Original Article

Prevalence of Diabetes Mellitus Over the Years in Iraqi Governorates

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ABSTRACT

Objective: To determine the prevalence of Diabetes Mellitus (DM) cases in Iraqi Governorates over the years and highlight the underlying factors.

Study Design: This descriptive cross-sectional study.

Place and Duration of Study: This study was conducted at the College of Nursing, University of Al-Kufa, Kufa, Iraq from 1st April 2018 to 30th March 2022.

Methods: All patients who visit Iraqi health directorates in the Ministry of Health with a confirmed diagnosis of diabetes Mellitus were included in the study. Eighteen Health Directorates in Iraq affiliated with the Iraqi Ministry of Health were included in the Study, Kurdistan region (North Iraq) was excluded from the study. Each Health Directorate includes a different number of hospitals.

Results: A significant increase in diabetes mellitus patients over the years among males and females, the overall number (males & females) 547149 in 2018 and rose to 710359 in 2022. The males recorded 280574 in 2018 and the number increased to 352382 in 2022 while the females recorded 266575 in 2018 and dramatically increased to 357977 in 2022.

Conclusion: All the Iraqi governorates reveal a high prevalence of diabetes mellitus and the number proceeded to increase over the years, the numerals grew in both sexes. It is expected that DM become a major health problem in Iraq.

Key Words: Epidemiology, Diabetes Mellitus, Over Years, Iraqi Governorates

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INTRODUCTION

Not only in Iraq, diabetes mellitus is considered a global health problem, and the numeral going to increase. Due to stressful life events, machine-based jobs, decreased physical activity, fast food etc. the number of diabetic people is increasing.[1] Even though the predisposing factors of DM are clearly defined, the Incidence is expected to increase from 30 Million in 2025 to 80 Million in 2030 in the South East Asia Region.[2] The Middle East region has shown an epidemic increase in DM, in Basrah, Iraq, The prevalence of DM is extremely high. About every 5 adults, at least one of them suffering from DM. There is a significant strain on the health care system and fiscal resources.[3] Poor knowledge, low educational level, bad healthcare provider practices, and inadequate policymaker role-play directly affect the prevalence of DM in Iraq.[4] In the Middle East, the Number increased approximately two-five percentages per year. A regimen that includes a balanced diet, consistent exercise, and the maintenance of a healthy body mass index can potentially prevent or postpone the onset of DM. the majority risk factor of DM is obesity, providing accurate and valid data of DM prevalence rate will initiates a primary prevention plans which considered a cornerstone to minimize the incidence rate.

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METHODS

This descriptive cross-sectional study was used to identify the prevalence of diabetes mellitus over the years in Iraqi governorates. Eighteen Health Directorates were included; a non-probability (convenience) sample was used to gather all patients in the Iraqi Governorates/Health Directorates/ Governmental Hospitals. Ethical considerations are the cornerstone of the research. Official approval was obtained from the supreme council in the College of Nursing / University of Baghdad and then submitted to the Iraqi Ministry of Health/Health Directorates across the Governorates, furthermore, each patient was informed that all the subjective data would be secured. Data were collected at Consultation Departments/ Governmental Hospitals of the following Health

Directorates: Ibn Sina Hospital, Baghdad Health Directorate/Al-Karkh, Baghdad Health Directorate/Al-Rusafa, Baghdad Health Directorate/Medical City, Basra Health Directorate, Nineveh Health Directorate, Maysan Health Directorate, Diwaniyah Health Directorate, Diyala Health Directorate, Anbar Health Directorate, Babylon Health Directorate, Karbala Health Directorate, Kirkuk Health Directorate, Wasit Health Directorate, DhiQar Health Directorate, Muthanna Health Directorate, Salah al-Din Health Directorate and Najaf Health Directorate. The data was analyzed through SPSS-24.

RESULTS

Iraq, Baghdad (Capital of Iraq) Health Directorates in the Ministry of Health recorded a significant increase in the number of patients with Diabetes Mellitus (DM) in both males and females. The Health Directorates in Baghdad recorded 911604 cases from 2018 to 2022 (Table1). The Health Directorates within the Ministry of Health, located in the northern region of Baghdad (Nineveh, Salah al-Din, and Kirkuk), have reported a significant increase in the prevalence of diabetes mellitus (DM). The recorded cases were 68979 in 2018 and have been raised to 96980 in 2022 (Table 2). On the other hand, the South Baghdad Provinces which include Basrah, Maysan, Diwaniyah, DhiQar, and Muthanna also demonstrated a remarkable increase in DM prevalence, 138773 in 2018 which increased over the years to 209352 in 2022 (Table 3). The highest increase in the prevalence of DM was in the Al-Furat Al-Awsat Provinces (Diyala, Anbar, Diyala, Karbala, Wasit, and Najaf), which was 139066 cases in 2018 and dramatically worsened to 2013080 cases in 2022 (Table 4). The results of the study demonstrate a significant increase in Diabetes Mellitus patients over years among male and female, the male record 280574 in 2018 and the number increased to 353781 in 2022 while the females record 266575 in 2018 and increased to 356578 in 22022 (Fig. 1). Baghdad records the highest prevalence of DM followed by Al-Furat Al-Awsat, Southern Baghdad, and Northern Baghdad health directorates as 911604, 830511, 813041, and 378241 respectively, the overall number was 2933397 (Table 5).

Table No. 1: Baghdad (Capital of Iraq) Health Directorates

Years	Medical City		Baghdad/Al-Rusafa		Baghdad/Al-Karkh		Ibn Sina Hospital		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
2018	1999	2125	80946	67282	23872	23479	481	147	200331
2019	2112	2403	79789	74623	26869	27600	100	46	213542
2020	1003	938	51381	52394	21441	21185	74	37	148453
2021	3654	3664	51330	48983	25272	25188	134	106	158331
2022	6772	7104	60849	61461	28345	26126	207	83	190947
Total	15540	16234	324295	304743	125799	123578	996	419	911604

Table No. 2: North Baghdad Health Directorates

Years	Nineveh Health		Salah al-Din		Kirkuk		Total
	Male	Female	Male	Female	Male	Female	
2018	9406	8722	8896	9156	15048	17751	68979
2019	8646	9028	10428	10429	19016	19538	77085
2020	8123	8294	6652	6457	13886	16305	59717
2021	14052	14885	9133	9852	13443	14115	75480
2022	16853	17248	13587	13131	19293	16868	96980
Total	57080	58177	48696	49025	80686	84577	378241

Table No. 3: South Baghdad Health Directorates

Years	Basra		Maysan		Diwaniyah		DhiQar		Muthanna		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
2018	12741	12172	18298	18670	12234	11812	11273	12501	15567	13505	138773
2019	16638	17460	20917	21895	14150	13491	12838	14910	13060	12375	157734
2020	19593	21672	16888	17546	7971	7385	12740	13967	13005	11606	142373
2021	26507	28714	15108	16662	9089	9142	13177	14324	16550	15536	164809
2022	36007	37474	16484	18261	12454	11168	17764	18276	21084	20380	209352
Total	111486	117492	87695	93034	55898	52998	67792	73978	79266	73402	813041

Table No. 4: Al-Furat Al-Awsat Health Directorates

Years	Diyala		Anbar		Babylon		Karbala		Wasit		Najaf		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
2018	3003	3336	11072	11359	13038	12227	16819	17257	13734	15170	12147	9904	1390

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2019	3447	3462	19143	18189	15486	14875	15384	17162	11948	13237	15407	14536	162276
2020	3132	3197	22116	18780	13465	12616	11719	15584	10257	11993	12586	12109	147554
2021	4188	4242	24635	23466	17294	19568	12345	14056	13199	15122	10136	10284	168535
2022	5213	5429	27783	25221	25617	26587	17585	20779	20244	23130	7640	7852	213080
Total	18983	19666	104749	97015	84900	85873	73852	84838	69382	78652	57916	54685	830511

Table No. 5: Overall Number of patients with DM in the Iraq Regions over the years

Years	Baghdad Health Directorates	North Baghdad Health Directorates	South Baghdad Health Directorates	Al-Furat Al-Awsat Health Directorates	Total
2018	200331	68979	138773	139066	547149
2019	213542	77085	157734	162276	610637
2020	148453	59717	142373	147554	498097
2021	158331	75480	164809	168535	567155
2022	190947	96980	209352	213080	710359
Total	911604	378241	813041	830511	2933397

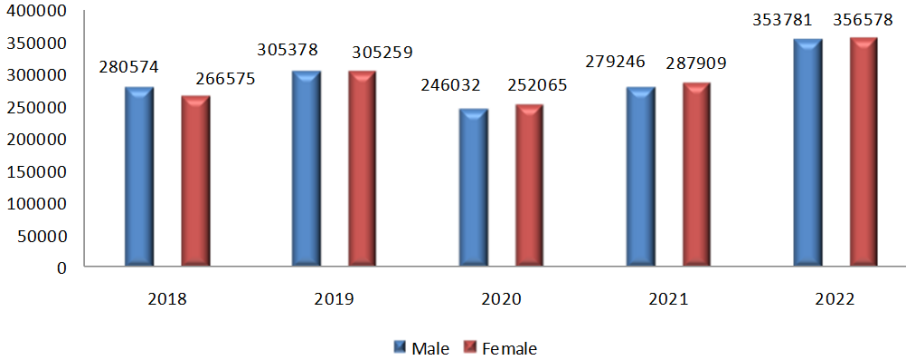

Figure No. 1: Distribution of DM patients by Sex over Years

DISCUSSION

The World Health Organization stated that the Iraqi Ministry of Health estimated that 14% of Iraqis have diabetes.[5] The incidence of type 1 Diabetes Mellitus (T1DM) has increased in the last three years in the Basrah, T1DM recorded a prevalence ratio of 87:100000 of adults <40 years old between January, 1st 2012, and December 31, 2016; the T1DM was 7.4: 100000 annual incidence rates.[6] The study results reveal that the overall number of cases in Iraqi provinces from 2018 to 2022 was 2,933,397 (Table 5), this comes along with the International Diabetes Federation (IDF) report which stated in 2021 that 9.4% of Iraqi adults have diabetes and estimates the total number of 2,011,400.[7]
Over the past three decades, there has been a consistent increase in the prevalence of diabetes worldwide, particularly in low- and middle-income countries, indicating rapid growth. This rise has also been observed in children, potentially attributed to the modernization of lifestyle. According to the International Diabetes Federation (IDF), the global prevalence of diabetes among the adult population in 2017 was estimated to be 8.8%, affecting approximately 425 million people. Among the IDF regions, the Middle East and North Africa (MENA) region recorded the second-highest rate of diabetes with a prevalence of 9.2%. Projections indicate that between 2017 and 2045, the prevalence of diabetes in the MENA region will surge by 110%, leading to an estimated 629 million cases worldwide by 2045.[8] In reference to Baghdad, the diabetes mellitus prevalence rate from 2018 to 2022 was 911604. The findings suggest a consistent increase in the prevalence over the years. This is corroborated by a cross-sectional study aimed at assessing the prevalence of pre-diabetes in Baghdad. The study, conducted on 735 Iraqi individuals, revealed that approximately 17% of the participants exhibited pre-diabetic conditions.[9] According to the 2006 national survey on risk factors for chronic non-communicable diseases in Iraq, it was found that the prevalence of diabetes mellitus (DM) is 10.4%. Notably, the survey revealed that women face a higher risk of developing type II DM, which could be linked to a greater susceptibility to adopting a Western lifestyle within specific Iraqi communities. While type II DM has traditionally been associated with adults,

there is a concerning trend of its diagnosis in children, reflecting the increasing rates of obesity.[10] Al-Rubaee Razzaq stated that in 2010 Nassiryah diabetic center estimated prevalence rate of DM was 10.2 % and this transcends the estimated prevalence rate of diabetes in the Middle East and North Africa region which was 9.3% and concluded the incidence rate had increased in the last five yrs in ALNassiryah city.[11]

Zalzala Sarah et al[12] conducted a study focusing on primary schools in the Al-Karkh region of Baghdad City, Iraq. The study encompassed 141 schools with an enrollment of 69,115 students, utilizing a multistage cluster sampling methodology. The research revealed a prevalence of type 1 diabetes mellitus at a rate of 159 per 100,000, aligning closely with prevalence rates in Saudi Arabia, lower than those in Al-Kuwait, but higher than those in Turkey. Additionally, the study observed a slightly higher proportion of female students compared to male students, with a female-to-male ratio of 1.3:1 among diabetic individuals.

Recommendation: Activate the role of the primary health care centers, the primary prevention programs are urgently required to control the expected burdens. Furthermore, conducting periodic assessments and including the private clinics to figure out the extent of the DM prevalence.

CONCLUSION

All the Iraqi governorates reveal a high prevalence of DM and the number proceeded to increase over the years, the numerals grew in both sexes. It is expected that DM become a major health problem in Iraq.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Mohammed Abdulkareem Mustafa, Wafaa Abd Ali Hattab
Drafting or Revising Critically:	Wafaa Abd Ali Hattab, Sarah Abdulateef Kadhim, Musaab Majid Abdulwahhab
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

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