**
Cheilosis is also common finding associated with IDA?	**48**	**12**	**40**
Is malocclusions increased in patients with sickle cell anemia?	**32**	**30**	**38**
Is there's malocclusion in patients with sickle cell anemia caused by muscular imbalance?	**34**	**24**	**42**
Patient with IDA suffer from prolonged and spontaneous post-extraction bleeding	**54**	**21**	**25**
There is relationship between IDA and periodontitis	**59**	**13**	**28**
Are there oral manifestations of aplastic anemia?	**42**	**11**	**47**
Minimal trauma, that occurs while eating or in tooth brushing, may provoke gingival hemorrhage?	**54**	**19**	**27**

Table 3. Awareness of signs and symptoms of IDA with general health by demographics

	(%)					
	Gender		Age (in years)		Level	
	Male	*Female*	*20-25*	*25-30*	*Student*	*Intern*
If you are examining a patient with IDA do you expect to find intra oral abnormalities?	25.0	58.8	52.2	60.0	50.6	63.2
Do you think anemia is related to reduce levels of any Vitamin in the body?	41.7	61.4	60.0	50.0	61.7	47.4
Do you think IDA is the most common kind of anemia?	50.0	76.1	73.3	70.0	75.3	63.2
IDA is caused by genetic	41.7	31.8	32.2	40.0	33.3	31.6
IDA is caused by malnutrition	83.3	89.8	90.0	80.0	91.4	78.9

Table 4. Awareness of signs and symptoms of IDA with oral health by demographics

	(%)					
	Gender		Age (in years)		Level	
	Male	*Female*	*20-25*	*25-30*	*Student*	*Interns*
Do you think that IDA causes dry mouth?	25.0	56.8	52.2	60.0	49.4	68.4
Do you think that IDA causes gingivitis?	66.7	65.9	60.0	60.0	66.7	63.2
Does IDA cause burning sensation?	50.0	50.0	51.1	40.0	44.4	73.7
Is dysphagia a symptom of IDA?	25.0	33.0	33.3	20.0	32.1	31.6
Do you think IDA causes cavities or decay?	41.7	50.0	51.1	30.0	53.1	31.6
Is pale mucosa a sign of IDA?	58.3	71.6	70.0	70.0	71.6	63.2
May angular cheilitis be present in patient with IDA?	41.7	44.3	42.2	60.0	45.7	36.8
Do you think IDA may cause reducing biofilm bacteria?	16.7	14.8	11.1	50.0	14.8	15.8
Do you think IDA affects salivary gland?	50.0	42.0	42.2	50.0	46.9	26.3
Cheilosis (dry scaling of the lips and corners	25.0	51.1	40.0	80.0	48.1	47.4

of the mouth) is also common finding associated with IDA?						
Is malocclusions increased in patients with sickle cell anemia?	**33.3**	**31.8**	**31.1**	**40.0**	**30.9**	**36.8**
Is there's malocclusion in patients with sickle cell anemia caused by muscular imbalance?	**25.0**	**35.2**	**32.2**	**50.0**	**33.3**	**36.8**
Patient with IDA suffer from prolonged and spontaneous post-extraction bleeding	**41.7**	**55.7**	**51.1**	**80.0**	**51.9**	**63.2**
There is relationship between IDA and periodontitis	**58.3**	**59.1**	**58.9**	**60.0**	**58.0**	**63.2**
Are there oral manifestations of aplastic anemia?	**16.7**	**45.5**	**42.2**	**40.0**	**39.5**	**52.6**
Minimal trauma, that occurs while eating or in tooth brushing, may provoke gingival hemorrhage?	**58.3**	**53.4**	**52.2**	**70.0**	**55.6**	**47.4**

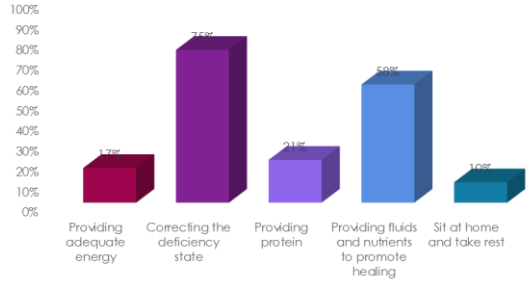

Figure 1. Multiple response on the treatment of IDA

anemia was due to the deficiency of hemoglobin. Whereas, very few thought that anemia was due to the deficiency of proteins. Additionally, most of the students believed that anemia is related to reduce levels of vitamins in the body.

Through our research, we found that a small percentage of our sample of dental students do not have sufficient knowledge about anemia and that was reflected through their misdiagnosis of such a common disorder. IDA is common in Saudi Arabia ranging from 30% to 56% and 40% child bearing age women suffering from anemia.[10] Students' awareness must be raised through frequent activities and seminars to update and increase their knowledge and awareness of such common blood disorder. These programs have to be conducted in all medical and dental institutions in order to improve students' knowledge and treatment plan skills which will improve overall patient care through better patient education of their condition and helping them receive treatment at the early stages of the disease and management of their daily lifestyle trough a healthier diet and exercise.

Conclusion

Within the limitations of our study and based on our results, there is a high percentage of awareness of IDA among dental students of REU. Symptoms such as tenderness or burning sensation of oral mucosa, generalized oral mucosal atrophy, and atrophy glossitis were well recognizable by our dental students enabling them to construct the appropriate treatment plans and properly assess their patients' medical conditions and so guide them to pursue medical counseling for proper management of their condition.

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