International Journal Dental and Medical Sciences Research
Volume 3, Issue 6, Nov-Dec 2021 pp 445-449www.ijdmsrjournal.com ISSN: 2582-6018

NECK CIRCUMFERENCE AS A PREDICTOR OF DIABETIC NEPHROPATHY IN TYPE – II DIABETES MELLITUS

Dr. Mohammed Zain Alam, Dr. Adepu Vaishnavi, Dr. Praveen Naik

Submitted: 05-12-2021 Revised: 17-12-2021 Accepted: 20-12-2021

I. INTRODUCTION

- This study focuses on taking simple anthropometric measurement i.e., Neck circumference as a predictor for diabetic nephropathy in type 2 DM.
- Obesity is a known risk factor for diabetes and diabetes associated microvascular complications.
- Diabetes related complications affect many organ systems and are divided into vascular and non-vascular complications.
- One of the adverse vascular complications is Diabetic Nephropathy. Early recognition and timely intervention can help in improving quality of life for the patient.

AIM & OBJECTIVE

To study the correlation between neck circumference and nephropathy in patients with type - 2 diabetes

PATIENTS AND METHODS

Place of study: OPD, General Medicine Department, KIMS, Narketpally.
Study Design: Retrospective study
Duration of study: August, 2020 to June, 2021
Sample Size: 100 patients with type – 2 diabetes mellitus

Patients were screened for functional integrity of kidneys by taking Urinary albumin creatinine ratio more than 30(30-300 microalbuminuria) as criteria in diabetic patients.
Neck circumference was measured in all patients with erect neck, eyes forward, midway of neck between midcervical spine and midanterior neck with flexible tape placed horizontally at the level of lower margin of laryngeal prominence
Males who measured 37cm or more and females 34cm or more were labeled as individuals with increased neck circumference.

INCLUSION CRITERIA

All the patients above age group of 18 years diagnosed with diabetes mellitus are included in this study.

EXCLUSION CRITERIA

- Those with other significant causes of microalbuminuria like hypertensive nephropathy, urinary tract infections, pregnancy, hematuria, high grade fever post strenuous activity were excluded.
- Those conditions with increased neck circumference secondary to thyromegaly, neck swellings and neck deformities were excluded.
- Those who are already on treatment with ACE inhibitor or ARB were excluded.

II. OBSERVATION & RESULTS

TABLE 1: GENDER WISE DISTRIBUTION OF PATIENTS

PATIENTS GENDER	NUMBER OF PATIENTS (n=100)	PERCENTAGE(%)
Male	65	65
Female	35	35

International Journal Dental and Medical Sciences Research
Volume 3, Issue 6, Nov-Dec 2021 pp 445-449www.ijdmsrjournal.com ISSN: 2582-6018

FIGURE 1: GENDER WISE DISTRIBUTION OF PATIENTS

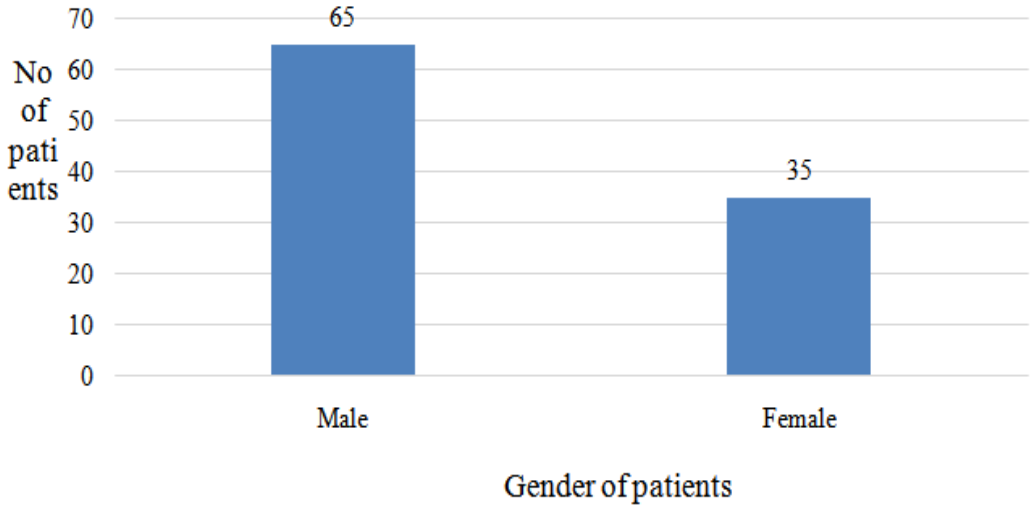


TABLE 2: AGE WISE DISTRIBUTION OF PATIENTS

Age group(years)	Number of patients(n=100)	Percentage (%)
18-30	0	0
31-40	2	2
41-50	31	31
51-60	34	34
61-70	28	28
>70	5	5

Most common age group was 51-60 years

FIGURE 2: AGE WISE DISTRIBUTION OF PATIENTS

International Journal Dental and Medical Sciences Research
Volume 3, Issue 6, Nov-Dec 2021 pp 445-449www.ijdmsrjournal.com ISSN: 2582-6018

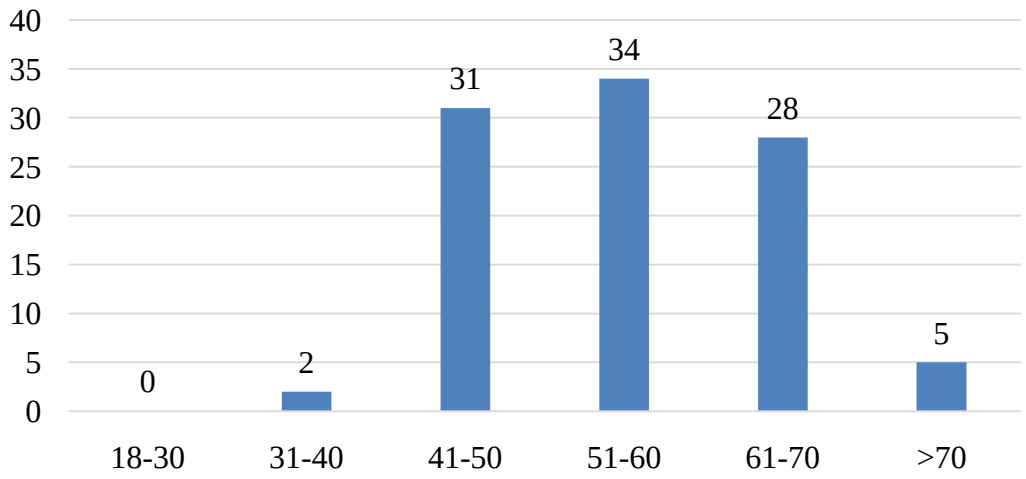
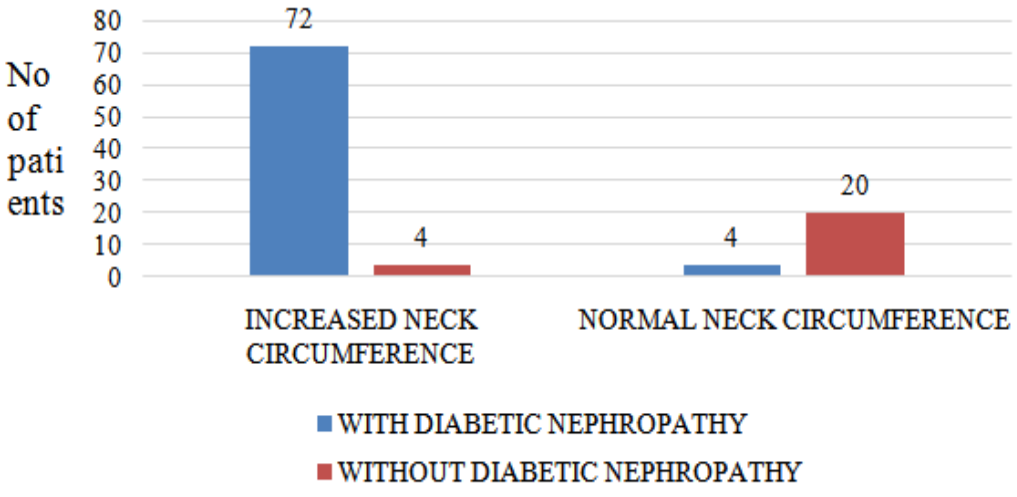


TABLE 3: CORRELATION OF NECK CIRCUMFERENCE WITH DIABETIC NEPHROPATHY

NECK CIRCUMFERENCE	WITH DIABETIC NEPHROPATHY	WITHOUT DIABETIC NEPHROPATHY	TOTAL(n=100) P value
Increased	72	04	76
Normal	04	20	24
Chi square	56.744	P value	<0.001

FIGURE 3 : CORRELATION OF NECK CIRCUMFERENCE WITH DIABETIC NEPHROPATHY



International Journal Dental and Medical Sciences Research
Volume 3, Issue 6, Nov-Dec 2021 pp 445-449www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 4: CORRELATION OF NECK CIRCUMFERENCE WITH DIABETIC NEPHROPATHY IN MALES

NECK CIRCUMFERENCE	WITH DIABETIC NEPHROPATHY	WITHOUT DIABETIC NEPHROPATHY	TOTAL(n=65) P value
Increased	51	03	54
Normal	03	08	11
Chi square	29.328	P value	<0.001

FIGURE 4: CORRELATION OF NECK CIRCUMFERENCE WITH DIABETIC NEPHROPATHY IN MALES

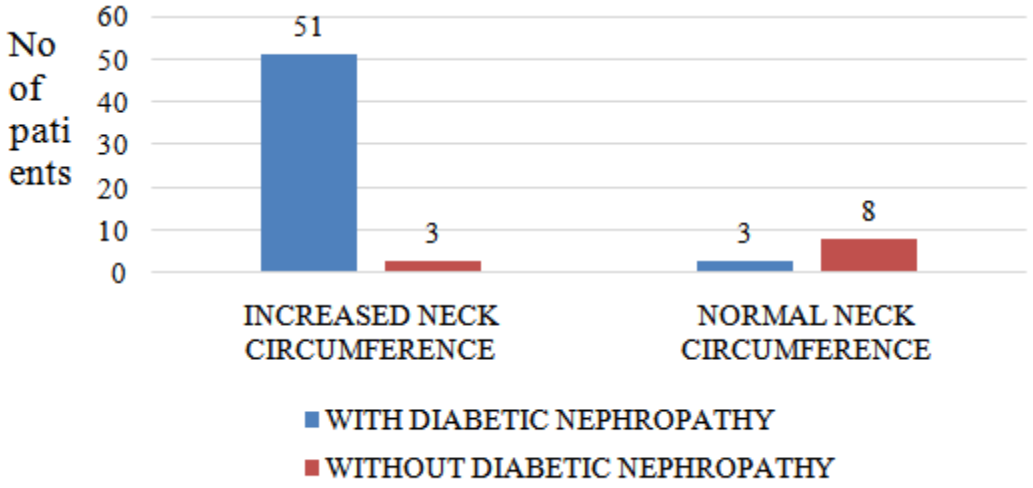
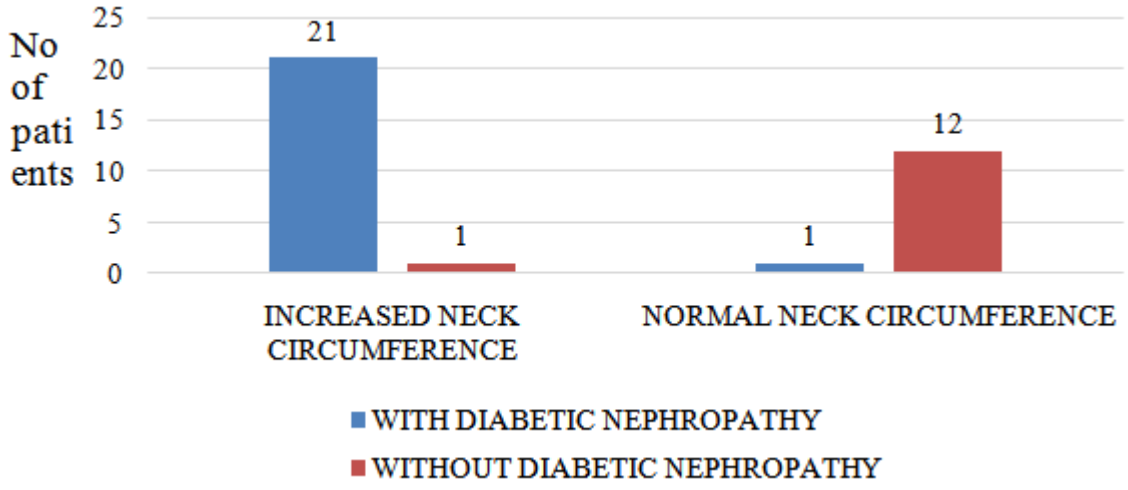


TABLE 5 : CORRELATION OF NECK CIRCUMFERENCE WITH DIABETIC NEPHROPATHY IN FEMALES

NECK CIRCUMFERENCE	WITH DIABETIC NEPHROPATHY	WITHOUT DIABETIC NEPHROPATHY	TOTAL(n=35) P value
Increased	21	01	22
Normal	01	12	13
Chi square	23.329	P value	<0.001

FIGURE 5:CORRELATION OF NECK CIRCUMFERENCE WITH DIABETIC NEPHROPATHY IN FEMALES

International Journal Dental and Medical Sciences Research
Volume 3, Issue 6, Nov-Dec 2021 pp 445-449www.ijdmsrjournal.com ISSN: 2582-6018



III. RESULTS

- Out of 100 Type 2 DM ,65 male and 35 female cases, 76 cases had diabetic nephropathy (DN) based on kidney function. Among the 100 patients, 72 (72%) had increased neck circumference.
- Among the males- 51(78.4%) males with DN had increased neck circumference and 3(4.61%)had normal neck circumference. Out of 11 non DN males, 3(4.61%) had increased neck circumference and 8(12.31%) had normal neck circumference.
- Among the females- 21(60%) females with DN had increased neck circumference and 1(2.85%) female had normal neck circumference. Out of 13 non DN females, 1(2.85%) had increased neck circumference and 12(34.28%) females had normal circumference.
- P value calculated as <0.0001 which was statistically significant.

IV. DISCUSSION

- There are very few studies evaluating the association of increased neck circumference with diabetic nephropathy seen in literature.
- Many studies were done to evaluate association of BMI, waist circumference, waist-hip ratio and skinfold measurements with microvascular complications of type 2 diabetes mellitus.
- BMI do not differentiate between fat and other tissues such as muscles and does not account for regional fat distribution.
- Waist circumference, waist-hip ratio and skinfold measurements have substantial variability in measurement and determine lower body fat accumulation.
- Upper body adipose tissue is lipolytically more active than lower body adipose tissue and is associated with abnormal metabolic profile when compared to lower body fat distribution.

V. CONCLUSION

There was statistically significant association between increased neck circumference and diabetic nephropathy in type 2 diabetes mellitus.

However further studies are required to prove neck circumference as an independent risk factor in identifying diabetic nephropathy in type 2 diabetes mellitus.

REFERENCES

[1]. Anothaisintawee T, Sansanayudh N, Thamakaison S, Lertrattananon D, Thakkinstian A. Neck Circumference as an Anthropometric Indicator of Central Obesity in Patients with Prediabetes: A Cross-Sectional Study. Biomed Res Int. 2019;2019.

[2]. Vatier C, Poitou C, Clement K, Evaluation of Visceral Fat in Massive Obesity. In: Nutrition in the Prevention and Treatment of Abdominal Obesity. Elsevier Inc.;2014 p.67-77.

[3]. Aswathappa J, Garg S, Kutty K, Shankar V. Neck circumference as an anthropometric measure of obesity in diabetics. N Am J Med Sci. 2013 Jan;5(1):28–31.

[4]. Hingorjo MR, Qureshi MA, Mehdi A. Neck circumference as a useful marker of Obesity: a comparison with BMI and waist circumference J Park Med Assoc.2012 Jan;62(1):36-40

[5]. Ismail-Beigi F, Craven T, Banerji MA, Basile J, Calles J, Cohen RM, et al. Effect of intensive treatment of hyperglycaemia on microvascular outcomes in type 2 diabetes: An analysis of the ACCORD randomised trial. Lancet. 2010 Aug;376(9739):419–30.

[6]. Basi S, Fesler P, Mimran A, Lewis JB. Microalbuminuria in type – 2 diabetes and hypertension.Diabetes Care. 2008 Feb;31(2):S194-201.