



COMPARISON STUDY AMONG DISPLACED AND SETTLEMENT WOMEN REGARDING DIABETES IN NYALA LOCALITY, SOUTH DARFUR STATE

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ABSTRACT

A cross-sectional community based study was conducted in Nyala Town among displaced and settlement women in Nyala locality to compare the epidemiological burden of diabetes. This study aimed to measure the prevalence of diabetes among study population and to determine most risk factors associated with the disease. The stratified random sampling was used with a sample size (490); of whom (359) settlement women and (131) displaced women. Data was collected by interview and questionnaire also the laboratory examination of diabetes. Data was analyzed and displayed in tables. The study results concluded the following: - out of 490 women examined, 117 of blood samples were positive for diabetes which constituted a prevalence rate of 23.9%. The prevalence rate for settlement women was 28.1% and displaced women was 12.2%, (p value 0.000). The most of the risk factors of the diabetes were found to be 49.6% of diabetic women have family history of diabetes (p value = 0.000), 15.9% of diabetic women were smokers (p value = 0.024) and 25.7% of diabetic women were eating meat and its fat (p value = 0.027). The study recommended the planning and implementation of effective health education programs to increase the awareness of people about diabetes and its controllable risk factors, early diagnosis and treatment maintenance of normal body weight, physical exercise and complication of disease to decrease of disability. providing the treatment of diabetes and clinics for examination.

INTRODUCTION:

Diabetes is a group of diseases marked by high levels of blood glucose resulting from defects in insulin production, insulin action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes, working together with their support network and their health care providers, can take steps to control the disease and lower the risk of complication⁽¹⁾. Diabetes is a disease caused by deficiency or diminished effectiveness of insulin⁽²⁾.

The main types of diabetes are Type 1 diabetes results from the body's failure to produce sufficient insulin and Type 2 diabetes results from resistance to the insulin and Gestational diabetes pregnant women who have never had diabetes before but who have high blood glucose levels during pregnancy are said to have gestational diabetes⁽³⁾.

Risk factors for diabetes include: age, sex, family history, obesity, History of gestational diabetes, lack of physical activity

and stress⁽²⁾. The preventive measures of diabetes by reduce the risk factors e.g. the maintenance of normal body weight through adoption of healthy nutritional habits and physical. Diabetes is major cause of disability through its complications, e.g.; blindness, kidney failure, cardiovascular diseases and damage of nerves⁽³⁾.

The increasing prevalence of diabetes worldwide has led to a situation where approximately 382 million people had diabetes in 2013, of which more than 95% would have had type 2 diabetes. This number is estimated to increase to 552 million by 2030 and it is thought that about half of those will be unaware of their diagnosis⁽²⁾.

Data on diabetes prevalence by age and sex from a limited number of countries were extrapolated to all 191 world health organization member state and applied to United Nations population estimates for 2000 and 2030. urban and rural



populations were considered separately for developing countries (4).

In Sudan diabetes prevalence ranged from 2.6% in rural Sudan to 20.0% it was significantly higher in urban areas than in rural areas.

Undiagnosed diabetes is common in Sudan with a prevalence ranging from 18% to 75 % (5).

Diabetes is increasingly becoming a major chronic disease burden all over the world. This requires a shift in healthcare priorities and up-to-date data on the epidemiology and impact of diabetes in all region of the world to help plan and prioritize health programs. Undiagnosed diabetes is common in Sudan with a prevalence ranging from 18% to 75 % (5) the study aimed to compare between settlement and displaced women in nyalala town regarding diabetes

MATERIAL AND METHOD

Study Design

This was a cross-sectional community based study was conducted among settlement and displaced women.

Study Area

Nyala Town , South western Sudan, located at an elevation of 2,208 feet (673 meters) in the Darfur historical region. The city's

industries produce textiles, processed food, and leather goods. Nyala is a road and railway terminus and serves as a trading center for gum Arabic. It also has a domestic airport. Branches of the Agricultural Bank of Sudan and the Peoples Cooperative Bank, which extend loans to the different cooperatives, composed of farmers, consumers, craftsmen, and fishermen, are located in Nyala. The city became a haven for refugees after the outbreak of violence in Darfur in 2003. Pop. (2008) 492,984 (6). Localities in Nyala city includes: Nyala North and Nyala south. Otach camp located in Nyala North , total population of displaced people about 51629, 9876 families and 9874 houses and the total population of settlement in Nyala North Locality about 284,398 in 2017(6).

Study Population

Displaced women and settlement women

Study Variables

In order to answer the research, question the following variables were studied:

Demographic and Socioeconomic factors and risk factors

Sampling

by using stratified random sampling (displaced women and settlement women from 15years old and above

	N	Women from 15-60 years	Representative sample
Displaced in Otach camp	51629	17209	131
Non-displaced North Nyala	284398	47399	359
Total		64608	490

Sample Size

By equation from total population:

$$n = z^2 pq / e^2 = (1.96)^2 * 0.2 * 0.8 / (0.05)^2 = 245.8624 * 2 = 490$$

n= sample size

z= level of confidence (95%) =1.96

p= proportion of previous study about diabetes =20% (5)

q= complementary of proportion=1-p =1-0.2=0.8

e=error allowable =0.05

DATA COLLECTION

A questionnaire was designed to collect data and the results of the laboratory examination

Data Analysis and Presentation

The data was organized by a master-sheet and entered by statistical package for social science (SPSS) program, then finally represented in tables and graphs.

Ethical Consideration

Informed consent: A written consent about the purpose of the study will be signed by each respondent before starting the direct interview & collection of the data. All personal information will be kept confidential.

RESULTS

Table No (1): explain that the Result of examination of diabetes among displaced and settlement women 2019 (n=490)

	Result of examination	Frequency		%	
		Urban	Camp	Urban	Camp
	Positive	101	16	28	12
	Negative	258	115	72	88
	Total	359	131	100	100

Table No (2): Shows the type of diabetes among displaced women in Otach camp and settlement women in North Nyala locality 2019 (n=490)

Type of diabetes	Frequency		%	
	Urban	Camp	Urban	Camp
Type 1	35	6	35	38
Type 2	58	8	57	50
Gestational diabetes	8	2	8	12
Total	101	16	100	100

Table (3): Relationship between Diabetic & age

Age	Diabetic		Total	P value
	Positive	Negative		
15-24 years	4 (4.6%)	83 (95.4%)	87 (100%)	0.000
25-34 years	12 (9.8%)	110 (90.2%)	122 (100%)	
35-44 years	30 (25.6%)	87 (74.4%)	117 (100%)	
45 years and more than	71 (43.3%)	93 (56.7%)	164 (100%)	
Total	117 (23.9%)	373 (76.1%)	490 (100%)	

Table (4): Relationship between Diabetic & Residence

Residence	Diabetic		Total	P value
	Positive	Negative		
Urban	101 (28.1%)	258 (71.9%)	359 (100%)	0.000
Camp	16 (12.2%)	115 (87.8%)	131 (100%)	
Total	117 (23.9%)	373 (76.1%)	490 (100%)	



Table 5: Relationship between Diabetic & Income

Income	Diabetic		Total	P value
	Positive	Negative		
Low	54 (21.4%)	198 (78.6%)	252 (100%)	0.255
Moderate	48 (28.2%)	122 (71.8%)	170 (100%)	
High	15 (22.1%)	53 (77.9%)	68 (100%)	
Total	117 (23.9%)	373 (76.1%)	490 (100%)	

Table (6): Relationship between Diabetic & Smoking

Smoking	Diabetic		Total	P value
	Positive	Negative		
Yes	18 (15.9%)	95 (84.1%)	113 (100%)	0.024
No	99 (26.3%)	278 (73.7%)	377 (100%)	
Total	117 (23.9%)	373 (76.1%)	490 (100%)	

Table (7): Relationship between Diabetic & History

History	Diabetic		Total	P value
	Positive	Negative		
Yes	64 (49.6%)	65 (50.4%)	129 (100%)	0.000
No	53 (14.7%)	308 (85.3%)	361 (100%)	
Total	117 (23.9%)	373 (76.1%)	490 (100%)	

Table (8): Relationship between Diabetic & Alcohol

Alcohol	Diabetic		Total	P value
	Positive	Negative		
Yes	12 (32.4%)	25 (67.6%)	37 (100%)	0.204
No	105 (23.2%)	348 (76.8%)	453 (100%)	
Total	117 (23.9%)	373 (76.1%)	490 (100%)	

Table (9): Relationship between Diabetic & Cholesterol

Cholesterol	Diabetic		Total	P value
	Positive	Negative		
Yes	10 (18.5%)	44 (81.5%)	54 (100%)	0.327
No	107 (24.5%)	329 (75.5%)	436 (100%)	
Total	117 (23.9%)	373 (76.1%)	490 (100%)	

Table (10): Relationship between Diabetic & Stress

Stress	Diabetic		Total	P value
	Positive	Negative		
Yes	48 (28.1%)	123 (71.9%)	171 (100%)	0.111
No	69 (21.6%)	250 (78.4%)	319 (100%)	
Total	117 (23.9%)	373 (76.1%)	490 (100%)	

DISCUSSION

As for history of the disease, 49.6% of diabetic women have family history of diabetes (p value 0.000). This agrees with reference (24) who stated that the risk of disease increases if a parent or sibling has type 2 diabetes.

The study showed that 15.9% of diabetic women were smokers, that means there is relationship between the smoking and diabetes (p value= 0.024), similarly 32.4% of them were drinking alcohol (p value =0.204) which is in agreement with reference(22) who explained that excessive intake of alcohol can increase the risk of diabetes, by damaging the pancreas and liver and by promoting obesity).

Of the diabetic women, 18.5% were found to have abnormal cholesterol levels (p value = 0.327). This is in agreement with reference (24) who said that low levels of high-density lipoprotein, or "good," cholesterol, correlates with higher risk of type 2 diabetes. It was found that 4.4% of diabetic women have vitamin D deficiency. Reference (23) explained that none of low vitamin D consumption, early exposure to cow's milk or cow's milk formula, and exposure to cereals before 4 months of age has been shown to directly cause type 1 diabetes.

This study showed that 3.0% of diabetic women were active exercise, it agrees with (23) who reported that physical activity helps to control weight, uses up glucose as energy and makes cells more sensitive to insulin.

This study showed that 28.1% of diabetic women were suffering of stress (p value=0.111) which agrees with the finding of (22) who reported that surgery diets, trauma, and internal or external stress of situations increase the risk of type 2 diabetes onset in women and "bring out" the disease.

This study explained that 25.7% of diabetic women were eating meat and its fat (p value =0.027) which is in line with findings of reference (20) who explained that a high saturated fat intake has been associated with, a higher risk of impaired glucose tolerance, and higher fasting glucose and insulin levels, and 25.6% of women were eating foods contain carbohydrate which support the finding of (30) said (At the same time, it's also important to cut down on foods low in fiber such as white bread, white rice and highly-processed cereals).

As for food habit, 26.8% of positive diabetes were using added sugar (p value = 0.219) and 21.8% were drinking soda which agree with reference (29) who showed that sodas and sweet drinks are high in carbs, which increase blood sugar. Also, their high fructose content has been linked to insulin resistance and an increased risk of disease).

The present study showed that 20.3% of diabetic women were eating fast food (p value = 0.218). Similarly (29) said reported that packaged snacks are typically highly processed foods made from refined flour, which can quickly raise blood sugar levels.

The results showed that 28.9% of diabetic cases are obese as highest proportion (body mass index, ≥ 25) p value=0.319 which is in agreement with reference (31) who found that among patients with diabetes, the prevalence of body mass index of ≥ 25 was 85.7% (P<.0001).

This study showed that 40% of stage 3 hypertension among diabetic women as high blood pressure (p value =0.494) which agrees with reference (23) who stated that having blood pressure over 140/90 millimeters of mercury (mm Hg) is linked to an increased risk of type 2 diabetes.



CONCLUSION

The prevalence rate of diabetes was 23.9% among study population. 28.1 % among settlement women and 12.2% among displaced women, The prevalence of diabetes mellitus was significantly higher for urban residents than in IDP camp (p value=0.000)

- The types of diabetes found to be 35% for type1, 56.5% for type2 as highest proportion and 8.5% for gestational diabetes. (p value =(0.000) is statistically significant .
- The highest rate of diabetes (43.3%) was among the age group 45 years and above, there was significant association between the diabetes related to age (p value 0.000)
- Most of the risk factors of the diabetes studied were found to be statistically significant were:
-49.6% of diabetic women have family history of diabetes (p value = 0.000)
-15.9% of diabetic women were smokers (p value = 0.024)
- 25.7% of diabetic women were eating meat and its fat (p value =0.027)

Recommendations

According to the findings the study recommended the health authorities with the follow suggestion:

- Multidisciplinary efforts should be exerted to increase the awareness of diabetes and its controllable risk factors such as smoking ,alcohol, life style , diet , stress
- Improvement of the preventive measures comprise maintenance of normal body weight through adoption of healthy nutritional habits and physical exercise
- Program of health education of diabetic patient about early diagnosis and treatment to maintain blood glucose levels as close within the normal limits and diet control.
- Planning and implementation an effective health education program to improve awareness of diabetic patient about complication of disease
- providing the treatment of diabetes and clinics for examination .

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