



BIOMEDICAL STUDY ON HOSPITAL ANXIETY AND ECONOMICAL STRESS IN NORMOTENSIVE AND HYPERTENSIVE DIABETIC II PATIENTS

Khimdhaj Karki	Lecturer at Crimson College of Technology, Pokhara University, Nepal.
Dr. Shikha Agarwal*	Asst. Prof., Dept. of Biochemistry, Rama Medical College, Hospital and Research Center, Hapur, India. *Corresponding Author
Sandesh Shrestha	Tutor, Dept. of Biochemistry, Rama Medical College, Hospital and Research Center, Hapur, India.

ABSTRACT Diabetes is a chronic condition that needs continuing medical treatment and continuing education in patient self-management. To assess and compare the status of oxidative stress, psychological stress, and the economic burden of patients with diabetic and diabetic hypertension. The research was performed on 150 subjects. The present study shows that the diabetes patients in comparison to control subjects have higher mental stress pertaining to hospital anxiety and distress and significant economic distribution towards medical expenditure

KEYWORDS : Diabetes type II, Blood pressure Psychological and Economical burden

INTRODUCTION

Diabetes is a chronic condition that needs continuous medical treatment and ongoing education and encouragement for patient self-management to minimise acute complications and reduce the risk of long-term complications. The treatment of diabetes is complicated and needs several challenges to be solved, beyond glycemic control. [1,2] Hypertension is a common diabetes comorbidity that affects most patients, with prevalence depending on diabetes type, age, obesity, and ethnicity. A big risk factor for both CVD and microvascular complications is hypertension. [3]

Hyperglycemia is linked to chronic stress. This was explained to be caused either by the presence of excessive counter-regulatory hormones such as glucagon, glucocorticoids, etc., or by high cytokine circulating or tissue levels, particularly TNF-alpha and IL-1, which interfere with insulin function. In chronically stressed people, hyperglycemia results in elevated levels of glycosylated haemoglobin. With the course and severity of diabetes mellitus, psychological stress and the pressure on the economy are found to be increased and to be even higher when diabetes is co-prevalent with hypertension. This research therefore seeks to analyse these parameters on the prevalence of the respective subjects. [4]

MATERIAL AND METHODS

To evaluate and compare the psychological stress, and the economic burden on diabetic normotensive and diabetic hypertensive patients. A random cross-sectional study was conducted from 15/03/2019 to 20/09/2019 on 150 subjects who visited Rama Medical College, Hapur.

The present study comprised of total 150 subjects, divided into 3 groups:

- Group I: Healthy subjects serve as controls (n=50; age group 30-75) In this group, 50 normal healthy individuals of either sex, not suffering from any physical, mental, or physiological problem belonging to age group 30-75, were taken as control.
- Group II: Normotensive Diabetic Patients (n=50; age group 30-75) This group comprised of 50 age and sexes matched patients who had confirmed diabetes with normal blood pressure (Normotension).
- Group III: Hypertensive Diabetic Patients (n=50; age group 30-75) This group comprised of 50 age and sexes matched patients who had confirmed diabetes with high blood pressure (Hypertension).

Sample Size:

A total number of 100 patients with Diabetes of either sex (age 30-75 years) were included in the study from the OPD and IPD of Rama Hospital. These were divided into two groups based on their Systolic/Diastolic Blood pressure.

50 healthy subjects were also included in the study from an employee of departments, friends, and their relatives as control.

Inclusion Criteria:

All pre-diagnosed Normotensive and Hypertensive Diabetic patients will be included as per the American Diabetes Association criteria (ADA, 2016) [5] and Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7th Edition) criteria. [6]

Diabetic patients in the age group 30-75 years (either sex).

Normotensive Diabetic Patients:

- FBS: ≥ 126 mg/dl
- PPBS: ≥ 200 mg/dl
- BP: $< 120/80$ mmHg

Exclusion Criteria:

- Only hypertensive patients i.e. without Diabetes
- Gestational diabetic patients
- Other chronic illness like HIV, Cancer, TB
- Age: < 20 years & > 75 years
- Pregnant women

Normal	:	$< 120/80$
Prehypertension	:	120-129/80-84 130-139/85-89
Hypertension	:	$\geq 140/90$
Stage 1	:	140-159/90-99
Stage 2	:	160-179/100-109 $\geq 180/110$

Questionnaires: **Kuppuswamy's Socio-Economic Status Scale** [7,8] for evaluating economic burden and the **Hospital Anxiety and Depression Scale (HADS)** [9] for psychological stress was also filled with all the subjects.

In all subjects, systolic and diastolic blood pressures were recorded at the time of questioning.

statistically analyzed via IBM SPSS Statistics version 21.

OBSERVATION AND RESULT

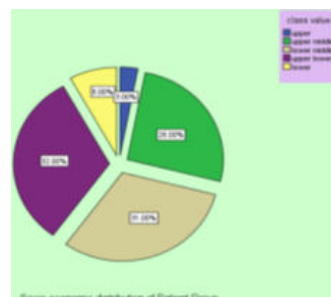


Fig.1. Socio-economic distribution of Patient Group

Table 1. Total Monthly Income And Expenditure

PARTICULARS	Group II	Group III	p- Value
Total (100%)	59	41	
Monthly income	20533±17705	20721±21524	0.005**
Total medical expenditure	2139±2002	3285±2432	0.32*
Direct medical expenditure	1348±1986	2372±2270	0.47*
Indirect medical expenditure	791±460	913±557	0.272*

Where,

** Significant

* Insignificant

Table.2. Socio-economic Profile Of Hypertensive And Normotensive Patients

PARTICULARS	Group II	Group III	p- Value
Total	59	41	
EDUCATION			
Professional degree	9	5	
Graduation	9	4	
Intermediate	5	7	
High school certificate	6	5	
Middle school certificate	5	4	
Literate	4	6	
Illiterate	21	10	
OCCUPATION			
Professional	1	6	
Semi professional	1	3	
Skilled worker	0	4	
Semi skilled worker	1	1	
Unskilled worker	3	0	
Unemployed	19	18	
Clerk, shop owner, farmer	18	27	
MONTHLY INCOME			
Rs 2020	20721±21524	20533±17705	0.005
Rs 2021 - 6079	5222±440	5333±1000	0.729
Rs6080 - 10,109	8206±1303	7600±547	0.208
Rs 10,110 - 15,139	13200±1788	12400±1140	0.099
Rs 15,140 - 20,209	19200±1880	18000±1395	0.394
Rs 20,210 - 40,429	32500±3544	27500±2738	0.12
Rs 40,430	75000±31347	50000±0.00	0.239
Total medical expenditure	3285±2432	2139±2002	0.32
Direct medical expenditure	2372±2270	1348±1986	0.47
Indirect medical expenditure	913±557	791±460	0.272
Socioeconomic Class			
Upper (I)	1	2	
Upper Middle (II)	8	18	
Lower Middle (III)	10	21	
Upper Lower (IV)	19	13	
Lower (V)	3	5	

Table.3. Relation Of Hospital Anxiety And Distress With Various Groups Of The Study Subjects (Mean±SD)

	Group I	Group II	Group III	p-value
HAD	6.51±4.23	8.65±3.83	8.46±3.74	
	6.51±4.23	8.65±3.83	8.46±3.74	0.73*
Anxiety	7.16±5.08	8.97±3.71	9.00±3.98	
	7.16±5.08	8.97±3.71	9.00±3.98	0.97
Distress	5.86±3.27	8.34±4.36	7.93±3.45	
	5.86±3.27	8.34±4.36	7.93±3.45	0.29*
	5.86±3.27	8.34±4.36	7.93±3.45	0.001**
	5.86±3.27	8.34±4.36	7.93±3.45	0.001**

Where,

*** p < 0.001: Statistically highly significant

** p < 0.05: Statistically significant

* p > 0.05 : Statistically non-significant

Group I: Healthy controls

Group II: Normotensive diabetes patients

Group III: Hypertensive diabetes patients

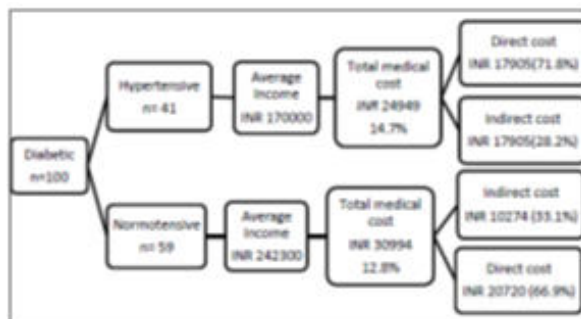


Fig.2. Average Income and medical expenditure

DISCUSSION

Hospital depression and anxiety, economic strain, and high blood pressure are prevalent among people. Aggravation of these variables has significantly developed to alleger multiple health conditions such as type II diabetes, metabolic syndrome, ultimately CVD, pushing generations to decline in all areas of health, economy, quality of life, and finally life. The hospital distress was found to be statistically important in comparing hypertensive and normotensive diabetic patients with the control group. **Groot et al. (2001)** showed a significant association between depression and complications of diabetes (p < .00001, z = 5.94). [12] **Lustman et al. (1998)** also found that depressive episodes seemed independent of diabetes problems because neuropathy, retinopathy, and nephropathy rates were comparable in both the depressed and reference groups. [13] Thus, in subjects with diabetes, hospital anxiety and depression was found to be well prevalent relative to subjects without diabetes. Not only does it have the economic burden of providing depression progression, but oxidative stress has a positive effect on the increase in stress too. Similar to other developing countries, there are various economic difficulties related to diabetes in India, including inadequate funding, an insufficient budget for healthcare and a shortage of medical reimbursement. The direct costs, such as consultations, investigations, medications, medicines, supervision and complications, are included in the cost of medication and care; (ii) indirect costs, such as loss of days, impairment and loss of income, travel, fitness courses, physical exercise, regulation of diet and other costs. When complications arise or when insulin injections, hospital admission, or surgery are needed, the price of diabetes care increases several folds. The economic burden associated with diabetes treatment is measured by measuring direct and indirect costs as the proportion of the annual household expenditure being spent on diabetes care. In this report, we found that diabetes patients spend 10-16 percent of the total monthly income on diabetes treatment (10.42 percent regular and 15.85 percent hypertensive). Patients in the lower socioeconomic groups have been found to spend a greater proportion of their monthly income on their diabetes treatment plan's overall medical expenses A research by **Ramachandran et al. (2007)** showed that the percentage of annual income spent on diabetes care increased from 24.5 percent in 1998 to 34 percent in 2005 among urban-dwelling people with a low SES in Chennai, South India.74 A similar study by **Tharkar et al. (2015)** showed that the median annual expenditure of urban patients on diabetes care in the urban population of Chennai was INR 10 000 (US\$227) compared with an expenditure of INR 6260 (US\$142) by rural patients. People tend to ignore health care due to the high economic burden on patients and their families and are often forced to resort to taking out loans or mortgages or selling their house.

CONCLUSION

The economic burden plays a crucial role in increasing the complexity of the disease by physiological stress linked to patient anxiety and depression.

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