

Pre-Diabetes and its Associated Risk Factors in Libya: Future Needs for Public Health Care



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Abstract

Diabetes mellitus is a major public health problem and is a primary cause of morbidity and mortality. The state incidence has much increased in the last years but with a major ignorance of the state health authorities. Thus, this study was aimed to explore the frequency of pre-diabetes and its associated risk factors among Libyan people. Data was collect from 911 (Males = 426 and Females = 485) non diabetic Libyan residents to identify pre-diabetes during 2016 and 2017, followed by risk assessment questionnaire. Findings indicate that 16.5% of the participants having pre-diabetes and it is higher in females than males. 70% of the cases with pre-diabetes were overweight (37.3% with BMI of 24-28 and 30% with BMI > 28) which were at high risk for developing diabetes. High rate of physical inactivity of the participants was distinguished (75% do not do any active physical activity). This study shows high incidence of pre-diabetes among the Libyan population. Thus, an action for national public health education for an early diagnosis of pre-diabetes and for a better healthy lifestyle is directly needed.

Mini Review

In Libya, diabetes mellitus (DM) is a prevalent disease and it is a public health challenge. DM is associated with complications leading to a low quality of life and premature mortality. WHO reported that DM will be the 7th leading cause of death by 2030. In 2014, the prevalence of DM in the world is 8.5% and it is higher in Africa. Several risk factors are associated with progression of DM. These include obesity, age (> 45 years), inactive lifestyle, smoking, family history of DM, elevated levels of cholesterol and of blood pressure. However, early diagnosis and intervention are beneficial [1]. Pre-diabetes is a high-risk condition for increasing DM and associated complications. It is also named as impaired glucose regulation (IGR) which includes impaired fasting glucose (IFG) and impaired glucose tolerance (IGT).

Pre-diabetes refers to a state that blood glucose is not as high as in diabetes but is higher than the normal level (FBG: 100-125 mg/dl, OGTT: 140-199 mg/dl, A1C: 5.7-6.4%). It is a middle stage between normal and diabetes as well as it is a reversible condition. 85million Americans have pre-diabetes and 90%do not know they have it. The prevalence of pre-diabetes is 35.3% in UK and 50.6% of the population who are overweight and ≥ 40 years old have pre-diabetes [2]. Globally, pre-diabetes has reached high rate of the

total number of adults and 70% of the pre-diabetes live in low- or middle-income countries [3]. Research shows about 70% of people with pre-diabetes will develop type 2 DM over time. Therefore, early diagnosis of pre-diabetes is a crucial and it may individuals benefit from intervention to reduce the risk of Type 2 DM and complications [4].

In Tripoli, Libya about one thousand non diabetic individuals were screened for blood glucose (n = 911, Males = 426 and Females = 485) during 2016 and 2017, followed by risk assessment questionnaire. The overall occurrence of pre-diabetes was 16.5% and higher in females than males (Table 1). About 70% of the individuals with pre-diabetes were overweight (37.3% with BMI of 24-28 and 30% with BMI > 28) which were at high risk for developing T2DM. High rate of physical inactivity of the individuals was also found (75%claimed that they do not do any active physical activity). Balanced diet is a vital risk factor for pre-diabetes (only 15.5% followed a balanced food).10% of the individuals were with high blood pressure and 11% with elevated triglycerides. Overall, there is a positive overlapping among individuals with pre-diabetes in age ≥ 45 years, obesity, physical activity, dyslipidemia and family history of diabetes.

Table 1: Prevalence of diabetes mellitus and pre-diabetes stratified by age.

Test	FBG			RBG			HA1C			
Age	ND	IGR	DM	ND	IGR	DM	ND	IGR	DM	Total
< 17	4	2	0	8	2	1	3	0	0	20
17-44	139	22	12	51	15	16	22	1	8	286
45-64	61	37	101	5	14	53	16	8	31	326
> 65	18	30	94	8	10	60	9	9	41	279
Total	222	91	207	72	41	130	50	18	80	911
%	42.7	17.5	39.8	29.6	16.9	53.5	33.8	12.2	54.0	16.5

FBG, RBG and HA1C represent fasting blood glucose, random blood glucose and glycated hemoglobin respectively. ND, IGR and DM represent no diabetes, impaired glucose regulation (pre-diabetes) and diabetes respectively. To the best of our knowledge, this is the first study exploring pre-diabetes and identifying associated risk factors in Libya. It shows a high incidence of pre-diabetes among the studied population. It alarms that Libya is facing a high prevalence of diabetes in near future which creates more economic load on healthcare system. An early detection and intervention of individuals with pre-diabetes is highly encouraged to reduce or delay DM and its complications [4]. The first initiative to limit the rise of DM is to identify the risk factors and, early diagnosis and treatment of pre-diabetes may limit the rise of DM. Effective public health education and promotion (all type of communication tool)

is requested to promote people for a healthy lifestyle (healthy diet, increased physical activity, reduce weight), if not the prevalence of DM will be elevated soon in Libya.

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