


Diabetes Prevalence in District of Tirana Adult Population			Healthcare
		Keywords: Albania, diabetes, socioeconomic status, Tirana.	
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Abstract			
<p>Aim: Our aim was to assess the prevalence of diabetes mellitus through self-reports in a representative sample of Albanian adults residing in Tirana. Methods: A cross-sectional survey was carried out in Tirana in January-March 2014 involving a representative sample of 506 adults aged 18 years or older. Information regarding basic socio-demographic and socioeconomic factors, as well as data regarding the presence of diabetes mellitus were collected via face-to-face interviews using a structured questionnaire. Results: The overall prevalence of diabetes was 63.83%. Diabetes prevalence was significantly higher among older subjects (24.9%) compared to younger ones (1.6%), among those with lower education (49%) compared to highly educated persons (15.8%). Conclusions: This survey provided recent information regarding the prevalence of diabetes and its distribution according to socio-demographic and socioeconomic factors in Albania. Diabetes prevalence is increasing thus reflecting the trends of risk factors. Immediate measure should be taken to prevent diabetes and control its complications through education in order to alleviate its burden on individuals and society as a whole.</p>			

1. Introduction

Diabetes mellitus is a heterogeneous primary disorder of carbohydrate metabolism with multiple etiologic factors that generally involve absolute or relative insulin deficiency or both. All causes of diabetes ultimately lead to hyperglycemia, and it can cause the late complications involving the eyes, kidneys, nerves and blood vessels. Diabetes Mellitus is a chronic disease that occurs frequently and affects many organs and body systems. It is a genetically and clinically heterogeneous group of chronic systemic disorders for various reasons. Diabetes Mellitus is a metabolic syndrome of multiple etiology characterized by chronic hyperglycemia associated with metabolic disorder of carbohydrates, fats and proteins that are the result of the defect in the secretion, insulin action or a combination of both factors together. This diagnosis has the highest incidence along with women over age and peaks 40-50 years. If left untreated, it becomes a chronic disability. Although finding a cure is not correct, more progress was made in controlling and managing diabetes. Diabetes Mellitus is a major public health concern worldwide. There will be an alarming increase in the population with type 2 diabetes both in developed and developing countries over the next two decades (22). Complications of diabetes mellitus are physiologically harmful. Diabetes mellitus is a condition that, if it is uncontrolled, it can produce lifelong complications affecting different organs of the body (23). Diabetes mellitus is an important cause of morbidity and mortality all over the world. Because of lack of awareness, most patients with diabetes mellitus suffer from its complications. (24)

1.1. General epidemiological characteristics

Globally it is estimated that 382 million people suffer from diabetes for a prevalence of 8.3%. North America and the Caribbean is the region with the higher prevalence, 36,755 people with diabetes (11%) followed by the Middle East and North Africa with 34,571 people with diabetes (9.2%). Western Pacific regions, with 138,195 people with diabetes, is the region with the higher number of people with diabetes, however its prevalence is 8.6%, close to the prevalence of the World. Europe has 56,276 people with diabetes (8.5%) having Turkey in the upper extreme of prevalence of diabetes with 14.9%, four percentage points higher than Montenegro with 10.1% of prevalence.

1.1.1. General characteristics

- They have relative rather than absolute insulin deficiency with resistance to insulin action,
- They do not require insulin for survival
- They may remain undetected for long time
- They have increased risk of macro and micro vascular complications.
- The autoimmune destruction does not occur
- Ketoacidosis is infrequent
- Obesity is very common
- Insulin level could be normal or elevated
- The risk of this type increases with age, obesity, lack of physical activity
- Genetic predisposition is common
- Prevalence showed racial/ethnic variation

1.1.2. Etiology

- Genetic factor is dominant in the emergence of diabetes mellitus
- Age. With increasing age and increasing the possibility for the emergence of diabetes mellitus
- Gender. Diabetes is a disease that occurs more frequently in elderly women dominate but especially those who have had multiple births.
- Malnutrition dominance balanced with scarce amounts of protein and fiber.
- Obesity and fat distribution. Overweight shows increase insulin resistance especially in cases where the amount of fat is about 30 %.
- Passive style of living. Persons who make passive are predisposed to diabetes screening compared with those who make an active.
- Stress. Done due to the secretion of corticosteroid which are antagonist of insulin.

1.1.3. Major risk factors (21)

- Age greater than 45 years (though, as noted above, type 2 diabetes mellitus is occurring with increasing frequency in young individuals)
- Weight greater than 120% of desirable body weight
- Family history of type 2 diabetes in a first-degree relative (eg, parent or sibling)
- Hispanic, Native American, African American, Asian American, or Pacific Islander descent
- History of previous impaired glucose tolerance (IGT) or impaired fasting glucose (IFG)
- Hypertension (>140/90 mm Hg) or dyslipidemia (HDL cholesterol level < 40 mg/dL or triglyceride level >150 mg/dL)
- Polycystic ovarian syndrome (which results in insulin resistance)

1.1.4. Diagnostic and therapeutic management

- Complete history and physical examination
- Blood tests including fasting glucose, cholesterol and triglyceride levels, blood urea nitrogen and creatinine, electrolytes.
- Urine for complete urinalysis, culture and sensitivity, glucose and acetone
- Fundoscopic examination
- Neurological examination
- Blood pressure
- Monitoring of weight

1.1.5. Therapeutic:

- Calculated food plan
- Exercise plan
- Insulin or oral hypoglycemia agent
- Specific teaching and follow-up programs.

Diabetes Mellitus is a chronic disease that occurs frequently and affect many organs and body systems. Is a genetically and clinically heterogeneous group of chronic systemic disorders for various reasons. Diabetes Mellitus is a metabolic syndrome of multiple etiology characterized by chronic hyperglycemia associate with metabolic disorder of carbohydrates, fats and proteins that are the result of the defect in the secretion, insulin action or a combination of both factors together. This diagnosis has the highest incidence along women overage and peaks 40-50 years. If left untreated become a chronic disability. Although finding a cure is not correct more progress was made in controlling and managing diabetes. Diabetes is associated with significant concerns to the health of the individuals and also poses a tremendous burden to the health systems of any nation as the expenses related to direct and indirect costs of diabetes take away major amounts of money which could be used for other public health or health improvement efforts. A study in 2001 among Tirana adults revealed that the prevalence of diabetes was 6.3% (2) among adults aged 25 years or older and one third of diabetics didn't know that they had the condition. Another study among people aged 65 years or older conducted in Albania in 2007-2008 reported the prevalence of diabetes at 18.7% (3). The prevalence of diabetes was found to be 4.2% in 2006 among 3709 volunteers in southwest Albania (4). According to the International Diabetes Federation, the prevalence of diabetes was estimated to be at 4.8% in 2007 and 7.5% in 2025 (5).

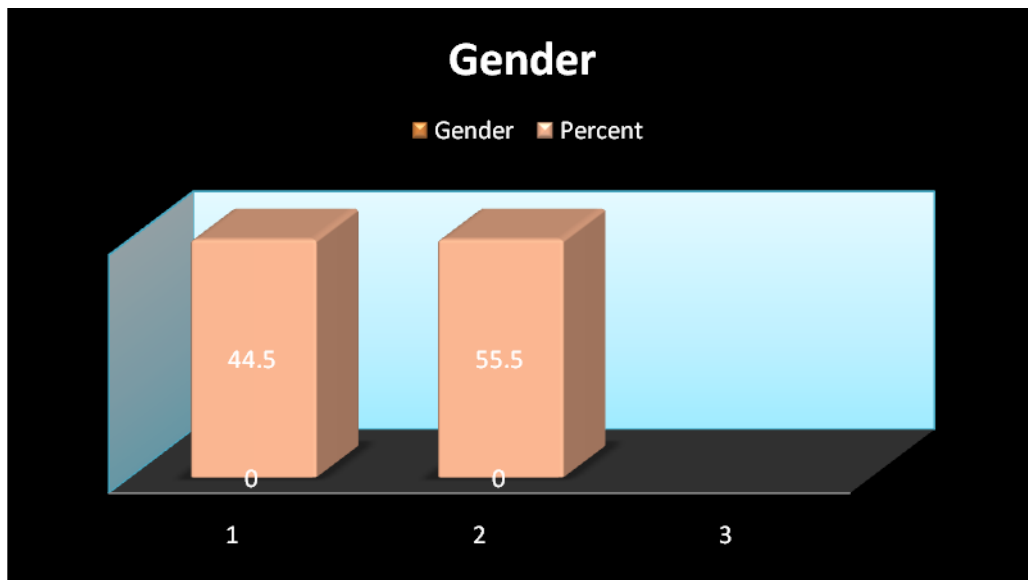
2. Material and methods**2.1 Study population**

A cross-sectional study was conducted in Tirana in January-March in 2014 including a representative sample of 506 individuals aged >18 years. A population-based simple random sample of 700 individuals aged ≥18 years was drawn based on the lists of inhabitants (sampling frame) available from the registries of family physicians working in primary health care centers of Tirana municipality, the capital of Albania. Of the initial 700 individuals targeted for inclusion, 194 participants could not be interviewed due to the following reasons: they had moved away to another living address (nr=37); they had moved permanently abroad (nr=28); few had died (nr=9); whereas 70 further individuals refused to participate in the survey., 50 further individuals were excluded from the analysis due to incomplete data on basic demographic and socioeconomic factors and/or diabetes status. Therefore, this report is based on 506 individuals, with an overall response rate of 72.28% (506/700).

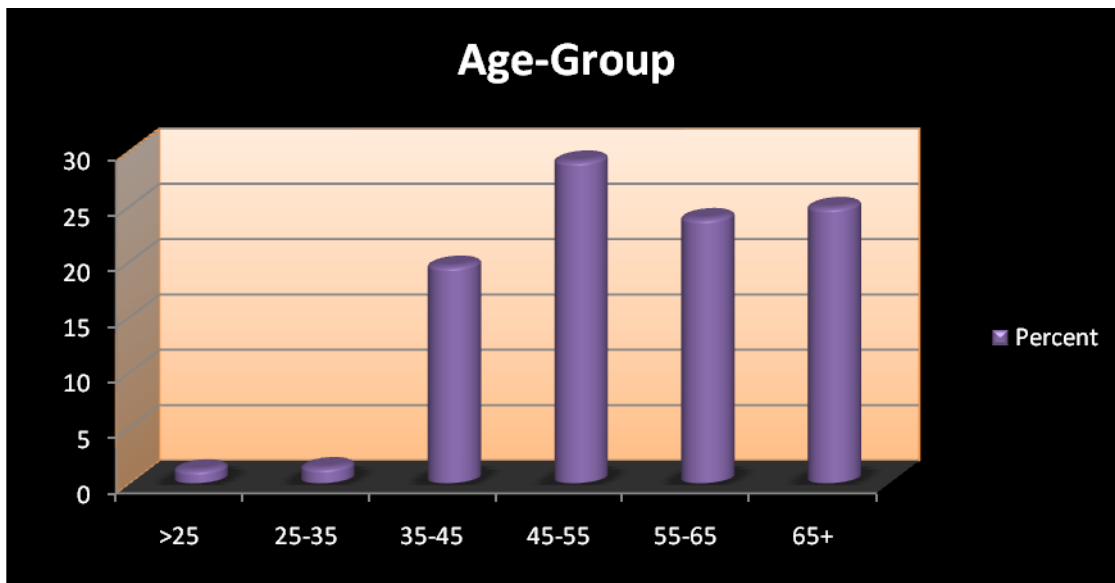
2.2 Data collection

Data on demographic and socioeconomic factors of the participating individuals were collected via face-to-face interviews using a structured questionnaire. The basic demographic and socioeconomic factors included gender, age, educational level and economic status. Information on age was categorized into six categories:<25 vjec:25-35 vjec:35-45 vjec:45-55 vjec:55-65 vjec:>65 vjec, whereas information on educational attainment was categorized into: low (0-8 years of education); middle (9-12 years of education) and high (≥15 years of education). Also, respondents were asked to self-rate their economic status based on monthly income (categorized into:300.000 and >300.000) based on the following question: “According to your opinion,how would you rate your actual economic status?”

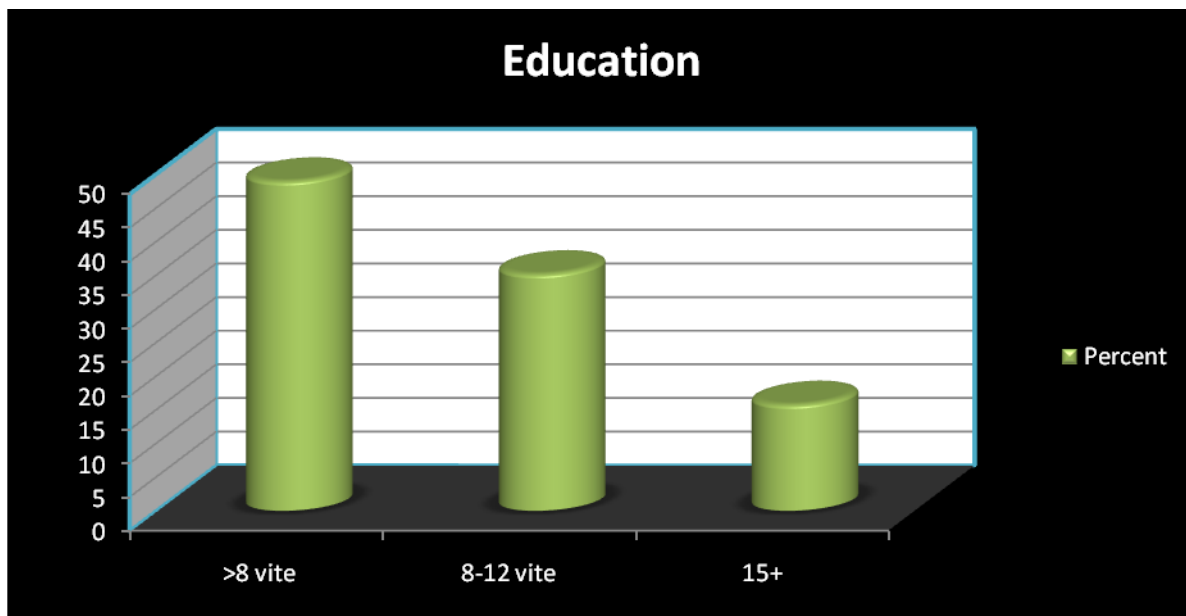
		Gender			
		Frequency	Percent	Valid Percent	CumulativePercent
Valid	Male	150	46.4	46.4	46.4
	Female	173	53.6	53.6	100.0
	Totally	323	100.0	100.0	



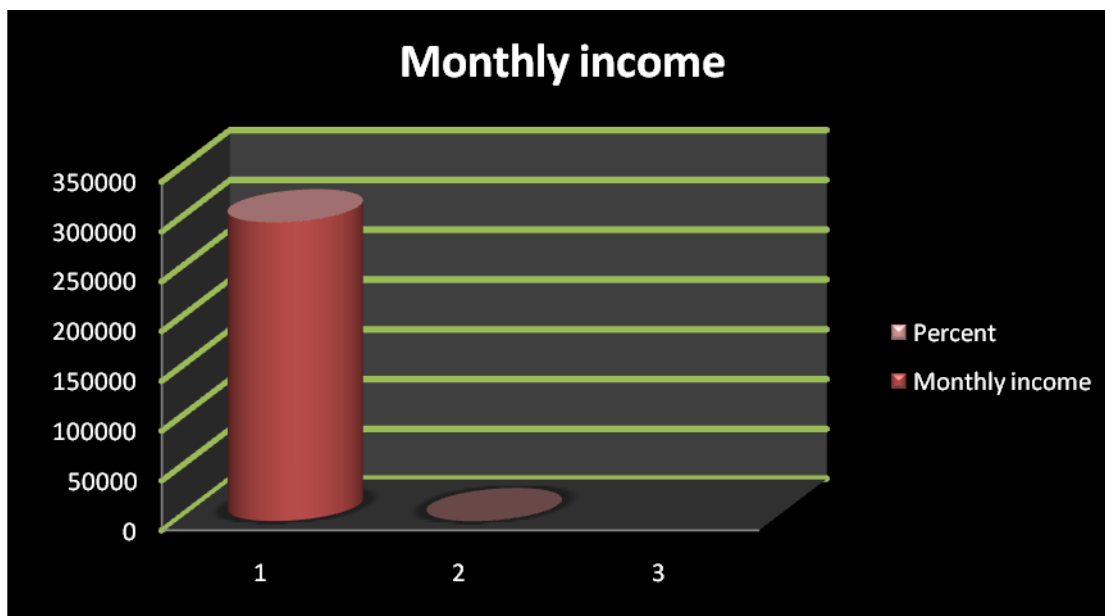
		Age-Groups			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	>25 years	4	1.2	1.2	1.2
	25 - 35 years	6	1.9	1.9	3.1
	35 - 45 years	52	16.1	16.1	19.2
	45 - 55 years	86	26.6	26.6	45.8
	55 - 65 years	81	25.1	25.1	70.9
	Over 65 years	94	29.1	29.1	100.0
	Totally	323	100.0	100.0	



(Education)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 8	248	49.0	49.0	49.0
	8 - 12	178	35.2	35.2	84.2
	15 +	80	15.8	15.8	100.0
	Total	506	100.0	100.0	

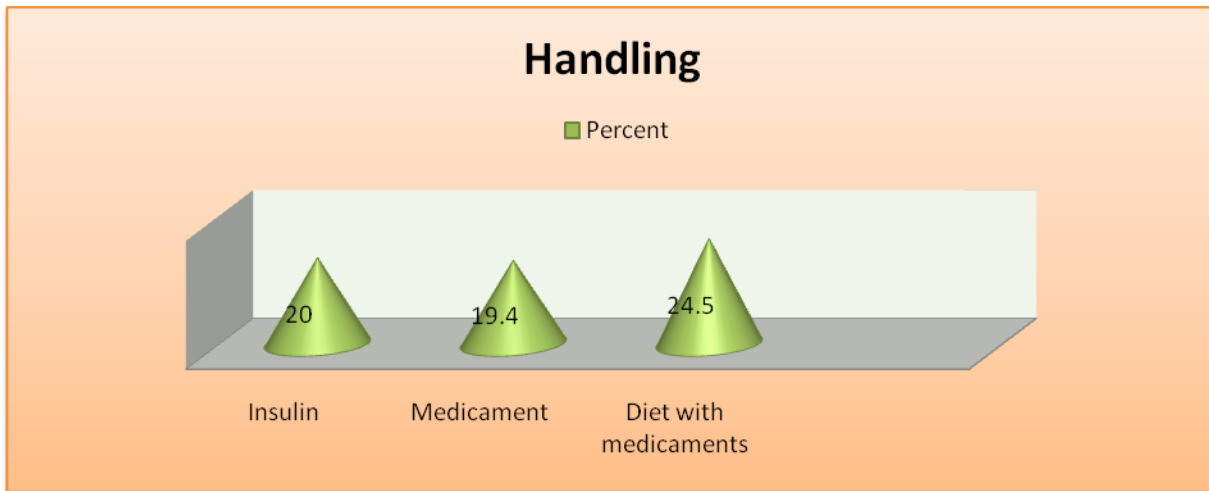


(Monthly income)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	> 300,000	323	63.8	63.8	63.8
	Over 300,000	183	36.2	36.2	100.0
	Totally	506	100.0	100.0	

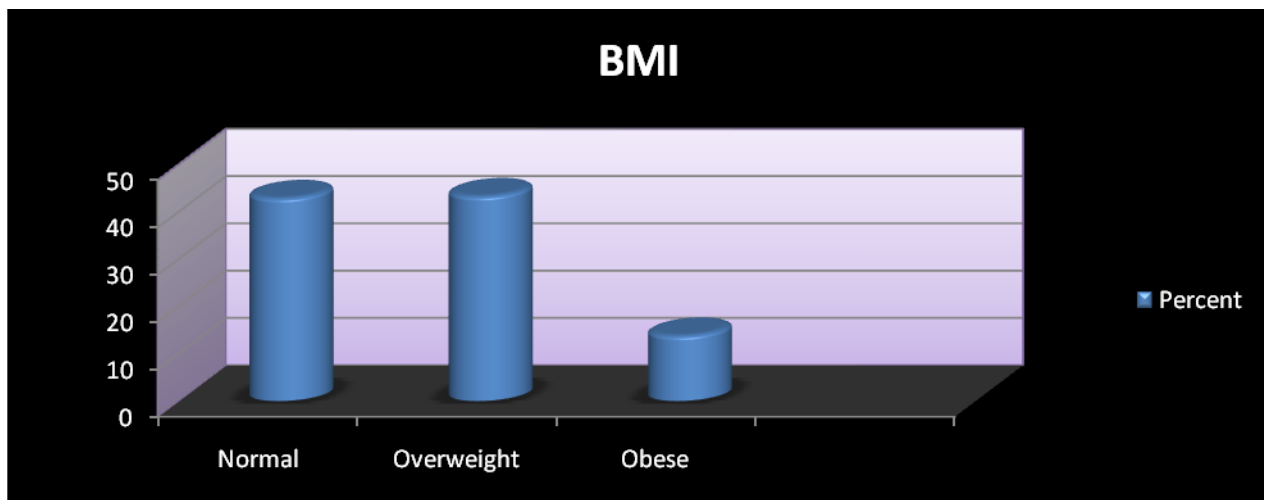


We also measured anthropometric indices including weight and height. We asked the respondents in relation to their weight and height. Based on these data, the Body Mass Index (BMI) was calculated. The later one was then recorded into a three category variable: *normal* (≤ 25.00), *overweight* (25.01-29.99) and *obese* (≥ 30.00). We also asked them regarding their way of life, whether they consume *tobacco*, *alcohol*, *both* or *none*. The participants were asked also the following question: "If you have diabetes how do you treat it?" with the answering options being: "*by special diabetic diet with medicaments*", "*also with medicaments*" and "*insulin*".

(Handling)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Insulin	101	20.0	31.3	31.3
	Medicaments	98	19.4	30.3	61.6
	Diet with medicaments	124	24.5	38.4	100.0
	Totally	323	63.8	100.0	
Missing	System	183	36.2		
Total		506	100.0		



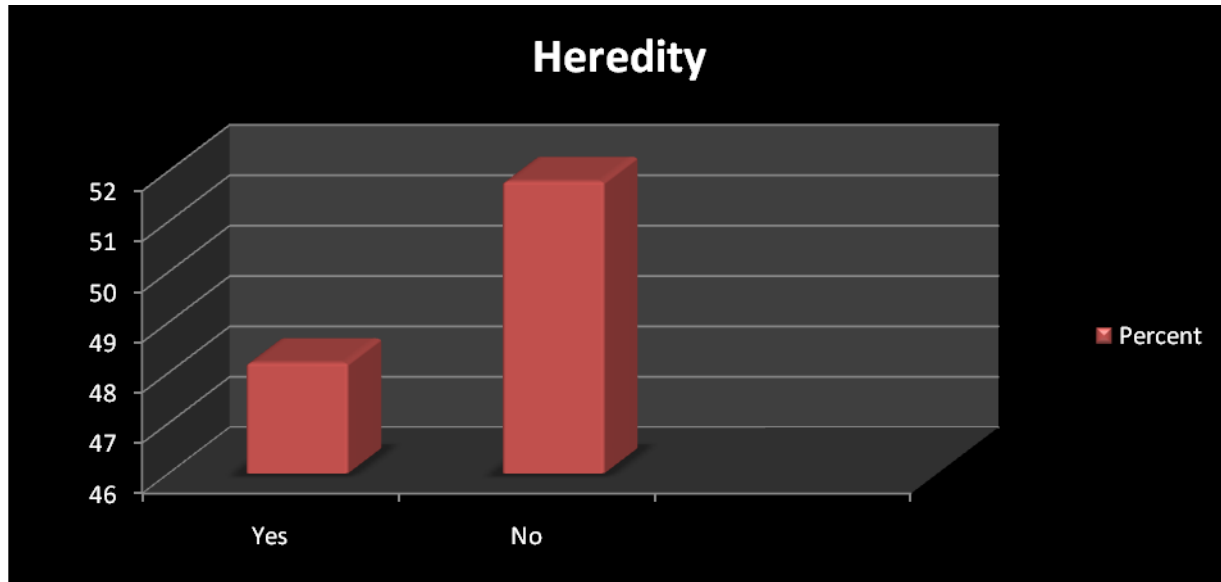
		BMI			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Normal	217	42.9	42.9	42.9
	Overweight	219	43.3	43.3	86.2
	Obese	70	13.8	13.8	100.0
	Totally	506	100.0	100.0	



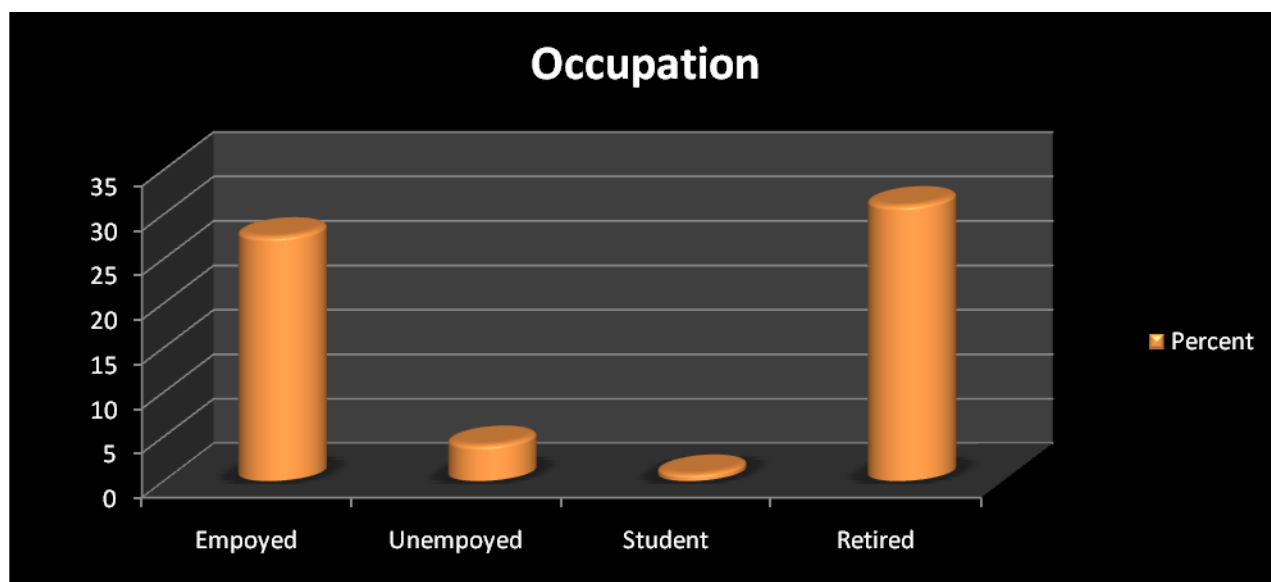
The persons answering “by medicaments” could then detail what kind of medicaments they were using to control their diabetes. In addition to asking the subjects about their own diabetes, they were also asked to provide some information about their family history about diabetes. In this regard, all the participants were asked the following question: “Have a relative who has had or has diabetes?” Information was categorized into two categories: *Yes* or *No*. Finally, the employment status comprised these categories: *employed*, *unemployed*, *student* and *retired*. Also all the participants were asked the following question: “Are you a member in the association of diabetes?” Information was categorized into two categories: *Yes* or *No*. Another question asked the participants was: “What is your hometown or what is your location?” Information was categorized into two categories: *village* and *city*.

Statistical Package for Social Sciences (SPSS), version 20.0, was used for all the statistical analyses

Heredity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	244	48.2	48.2	48.2
	No	262	51.8	51.8	100.0
	Totally	506	100.0	100.0	



(Occupation)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Employed	139	27.5	27.5	27.5
	Unemployed	206	40.7	40.7	68.2
	Student	4	.8	.8	69.0
	Retired	157	31.0	31.0	100.0
	Totally	506	100.0	100.0	



Results

Therefore the overall prevalence of diabetes in our sample was 63.83 %. Among those who had diabetes, 24.5% treated it by using special diabetic diet with medicaments “19.4 % treated it by using medicaments and 20 % treated it by using insulin and missing system (36.2%) As regards the family history for diabetes, 48.2% of the respondents mentioned that they have a relative who has had or has diabetes, and 51.8 % of the respondents mentioned that they have not or have not had a relative with diabetes. The prevalence of diabetes was similar among men and women: 66.66% of men and 61.56% of women reported to have diabetes, and the difference is not statistically significant (P=0.235). Percentage distribution by age group is: <25 years (1.2%): 25-35 years (1.4%): 35-45 years (19.6%): 45-55 years (29.1%): 55-65 years (23.9%): >65 years (24.9%) (P<0.008)

Diabetes prevalence was significantly lower among highly educated individuals, 15.8% of whom reported to have diabetes and higher among low educated individuals among whom the prevalence was 49% (P<0.159).

Diabetes prevalence was negatively associated with the income level: the frequency of the disease was significantly higher among lower income level individuals compared to higher income level individuals: the prevalence of diabetes was 63.8 % among low income level individuals vs. 36.2% among high income level individuals and this difference showed to be of significance (P=0.001).

Diabetes prevalence associated with hometown was: *village* (66%) and *city* (34%) (P<0.309) and associated with location was: *village* (50 %) and *city* (50%) (P<0.165)

Diabetes prevalence associated with occupation was: *employed* (27.5%) *unemployed* (40.7%) *retired* (31%) and *student* (0.8%). (P=0.003*).

Diabetes prevalence associated with lifestyle was: *tobacco* (39.1%); *alcohol* (6.3%); *tobacco and alcohol* (10.1%) and *neither* (44.5%) (P+0.000)*. Diabetes prevalence associated with BMI was: *Normal* (42.9%); *Overweight* (43.3%); *Obese* (13.8%) (P<0.081). Diabetes prevalence associated with membership was: *Yes* (9.5%); *No* (54.3%) *missing system* (36.2%). Diabetes prevalence associated with heredity was: *Yes* (48.2%) *No* (51.8%) (P=0.000)*

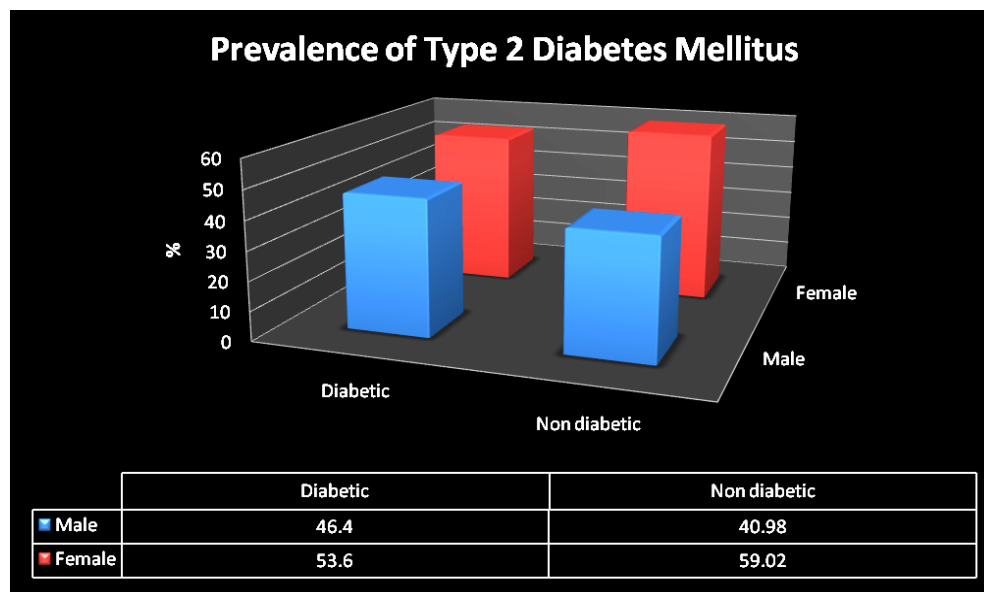
Table 1. Demographic and socioeconomic characteristics of a representative sample of Tirana adults in 2014.

		Groups		Significance (P) dhe Critical value (x ²)	
		Diabetes	No diabetes		
Sex:	Men	150	75	x ²	1.408
	Women	173	108	P	0.235
Educational level	< 8	148	100	x ²	3.683
	8 - 12	120	58	P	0.159
	12 - 15	0	0		
	15 +	55	25		
Age-Group	< 25	4	2	x ²	15.602
	25 - 35	6	1	P	0.008*
	35 - 45	52	47		
	45 - 55	86	61		
	55 - 65	81	40		
	65 +	94	32		

Hometown	Village	208	126	χ^2	1.034
	City	115	57	P	0.309
Location	Village	154	99	χ^2	1.926
	City	169	84	P	0.165
Employment status	Employed	89	50	χ^2	13.826
	Unemployed	115	91	P	0.003*
	Student	2	2		
	Retired	117	40		
Monthly income	Till 300,000	189	134	χ^2	10.949
	Over 300,000	134	49	P	0.001*

* Sinjifikante

		Groups		Significanca (P) dhe Critical value (χ^2)	
		Diabetes	No diabetes		
Lyfestyle	Neither	113	112	χ^2	38.048
	Tobacco	154	44	P	0.000*
	Alcohol	18	14		
	Alcohol&Tobacco	38	13		
BMI	Normal	128	89	χ^2	5.027
	Overweight	144	75	P	0.081
	Obese	51	19		
Heredity	Yes	178	66	χ^2	16.966
	No	145	117	P	.000*



Discussion

This study provides recent information regarding the prevalence of diabetes in the urban adult population of Tirana and its distribution across socio-demographic and socioeconomic factors. The prevalence of diabetes in our study was 63.83 %..The study among persons aged 65 years or older in Albania reported a higher prevalence rate of diabetes, which is explainable by the positive relationship that exists between diabetes prevalence and age (6,13) found in our study as well.The associations of diabetes prevalence with the educational level, income level, and occupational status are in concordance with previous studies (16,18). Obesity is becoming an issue of increasing concern to the Albanian health system, as in other parts of the world (6). From the public health perspective, urgent measures need to be taken in order to prevent diabetes mellitus and its complications, especially in the context of booming of diabetes’ risk factors due to changes in life-style in our country.. A strong aspect of the present survey is the nature of the information collected. We asked the participants to answer about their education years, age, and occupation. The disease is more frequent among least educated, among older people and among those with lower income level. It is necessary to take the appropriate preventive measures in order to alleviate the burden of diabetes in Albania.

Changing lifestyle, stress, obesity, physical inactivity and alcohol consumption of tobacco to make such intervention necessary. It is undertaking essential preventive programs with particular focus on the management of risk factors such as factors related to life style. Attention should be focused more on groups in risk for developing diabetes such as women, ages larger, people with family history for diabetes, overweight and obese individuals. Must find ways necessary communication that these findings are made known to policy makers so that preventive screening activities and training related to the treatment of diabetes mellitus to be as soon preventing increased costs and load medical services.

Conclusions

This survey provided fresh information about the prevalence of diabetes mellitus in a population-based sample of Tirana adults based on self-reports. The management and control of diabetes mellitus in primary health care settings in Albania is not optimal and this means that diabetic individuals might be exposed to elevated risk for future diabetic complications. Education of the populace is still key to the control of this emerging epidemic. It is likely to increase further in the future, with important implications for health policy.

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