Awareness Of Anemia Causes Among Saudi Population In Qassim Region, Saudi Arabia

Hisham Ali Waggiallah*, Mohammed Alzohairy**

*Department of Medical Laboratory. College of Applied Medical Science. Taibah University P.O. Box 30001, Almadina Almonawwarah, Saudi Arabia,. **Department of Medical Laboratory, College of Applied Medical Science, Qassim University

Abstract : **Background:** Anemia is a global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development. **Aim**: This study was conducted to assess awareness of anemia and its causes among Saudi population in Qassim region kingdom of Saudi Arabia. **Methods:** This cross-sectional community-based study was conducted throughout the Qassim region which has been divided into 11 provinces were evaluated.A total of 1281Saudi citizens participated in this study. Each participant was asked to answer a total of 18 questions from a pre-piloted questionnaire. **Results:** Data were analyzed statistically using (SPSS) version 16.The participants response rate was 95.7%, and general aware ness of anemia was 89.2%, whereas Satisfactory, fair, and poor awareness of anemia represented 20.5%, 50.5%, and 29.0% respectively, while the mean of awareness was 44.0 ± 22.8. Males represented 62.2%. In high education males were approximately twice times.Drinking tea,eating fava bean and pregnancy as anemia causes in both male and female showed highlysignificant awareness ($p \leq 0.001$) in additionvegetarianism, drinking tea during meal, pregnancy, inheritance, renal failure and intestinal worms represented as well known ($p \leq 0.001$) causes of anemia in all levels of education. Moreover,vegetarianism, drinking tea,pregnancy and renal failure as well known causes ($p \leq 0.001$) of anemia in different categories of education.**Conclusion:** Saudi citizens in Qassim region has satisfactory general knowledge of anemia, however, they are not very well aware of anemia causes. Therefore, our study suggests that more efforts should be made to increase the knowledge of anemia causes in the population [Waggiallah H A et al NJIRM 2013; 4(6) : 35-40]

Key Words: Awareness, anemia, anemia causes

Author for correspondence: H.A. Waggiallah, Department of Medical Laboratory. College of Applied Medical Science. Taibah University P.O Box. 30001 Almadinah Almonawwarah. Saudai Arabia. E-mail: hishamwagg30@hotmail.com

Introduction: Anemia is the most common disorder of the blood. The several kinds of anemia are produced by a variety of underlying causes. It can be classified in a variety of ways, based on the morphology of RBCs, underlying etiologic mechanisms, and discernible clinical spectra, to mention a few. The three main classes include excessive blood loss (acutely such as a hemorrhage or chronically through low-volume loss), excessive blood cell destruction (hemolysis) or deficient red blood cell production (ineffective hematopoiesis).[1]

Given the multifactorial nature of this disease, correcting anemia often requires an integrated approach. In order to effectively combat it, the contributing factors must be identified and addressed. In settings where iron deficiency is the most frequent cause, additional iron intake is usually provided through iron supplements to vulnerable groups; in particular pregnant women and young children. Food based approaches to increase iron intake through food fortification and dietary diversification are important, sustainable strategies for preventing anemia in the general population.[2] Anemia has been shown to affect mental development and learning capacity. In infancy it may cause a permanent loss of IQ later in life, shortened attention span, irritability, and fatigue, difficulty with concentration, lethargy, weakness and increased susceptibility to infection. Consequently, anemic children tend to do poorly on vocabulary, reading, and other tests [3]. In women of childbearing age, the anemia prevalence is 30.2%; Overall, 468.4 million women of childbearing age are anemic. The highest prevalence is found in Africa (47.5%) and in South-East Asia (35.7%). It is 17.8% in the Americas [4]14% in the United Arab Emirates; and from a low of 11% in Egypt to over 40% in the Syrian Arab Republic and Oman among women of childbearing age [5]. In Saudi Arabia most of the studies on anemia were based on nutritional status and concentrated on preschool children who were under six years old.[6]Still in Qassim region, it is unknown how much the public actually know about anemia. This study aimed to assess awareness of anemia and it's causes among Saudi in Qassim region kingdom of Saudi Arabia.

Materials and Methods: Study design and population : This cross-sectional community-based

study was conducted throughout the Qassim region which lies approximately at the centre of the Arabian Peninsula. Qassim region has been divided into 11 provinces, Buraida, Onaiza, Al-Rass, Al-muthnab, Al-Bekaria, Al-Badaei, Al-Asyah, Al-Nabhania, OyonJawa, RiadKhobara, and Al-Shamasia. The study samples were collected from each province, size of which depended upon the population structure of each province as per the 2004 census (Department of Statistics, 2004). The sample size was calculated to estimate the proportion of subjects having adequate knowledge with 95% confidence. Since this was not available for Qassim region, it was assumed that in each province, 50% of the subjects had adequate knowledge in order to get maximum sample size. A multistage random cluster technique was employed for sampling.

Data collection: The data was collected from May 2012 to February 20103. A total of 1281Saudi citizens participated in this study. Inclusion criteria for the study subjects were Saudi citizen, age ≥15 years. Data was collected using pre-piloted questionnaires during the visits to homes and public places that is Estarahes (party lounges), markets, and schools. The questionnaire contained a series of questions related to participant's demographic characteristics (4questions) and awareness of Anemia including general knowledge and risk factors (14 questions), Additionally, participant's sources of information on anemia were recorded. The questions were translated into Arabic language for better understanding of the participants. All the questions were closed-ended with the only possible answer of yes or no.

Ethical consideration: Ethical approval was obtained from the Ethics and Research Committee of Qassim University. Participation was voluntary and verbal consent was acquired from each participant.

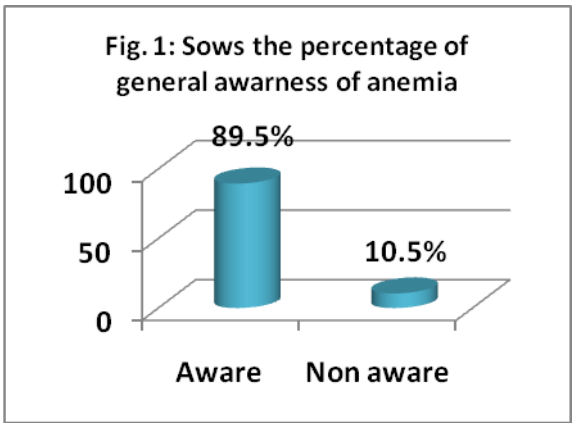
Statistical analysis : Data were analyzed statistically using Statistical Package for Social Sciences (SPSS) version 16. Demographic variables were expressed in percentage. Chi-square used to get association between demographic variables and causes of anemia .Significance is taken at and below the 0.05 level.

Results: 1281 questionnaires were distributed the response rate was 95.7%.Males represented 62.2%. In high education males were approximately twice times educated more than female. Students represented almost half of participants. The demographic data is shown in table 1.

Table 1. Shows the demographic characteristic of study participants (n=1281)

Variables		Total	Gender	
			Male (728)	Female(443)
			%	%
Age Group	15- 25	619	32.5	20.3
	26-35	250	12.0	9.4
	36-45	174	9.9	5.0
	>46	128	7.8	3.2
Education	Illiterate	44	1.3	2.4
	Primary schools	58	1.9	2.9
	Intermediate	102	4.3	4.3
	Secondary	502	26.6	15.6
	University and above	484	27.6	13.1
Occupation	Students	517	27.1	16.7
	Government officers	455	29.6	8.9
	House wife	143	0	12.1
	Labour	22	1.7	0.2
	Retired	45	3.5	0.3

Satisfactory, fair, and poor awareness of anemia represented 20.5%, 50.5%, and 29.0% respectively, while the mean of awareness was 44.0 ± 22.8.



In table 2 data represented significant results of awareness ($p < 0.001$) of drinking tea, eating fava bean and pregnancy as anemia causes in both male

and female. Moreover, vegetarianism, drinking tea during meal, pregnancy, inheritance, renal failure and intestinal worms represented as well known causes of anemia in all levels of education as shown in table 3.

Table 2. Shows association between gender distribution and anemia causes (n=1281)

Anemia cause	Level of awareness	Total	Gender		P_ value
			Male	Female	
			%	%	
Vegetarianism	Yes	530	31.0	18.8	0.132
	No	533	29.4	20.7	
Drinking tea during meal	Yes	544	27.1	24.1	0.001**
	No	517	33.3	15.5	
Fava bean	Yes	828	49.1	28.8	0.001**
	No	235	11.4	10.7	
Pregnancy	Yes	700	36.1	30.1	0.001**
	No	357	24.2	9.6	
Benzene exposure	Yes	210	13.7	6.1	0.09
	No	848	46.7	33.5	
Lead exposure	Yes	142	9.7	3.8	0.19
	No	914	50.8	35.8	
Inheritance	Yes	715	41.2	26.5	0.380
	No	342	19.3	13.1	
Renal failure	Yes	465	25.8	18.1	0.176
	No	593	34.6	21.5	
Malaria & Autoimmune diseases	Yes	412	22.5	16.6	0.065
	No	641	38.0	22.9	
Ulcers& pile	Yes	337	19.1	12.9	0.378
	No	718	41.4	26.6	
Heavy periods	Yes	329	19.1	12.0	0.356
	No	727	41.3	27.6	
Intestinal worms	Yes	448	26.0	16.5	0.351
	No	607	34.4	23.1	

*P≤ 0.05 ** P≤ 0.001

Furthermore the data showed in table 4 vegetarianism, drinking tea, pregnancy and renal failure as well known causes of anemia in different categories of education.

Discussion : Anemia is a major public health problem but mostly ignored whether the country is developing or developed. In developing countries it serves as a primary cause for 40% of maternal death either directly or indirectly. World Health report of 2002 identified anemia as one among the top 10 risks for mortality [7]. In the present study has highlighted satisfactory knowledge of anemia in Saudi citizens inQassim region. They seemed to have fair idea regarding the causes of anemia.

The percentage of awareness was 89.2% as illustrated in figure 1, and the degree of fair awareness was 50.5% which may reflect the level of education of participants in this study as 76.8% of them had either secondary or university education.

Moreover males were more aware of anemia causes than females even in nutritional behavior, heavy periods and pregnancy as major causes of anemia. The data is consistent with previous studies from other part of world showed the association between level of education and the increase in anemia knowledge. [8]

Previous study have been conducted in Saudia Arabia regarding anemia were about the prevalence of iron deficiency anemia among female at university stage, Al-Sayes et al 2011 recommended to use screening and educational programs for iron deficiency anemia among female as high risk groups. Iron supplement and food iron fortification are required in order to overcome this simple but common health problem.[9]

The degree of anemia awareness is directly proportional to the level of education as shown in table 3. Showing that education plays a role in the awareness anemia. The present study represented that, governmental officers were had the highest knowledge about anemia causes.

A vast majority of the subjects were aware of drinking tea during the meal and pregnancy as anemia causes ($p < 0.001$) regard less gender, level of education and nature of occupation.

Our study showed that, vegetarianism and pile & ulcer also were considered as known causes of anemia in different categories of occupation and education levels.A statistical report of WHO has shown that anemia has remained a significant nutritional problem among pregnant women in developing world and one of the reasons include gastro intestinal side effects [10]

Table 3. Shows association between education levels and anemia causes (n=1281)

Anemia cause	Level of awareness	Total %	Education					P_value
			Illiterate	Primary schools	Intermediate	Secondary	University and above	
			%	%	%	%	%	
Vegetarianism	Yes	49.5	1.2	2.3	3.1	19.0	23.9	0.01*
	No	50.5	1.5	2.4	4.9	22.4	19.4	
Drinking tea during meal	Yes	50.7	1.1	2.6	3.2	18.6	25.2	0.001**
	No	49.3	1.6	2.1	4.8	22.6	18.3	
Fava bean	Yes	77.5	2.2	3.7	5.9	31.3	34.5	0.516
	No	22.5	0.5	1.0	2.1	10.1	8.9	
Pregnancy	Yes	64.5	2.5	3.7	4.7	23.2	30.4	0.001**
	No	35.5	1.4	1.4	4.0	17.4	11.3	
Benzene exposure	Yes	19.9	0.9	1.0	1.8	7.2	8.9	0.446
	No	80.1	1.7	3.7	6.1	34.2	34.4	
Lead exposure	Yes	13.6	0.6	0.4	0.7	4.9	6.9	0.059
	No	86.4	2.0	4.3	7.2	36.5	36.3	
Inheritance	Yes	67.4	1.3	2.7	4.5	26.7	32.2	0.001**
	No	32.6	1.3	2.0	3.4	14.7	11.2	
Renal failure	Yes	43.9	1.1	2.1	2.7	15.9	22.1	0.001**
	No	56.1	1.6	2.6	5.2	25.4	21.3	
Malaria & Autoimmune diseases	Yes	38.8	1.2	1.9	2.7	12.9	20.2	0.001**
	No	61.2	1.5	2.9	5.2	28.3	23.3	
Ulcers& pile	Yes	31.9	1.4	1.8	2.8	11.4	14.6	0.024*
	No	68.1	1.3	2.9	5.2	29.8	28.9	
Heavy periods	Yes	31.0	1.0	1.3	2.4	11.4	14.9	0.230
	No	69.0	1.7	3.4	5.5	29.9	28.5	
Intestinal worms	Yes	42.0	0.8	1.8	3.0	15.8	20.6	0.027
	No	58.0	1.8	3.0	4.9	25.6	22.7	

*P≤ 0.05 ** P≤ 0.001

Exposing to the chemicals such as benzene and lead were significantly unknown may be it is specific occupational health safety.

In our study the knowledge of heavy periods as one cause of anemia was observed very poor particularly female, so there is an urgent need of increase in women's education as educated mothers exhibited sound maternity health. Maternal health care centers and regular antenatal care visits really play a major role in creating awareness regarding anemia and other women gender problems. Media also have a key influence on the awareness regarding iron in the diet and also in informing which foods are rich in iron. [11]

The Results of this study showed that other medical causes of anemia such as inheritance, renal failure, malaria &autoimmune diseases and intestinal worms represented different degrees of awareness but generally was poor knowledge.Educational programs should be conducted to improve public awareness of anemia and its causes, and medical education is needed to ensure a greater awareness of anemia and the testing needed to establish diagnosis as well as underlying causes.

Table 4. Shows association between occupation and anemia causes (n=1281)

Anemia cause	Level of awareness	Total %	Occupation					P_value
			Retired	Labor	House wife	Government officers	Students	
			%	%	%	%	%	
Vegetarianism	Yes	49.5	1.8	0.7	5.4	22.9	18.7	0.001**
	No	50.5	1.6	0.7	5.7	17.2	25.2	
Drinking tea during meal	Yes	50.8	2.0	1.0	6.3	22.7	18.8	0.001**
	No	49.2	1.4	0.5	4.8	17.4	25.1	
Fava bean	Yes	77.4	3.0	1.2	7.9	31.8	33.5	0.160
	No	22.6	0.4	0.3	3.1	8.3	10.4	
Pregnancy	Yes	66.1	2.5	0.6	9.3	29.5	24.3	0.001**
	No	33.9	0.9	0.9	1.9	10.7	19.5	
Benzene exposure	Yes	19.6	0.9	0.4	1.7	8.4	8.3	0.436
	No	80.4	2.5	1.1	9.5	31.8	35.6	
Lead exposure	Yes	13.5	0.7	0.4	1.0	6.0	5.3	0.107
	No	86.5	2.7	1.1	10.1	34.0	38.6	
Inheritance	Yes	67.4	2.4	0.7	7.2	27.9	29.2	0.250
	No	32.6	1.0	0.8	3.8	12.3	14.7	
Renal failure	Yes	43.8	2.1	0.6	4.6	19.1	17.3	0.020*
	No	56.2	1.3	0.8	6.5	21.0	26.6	
Malaria & Autoimmune diseases	Yes	38.6	1.5	0.5	4.0	17.2	15.4	0.181
	No	61.4	2.0	1.0	7.1	23.1	28.3	
Ulcers& pile	Yes	31.7	2.0	0.4	3.7	12.9	12.7	0.011*
	No	68.3	1.5	1.1	7.4	27.2	31.2	
Heavy periods	Yes	30.7	1.6	0.4	3.1	13.7	12.0	0.051
	No	69.3	1.9	1.1	8.1	26.5	31.7	
Intestinal worms	Yes	42.1	1.8	0.7	3.7	17.9	18.1	0.186
	No	57.9	1.7	0.8	7.4	22.3	25.6	

*P≤ 0.05 ** P≤ 0.001

Conclusions : This is the first study to show general knowledge of anemia and it's causes among Saudi population in Qassim region, our data shows that, Saudi population in Qassim region has satisfactory general knowledge of anemia, however, they are not very well aware of anemia causes. Therefore, our study suggests that more efforts should be made to increase the knowledge of anemia causes in the population

Acknowledgement: The authors are grateful to all students at Qassim University who participated in data collection of this study. Thanks also are due to Mr. Yousef Musaad, College of Bioinformatics for his guidance in statistical analysis.

References

1. Fredrick M, Abrahamian DO. Chronic Anemia. Article by FACEP". {http://www.emedicine.com/emerg/topic734.htm#section~clinical} 2009-12-07.
2. Crompton DWT et al. controlling disease due to helmint infections. Geneva, World Health Organization. 2003.
3. Kordas K, Lopez P, Rosado JL,García Vargas G, Alatorre Rico J, RonquilloD,CebriánME,Stoltzfus RJ. Blood lead, anemia, and short stature are independently associated with cognitive

performance in Mexican school children. J. Nutr. 2004; 134 (2): 363-371.
4. WHO Report. World prevalence of anemia 1993-2005. WHO Global Database on Anemia. Geneva, World Health Organization. 2008.
5. Al-Buhairan AM, Oluboyede OA. Determination of serum iron, total iron-binding capacity and serum ferritin in Saudi adults. Ann. Saudi. Med. 2001; 100 (21): 1-2.
6. Sebai ZA, El-Hamzi MAF, Serenius F. Health profile of preschool children in Tamnia villages, Saudi Arabia. Saudi Med. J. 1981; 2(1): 68-71.
7. World Health Organization (2009) Global Health Risks: Mortality and burden of disease attributable to selected major risks.
8. Kapur D, Sharma S, Agarwal KN. Effectiveness of nutrition education, iron supplementation or both on iron status in children. Indian Paediatr. 2003;40 (12): 1131-44.
9. Al-Sayes F, Gari M, Qusti S, Bagatian N, Abuzenadah A. Prevalence of iron deficiency and iron deficiency anemia among females at university stage. Journal of Medical Laboratory and Diagnosis. 2011; 2(1): 5-11.
10. World Health Organization. Iron deficiency anemia: Assessment, prevention and control- A guide line for programme Managers. Geneva. 2001.
11. Hussain T, Shu L Y. Awareness of Iron Deficiency Anemia among Women of Reproductive Age in Hubei Province, China. Asian Journal of Medical Sciences. 2010;1(1):12-13.
12. Journal of Medicine,microbiology20,141-144.

Conflict of interest: None
Funding: None