

Prevalence of Depression in Anemia Patients of Asir Region, Saudi Arabia

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Introduction

Depression is a mental disorder that is usually comorbid with physical illnesses, which suggests shared underlying pathophysiological mechanisms (e.g., inflammatory system and brain adaptation). Korkmaz et al. (2015) found that anemia has been more prevalent in patients with psychiatric disorders, including depression, than in those who don't have any such condition. A more recent study reported the association between anemia and depression has been found more in a non-clinical adult population than in healthy adults (Vulser et al., 2016). Though there are few

research on iron deficiency anemia (IDA), the most frequent nutritional deficit, a link between IDA and depression intensity and its relationship to somatic (especially gastrointestinal) symptoms was found in 125 IDA patients compared to 57 healthy controls (Pamuk et al., 2015). Moreover, Murat et al. (2015) reported that IDA had a negative impact on sleep quality, anxiety, and depression in 104 IDA patients compared to 80 healthy controls. In addition, the presence of serum iron deficiency was linked to depressive symptoms in 1875 aged people (Stewart & Hirani, 2012).

The link between poor nutrition and depression has been proposed, particularly in women of childbearing age who are susceptible to nutritional depletion, notably iron deficiency. Hemorrhage is a common cause of anemia in the postpartum period, and it has been linked to iron shortage and depression (Milman, 2011). Low blood hemoglobin, iron status variables, and low plasma ferritin levels have all been linked to postpartum depression. Low serum ferritin levels, which are a measure of bodily iron storage, were linked to an increased prevalence of depression in men but not in women in a middle-aged group. Previous research suggests that gender differences may be at the root of the link between IDA and sadness.

One of the most frequent hemoglobinopathies is sickle cell disease (SCD), which include sickle cell anemia (SCA), sickle cell hemoglobin C disease, sickle beta thalassemia, and others (Quinn, 2013). The disease is characterized by the sickling of hemoglobin in red blood cells and is transmitted as an autosomal recessive disease. The most severe form of SCD is SCA. Acute chest syndrome, pulmonary hypertension, frequent painful episodes, and osteomyelitis are among the signs and complications that patients with SCA suffer. Because of their heightened susceptibility to significant morbidities such renal, respiratory, and cardiac problems, as well as stroke, they live shorter lives than the general population (Chakraborty & Williams, 2015). In high-income countries, the median life expectancy is 40-60 years, but it is substantially lower in low-

income countries. Furthermore, due to frequent painful episodes, individuals with SCA have much lower quality of life scores than patients with other chronic conditions such as congenital heart disease and nephrotic syndrome (Bhagat et al., 2014). It is estimated that worldwide about 300,000 children are born with SCD each year (Piel et al., 2013).

SCA is linked to a high prevalence of acute care contacts and rehospitalization in the USA, according to a historical cohort of SCA-related data from eight states (Brousseau et al., 2010), which greatly raises the entire cost of health care for these patients. SCA-related hospitalizations, for example, cost the US government roughly US\$ 475 million per year between 1989 and 1993. In Saudi Arabia, SCA is common, especially eastern and southwestern regions (Alhomoud et al., 2018). However, there are currently no credible statistics on the prevalence of SCA in Saudi Arabia. Nonetheless, the Saudi Ministry of Health has taken attempts to reduce the disease's incidence by instituting premarital screening and a genetic counseling program (Memish & Sayeedi, 2011).

Psychiatric issues and depression are widespread among SCA patients, as they are with other chronic disorders. Many variables contribute to this, including the chronic nature of the disease, the severity of symptoms, and the existence of psychosocial stresses. Previous research in this area has tended to look at the frequency of depression in SCA patients as well as patients with different SCD genotypes as a whole. The prevalence of depression among SCD adult patients has been reported to be between 21.6 percent to 44 percent worldwide over the last decade (Hasan et al., 2003).

Anie, Egunjobi, and Akinyanju (2010) in a comprehensive study conducted in Nigeria to evaluate the psychological impact of SCD in 408 individuals, discovered that almost half of the subjects were depressed. In another study conducted in Jamaica, Asnani et al. (2010) looked at the

incidence of depression in 277 SCD patients and 65 controls, finding a prevalence rate of 21.6 percent in SCD patients and 9% in controls. There is no study, however, on the prevalence of depression in anemia patients in Saudi Arabia. As a result, the goal of this study is to find out how common depression is among anemia patients in Saudi Arabia's southern province of Asir, as well as the factors that contribute to depression.

Methods

This is a cross-sectional study, in which data is collected through a questionnaire comprising the demographic questions and items related to the population's knowledge about joint pain, its causes, effects on their daily lives and preventive measures. The survey was conducted in the Asir region of Saudi Arabia. Data were collected from the common public in the region. Informed consent was obtained from each of the participants. After the collection of data, they were coded and entered in the SPSS ver.20 software for analyses descriptive statistics (mean standard deviation, frequencies, and %s were computed), to measure the significance differences chi-square test was used at 5% level of significance. Ethical approval was obtained from King Khalid University, Saudi Arabia. The study was conducted during the period between July 2021 and October 2021.

Results

Table 1 demonstrates demographic data like residence, age, education, gender, income, marital status, occupation, and nationality of the survey's 218 participants. Out of these respondents, 201 (92.2%) are from Asir, the southern-most region of the Kingdom of Saudi Arabia, while the remaining are from other regions. A little less than three fourth (72.9%) of them are from the age group of 18 to 30 years. As for education of the participants, a significant number of them

(77.5%) have at least undergraduate-level education or higher, whereas only 3 of them have just primary-level education. More than three quarters of the sample population are females and the rest are males. As for the economic status of the population, 167 of them (76.6%) earn a monthly income of Saudi Riyal (SAR) 5,000 or more, whereas the remaining earn less than SAR 5,000 per month. More than half of them (112 or 51.4%) are students, while 30.7 percent of them are unemployed. Almost all of the respondents (215 out of 218) are Saudi nationals.

Table 1 Demographics			
Do you live in the Asir region?			
		Frequency	Percent
	Yes	201	92.2
	No	17	7.8
	Total	218	100.0
Age (in years)			
		Frequency	Percent
	Less than 18	8	3.7
	18-24	115	52.7
	25-30	44	20.2
	31-40	37	17.0
	more than 40	14	6.4
Total		218	100
P value = 8.690			
Education			
		Frequency	Percent
	Primary school	3	1.4
	Middle School	6	2.8
	High School	40	18.3
	University	160	73.4
	Postgraduate	9	4.1
	Total	218	100
Gender			
		Frequency	Percent
	Male	49	22.5
	Female	169	77.5
Total		218	100
P = 0.120			
Monthly family income (in SAR)			
		Frequency	Percent
	Less than 5,000	51	23.4

	5,000-15,000	107	49.1
	More than 15,000	60	27.5
	Total	218	100
	Above 15000	83	14.3
P = 5.066			
Occupation			
		Frequency	Percent
	Student	112	51.4
	Teacher	1	0.5
	Military-sector employee	17	7.8
	Private-sector employee	21	9.6
	Unemployed	67	30.7
P = 2.462			
Marital status			
		Frequency	Percent
	Single	135	56.4
	Married	73	33.5
	Divorced	8	3.7
	Widow	2	0.9
	Total	218	100
P value = 3.676			
Nationality			
		Frequency	Percent
	Saudi	215	98.6
	Non-Saudi	3	1.4
	Total	218	100
P value = 5.511			

Chart 1 shows that more than one-third of the participants are anemic. Almost half of those who have anemia suffer from iron-deficiency anemia, whereas 10 percent have anemia due to lack of vitamin B12 or folate (Chart 2). Chart 3 shows that more than 31 participants said they are diagnosed with mental disorders. According to Chart 4, about 21 participants said they either take psychiatric medicines or have taken them in the past. As for the psychiatric medicines used by these 21 respondents, 12 takes or have taken Lexapro and three of them have Effexor SR (Chart 5)

Chart 1: Percentage of anemia patients

chart 1: depicts that is respondent anemic or not

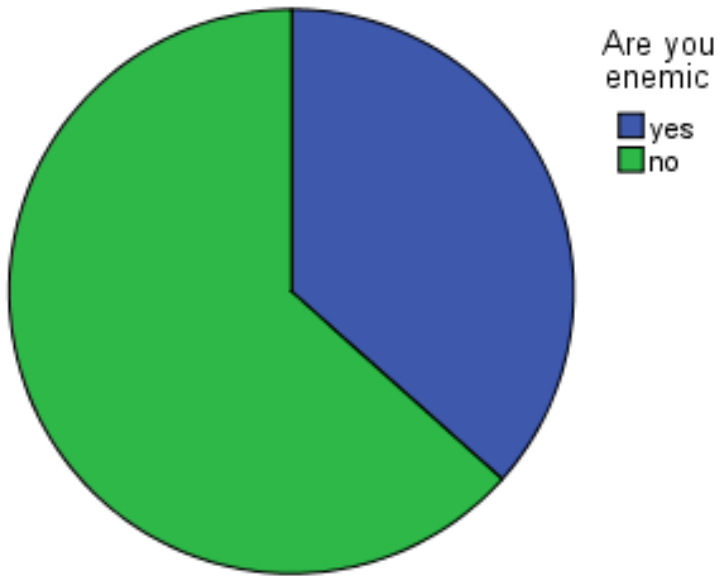
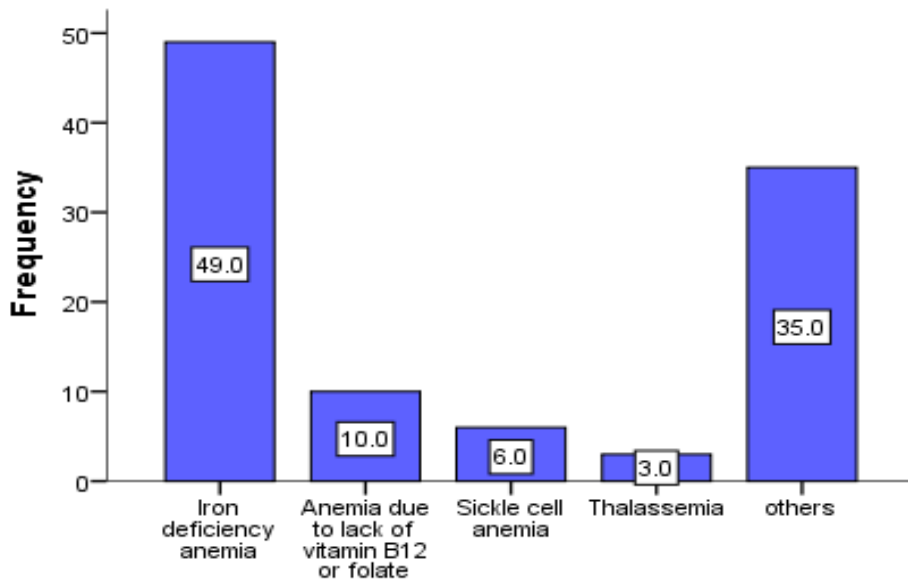


Chart 2: Types of anemia



Char 3: Have you ever been diagnosed with any mental disorder?

Chart 3: Have you diagnosed with mental disorder ?

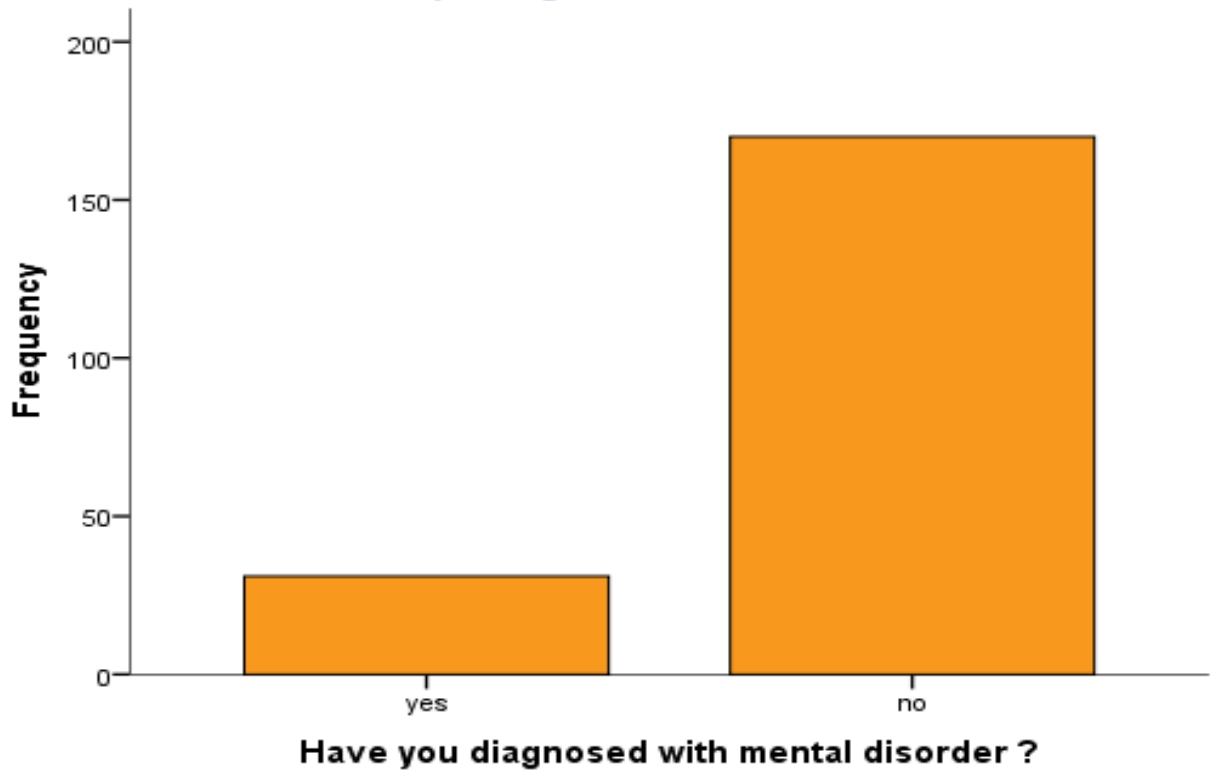


Chart 4: Do you take or have you ever taken any psychiatric medication?

Do you take any psychiatric medications or have you taken any?

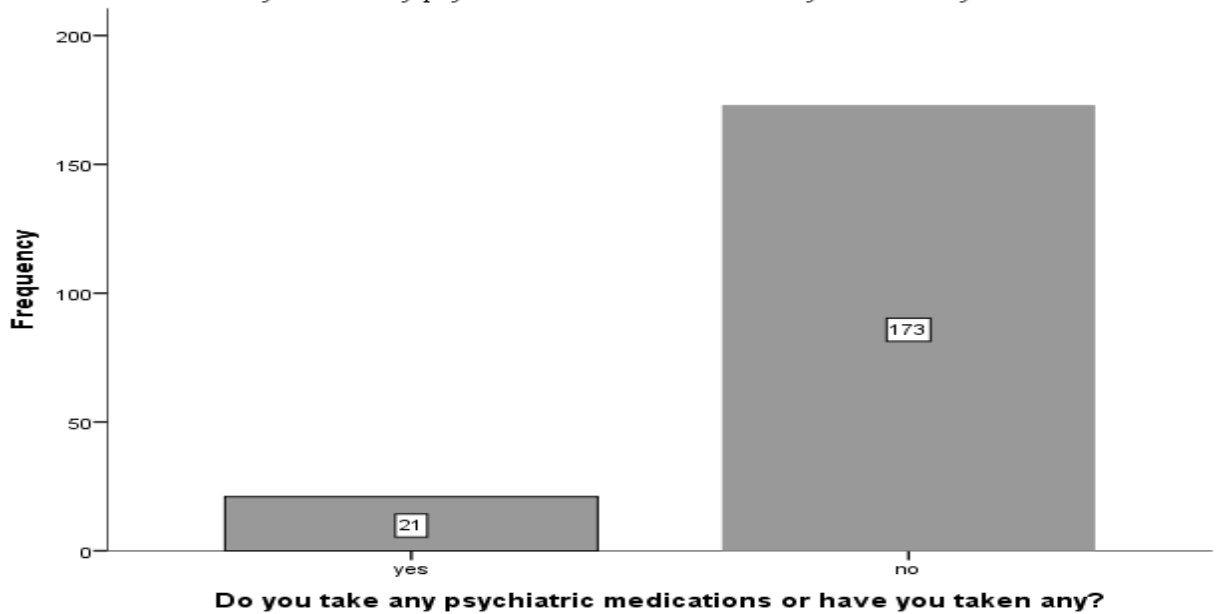


Chart 5: Names of psychiatric medication used by the patients

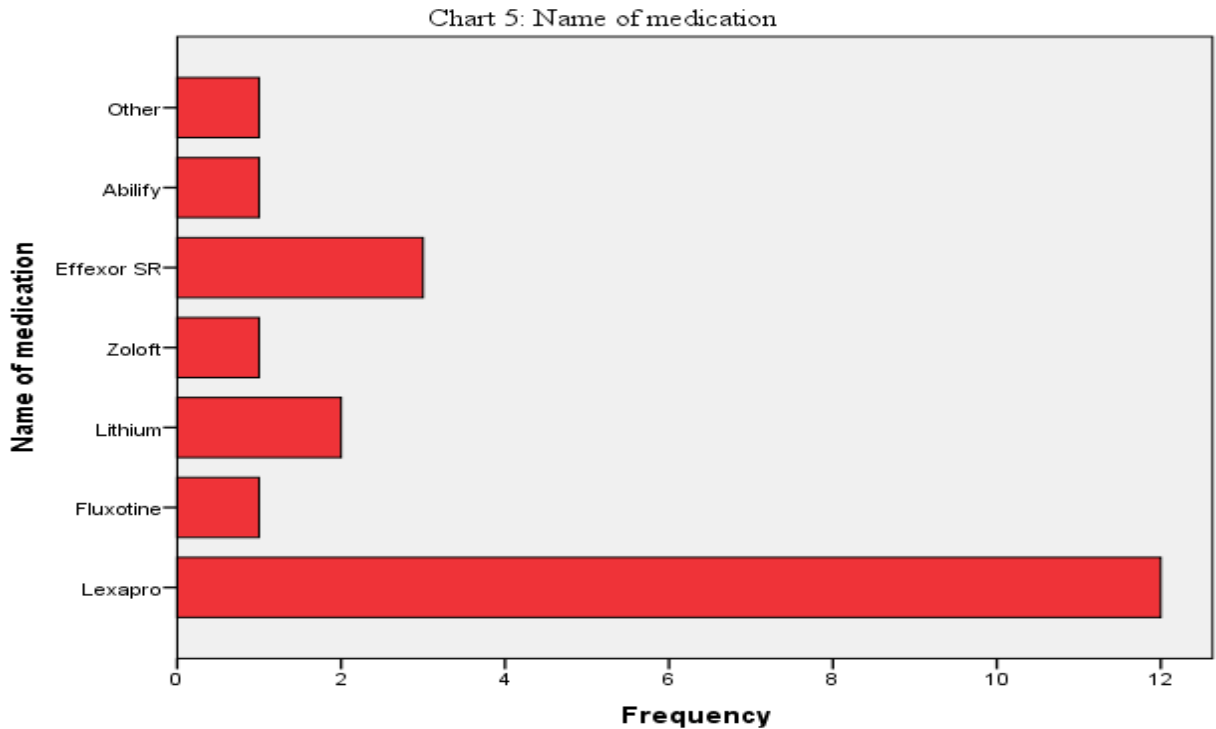


Table 2 compares the demographic characteristics of the participants who have mental disorders. Almost half of those having the disorders are single, whereas another 45 percent are married. All the 31 live in Asir region. Thirteen of them (42%) are between the age of 18 and 24v years. Only 6.5 percent of the patients are aged 40 years or above. Except one, all the respondents are Saudi nationals. Almost three-fourth of them are females whereas the rest are males. In terms of occupations, students (13) and unemployed people (9) suffer the most. Twenty respondents said they earn between SAR 5,000 and 15,000 per month.

Table 2: Comparison of demographics with mental disorder

Marital Status of the participants with a mental disorder			
		Frequency	Percent
	Married	14	45.1
	Single	15	48.3
	Divorced	1	3.2
	Widow	1	3.2
Do you live in Asir Region?			
	Yes	31	100

	No	0	0
Age of the respondents with mental disorders			
		Frequency	Percentage
	less than 18 years	1	3.2
	18-24 years	13	42
	25-30 years	4	12.9
	31-40 years	11	35.4
	more than 40 years	2	6.5
Nationality of the respondents with mental disorders			
	Nationality	Frequency	Percentage
	Saudi	30	96.8
	Non-Saudi	1	3.2
Gender of the respondents with mental disorders			
		Frequency	Percentage
	Male	8	25.8
	Female	23	74.2
Occupation of the respondents with mental disorders			
		Frequency	Percentage
	Student	13	41.9
	Military-Sector Employees	4	12.9
	Private-Sector Employee	5	16.1
	Unemployed	9	29.1
Family income of the respondents with mental disorders			
	Less than SAR 5,000	5	16.1
	SAR 5,000-15,000	20	64.5
	More than SAR 15,000	6	19.4

Discussion

The study found that mental disorders are detected in 31 participants (14.2%). In Saudi Arabia, depression is one of the top five primary causes of disability (Memish et al., 2014). Depression has been reported in many subpopulations, including primary healthcare patients, secondary school students, and the elderly, in various parts of the country. In comparison to earlier studies, the current study's SCA patients had a significant rate of depression. Furthermore, few studies have found that non-SCD cohorts have a similar or higher risk of depression. The use of several depression scales with varied sensitivities and specificities could explain the disparity.

The study revealed that almost two-thirds of the 218 respondents have anemia, of whom almost half (49%) have IDA, 10 percent have anemia due to lack of Vitamin B12 and folate, and only 6% have SCA. More than one-fifth said they take or have taken at least one psychiatric medication. Lexapro is found to be the most widely used medicine.

One of the significant and surprising findings of the study is that more than half of the respondents with depression are young people in the 18-24 age group. If we include people aged between 30 and 40, the number becomes a mammoth 88.3 percent. Moreover, among those who reported having depression, female participants amount to a little less than three quarters. In terms of occupation categories, over 40% of the respondents are students and, not surprisingly though, another 29 percent are unemployed. It is found that people in the middle-income group (SAR 5,000-15,000) suffer mental disorders the worst (64.5%).

Conclusion

The findings of this study suggest healthcare practitioners should look for both physical and psychological health problems in patients with anemia on a regular basis, and treat them appropriately with antidepressants, psychotherapy, and psychiatric referral as necessary. Healthcare practitioners should take an active part in helping these at-risk people better their quality of life.

The prevalence of depression among anemia patients was found to be high in this study. The most significant characteristics related with depression in anemia patients are the presence of both the conditions among the young population and a higher number of female patients than male ones. Our data back up the concept that depression in anemia patients is linked to demographic and illness severity characteristics.

References

- Alhomoud, M. A., Gosadi, I. M, Wahbi, H. A. (2018). Depression among sickle cell anemia patients in the Eastern Province of Saudi Arabia. *Saudi journal of medicine & medical sciences*. 6. 8-12.
- Anie, K. A., Egunjobi, F. E., Akinyanju, O. O. (2010) Psychosocial impact of sickle cell disorder: Perspectives from a Nigerian setting. *Global health*. 6(2).
- Asnani, M. R., Fraser, R., Lewis, N. A., Reid, M. E. (2010). Depression and loneliness in Jamaicans with sickle cell disease. *BMC psychiatry*. 10(40).
- Bhagat, V. M., Baviskar, S. R., Mudey, A. B., Goyal, R. C. (2014). Poor health related quality of life among patients of sickle cell disease. *Indian journal of palliative care*. 20. 107-111.
- Brousseau, D. C., Owens, P. L., Mosso, A. L., Panepinto, J. A., & Steiner, C. A. (2010). Acute care utilization and rehospitalizations for sickle cell disease. *JAMA*, 303(13), 1288–1294. <https://doi.org/10.1001/jama.2010.378>
- Chakravorty, S., & Williams, T. N. (2015). Sickle cell disease: a neglected chronic disease of increasing global health importance. *Archives of disease in childhood*. 100(1), 48–53. <https://doi.org/10.1136/archdischild-2013-303773>
- Duric, V., Clayton, S., Leong, M. L., & Yuan, L. L. (2016). Comorbidity Factors and Brain Mechanisms Linking Chronic Stress and Systemic Illness. *Neural plasticity*. <https://doi.org/10.1155/2016/5460732>
- Hasan, S. P., Hashmi, S., Alhassen, M., Lawson, W., & Castro, O. (2003). Depression in sickle cell disease. *Journal of the national medical association*, 95(7), 533–537.
- Hideese, S. K., Asano, S., & Kunugi, H. (2018). Association between iron-deficiency anemia and depression: A web-based Japanese investigation: iron-deficiency anemia and depression. *Psychiatry and Clinical neurosciences*, 72(7), 513–521. <https://doi.org/10.1111/pcn.12656>
- Korkmaz, S., Yıldız, S., Korucu, T., Gundogan, B., Sunbul, Z. E., Korkmaz, H., & Atmaca, M. (2015). Frequency of anemia in chronic psychiatry patients. *Neuropsychiatric disease and treatment*, 11, 2737–2741. <https://doi.org/10.2147/NDT.S91581>
- Memish, Z. A., Jaber, S., Mokdad, A. H., AlMazroa, M. A., Murray, C. J., Al Rabeeah, A. A., & Saudi Burden of Disease Collaborators (2014). Burden of disease, injuries, and risk factors in the Kingdom of Saudi Arabia, 1990-2010. *Preventing chronic disease*, 11, E169. <https://doi.org/10.5888/pcd11.140176>
- Memish, Z. A., & Saeedi, M. Y. (2011). Six-year outcome of the national premarital screening and genetic counseling program for sickle cell disease and β -thalassemia in Saudi Arabia. *Annals of Saudi medicine*, 31(3), 229–235. <https://doi.org/10.4103/0256-4947.81527>

- Milman N. (2011). Postpartum anemia I: definition, prevalence, causes, and consequences. *Annals of hematology*, 90(11), 1247–1253. <https://doi.org/10.1007/s00277-011-1279-z>
- Pamuk, G. E., Uyanik, M. S., Top, M. S., Tapan, U., Ak, R., & Uyanik, V. (2015). Gastrointestinal symptoms are closely associated with depression in iron deficiency anemia: a comparative study. *Annals of Saudi medicine*, 35(1), 31–35. <https://doi.org/10.5144/0256-4947.2015.31>
- Piel, F. B., Patil, A. P., Howes, R. E., Nyangiri, O. A., Gething, P. W., Dewi, M., Temperley, W. H., Williams, T. N., Weatherall, D. J., & Hay, S. I. (2013). Global epidemiology of sickle haemoglobin in neonates: a contemporary geostatistical model-based map and population estimates. *Lancet* (London, England), 381(9861), 142–151. [https://doi.org/10.1016/S0140-6736\(12\)61229-X](https://doi.org/10.1016/S0140-6736(12)61229-X)
- Quinn C. T. (2013). Sickle cell disease in childhood: from newborn screening through transition to adult medical care. *Pediatric clinics of North America*, 60(6), 1363–1381. <https://doi.org/10.1016/j.pcl.2013.09.006>
- Stewart, R., & Hirani, V. (2012). Relationship between depressive symptoms, anemia, and iron status in older residents from a national survey population. *Psychosomatic medicine*, 74(2), 208–213. <https://doi.org/10.1097/PSY.0b013e3182414f7d>
- Vulser, H., Wiernik, E., Hoertel, N., Thomas, F., Pannier, B., Czernichow, S., Hanon, O., Simon, T., Simon, J. M., Danchin, N., Limosin, F., & Lemogne, C. (2016). Association between depression and anemia in otherwise healthy adults. *Acta psychiatrica Scandinavica*, 134(2), 150–160. <https://doi.org/10.1111/acps.12595>