REVIEW ARTICLE

Anemia Among Women and Children in Saudi Arabia: Is it a Public Health Burden?

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SUMMARY

Background: **Anemia is a global health burden affecting developing and developed countries alike, estimated to affect one-third of the world's population. The most prevalent type of anemia globally is iron deficiency anemia. The groups most vulnerable to developing anemia include children, women (particularly pregnant women), and the elderly, primarily in developing nations. Anemia is also widespread in Gulf countries, including Saudi Arabia, where estimates suggest the disease affects up to 70% of women and children. The aim of the current review was to report the incidence of anemia among women and children in Saudi Arabia and the impact of anemia on pregnancy.**
Methods: **The main electronic databases were searched for publications on anemia among women and children in Saudi Arabia.**
Results: **In Saudi Arabia, the incidence of anemia among children and women ranges from 12.5% to 70%, varying by province. Younger pregnant women exhibit a higher prevalence of anemia than older pregnant women. The primary risk factors for developing anemia among children and women in Saudi Arabia include lifestyle choices, low dietary intake, the number of pregnancies, and sociodemographic factors. Consequently, anemia is a major health burden in Saudi Arabia, necessitating serious planning and intervention to reduce anemia-related complications among women and children.**
Conclusions: **Despite substantial development and improvements in socio-economic factors, anemia remains a major health issue for children and women in Saudi Arabia. Therefore, the underlying factors, including nutritional and other risk factors, warrant further investigation.**
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Supplementary Data

Table S1. Reported percentage of anemia among non- and pregnant females in Saudi Arabia.

Province	City	Year	% of anemia	Total population	Population	Age	Reference
Nationwide		2020	50.2%	7,427	female and male residents	> 15 years	[10]
		2020	48.3%	3,529	females	> 15 years	[10]
		2020	28.1%	981	mixed	> 17 years	[11]
		2023	12.5% - 70%	-	females	> 18 years	[9]
		2023	18% - 58%	-	pregnant women	> 18 years	[9]
Riyadh	Riyadh	2007	21%	102	females	> 18 years	[12]
		2013	40%	969	females	15 - 49 years	[13]
		2016	20.4%	372	pregnant women	> 18 years	[18]
		2018	30.75%	10,600	pregnant women	> 18 years	[20]
		2018	41.6%	683	females	> 18 years	[14]
		2019	12%	173	females and males	18 - 29 years	[15]
		2020	54.6%	1,893	female and male adults	> 15 years	[10]
		2021	28.4%	250	females	20 - 65 years	[16]
		2024	46%	240	obese females	> 18 years	[17]
Eastern	Province	2020	35.5%	887	female and male residents	> 15 years	[10]
	Al-Khobar	2008	41.3%	464	pregnant women	adults	[4]
	Al-Hasa	2010	45.2%	787	pregnant women	> 18 years	[26]
		2014	54.8%	31	pregnant, non-pregnant, and adolescents	12 - 44 years	[27]
	Dammam	2018	38.38%	120	female students	> 18 years	[28]
	Dhahran	2019	35.3%	201	female students	18 - 25 years	[29]
Qassim	Province	2020	26.2%	284	female and male residents	> 15 years	[10]
	Buridah	2020	29.3%	233	pregnant women	18 - 42 years	[31]
	Alghat	2022	51%	1,663	females and males	> 15 years	[32]
			21%	849	females	> 15 years	[32]
	Buraydah	2023	28.1%	520	obese pregnant women	> 16 years	[33]
Makkah	Province	2020	56.4%	2,069	female and male residents	> 15 years	[10]
	Makkah	2012	39%	100	pregnant women	> 18 years	[34]
		2022	41.9%	310	pregnant women	> 18 years	[35]
		2022	47.3%	12,020	females	> 18 years	[36]
		2023	13%	100	females	19 - 23 years	[37]
	Jeddah	2010	43.1%	8,981	pregnant women	> 20 years	[39]
		2011	23.6%	310	females	18 - 23 years	[40]
		2019	66.8%	1,037	obese pregnant women	> 18 years	[41]
		2020	55.6%	5,120	pregnant women	> 18 years	[42]
		2022	28.6%	336	pregnant women	> 18 years	[43]
	Taif	2014	25.3%	316	pregnant women	> 18 years	[47]

Table S1. Reported percentage of anemia among non- and pregnant females in Saudi Arabia (continued).

Province	City	Year	% of anemia	Total population	Population	Age	Reference
Madinah	Province	2020	47.9	627	female and male residents	> 15 years	[10]
	Madinah city	2015	64%	268	females	18 - 35 years	[50]
		2023	44%	300	pregnant women	16 - 45 years	[51]
Asir	Asir	1994	31.9%	6,539	pregnant women	> 18 years	[54]
		1995	21.6%	1,938	pregnant women	> 18 years	[55]
		2020	55.2%	566	female and male residents	> 15 years	[10]
		2020	63%	200	young females	19 - 27 years	[56]
	Bisha	2022	58.2%	683	adults and children	NA	[57]
Jazan	Province	2020	34.4%	325	female and male residents	> 15 years	[10]
	Jazan	2015	58.9%	389	pregnant women	19 - 48 years	[59]
		2020	67%	49	females	18 - 24 years	[60]
		2024	51.1%	90	females	18 - 25 years	[61]
		2024	51.6%	118	females	18 - 22 years	[62]
	Farasan island	2022	51.6%	130	females	18 - 25 years	[63]
Hail	Province	2020	17.7%	121	female and male residents	> 15 years	[10]
	Hail	2015	58%		pregnant women	20 - 40 years	[64]
		2021	34.1%	390	pregnant women	> 18 years	[65]
		2023	29.9%	334	pregnant women	≥ 18 years	[66]
Tabuk	Province	2020	49.7%	208	female and male residents	> 15 years	[10]
	Tabuk	2017	12.5%	200	females	18 - 25 years	[67]
		2023	48.73%	2,805	females and males	undetermined	[68]
			51.82%	1,428	females	undetermined	[68]
Norther Boarder province	Province	2020	13.3%	5	female and male residents	> 15 years	[10]
	Arar	2019	34.8%	299	pregnant women	≥ 18 years	[72]
		2020	43.33%	150	females and males	24 - 76 years	[71]
Najran	Province	2020	79.4%	175	female and male residents	> 15 years	[10]
Al-Baha	Baha	2020	81.5%	133	female and male residents	> 15 years	[10]
AL-Jouf	Province	2020	22.4%	134	female and male residents	> 15 years	[10]
	Al-Jouf	2016	32%	198	females	18 - 24 years	[75]