

<p><b>Obesity in Dogs and its Impact on <i>Diabetes Mellitus</i></b></p>		<p><b>Healthcare</b></p> <p><b>Keywords:</b> obese, overweight, cans, dry food, mix food, home food, diet.</p>
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<p><b>Abstract</b></p> <p>Background: In our study, we will study the impact of obesity in DM. Hypothesis: Obesity in dogs and its impact on Diabetes Mellitus Animals: we got 2921 dogs aged &gt;5 years accounting for 993 dogs have obesity and 10 dogs have DM. Methods: Received 2921 different dogs and underwent a rapid test for the presence of glucose in the blood. Dogs who tested positive for the test were separated from other dogs. Dogs that tested positive we've taken the age, sex, and way of nutrition. All these are put into a database. Results: From studies, the prevalence of overweight and obesity is 34% of the population of adult dogs. Only the prevalence of obesity in dogs Grow 6.5%. Of particular importance is that approximately 7% of female and 5% of the male are obese, and 32% of female and 20% of the male are overweight. And 10 dogs diagnosed in Tirana district clinics resulted in diabetes. Adult dogs were between 5 and 10 years.</p>
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## Introduction

The prevalence of combined overweight and obesity in domestic canine populations has been reported to range from 23% [1] to 41% [2]. Other studies in canine pet populations have found relationships between canine obesity and musculoskeletal disorders [3,5], cardiovascular problems [5]. glucose intolerance and diabetes mellitus [6,7] and bladder [8] and mammary cancer.[9] Knowledge of obesity/overweight as a risk factor for the disease can heighten awareness and target health screening of dogs. The main objectives of this study are to recognize obesity in dogs and its impact on Diabetes Mellitus. The essential factors that influence obesity are age, race, gender, type of food, hormonal disease.

## Materials and Methods

The study was focused 5 clinics in the city of Tirana. The dogs presented to the clinics for various purposes, be it vaccination of other routine checks, went through a rapid blood test. During the period 2013 - 2015 as many as 2921 dogs of different breeds were an integral part of the study. All of them were subjected to a rapid test for blood glucose. Those dogs with indicators standing at levels above 120 mg/dl underwent further comprehensive blood tests to determine their case better. The animals with pregnancy problems were excluded from the study because their glucose indicators might be compromised. Those animals with levels at above 120 mg/dl were considered to be positive. Results for each animal testing positive were recorded and questionnaires were completed accordingly with information about the animal and also about the living conditions and their food. All these data are entered into a database. Breeds of dogs are classified on the basis of breed manuals with cross breeds being considered as mixed ones. Also, positive animals were grouped according to their age, gender, and breed.

### Body Condition Score

Body condition scores were assigned as a whole number value from 1 to 5 by the veterinarian examining the dog. 1 indicated the animal was excessively thin, 3 was ideal, 4 overweight and 5 was obese. The amount of fat cover over the dogs' ribs and tail base and the abdominal contour were used in assessing body condition.

### Type of Food

The dogs in this study were divided by type of food that they consume: ready food crochets, semi-liquid food (canned) homemade food and mixed food (homemade food and ready food).

### Statistical Methods

The adult dog is defined as an animal over 4 years; Analyses were performed on adult dogs  $\geq 5$ . The statistical program was used to find the frequency, prevalence assessment. Adult dogs were taken in the study the spread estimates of obesity and overweight based on age, race, gender. To control the factors of obesity, are performed many statistical actions including animal problems they may have had at the time of diagnosis.

### Results and Discussion

In the study, a total number of 2921 dogs of mixed breeds were examined including Labradors retrievers, mixed, coli, Yorkshire terriers and others. These dogs underwent rapid tests and the following results were obtained. Resulted from the examination takes 34% of the dogs were adults and the other 66% were young dogs.

### Body Condition

Adult dogs over 34% (338 dogs) of them were overweight and obese. The prevalence of obesity in adult dogs was 6.5%. (65 dogs)

Body condition	Nr	%
Obese	65	6.5%
Overweight	273	27.5%

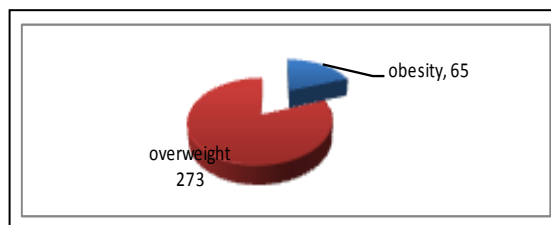


Figure 1. Body condition

### Gender

In this study, we noticed that obesity and overweight are the greatest in middle-aged dogs roughly between 5 and 10 years. we have 500 female dogs that had a prevalence of obesity 7% (35 dogs) and the prevalence of overweight 32% (160 dogs)

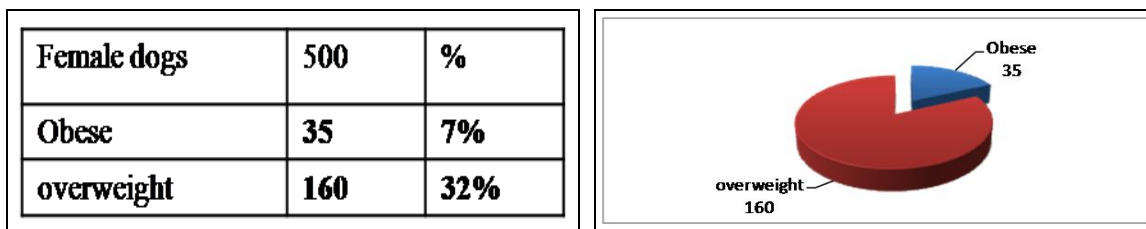


Figure 2. Total female dogs are overweight and obese.

Male dogs were 493, and had a prevalence of obesity of 5% (25 dogs) and the prevalence of overweight of 20%. (99 dogs)

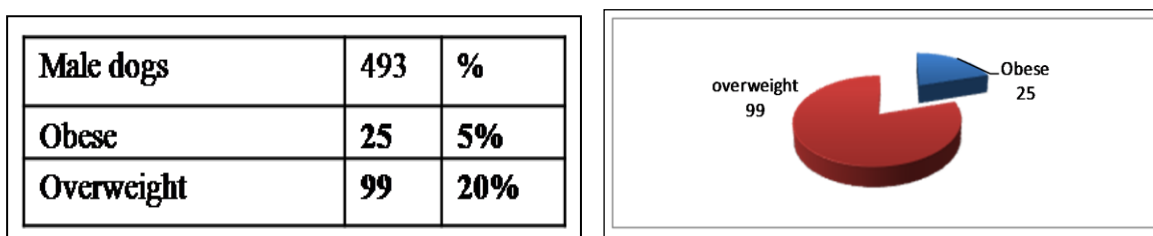


Figure 3. Male dogs total overweight and obese.

### Food

In this study, it was obtained and the type of food they ate to see its impact on obesity. Dogs that consume liquid foods or canned (10%), consume dry food (35%), indoor food as their main source of diet (30%) mixed food (25%)

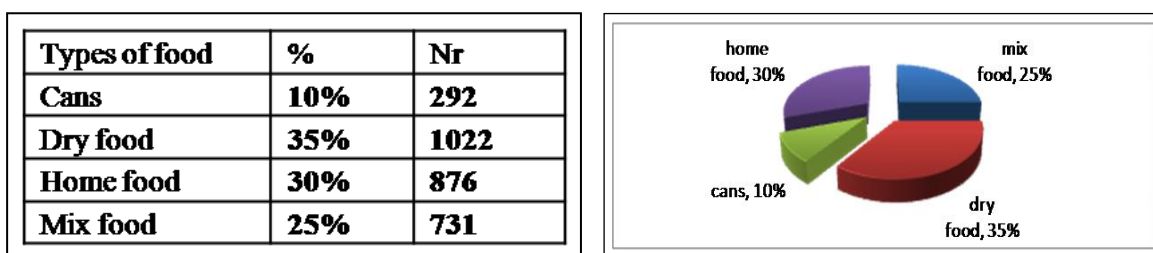


Figure 4. Types of Food

The study showed that some dogs who consumed processed foods were more likely to be obese. 1.5% of dogs who consumed the cans were obese, 2% of dogs who consumed dry food were obese, 1% of dogs who consumed the food home were obese, 2.3% of dogs who consumed a mix of food were obese.

Obesity	%	Nr
Cans	2.3%	7
Dry food	2.8%	29
Home food	1.2%	11
Mix food	2.5%	18

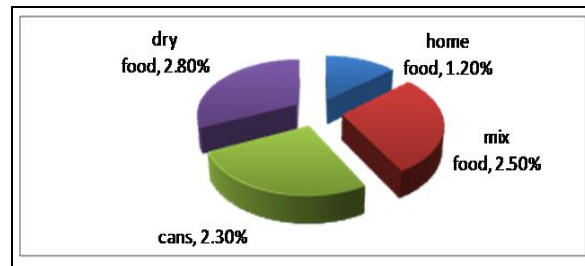


Figure 5. Obesity by food type

### Obesity and its Impact on *Diabetes Mellitus*

In this study we took in 2921 dogs with various breeds including Labrador Retrievers are cataloged, Hills, Yorkshire Terrier and others. These dogs are examined by a rapid test and found these results were 10 dogs with diabetes. all dogs that were positive were subjected to a more detailed examination before and after meals. Our audits have brought 0.33% of the dogs were suffering from diabetes. Those 10 dogs that were positive for diabetes tests, 6 of them were with diabetes and obese, 4 of them were diabetetic but not obese. This figure points to a low frequency of diabetes as well as to the fact that the pathology shows no upward tendency.

Nr total	10	100%
Obese	6	60%
Non obese	4	40%

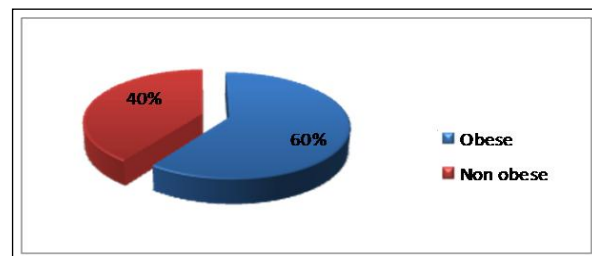


Figure 6. Obese diabetetic dogs

Blood glucose analysis showed that 10 individuals or 0.33% of dogs examined in clinics across Tirana district tested positive with diabetes. This figure points to a low frequency of diabetes as well as to the fact that the pathology shows no upward tendency.

### Conclusion

From studies, the prevalence of overweight and obesity is 34% of the population in the adult dog. Only the prevalence of obesity in adult dogs was 6.5%. The female dog in 7% and 5% in the male dog. 32% and 20% of the female dog in male dogs are overweight. Adult dogs were between 5 and 10 years. To avoid reached overweight or obese should pay attention to dog nutrition at a young age and a lot of exercises.

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