Galore International Journal of Applied Sciences and Humanities
Vol. 8; Issue: 4; October-December 2024
Website: www.gijash.com
Research Paper *P-ISSN: 2456-8430*

Identification of the Contributing Factors Related to Microvascular Complications Among Patients with Diabetes Mellitus in Selected Hospitals, Kolkata, West Bengal

Banhi Singha Roy

Nursing Tutor, Institute of Psychiatry – COE, College of Nursing, 7, D. L. Khan Road, Kolkata – 700025, West Bengal, India

DOI: https://doi.org/10.52403/gijash.20240402

ABSTRACT

A descriptive study was carried out on Identification of the contributing factors related to micro-vascular complications among patients with diabetes mellitus in selected hospitals, Kolkata, West Bengal.

Risk factors for the development of complication of diabetes of Sandra A. Black's model (2002) were adopted as a conceptual framework. Among 100 diabetic patients were selected by non-probability convenient sampling technique from diabetic clinic Infectious Diseases & Beleghata General Hospital (I.D. & B.G. Hospital).

Semi structured interview schedule and Record analysis was used for data collection. The study findings based on descriptive and inferential statistical revealed that 62% falls in only diabetic group and the remaining 38% in the diabetic with micro vascular complication group where only retinopathy 18%, only nephropathy 11%, retinopathy and nephropathy both 9%. Chi square findings revealed that there were significant associations between the microvascular complications of diabetic patients and work habits (4.44) at df (1)/<0.05 level.

Chi square findings also revealed that there were significant associations between the microvascular complications of diabetic patients and alcohol habits (4.40) at df (1)/<0.05 level. Recommendations for future studies are large sample size, to assess the prevalence of microvascular complication of diabetes mellitus patient, in different community settings.

Keywords: Diabetes mellitus, contributing factors related to micro-vascular complications.

INTRODUCTION

Diabetes Mellitus (DM), a chronic condition marked by high blood sugar, is reaching pandemic levels. It can lead to micro vascular complications like nerve damage (neuropathy), kidney failure (nephropathy), and vision loss (retinopathy). The number of people with diabetes is expected to rise significantly in the coming decades, especially in developing countries.

According to diabetes atlas (7th edition), the worldwide prevalence of diabetes is estimated at 415 million (8.8%), which is predicted to rise to 642 million in next 25 years. In India, there are more than 69 million people with diabetes and are expected to cross 123 million. By 2040, India alone is projected to have over 123 million diabetics. Early diagnosis and management are crucial to prevent these complications.

MATERIALS & METHODS

Research Approach: Quantitative nonexperimental approach.
Research Design: Descriptive survey design.
Research Setting: Diabetic clinic, I.D. & B.G. Hospital, Kolkata, West Bengal, India
Sampling Technique: Non-probability convenience sampling technique
Sample Size: 100+ diabetic patients.

Description of the tool:
Tool-I: Demographic variables
Tool-II: Microvascular complications
Tool-III: Contributing Factors

Data collection method:
Tool-I and Tool-III Semi-structured Interview Schedule
Tool-II Record analysis.

Plan of data analysis: Descriptive & inferential statistics were used to analyze the data.

Statistical Analysis

The data obtained from the subjects were tabulated and analysed in terms of the objectives of the study using descriptive and inferential statistics.

The result showed that Descriptive statistics summarized demographic information, complication rates, and other factors. Chi-square tests investigated the association between microvascular complications and various factors in diabetic patients.

A statistically significant association was found between microvascular complications and work habits (4.44) at df (1)/<0.05 level. This suggests that physical activity may play a role in the development of these complications in diabetic patients.

Another statistically significant association (4.40) at df (1)/<0.05 level was identified between gender and modifiable risk factors related to alcohol habits. This implies that gender might influence the risk of microvascular complications based on alcohol consumption in diabetic patients. In future studies, it would be beneficial to explore the causal relationships between these factors and microvascular complications.

RESULT

Section I: **Findings related to demographic variables.**

This section describes the demographic characteristics of patients with diabetes mellitus according to age, gender, marital status, religion, educational status, occupation, family income, types of family, member of family have received any information regarding micro-vascular complications among patients with diabetes mellitus in frequency percentage.

Table 1: Frequency and percentage distribution of the patients according to demographic variables. n=100

Demographic Variable	Value	Frequency(f) & Percentage (%)
Age	34-40	6
	41-47	9
	48-55	30
	56-62	27
	63-69	16
	70-80	12
Gender	Male	48
	Female	52
Marital status	Married	84
	Unmarried	13
	Widow	3
Education status	Illiterate	11
	Primary	52
	Secondary	21
	Higher secondary	6
	Graduation	10

Occupation	Unemployed	30
	Employed	28
	Business	33
	Retied	9
Family income (per month)	<5000	14
	5000-10000	57
	10001-15000	22
	>15000	7
Number of family member	1-5	78
	6-10	15
	10-16	7
Types of family	Nuclear	82
	Joint	18

Section II: Finding related to identify micro-vascular complications in terms of frequency and percentage distribution.

Table 2: Frequency and percentage distribution of the patients according to micro-vascular complications. n=100

Variable	Value	Frequency(f) & Percentage (%)
HbA1c (mcq/lit)	<5.7	1
	5.7-6.4	16
	≥6.5	83
FBS (mg/dl)	<70	Nil
	70-90	1
	>90	99
PPBS (mg/dl)	<140	5
	140-200	12
	>200	83
Hemoglobin (g/dl)	<12.0	45
	12.0-17.5	55
	>17.5	Nil
Platelet (/cu.mm)	<150000	15
	150000-400000	85
	>400000	Nil
TLC (/cu.mm)	<5000	Nil
	5000-10000	90
	>10000	10
Total cholesterol(mg/dl)	Optimal (<200)	66
	Intermediate (200-239)	25
	High (>239)	9
Urea (mg/dl)	<7	Nil
	Jul-20	33
	>20	67
T.S.H (mIU/l)	<0.35	Nil
	0.35-5.0	88
	>5.0	12
Creatinine level (mg/dl)	<0.5	Nil
	0.5-1.2	77
	>1.2	23
ACR (mg/dl)	A1(<30)	38
	A2(30-300)	62
	A3(>300)	Nil
Diabetic with micro vascular complication	Only Diabetic	62
	Neuropathy	18
	Nephropathy	11
	Retinopathy	9

Section III: Finding related to contributing factors in terms of frequency and percentage distribution.

Table 3: Frequency and percentage distribution of the patients according to contributing factors. n=100

Contributing factors		Frequency(f) & Percentage (%)
Tobacco habit	Never	37
	Sometimes	40
	Daily	23
Alcohol drinking	Never	73
	Occasional	20
	Regular	7
Type of work	Sedentary	76
	Active	24

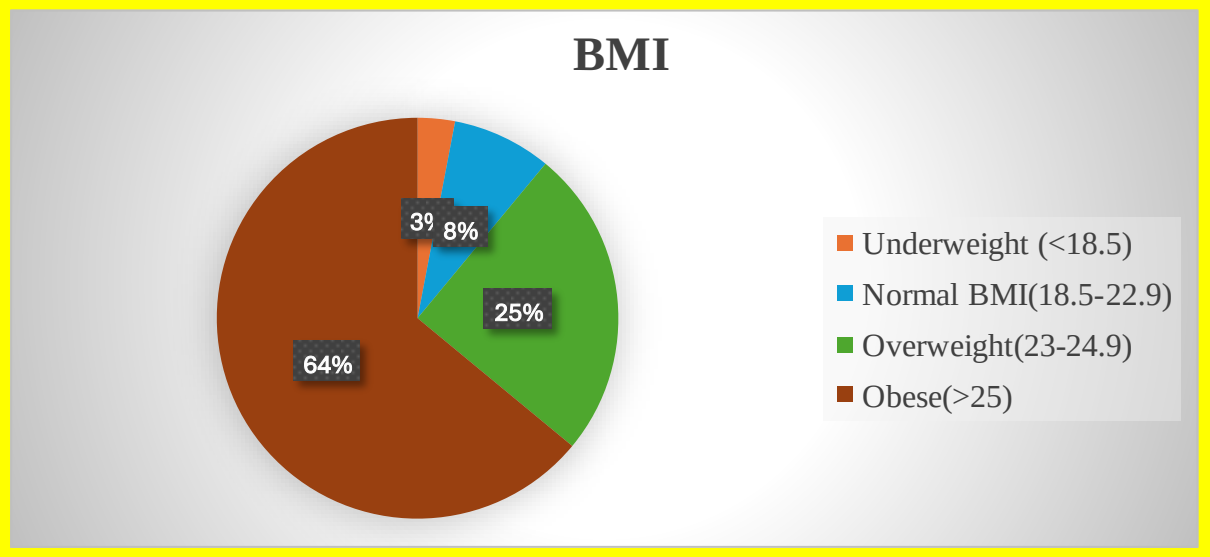

Fig.4 This pie diagram showing percentage distribution of patients according to BMI.

Section IV: Finding related to find out association between microvascular complications of diabetic patients with their contributing factors.

Table 4: Chi-square value shows association between microvascular complications of diabetic patients with their contributing factors. n=100

Contributing factors		Only Diabetic	Diabetic With Complication	X2 Value	Significance At 0.05 Level
Smoking Habits	Smoker	41	22	0.41	Not Significant
	Non-smoker	21	16		
Alcohol Consumption	Alcoholic	5	47	4.40*	Significant
	Non-alcoholic	26	22		
Physical Activity	Active Work	17	7	4.44*	Significant
	Sedentary Work	45	31		
BMI	≤Normal	26	16	1	Not Significant

CONCLUSION

From this study, it is shown that most patients were diagnosed with diabetes 6-10 years prior to this study. Over half (52%) of the patients were female. The most common age group was 48-55 years old. Primary education was the most frequent educational level. Business ownership was the most common occupation. Most patients had normal levels for haemoglobin, platelet count, and total leukocyte count. Maximum numbers of patients had optimal total

cholesterol levels and elevated urea levels. Most patients reported normal results for retinal examination and 24-hour urine tests.

Family history of various conditions was prevalent, including hypertension and diabetes mellitus. Sedentary work and infrequent fruit consumption were common. Most patients took hypoglycaemics medication, with most using tablets. Overweight and obesity were the most common BMI categories.

Overall, the study suggests that while some modifiable risk factors like alcohol consumption might be linked to microvascular complications in diabetic patients, further research is needed to confirm these findings and explore other contributing factors.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: I acknowledge my deepest gratitude to the almighty for where I am today. Thanking my family for all time support during this study period.

Heartfelt thanks to Madam Mrs. Ruma Roy, Senior lecturer, College of Nursing, Medical College and Hospital, Kolkata, West Bengal who guide me with her benevolent personality to conduct this study successfully.

I would like to express my sincere and heartiest thanks to Mrs. Ashru Bagchi Principal of College of Nursing, I.D.& B.G. Hospital attached with Master of Sciences in Nursing Program for timely help and for being so understanding through all the difficult moments.

Source of Funding: Self

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Aastha Chawla, Rajeev Chawla, and Shalini Jaggi. Microvascular and macrovascular complications in diabetes mellitus: Distinct or continuum. Indian J Endocrinol Metab, 2016 Jul-Aug: 20(4): 546-551.
2. Asher Fawwad, Nida Mustafa, Awn Bin Zafar and Maria Khalid. Incidence of microvascular complications of type 2 diabetes: A 12 year longitudinal study from Karachi-Pakistan, Pak J Med Sci, 2018 Sep-Oct; 34(5): 1058-1063. https://www.ncbi.nlm.nih.gov/pubmed/30344550
3. Sohila Cheema, Pratick Maisonneuve, Mohmoud Zirie, Amin jayyousi Hekmat Alrouh, Amit Abraham, Sura Al-Samraye, Ziyad Mahfoud Ibrahim Mohammad Al-jahani, Buthaina Ibrahim, Albert B. Lowenfels and Ravinder Mamtani Risk Factors for Microvascular Complications of Diabetes in a High-Risk Middle East Population, Journal of Diabetes Research, July 2018, 48(7):1-7
4. Maria C. Monti, John T. Lonsdale, Cristina Monto moli Rebecca Montross, Erin schlagdavid, A. Greenberg. Familial Risk Factors for Microvascular Complications and Differential Male-Female Risk in a Large Cohort of American Families with Type 1 Diabetes, The Journal of Clinical Endocrinology & Metabolism, Volume 92, Issue 12, 1 December 2007, Pages 4650-4655, https://doi.org/10.1210/jc.2007-1185.
5. Dr. Abd Al Magid Tahrani MD, MRCP, M Med Sci, Microvascular complications in patients with type 2 diabetes: the impact of ethnicity, sleep and oxidative stress, A thesis submitted to the University of Birmingham for the degree of Doctor Of Philosophy, Centre of Endocrinology, Diabetes and Metabolism (CEDAM) School of Clinical and Experimental Medicine University of Birmingham, May 2012.
6. https://pdfs.semanticscholar.org/42e9/e08d9a6be458f030a9c2dcc42c3d3c88ebfd.pdf
7. Fayaz Ahmad Wani, Rakesh K Koul, Akhtar A Raina, Arjumand Nazir, Muzaffar Maqbool, M Hyat Bhat, Parvaiz A Shah. Prevalence of Microvascular Complications in Newly Diagnosed Type-2 Diabetes Mellitus International Journal of Scientific Study January 2016, Volume 3, Issue 10:102-105
8. Ema Lumi, Spiro Pine, Petrika Pengo, Entela Puca, Prof.Dr. Agron Ylli, The incidence rate of diabetes mellitus and pre-diabetes in korca albania, in 2015, Medico research chronicles, Year: 2016, Volume: 3,Issue: 2, Page numbers: 176-182, http://www.medrech.com/node/315
9. Rajiv Raman, Laxmi Gella, Sangeetha Srinivasan and Tarun Sharma. Diabetic retinopathy: An epidemic at home and

around the world. Indian J Ophthalmic,64(1): 69-75. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4821125/

10. Sweety Trivedi, Alak Pandit, Goutam Ganguly, and Shyamal Kumar Das. Epidemiology of Peripheral Neuropathy: An Indian Perspective Ann Indian Acad Neurol. 2017 Jul-Sep; 20(3): 173. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5586108/
11. Osama Gheith, Nashwa Farouk, Narayanan Nampoory, Medhat A Halim, and Torki Al-Otaibi Diabetic kidney disease: worldwide difference of prevalence and risk factors. J Nephropharmacol.2016;5(1):49-56. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5297507/

How to cite this article: Banhi Singha Roy. Identification of the contributing factors related to microvascular complications among patients with diabetes mellitus in selected Hospitals, Kolkata, West Bengal. *Galore International Journal of Applied Sciences & Humanities*. 2024; 8(4): 8-13. *DOI: https://doi.org/10.52403/gijash.20240402*

******