MEDICAL SCIENCE

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DISCOVERY

SCIENTIFIC SOCIETY

In World Diabetes Day, assessment of the chronic diseases among general population in Riyadh, KSA

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ABSTRACT

Background: Every year World Diabetes Day (WDD) is celebrated on 14 November all across the globe to raise awareness about the diabetes and its prevention, complications and treatment. Complications include macrovascular conditions, such as coronary heart disease, stroke and microvascular, including diabetic nephropathy, retinopathy and peripheral neuropathy. We aim to assess the relationship between random glucose blood glucose and chronic diseases. *Methods:* A cross-sectional study in Riyadh on November 2021 and January 2022 at a public shopping center. Data collection sheet was prepared for age, weight, gender, hypertension, diabetes mellitus, ischemic heart disease, random blood glucose and Glucometer devices were used to gather the data. One of the volunteers took a visitor's random blood glucose reading and weight in kilograms using a mechanical scale. Data analyzed using SPSS. *Result:* Majority of participants was male (54%) with age group from 30-39 years old (29.3%) with weight in kilo gram from 60-79 (43.4%). Prevalence of diabetes was (18%) and hypertension (17%) and ischemic heart disease (1.8%). Relation between age and RBG (p value= 0.000) and between weight and RBG (p value=0.243). *Conclusion:* According to this study, Saudi Arabia is one of the average countries in terms of the number of diabetic patients. High prevalence of diabetics, especially men in the 30- to 39-year-old age group who weight between 60 and 79 kg. Almost majority of the patients had hypertension in addition to diabetes. The statistical relationship between age and random blood glucose was significant.

Keywords: Diabetes Mellitus, Chronic Diseases, Random Blood Glucose, Obesity.

1. INTRODUCTION

World Diabetes Day (WDD), on November 14th each year, is celebrated around the world to raise awareness of diabetes and its prevention, complications and treatment. November 14th was chosen as his WDD as it is F. Banting's b'day, which along with C. Best developed insulin in 1922 (Bandarian and Larijani, 2019). Complications traditionally associated with diabetes mellitus include macrovascular disease such as coronary artery disease, stroke and peripheral artery disease and microvascular disease such as diabetic kidney disease, retinopathy and peripheral neuropathy (Fowler, 2008; Alamro et al., 2021). The global prevalence of diabetes in 2019 is estimated at 9.3% (463 million people). Its prevalence is projected to increase to 642 million by 2040 and by 2030 he is projected to be the seventh leading cause of death (Aljuaid et al., 2018). Saudi Arabia and Kuwait are among the countries with the highest prevalence of diabetes, estimated at 17.6% and 14.3% respectively (Ogurtsova et al., 2015; Mathers and Loncar, 2006). Saudi Arabia is ranked seventh globally and second in the Middle East for diabetes (Al-Dawish et al., 2016). Health professionals and public policy makers are aware of the impact diabetes has on public health. Diabetes is a silent disease. Many patients don't realize they have diabetes until they develop life-threatening complications. Knowing about diabetes can help detect the disease early and reduce the incidence of complications. Volunteering in underserved communities is associated with positive outcomes such as improved communication, increased empathy and enhanced interpersonal and leadership skills (Loh et al., 2016). Previous community service projects in medical school have shown that students develop teaching skills during the course of medical school, grow as leaders and are able to identify and address health needs in their communities (Goldstein et al., 2009; Jones et al., 2014). Community opportunities enable medical students to work in local settings, identify health needs and collaborate with others in the community (Leung et al., 2007). We aim to assess the relationship between random glucose blood glucose and chronic diseases.

2. METHODS

It was a cross-sectional study was by volunteering medical students of Al-Maarefa University in KSA, Riyadh city on November 2021 and January 2022 at a public shopping center. A specially prepared data collection sheets contained age, weight, gender, diagnosed with hypertension or diabetes mellitus or ischemic heart diseases, random blood glucose and a glucometer devices (ACCU-CHEK with instant test strip) were used for the data collection, when a visitor agreed to participate, one of the volunteer students measured their random blood glucose, measured their weight in kilograms using a standard mechanical scale and asked direct questions about their age and whether they had been diagnosed with hypertension, diabetes mellitus or ischemic heart disease. If they refused to answer, they were excluded from the study (Figure 1). The data was cleared, coded and entered using the Statistical Package for the Social Sciences (SPSS) and MS software, each participant volunteered to take the glucometer willingly, all information and results were used for academic purposes and kept completely confidential and private. Anonymity of individuals participating in the research is ensured. All the participants of this study were not subjected to harm in any way. The protection and privacy of the research participants was promised and maintained.
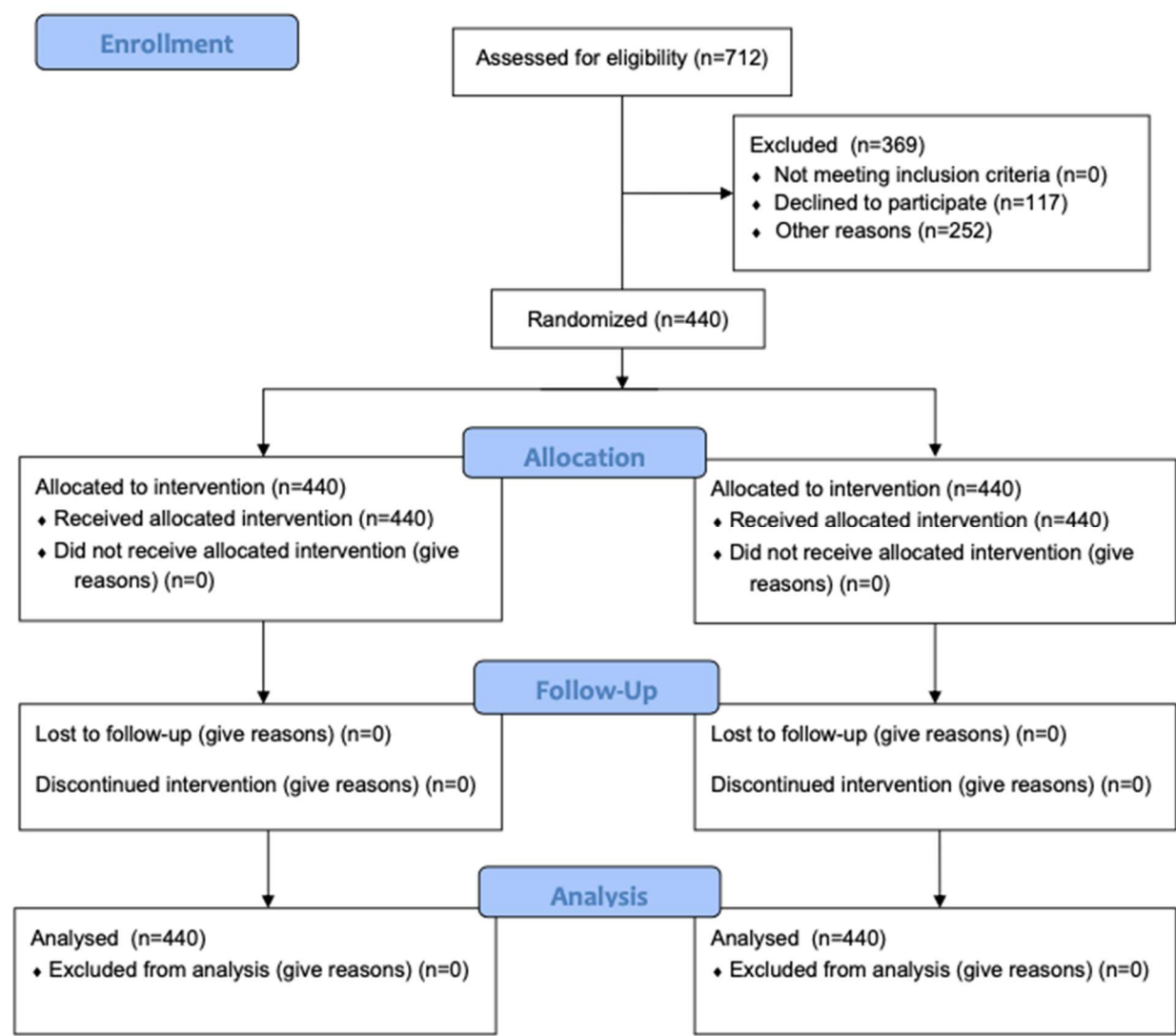
Figure 1 Consort 2010 flow diagram

3. RESULTS

In Table 1 majority of the participants are males (54.1%), most of their age is from 30 to 39 years old (29.3%) and minority of them are in age group from 18 to 29 years old (15.7%), regarding their weight group they are mostly from 60 to 79 kilo grams (KG) and minority are from 40 to 59 KG (8.4%).

Table 1 Personal data

Gender	Frequency	Percent
Male	238	54.1
Female	202	45.9
Total	440	100.0
Age (Years)	Frequency	Percent
18-29	69	15.7
30-39	129	29.3
40-49	127	28.9
50 and more	115	26.1
Total	440	100.0

Weight (KG)	Frequency	Percent
40-59	37	8.4
60-79	191	43.4
80-99	168	38.2
100 and more	44	10.0
Total	440	100.0

N=440

Table 2 Descriptive statistics of age, RBG and weight

Statistics	RBG	Age	Weight (KG)
Mean	129.50	41.11	79.003
Std. Deviation	60.438	11.636	15.4740
Range	521	57	90.0
Minimum	67	18	40.0
Maximum	588	75	130.0

N=440

Table 2 describes the statistics of the RBG mean (129.50) max. (588) min. (67) of the participants as well as their age mean (41.11) max. (75) min. (18) and weight mean (79) max. (130) min. (40).

Table 3 Prevalence of chronic diseases

Hypertension	Frequency	Percent
Yes	77	17.5
No	363	82.5
Total	440	100.0
Diabetes Mellitus	Frequency	Percent
Yes	79	18.0
No	361	82.0
Total	440	100.0
Ischemic Heart Diseases	Frequency	Percent
Yes	8	1.8
No	432	98.2
Total	440	100.0

N=440

In table 3 we demonstrate the incidence of the chronic illnesses among the participants with hypertension (17.5%) and diabetes (18%) in (Figure 2) and Ischemic heart diseases (1.8%).

Table 4 Correlations between age and wight with RBG

	Test of Correlation	Age (Years)	Weight (Kg)
RBG (mg/dl)	Correlation Coefficient	.243	.009
	P -Value	.000	.853

Table 4 shows the significance of the statistical relation between random blood glucose and age (p value=0.000) in (Figure 3) and between random blood glucose and weight (p value=0.853) in (Figure 4).
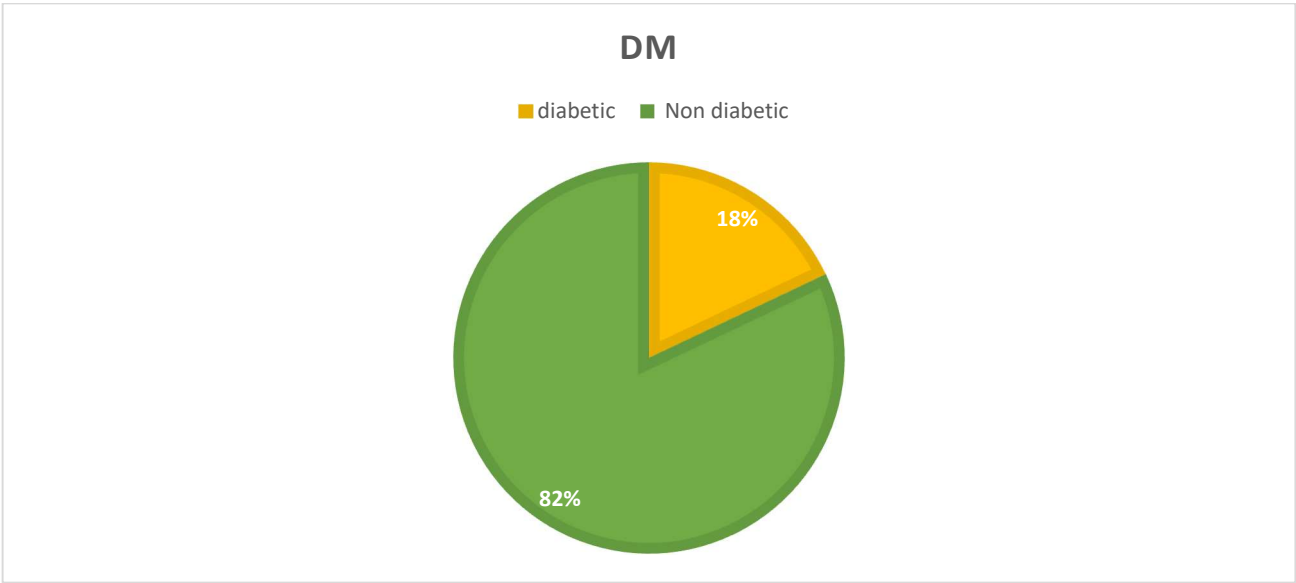
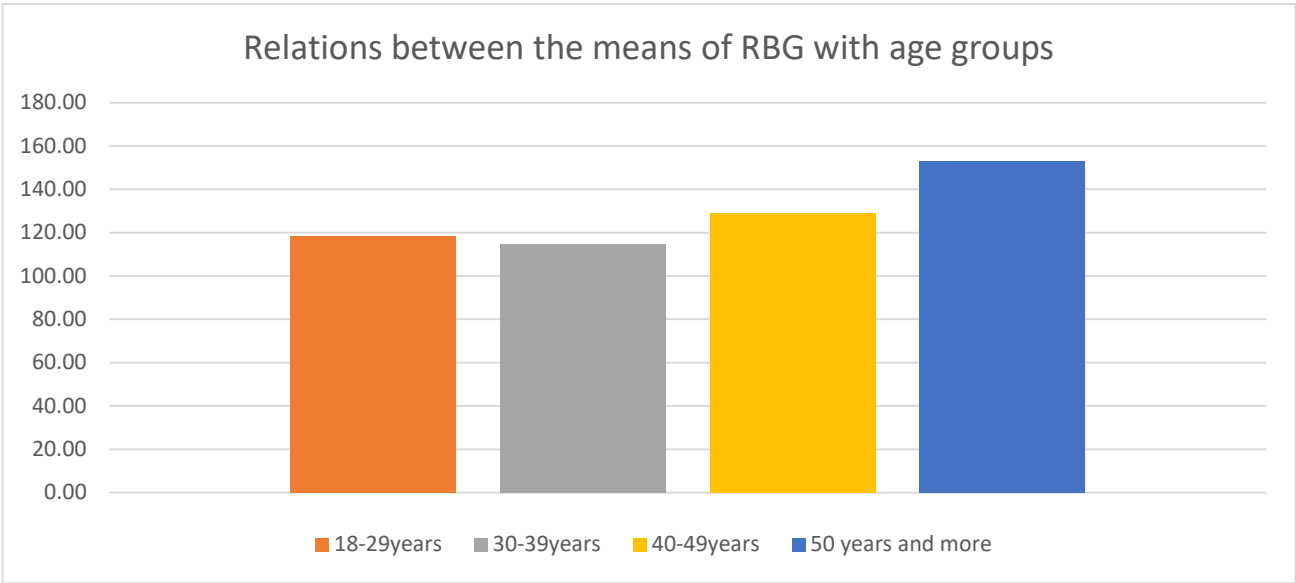**Figure 2** The distribution of diabetes mullites among the participants (N=440)

Figure 3 Graphical relations between the means of RBG with age groups (N=440)
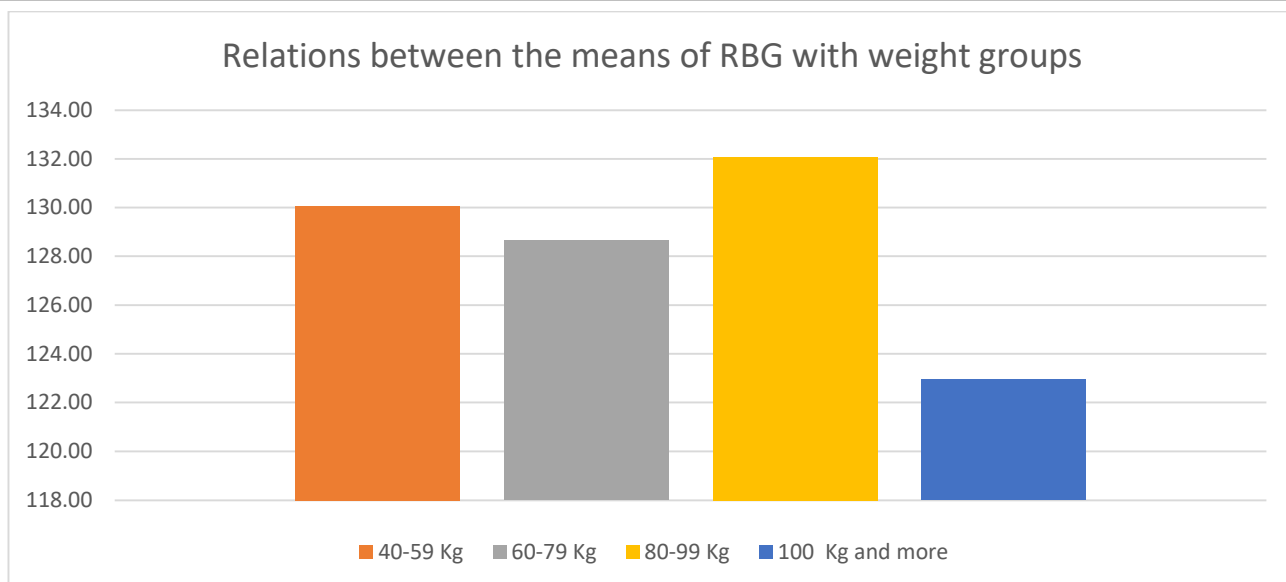
Figure 4 Graphical relations between the means of RBG with weight groups (N=440)

4. DISCUSSION

It was found that the minority of the sample size in this study had diabetes mellitus which is in contrary with a study done by Gunggu et al., (2016) in Malaysia which they found that half of their sample size was diabetic and this difference was due to different population. We recommend ministry of health to continue in their awareness programs regarding diabetes and how to prevent the risk factors (Gunggu et al., 2016). The mean weight was 79 KG which is in contrary with a study conducted by koh-Banerjee et al., (2004) in USA and there mean weight was 72.9 KG and also this mild difference was due to different population. We advise health institutions with the help of ministry of health to provide interaction programs to prevent obesity with these participants (Koh-Banerjee et al., 2004). The mean of RBG in this sample size was 129.50 mg/dl which is a close result with a study conducted by Khalid et al., (2017) in Saudi Arabia and their mean of RBG was 121.56 mg/dl. We encourage the population in Riyadh city to sign up for nutritional courses or a diet program to control their diet program and decrease the RBG (Khalid et al., 2017). The mean age of the participants in this study was 41 years old which in contrary with a study was published by Aljuaid et al., (2018) in Taif city in Saudi Arabia they had the mean age of their 509 participants was 58 years old due to different city population and conducted 4 years ago. Several studies suggest that getting old is one of the risk factors of increasing level of random blood sugar which is in a study published Saudi Arabia by Khalid et al., (2017) which is in line with the result of the sample in this study there was significant statistical relation between age and RBG.

5. CONCLUSION

In this study it was found that Saudi Arabia is one of the average countries to have diabetic patients. High prevalence of diabetics mostly males from age group of 30 to 39 years old with weight in range of 60 to 79 KG. Almost all of the participants who had diabetes also had hypertension. There was significant statistical relation between age and random blood glucose.

Authors' contribution
All authors had substantial contribution to the paper; AMR, AA, MSA and JSS designed the study and prepared the proposal. ABH, LFS and YMA analyzed and interpreted data. AMA, ALA and MKE wrote results and discussion. ABH checked the paper from

plagiarism and did proofreading. SA checked and revised every step of this paper. All authors critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Conflict of interest
The authors declare that there is no conflict of interests.

Data and materials availability
All data sets collected during this study are available upon reasonable request from the corresponding author.

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