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ADHERENCE TO THERAPEUTIC REGIMEN AMONG DIABETIC PATIENT IN ITAHARI-5 SUNSARI

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ABSTRACT

Introduction: Adherence to treatment regimen among diabetes patients is very crucial for good glycemic control. Poor adherence is a widely recognized problem causing great impact on poor health outcomes and healthcare costs. Hence, this study was conducted to identify the adherence to prescribed therapeutic regimen among diabetic patients. **Methods:** descriptive cross sectional research design was adopted. Data was collected purposively among 400 respondents at Itahari, sub metropolitian city Of Province 1 Nepal. Through interview using structured questionnaire. Analysis was done by descriptive and inferential statistics. **Results:** The study findings revealed Adherence to medicine and diet were (16%) & (25%) respectively. Dietary adherence was associated with age, sex, educational level, attending diabetic counseling ($p<0.001$). Exercise adherence was associated with age, sex, educational level, occupation and attending diabetic counseling ($p<0.05$). Medication adherence was associated with attending diabetic counseling ($p=0.03$). Follow up adherence was associated with education, occupation, attending diabetic counseling, duration of diabetes mellitus, frequency of follow up visit, and knowledge level ($p<0.05$). Moreover, respondents with good adherence to exercise (75.7%), medicine (63.3%) and follow up adherence (66%) had controlled fasting blood sugar level ($p=0.01$, $p=0.03$ and $p=0.01$ respectively). **Conclusion:** Adherence on diet and exercise was very low than other components among diabetes patients. So, it is recommended to focus on education especially on diet and exercise adherence which would be of great benefit in glycemic control.

KEYWORDS: Adherence, compliance, diabetic patient, treatment.

BACKGROUND

Diabetes mellitus is a disorder of carbohydrate metabolism characterized by impaired ability of the body to produce or respond to insulin and thereby maintain proper levels of sugar (glucose) in blood.[1] According to World health organization (WHO) Adherence to therapy is defined as "the extent to which a person's behavior in taking medication, following a diet pattern and/or executing lifestyle changes, corresponds with agreed recommendation from a health care provider".[2] About 422 million people worldwide have diabetes, the majority living in low-and middle-income countries, and 1.5 million deaths are directly attributed to diabetes each year.

Globally, in 2014 the global prevalence of diabetes was estimated to be around 9% among adults aged more than 18. Between 2000 and 2016, there was a 5% increase in premature mortality rates (i.e. before the age of 70) from diabetes. The global prevalence of diabetes in all ages is 6.5% in 2017 and 2.5% total deaths were caused by diabetes globally. The global diabetes prevalence in 2019 is estimated to be 9.3% (463 million people), rising to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045.[2] The prevalence is higher in urban (10.8%) than rural (7.2%) areas, and in high-income (10.4%) than low-income countries (4.0%).[2] In Asia, more than 60% of the people with diabetes live in Asia, with almost one-half in China and India combined. In 2020, according to the International Diabetes Federation (IDF), 77 million people have diabetes in India.[3] The report of 2019 shows that the incidence of diabetes incidence will rise to over 134 million by 2045 and approximately 57% individual remain undiagnosed. According to the IDF 2021 the top countries with diabetes is Pakistan and Kuwait and with lowest is Bahrain and Brunei. According to the 2020 CDS guideline, 13.21% (12.04%, 14.47%), or 71.87 (65.89, 77.85) million Chinese adults would be classified as suffering from diabetes. In Nepal the prevalence of diabetes mellitus was found to be 8.5% (95% CI 7.8% to 9.3).[4] In 2016, The Nepal Diabetes Association reported that diabetes affects approximately 15% of people of more than 20 years and 19% of people of more 40 years of age in urban areas.[4]

According to WHO, diabetes affects more than 436,000 people in Nepal, and this number will rise to 1, 328,$000 by 2030.

Diabetes Mellitus, a 'silent disease' with minimal symptoms at the beginning has rapid progression until target organ damage and with its serious consequences; it has become an important public health concern. In order to achieve and maintain optimum blood glucose level, diabetic patients need good self-care management. The diabetes self-care includes the home based actiates such as eating healthy diet, proper exercise, adherence to medication and preventive care against foot ulcer and other complications.[4] According to World health organization(WHO) Adherence to therapy is defined as "the extent to which a person's behavior in taking medication, following a diet pattern and/or executing lifestyle changes, corresponds with agreed recommendation from a health care provider".[1] Adherence to treatment plan is complex. Good adherence helps to improve glycemic control and prevent from complication of diabetes. There is only an adherence plan when the behavior of a patient in taking medication, diet commitment, and / or changes in lifestyles, will coincide with the advice of a health professional, i.e. it is the degree of conformity between the recommendations done and the patient's behavior to the proposed therapeutic regimen.[6]

Diabetes mellitus is a major public health problem worldwide. Current global estimates indicate that this condition affects 415 million people and is set to escalate 642 million by the year 2040. A further 193 million people with diabetes remain undiagnosed.

According to annual report 2076/77 the diabetes mellitus case in province1 has increased from 55,461(2075/76) to 80,201. Diabetes, because of its prevalence and association with co-morbidities, requires urgent intervention by the adoption of exercise, diet, medication and follow up.

In Hospital based descriptive cross sectional study concluded that follow up adherence (57.8%), Adherence to medicine, diet and exercise were (28.5%), (16.1%) and (8.8%) respectively which shows that Adherence on diet and exercise was very low than other components among diabetes patients.[1] Another hospital based cross sectional study conducted in 2018 concluded that among 480 respondents 65.4% had poor glycemic control which was associated with poor adherence to self-care and their barriers in our diabetic population.[5]

Study conducted in Nepal in 2018 showed that 65.4% had poor glycemic control and poor glycemic control was associated with poor adherence to self-care adherence and their barriers in our diabetic population.[5] Therefore, knowledge on self-care adherence should be targeted to improve glycemic control in our communities as they were unaware about knowledge on self-care practices.

This study aims to assess the adherence level among type 2 diabetic patients residing in Itahari of Morang district Nepal.

MATERIALS AND METHODS

A descriptive cross sectional study was conducted among 400 diabetic patients residing in Itahari submetropolitian city of Province 1 Nepal. Non probability purposive sampling technique was adopted. Patients diagnosed as type 2 DM, on treatment for more than one year were included in this study. Data was collected from December 2020 to March 2021 by using structured questionnaire with interview on adherence to therapeutic regimen which includes patients' behaviors in terms of following diet, exercise, taking medicine as per the health care providers' recommendation to control blood sugar. Morisky Medication Adherence scale (MMAS - 8)11 was used to measure medication adherence. The level of adherence was categorized as good (>75% score), fair (50-75% score) and poor (<50% score), 1 Fasting blood sugar (FBS) was used to assess Glycemic control. Further, it was categorized as good glycemic control (FBS= ≤130 mg/dl) and poor glycemic control (FBS= >130 mg/dl) based on American Diabetes Association (ADA) Diabetes Guideline Summary Recommendation, 2016.12 The validity of the instrument was established by consulting with Head of Department of Internal Medicine and Unit Chief, senior dietician, subject experts and reviewing the related literature. The collected data was entered into SPSS version 16 and analysis was done by using descriptive and inferential statistics. A p value of <0.05 was assumed to be statistically significant.

RESULTS

Table 1 reveals the age of respondents with the mean age and SD 55.57± 13.05%. Among the 400 respondents nearly half of the respondents (45%) belongs to middle adulthood out of which half of the respondents (53.5%) are female, had primary level education and more than one third respondents (32.4%) are.

Table 1: Socio Demographic Characteristics of Respondents.

Variables	Frequency	Percentage (%)
Age in year		
<40	90	22.5
41-59	180	45
>60	120	30
Gender		
Male	185	46.25
Female	215	53.75
Education level		
Can't read and write	98	24.5
Primary level	120	30
Secondary level	102	25.5
Higher Secondary	80	20
Occupation		
Service	70	17.5
Business	55	14
Agriculture	130	32.5
Homemaker	105	26
Retired	25	6
Unemployed	15	4

Table 2: Source of Information (n=400).

Source of information	Frequency	Percentage (%)
Radio	17	4.25
Television	50	12.5
Internet	16	4
Health Personnel	299	74.75
Others	18	4.5

Table No 2 reveals that more than half of the respondents (74.5%) reported health personnel for source of information regarding adherence to therapeutic regimen of diabetes mellitus.

Table 3: Duration of Diabetes (n=400).

Variables	Frequency	Percentage (%)
Duration of diabetes (yrs)		
1-5	191	47.8
6-9	146	36.5
10-15	25	6.3
>15	38	9.4
Family history of diabetes mellitus		
Yes	220	55
No	180	45

Table 3 reveals more than one-third respondents (47.8%) had duration of diabetes of 1-4 years whereas more than half of the respondents (55%) had family history of diabetes.

Fig 1: Adherence of therapeutic regimen of diabetic patient.

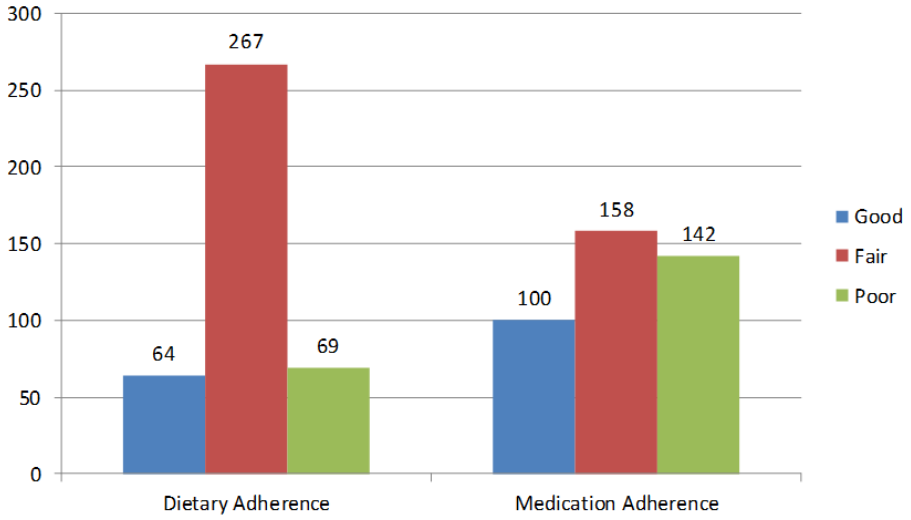

Fig. 1: shows that 66.7% had fair adherence level whereas 73% % had fair medication adherence among diabetic patients.

Table 4: Level of adherence of diet with selected socio demographic variables (n=400).

Variables	Level of Adherence			χ^2 value	p-value
	Good	Fair	Poor		
Age in completed years					
≤ 40	25(16%)	40(66.7%)	35(17.3%)	49.9	**0.001***
41 – 59	30(17%)	130(72%)	20(11.1%)		
≥60	9(7.5%)	97(80.8%)	14(11.6%)		
Sex					
Male	30(16.2%)	145(78%)	10(5.4%)	39	**0.001***
Female	24(11%)	127(59%)	64(30%)		
Education level				64.23	**<0.001***
Can't read and write	8(8.2)	40(40.8)	50(52)		
Primary level	10(8.3%)	80(66.7%)	30(25%)		
Secondary level	30(29.4%)	60(58.8%)	12(10.8%)		
Higher secondary level and above	8(10%)	57(71%)	15(19%)		
Occupation					
Service	25(36%)	30(43%)	15(21%)	1.78	0.22
Business	30(55%)	10(18%)	15(27%)		
Agriculture	55(42)	60(46%)	15(12%)		
Homemaker	50(48%)	30(29%)	25(23%)		
Unemployed	13(32%)	15(38%)	12(30%)		
Attended diabetic counseling					
Yes	45(21%)	152(69%)	23(10%%)	22.56	**<0.001***
No	20(11%)	110(61%)	50(28%)		

Test statistics- χ2:Pearson's chi square Test

Table 5: Association between medication adherences with selected variables.

Variables	Level of Adherence			χ^2 value	p-value
	Good	Fair	Poor		
Age in completed years					
≤ 40	20(20%)	46(46%)	34(34%)	49.9	**0.001***
41 – 59	60(33%)	62(35%)	58(32%)		
≥60	20(17%)	50(41.5%)	50(41.5%)		
Sex				39	**0.001***
Male	30(16%)	125(68%)	30(16%)		
Female	70(33%)	33(15%)%)	112(52%)		
Education level				49.9	**<0.001***
Can't read and write	20(20.3)	35(35.7%)	43(44%)		

Primary level	45(37.5%)	45(37.5%)	30(25%)		
Secondary level	20(19.5%)	60(59%)	22(21.5%)		
Higher secondary level and above	15(18.8%)	18(22.5)	47(58.7%)		
Occupation					
Service	15(21%)	20(20%)	35(50%)		
Business	20(36%)	20(36%)`	15(28%)		
Agriculture	30(23%)	80(62%)	20(15%)	60	**<0.001***
Homemaker	20(19%)	28(27%)	57(54%)		
Unemployed	15(37.5%)	10(25%)	15(37.5%)		
Attended diabetic counseling					
Yes	90(41%)	100(45.5%)	30(13.5%)	22.56	**<0.001***
No	10(6%)	58(32%)	112(62%)		

Table no 5 reveals there was significant association of level of adherence of diet with Sage, sex, education level and diabetic counseling.

DISCUSSION

The statistical analysis of the study showed that among 400respondents, 64(16%) had only good level of adherence to diet. Our major findings were compatible to the findings of the researcher Krishna D Shrestha, Takma KC, Rachana Ghimire conducted in Tribhuvan University Teaching Hospital (TUTH) which reveals that among 422 diabetic patients only 68(16.1%) had good level of adherence to diet. This showed that the result of this study had a similarity with our study as both of the research was conducted using cross sectional design.

The statistical analysis of the study showed that among 400 respondents 100(25%) had good level of adherence to medication. Our major findings was compatible to the findings of the researcher Krishna D Shrestha, Takma KC, Rachana Ghimire conducted in Tribhuvan University Teaching Hospital (TUTH) which reveals that among 422 diabetic patients only 115(28.5%)had good level of adherence to medication . This showed that the result of this study had similarity with our study as it was conducted in same sample.

Our major findings conducted among 400 diabetic patients were 267(66.75%) had fair level of adherence to diet and 158(39.5%) had fair level of adherence to medication which was similar to the findings of the researcher A. Mumtaz, M. I. Shah, G. Shaheen et al conducted in the Medicine Department of Jinnah medical college Peshawar and DHQ & Teaching Hospital KDA Kohat reveals that out of 210 diabetic patients, 150(71.4%) had fair level of adherence to diet, 160(76.2%) had good level of adherence to medication as both of the research were conducted using cross sectional design.

Our major findings were compatible to the findings of the researcher Fernanda S. Marinho, Camila B. M. Moram, Priscila C. Rodrigues, Nathalie C. Leite, Gil F. Salles, and Claudia R. L. Cardoso conducted in Department of Internal Medicine, University Hospital Clementino Fraga Filho Brazil which reveals that only 29.2% had good level of adherence to diet and 93.5% had good level of adherence to medication. This showed that the result of this study had a contrast with our study as both of the researches were conducted in different setting.

Findings related to the association between levels of dietary adherence with selected sociodemographic variables

A Study conducted by Krishna D Shrestha, Takma KC, Rachana Ghimire in kathmandu showed that there was significant association between level of dietary adherence with sex, education and occupation of respondents and no association of age of respondents with level of dietary adherence. This showed that the result of this study had a significant difference with our study as it was carried in different setting.

CONCLUSION

Adherence to diet and medication level are inadequate. Counseling to the patient at hospital and community is required to make them aware of importance of adherence

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