

Prevalence of Type 2 Diabetes in a Rural Population of AbuNakhla, Doha, Qatar

Mir Saad Hussain (1)

Nusrat Nizamani (2)

(1) Family Medicine, Abu Nakhla Health Centre, Primary Health Care Corporation, Doha, Qatar

(2) General Practitioner (MBBS, MRes), National Health Services (NHS), Scotland, United Kingdom

Email: drnusrat79@hotmail.com

Corresponding author:

Dr. Mir Saad Hussain

(MBBS, MD, MRCP, MRCGP, PGDDM), Abu Nakhla Health Centre, Primary Health Care Corporation (PHCC) Doha, Qatar

Telephone: (+974) 3038 9323

ORCID iD (1) : <https://orcid.org/0000-0003-2586-3390>

Email: mirsaadhussain@googlegmail.com, mshussain@dundee.ac.uk

Received: April 2020; Accepted: May 2020; Published: June 1, 2020.

Citation: Mir Saad Hussain, Nusrat Nizamani. Prevalence of Type 2 Diabetes in a Rural Population of AbuNakhla, Doha, Qatar. World Family Medicine. 2020; 18(6): 20-26 DOI: 10.5742MEWFM.2020.93816

Abstract

Objective: Type 2 diabetes (T2DM) is a common condition worldwide and is a rapidly growing epidemic. T2DM prevalence is more common in middle and low-income countries. Once known as a disease of middle and old age, it now more commonly affects the younger population given various risk factors like unhealthy lifestyle, poor health literacy, obesity, and male gender. This study aims at looking at the prevalence of T2DM in a small rural population of AbuNakhla, Doha, Qatar with age and gender distribution.

Method: A cross sectional study was conducted, gathering a total number of patients registered with T2DM at AbuNakhla health center, Doha, Qatar. Patient data was collected from Cerner (database software) in January 2020, categorising them into four age groups; 18 to 35 years, 36 to 50 years, 51 to 65 years and 66 years and above. Also, data was categorised into male and female genders for each age group to find out the proportion of male and female patients in each of the four age groups.

Results: The results showed high disease burden in the local population of AbuNakhla. Around 51% of patients with T2DM are under the age of 50 years, out of which 10% are under the age of 35 years. Also, the number of females with T2DM is quite high under the age of 35 years. Around 49% of patients are above the age of 50 years.

Conclusion: The data showed a high diabetes prevalence in AbunAkhla, Doha Qatar. Prevalence is higher in the younger age group i.e under 50 years with a rapid rise in prevalence in age group 36 to 50 years for both males and females. More community based educational programs are required to increase health literacy and awareness especially for the younger population. This should be aimed at both prevention as well as proper disease management.

Key words: Type 2 Diabetes Prevalence, AbuNakhla, Qatar, PHCC

Introduction

Type 2 diabetes mellitus (T2DM) is a rapidly growing epidemic worldwide. In America more than 30 million people have diabetes i.e 1 in every 10 people has diabetes and around 90% to 95% of these are T2DM. Usually T2DM develops after the age of 45 years but now it is more commonly affecting children, teens and young adults (1) .

In the United Kingdom (UK) around 4.7 million people have diabetes out of which 90% have T2DM, around 8% are type 1 diabetes mellitus (T1DM) and remaining types under 2% (Figure 1). One million people with T2DM are still undiagnosed in UK. In 1996 there were 1.4 million people diagnosed with diabetes and in 2019 3.8 million were diagnosed (2).

As per the International Diabetes Federation (IDF) there are approximately 643 million people (aged 20 to 79 years) living with diabetes worldwide. By 2045 this figure will go up to 700 million. The proportion of people with T2DM is growing worldwide. Around 232 million (1 in 2) people are undiagnosed with diabetes and 374 million are at increased risk of developing T2DM(3).

IDF Middle East and North Africa (MENA) region represents 21 countries with 29 diabetes organisations. Qatar is one of the 21 countries of MENA region. The total adult population of Qatar in 2017 was around 1,844,000 out of which there were 259,200 cases of diabetes , having a prevalence of 14.1% in 2017 (4). According to the World Health Organisation (WHO) diabetes country profile the prevalence of T2DM in the Qatari adult population was around 17%. The high disease prevalence among the adult population is due to the increased labour demand

causing a large influx of immigrants in the last decade and by 2020 diabetes alone was estimated to be responsible of 10% mortality in Qatar (5).

In Qatar, the number of people with diabetes aged 20 to 79 years in 2010 was 85 per 1000. This number has increased from 85 to 347 per 1000 in 2019 and this number will increase to 702 per 1000 by year 2045. There are still 125.2 undiagnosed people per 1000 in addition to the above figures (6) (Figure 2).

A prospective cohort study performed by Alyafei et al (2018) looked at the incidence of T1DM and T2DM among aged 0-14 years children in Qatar between 2012 to 2016. A total 440 youths with T1DM and 45 with T2DM were identified for the study. The incidence rate of T2DM increased from 1.82 per 100,000 in 2012 to 2.72 per 100,000 in 2016 with an annual increased incidence of 3.12% (Figure 3)(7).

Similar to the statistics worldwide, of all the diabetes mellitus (DM) cases in Qatar, 90% are of T2DM only. Hereditary and life style risk factors are the main contributors towards development of T2DM (8). To understand the prevalence and risk factors of DM in Qatar, a case-control study was conducted over 459 adult patients with diabetes and 342 control patients over a period of 2 years i.e 2006 to 2008. The results showed being a Qatari national was the strongest risk factor for development of DM. Other risk factors included higher monthly income (\geq 3000 QAR), age > 65 years, male gender, obesity (BMI \geq 30), no college education and lack of physical activity. This study suggested that eliminating obesity and improving the level of education may reduce the risk of DM cases up to half for Qatari nationals (46.9% and 49.3% respectively) and by one third for the population at large (31.7% and 26.8% respectively) (9).

Figure 1: Taken from Diabetes.org.uk/facts & Figures - Infographics of different types of Diabetes (2)

The different types of diabetes

Infographics available

1



About **90%** of people with diabetes have **Type 2**.

About **8%** of people with diabetes have **Type 1**.

About **2%** of people have **rarer types** of diabetes.

Figure 2: Taken from IDF Diabetes Atlas showing Qatar Country Report 2010 - 2045 (6)

At a glance	2010	2019	2030	2045
Diabetes estimates (20-79 y)				
People with diabetes in 1000s	85.0	347.0	508.7	702.1
Age adjusted comparative prevalence of diabetes %	15.4	15.6	17.0	17.7
People with undiagnosed diabetes in 1,000s	-	125.2	-	-
Proportion of people with undiagnosed diabetes, %	-	36.1	-	-

Figure 3: Taken from Alyafei et al (2018) showing incidence rates of T1DM and T2DM in Qatar from 2012 to 2016

Incidence rates/100,000 for T1DM and T2DM in children and adolescents in Qatar			
Year	T1DM	T2DM	Total
2012	25.91	1.82	27.74
2013	26.05	4.40	30.45
2014	24.65	3.48	28.12
2015	33.49	2.07	35.57
2016	31.83	2.72	34.55

According to Weill Cornell Medicine-Qatar (WCM-Q), obesity accounts for 66 % followed by other factors (e.g. genetic) as the leading cause of T2DM in Qatar (Figure 4) and the fraction of Qataris with T2DM is predicted to grow by 147% by year 2050 and T2DM will consume around one third of health expenditure in Qatar by year 2050 (10)(11).

Qatar Diabetes Association (QDA) is a member of IDF and is working on diabetes prevention as well as treatment locally as well as in the region. QDA is providing a free service and has introduced a few educational programs aiming to increase awareness of local population which include educational and social learning camps for children and adults (Al Bawasil Camp & Youth at Risk Camp), diabetes in Asia study group holding biannual conferences and school health visits and awareness drives (12)(13).

Also, the Primary Health Care Corporation (PHCC) in Qatar has already established "SMART Clinics" which play a vital role in screening the adult Qatari population i.e

≥ 18 years for diabetes through glycosylated haemoglobin (HbA1c) levels and categorised them into normal, pre-diabetic or diabetic range as per American Diabetes Association (ADA) guidelines (5)(14).

AbuNakhla is a small district, located in the western region of Qatar and has a primary health care facility known as AbuNakhla Health Center in Mebaireek area, working under the Primary Health Care Corporation (PHCC). PHCC started to work initially in 1954 by providing its services to the local community through a number of clinics. In 1978, the Ministry of Public Health (MoPH) launched the primary health care system through nine health centers all cross Qatar. Now in 2020, the primary health care system has massively grown to 27 health centers providing high quality care across the country.

AbuNakhla health center is one of the 27 health centers built across the country and has around 50,000 registered patients covering AbuNakhla and surrounding areas. (Figure 5)

Figure - 4: Taken from WCM-Q study, showing risk factors for T2DM in Qatari Population (10)(11)

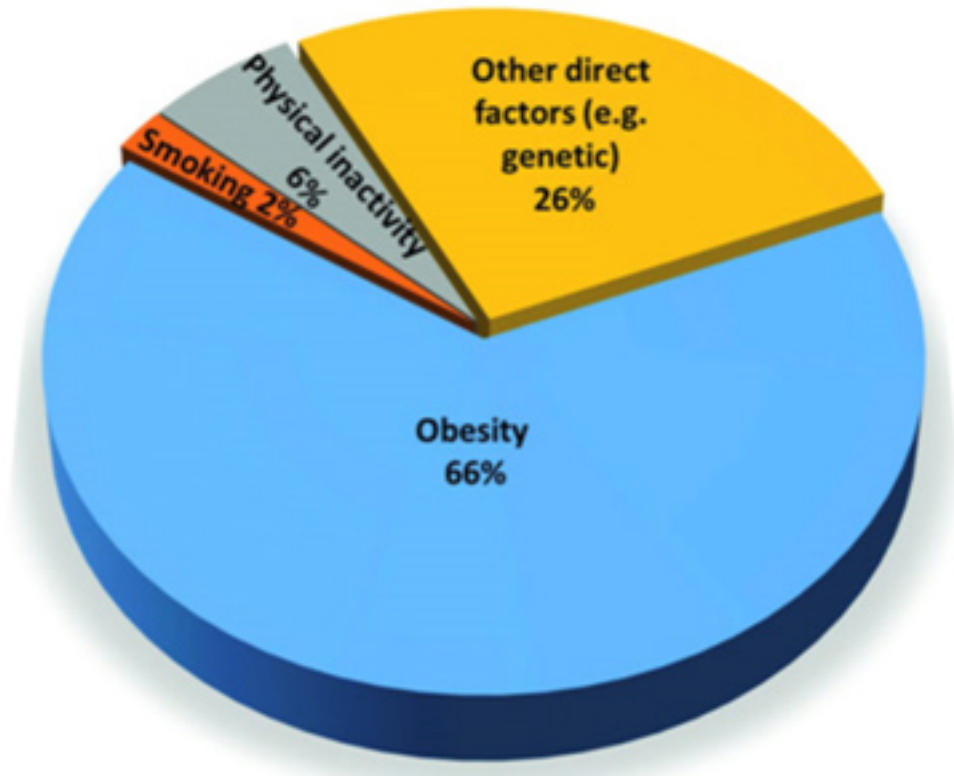


Figure 5: Taken from Google Maps, showing Abu Nakhla location (Pinned area)



As T2DM is usually a disease of middle to old age, this paper focuses on prevalence of T2DM in the rural population of AbuNakhla and gives detailed statistics about T2DM prevalence age wise and gender wise, reflecting which age group has more prevalence of T2DM, either under 50 years or above 50 years of age and also which gender is more affected in each age group. The data will help in arranging the local health and community educational services to target the highest prevalence groups towards prevention as well as proper management of T2DM.

Patients and Methods

Study Design:

A cross-sectional study was conducted at AbuNakhla health center, Doha Qatar. Data was collected from Cerner (computer software) with the help of the IT department. Data collection was done in January 2020 specifically for patients registered under clinical code of "Type 2 Diabetes" from Cerner.

Study Population:

The total registered patient population of AbuNakhla health center is around 50,000 which covers AbuNakhla as well as surrounding areas. The total number of registered T2DM patients (Prevalence) was obtained and was subcategorised under gender (male and female) and 4 different age groups i.e 18 – 35 years, 36 to 50 years, 51 to 65 years and 66 years and above, so an exact prevalence can be obtained for different age groups, both male and female.

Ethical Considerations:

Written approvals from health center manager and IT department were obtained as per local policy.

Results

Out of a total 50,000 registered patients at AbuNakhla health center, the total number of patients coded under T2DM was 1,853. This number included all patients from age 18 years and above.

The total number of patients in group-1 (age group 18 to 35 years) was 197, having a prevalence of 10.63%. In group-2 (age group 36 to 50 years) there were 752 patients, having a prevalence of 40.58%. In group-3 (age group 51 to 65 years) the total number was 645, having a prevalence of 34.80% and in group-4 (age group 66 and above) the total number was 259, having a prevalence 13.97% (Figure 6).

Among all 4 age groups, the highest prevalence of T2DM was between age group 36 to 50 years (40.58%) and the second highest prevalence in age group 51 to 65 years (34.80%). (Figure 7).

For gender distribution, the data showed a higher number of female patients with type 2 diabetes in the younger age group i.e 18 to 35 years initially, but then higher male patients in age range of 36 to 65 years (Figure 8).

The statistics overall showed a high percentage of T2DM in younger age groups, with a 10.63% prevalence in the young age group and 40.58 % prevalence in the middle age group. This means that out of a total 1,853 patients registered under T2DM code, around 51% patients (n=949) are under the age of 50 years only and the rest 49% are above 50 years age group. Among these the affected male population is 57.20% (n=543) and female population is 42.78% (n=406).

Discussion

This short study clearly describes a higher disease burden in the local rural population of AbuNakhla, Doha, Qatar, affecting younger and middle age population more commonly than elderly i.e. the majority of patients (51%) are under the age of 50 years. Although, this may not be an exact reflection of disease burden in the local community and the actual numbers could be much higher than this as data was collected for patients registered under the code of "Type 2 Diabetes". This excluded the patients coded under "Type 1 diabetes" and also coded wrongly as only "Diabetes Mellitus" or "Hyperglycemia" and would be the limiting factor, but at same time it highlights that the actual numbers and disease burden could be much higher than what is shown and discussed here. More community-based educational and information programs are required to increase health literacy and awareness of the local population in terms of high disease burden, its prevention and management. People need more awareness of different modifiable risk factors like obesity, life style, education by increasing health literacy and understanding to decrease risk factors which lead to development of T2DM at early age groups.

The adaptation of "SMART Clinic" model by PHCC is a huge step towards working in early screening and management of diabetes in the local community. The SMART clinic model offers an early screening among Qatari adult population i.e. age \geq 18 years, using a multidisciplinary team approach which involves physicians, dieticians, nurses and other health care workers, helping to detect and guide people at risk. Hence, further enhancement of diabetes prevention educational programs in local community can be an option to address the issue. Increasing health literacy and addressing the modifiable risk factors at an earlier age are likely going to help in lowering the disease burden in the local population.

In order to provide more information and education to the local population, there is a need to reach more members of the community, because providing education within the community helps the educator to reach a large number of the population. Also, community-based programs should be designed to maximise the effects and impact of education and efforts of diabetes prevention and education. These community based educational programs can be delivered through different settings including school health and education programs, work site awareness programs, local community center information programs, through local health center and health care providers, through shopping

Figure -6 Number of Patients with T2DM in AbuNakhla Health Center

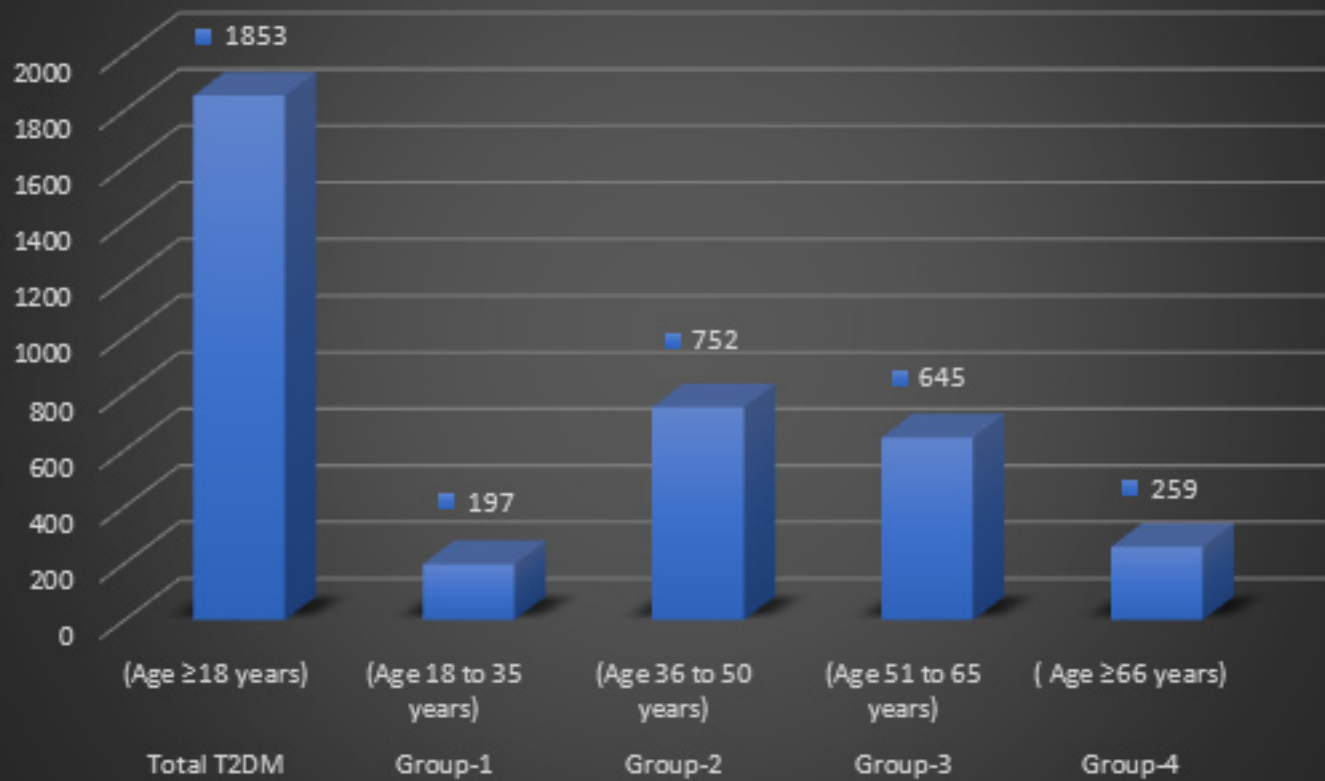


Figure-7 Age wise Prevalence of T2DM in AbuNakhla Health Center

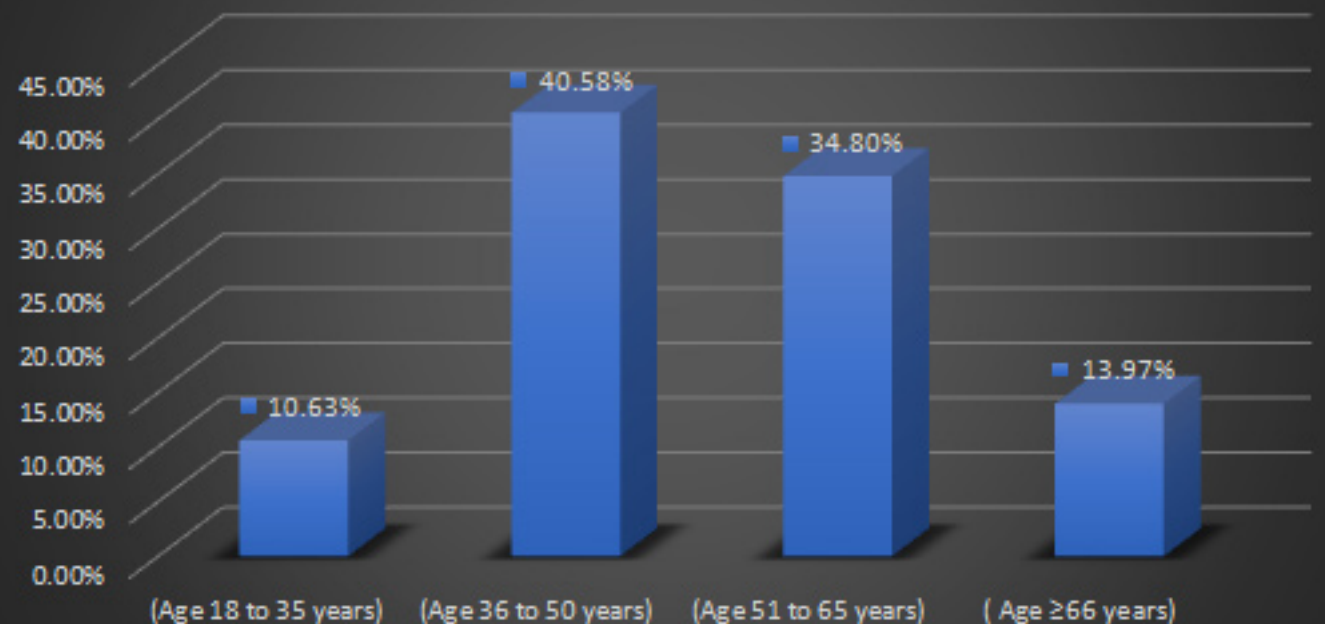
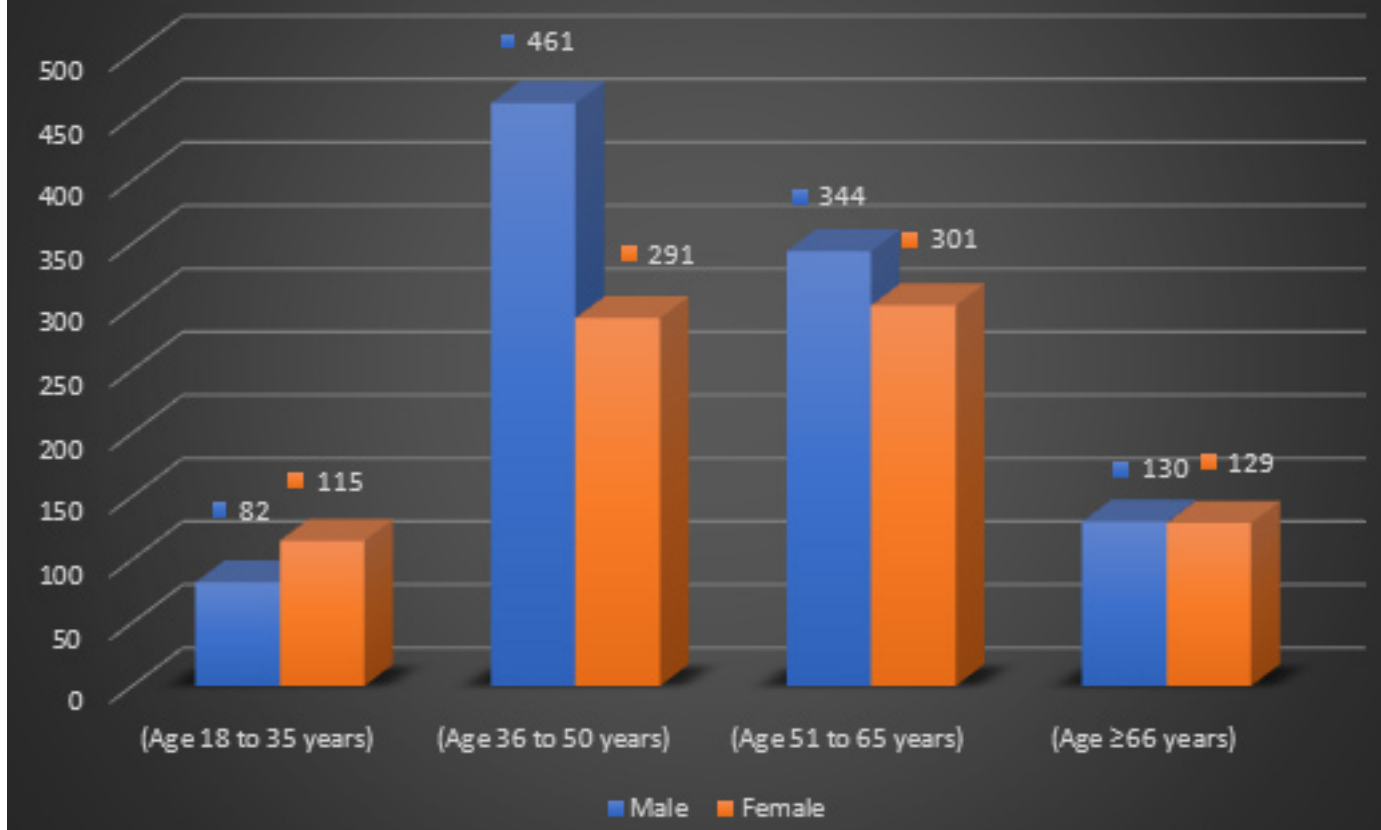


Figure-8 Gender Distribution of T2DM patients at AbuNakhla Health Center



malls and also through local mosques. Utilising these different settings to reach the local population by using existing social and health care resources will definitely help in raising awareness of disease burden and risk in the local community. The aim is to reduce the rate of incidence of developing diabetes and improve the control of existing disease.

Acknowledgments:

Special thanks to the manager of AbuNakhla Health Center and IT department for helping in data collection.

References

1. Type 2 Diabetes | Basics | Diabetes | CDC [Internet]. 2019 [cited 2020 Jan 24]. Available from: <https://www.cdc.gov/diabetes/basics/type2.html>
2. Facts & Figures [Internet]. Diabetes UK. [cited 2019 Nov 29]. Available from: <https://www.diabetes.org.uk/professionals/position-statements-reports/statistics>
3. International Diabetes Federation - Facts & figures [Internet]. [cited 2020 Jan 24]. Available from: <https://www.idf.org/aboutdiabetes/what-is-diabetes/facts-figures.html>
4. Members [Internet]. [cited 2020 Jan 24]. Available from: <https://idf.org/our-network/regions-members/middle-east-and-north-africa/members/45-qatar.html>
5. Samya Ahmad Al A, Dahlia Mustafa H, Azza Mustafa M, Joelle B. SMART Population Screening and Management in Qatar. *Int J Diabetes Clin Res* [Internet]. 2019 Mar 31 [cited 2020 May 6];6(1). Available from: <https://www.clinmedjournals.org/articles/ijdcr/international-journal-of-diabetes-and-clinical-research-ijdcr-6-099.php?jid=ijdcr>
6. Qatar country report 2010 — 2045 [Internet]. [cited 2020 Jan 24]. Available from: <https://diabetesatlas.org/data/>
7. Alyafei F, Soliman A, Alkhalaf F, Sabt A, De Sanctis V, Waseef R, et al. Incidence of type 1 and type 2 diabetes, between 2012-2016, among children and adolescents in Qatar. *Acta Biomed*. 2018;89(Suppl 5):7–10.
8. Type 2 Diabetes [Internet]. [cited 2020 Jan 25]. Available from: <https://www.hamad.qa:443/EN/your%20health/Diabetes/About-Diabetes/Pages/Type-2-Diabetes.aspx>
9. (PDF) Prevention of type II diabetes mellitus in Qatar: Who is at risk? [Internet]. [cited 2020 Jan 25]. Available from: https://www.researchgate.net/publication/273113739_Prevention_of_type_II_diabetes_mellitus_in_Qatar_Who_is_at_risk
10. Gulftimes: At least one in four Qataris will have diabetes by 2050 [Internet]. [cited 2020 Feb 24]. Available from: <https://m.gulf-times.com/story/587494/At-least-one-in-four-Qataris-will-have-diabetes-by-2050>
11. WCM-Q study: At least one in four Qataris will have diabetes by 2050 [Internet]. Latest News - Weill Cornell Medicine - Qatar. [cited 2020 Feb 24]. Available from: <https://qatar-weill.cornell.edu/media-and-news/news/story/wcm-q-study-at-least-one-in-four-qataris-will-have-diabetes-by-2050>
12. Information About Education, Economy, Health, IT and Tourism in Qatar [Internet]. [cited 2020 Feb 24]. Available from: <https://portal.www.gov.qa/wps/portal/topics>
13. Home [Internet]. [cited 2020 Feb 24]. Available from: <http://qda.org.qa/index>
14. Diagnosis | ADA [Internet]. [cited 2020 May 6]. Available from: <https://www.diabetes.org/a1c/diagnosis>