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# A CROSS-SECTIONAL RESEARCH TO ASSESS THE ASSOCIATION OF VISFATIN WITH OBESITY MEASURES IN DIABETIC NEPHROPATHY PATIENTS

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**Abstract**

***Objective:*** *Health professionals suggest visfatin in the role of adipocytokine concealed from instinctual fat and the level of blood is obvious the degree of diabetes and obesity. Therefore, this research aims to determine the correlation of serum visfatin to the necessary precautions of obesity among a category of patients who have reported with diabetic nephropathy and the subjects who displayed normal controls.*

***Methodology:*** *We conducted this cross-sectional research during the time period from February to October 2017 at Sir Ganga Ram Hospital, Lahore on a total of 60 patients. We further divided the research population into two groups; one of (30) patients reported with diabetic nephropathy and the rest (30) as controls. We adopted standard techniques while taking anthropometric measurements and we calculated visfatin with the help of EIA Kit.*

***Results:*** *The findings of the study found the quantity of serum visfatin among the obese patients from both the group that was similar to non-obese patients and p-value is (0.238). Moreover, the ratio between the group was; (7.9 ± 6.1 vs. 6.4 ± 3.2). Additionally, this study determined an affirmative association between visfatin and BMI as (r=0.313) and the value of p is (<0.05). We did not find its correlation with a circumference of the waist (r=0.148) and the correlation between waist and hip ratio (0.198) and the value of p was (0.695 and 0.136) simultaneously. The study reports serum visfatin with P-value (<0.05) in the diabetic and non-diabetic research population as (9.2 ± 5.4) versus (5.2 ± 3.4).*

***Conclusion:*** *Through this research project we reached to the conclusion that the factors which generate visceral obesity have no one to one correspondence with serum visfatin along with circumference of patients' waist and to the ratio of their hips. On the other hand, we came across the positive association between BMI and serum visfatin. However, further studies in this prospect may explore the probable role of serum visfatin in visceral obesity.*

**Keywords:** *Visfatin, Obesity, Body Mass Index and Visceral Obesity.*

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## INTRODUCTION:

Many random surveys have reported that a great number of patients are reporting regarding the issues of diabetes mellitus and obesity to the health professionals around the globe. This increase in obesity may cause to the risk in increased cases of diabetes mellitus. The researchers believe that the pervasiveness of diabetes (type 2) may enhance the number of cases to (366 million) in 2030 which were (171 million) recorded in 2000 [1]. The amalgam of obesity and diabetes lead to the further probability of diabetic nephropathy that makes the patients vulnerable to disease related to renal arteries. This jeopardy is alarming, increasing around the Asian countries and that has reported a major originator of end-stage disease in renal areas more specifically in (9 out of 10) Asian countries [2]. This plague has attracted the attention of researchers, especially on the biologically produced tissue through animals' fat. In the last few decades, many studies lighted upon the potentials of secretion of endocrine gland for adipose tissues and their old perceptions as a bank for nutrient storage that was a mistaken concept. They further explored that this is not only a means for storage but also has the potential to secrete numerous cytokines. Those cytokines are IL-6, leptin, resisting TNF-α, and adiponectin [3]. The studies on the said problem are also trying to cover the hazard in adipose tissue with respect to their regional difference. The previous literature explored that visceral fat is the major factor that increases the circumference of belly and subcutaneous fat around the heavy hips and the thighs of the patients. That is the originator of this plague in the face of obesity, that bothers the masses in present time. Such a difference has sought special consideration towards divergence between subcutaneous and visceral fat. Fukuhara et al. (2005) attempted well to define this phenomenon by exploring visfatin that was favourably defined in visceral fat [4]. Samal et al. (1994) visfatin have similarities with the elements which cause to propagate B cell precursors [5]. These unique and attention seeking discovery compelled the scholars to take proactive steps for further studies. Some research administered on mice presented a downfall due to dose dependency [4, 7]. The body organs like lungs, spleen, kidneys, brain and testis. Visfatin is not dependent on visceral fat only [8]. Fukuhara et al were the first who explored the correlation between visceral flab and visfatin which was acknowledged through many later molecular and observational research. Though visfatin may have a positive relationship between diabetes and obesity present observational research is more concerned with the alteration in findings with the alteration in regions of the patients. Therefore, this study endeavoured to examine the relationship between obesity in terms of total measurements of buttocks, thighs and waist (BMI) and visfatin. Under these considerations, we proposed the hypothesis as the level of serum visfatin is a factor to the inclination towards obesity in terms of the greater circumference of waste.

## METHODOLOGY:

We conducted this cross-sectional research during the time period from February to October 2017 at Sir Ganga Ram Hospital, Lahore. For the research sample, we shortlisted sixty patients. Among these patients, thirty reported as diabetic nephropathy and the rest of the thirty were normal controls. We recruited patients of matched control by using the convenient sampling technique around the general localities whereas, we selected diabetic patients who were admitted to the hospital's nephrology department.

We selected the patients who laid in the age limit of (40 – 60) years and their BMI was greater than (18 $kg/m^2$) and less than (37 $kg/m^2$). We carefully made sure that no patients had any liver, heart disease and rheumatoid arthritis or any other febrile deficiency.

This research deliberated to explain this phenomenon to the patients. In order to satisfy ethical consideration, we sought the informed consents from the patients. We also recorded and examined the previous history of the patients in the said problem. To record the time period of nephropathy, history of diabetes, their inherited medical issues and either they are addicted to smoking or not by using the tool of structured questionnaires. We inquired about the use of any kind of insulin or some other measures to control the illness as a medication. We ensured the standard methods to measure height, weight and BP. We measured the height and weight of the subjects by making them in standing position barefooted. We adopted the standard procedures to measure their waist circumference. Similarly, we chose the widest part of the hip for measuring its' circumference. To calculate BMI, we took the weight in kilograms and height in metres. We applied APC (Asia pacific criteria) to define obesity as it is recommended by WHO that is greater than (102) for men and greater than (88) for women [10 – 11]. WHO Criteria defined the non-diabetic as blood glucose less than (110 mg/dl) when fasting [12]. Therefore, we collected the blood samples when subjects reported with overnight fast. We took arterial samples of blood during (8 – 10) hours period of fasting. We separated and frozen serum at (-70 C).

We used the Social Science version for the analysis

and feeding of collected data in a computer, particularly in a statistical package. We presented and displayed data textual form. Gender and diabetes are categorical variables whereas, clinical evaluations and age are continuous variables. More precisely, for qualitative variables, we used the Chi-Square test, whereas, for quantitative variables we implemented ANOVA. The value of p remained less than (0.05) during statistical analysis of data.

## RESULTS:

We recorded require laboratory records of all the individuals who participated in the research and presented their data in tabular graphics. The values of visfatin displayed no variation among the men and women participants as a total number of the first group was (31) had (6.8 ±7.5). Whereas other class had (29) members who showed the value (7.5 ± 5.9). The value of p was (0.58). Similarly, we did not record any difference between obese and non-obese participants. Both groups had equal numbers as thirty in each. (7.9 ± 6.1) vs (6.4 ± 3.2) with the p-value (0.239) simultaneously. The patients (n=43) with visceral obesity had the mean visfatin of (7.3 ± 5.3) versus the patients (n=17) had (6.8 ± 3.6) with (p= 0.75). While doing the analysis on subgroup mean plasma visfatin between obese and non-obese patients is (10.3 ± 7.0 versus 8.0 ± 2.9) and fifteen was the population of each group with (p=0.546). On the other hand, between non-obese normal controls and obese normal controls plasma visfatin was (4.6 ± 4.9 versus 5.8 ± 3 .9) both groups have equal numbers (15) of patients with (p=0.895). Twelve patients were taking oral hypoglycemic. Whereas, (18) were on both hypoglycaemic and insulin. Such case did not show a significant difference in the mean plasma visfatin as for the first case it was (9.0 ± 3.4) and for the second case (9.4 ± 6.8) with the value of p as (0.819).

**Table – I:** DN and Non-DN Stratification

| Outcomes | DN | Non-DM |
|---|---|---|
| Number | 30 | 30 |
| Obese Cases | 15 | 15 |
| Visceral Obese Cases | 21 | 22 |
| Male | 13 | 18 |
| Female | 17 | 12 |

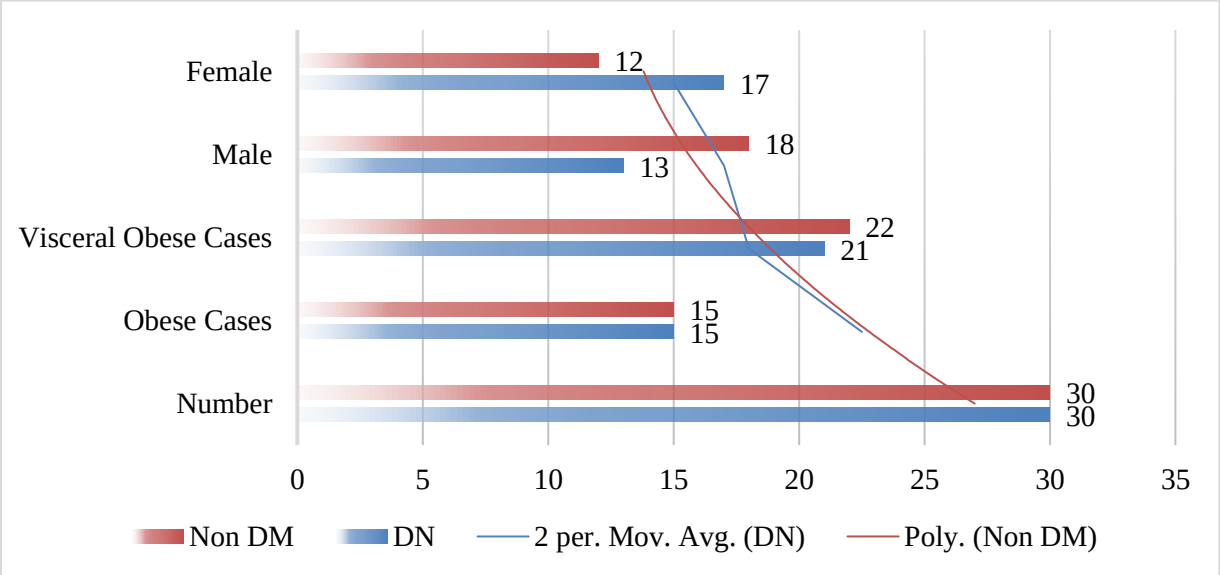


**Table – II:** Variables Outcomes among DN and Non-DN

| Outcomes | DN | | Non-DM | |
|---|---|---|---|---|
| | Mean | ±SD | Mean | ±SD |
| Age (yrs) | 52 | 6.90 | 48 | 5.90 |
| BMI(kg/m $^2$) | 26.1 | 5.80 | 25.9 | 4.50 |
| Waist Circumference (cm) | 105 | 23.20 | 113 | 25.40 |
| Waist to hip ratio | 0.93 | 0.06 | 0.88 | 0.13 |
| SBP(mmHg) | 142 | 9.94 | 114 | 7.70 |
| DBP(mmHg) | 96.4 | 7.80 | 73 | 9.80 |
| FBS (mg/dl) | 142 | 12.00 | 86 | 11.00 |
| Visfatin (ng/ml) | 9.2 | 5.40 | 5.2 | 3.24 |

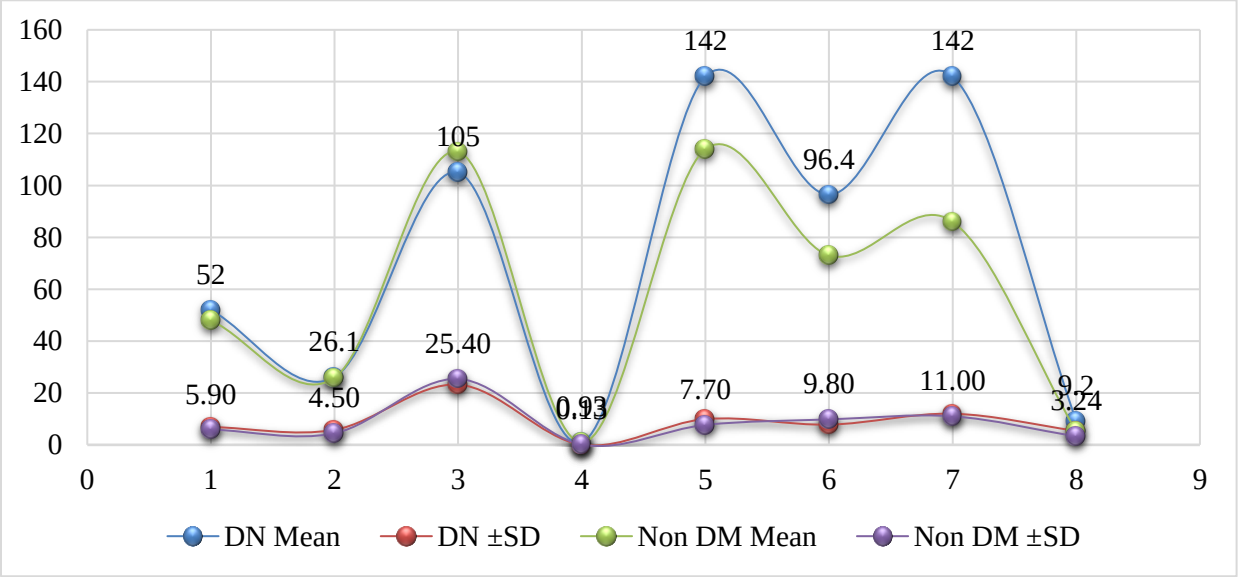
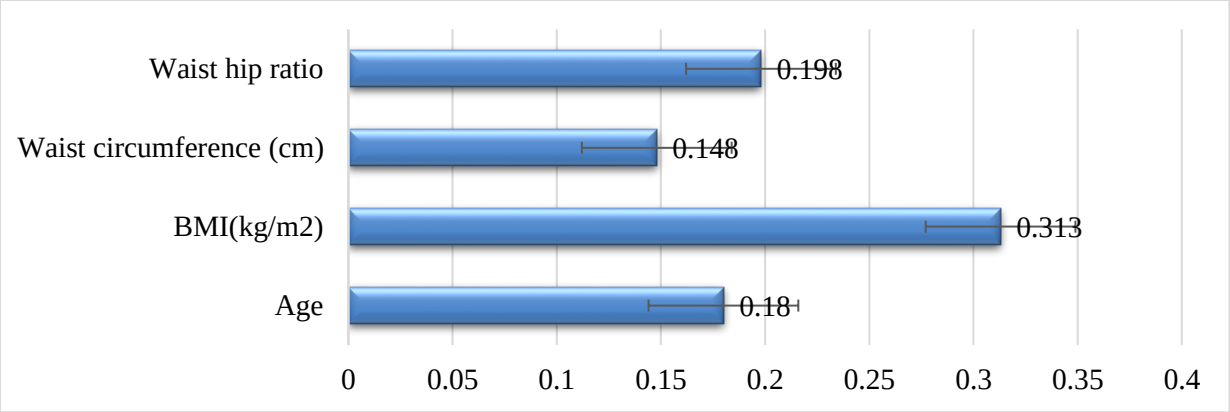



**Table – III:** Correlation Coefficient

| Variables | Correlation coefficient ($r^2$ ) |
|---|---|
| Age | 0.18 |
| BMI(kg/m2) | 0.313 |
| Waist circumference (cm) | 0.148 |
| Waist-hip ratio | 0.198 |




## DISCUSSION:

This research report did not determine any apparent difference in the case of non-obese and obese. Therefore, our findings made an agreement with the research report Berndt et al that is a meagre association with BMI and similarly no relation could be made pointers of visceral obesity [13, 14]. Moreover, in Berndt et al. and we did not witness any affirmative association with the circumference of waste. However, some studies reported spotted some associations. As a result, researchers accounted for this matter of controversy in terms of association of remedies of obesity with visfatin. Among the obese women in Korea, Choi along with his research participants reported a great quantity of visfatin as compared to non-diabetic patients [15]. Zahorska and fellows made the agreement with Choi's report [16] As opposed to this statistic, Pagano et al coded less level of visfatin among obese patients contrary to non-obese [17]. Pfutzner et al evaluated the impacts of medication with simvastatin, pioglitazone, or synthesis of both on the level of visfatin which explored that after (3) months of a cure no method reported any variation in the level of visfatin [19 – 24]. To validate this report, Kralisch et al discovered no result on their synthesis in (3T3-L1) cells. Same is the case with the use of insulin with visfatin for treatment remained implausible [25].

We opted a short sample of subjects that do not help to reach any final and concluding concept. Additionally, we did not include severely obese cases which could have helped us to draw a possibility of an association between extreme obesity and visfatin. Concluding, the patients which we added in this research were experiencing nephropathy that is a root of inflammation which further heightens the level of visfatin. Therefore, it limits us to interpret the findings and halts to generalize the results.

## CONCLUSION:

To conclude, we can make the case that serum visfatin has no one to one correspondence with the indicators of visceral obesity, Therefore, it displayed an affirmative association with BMI. It further propounded that central fats or visceral can be regarded as the primary originator of visfatin over fabrication. For the future perspective, research professionals recommend evaluation of greater numbers of patients and individuals who are not suffering any other disease or severely fat subjects could help to testify any final report regarding visceral obesity.

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