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EVALUATION OF DRUG ADHERENCE AMONG DIABETIC MELLITUS PATIENTS ALONG WITH CO MORBIDITIES AT PIR SYED ABDUL QADIR SHAH JEELANI INSTITUTE OF MEDICAL & SCIENCE GAMBAT. SINDH

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Abstract

Diabetic mellitus (DM) is a long-lasting metabolic disorder characterized by elevated blood sugar levels arising from deficiencies in insulin secretion, its action, or both. Diabetes poses a significant global health challenge. Similar to other nations, in Pakistan, the instances of diabetic mellitus are swiftly escalating each day. More than a third of diabetes cases in Pakistan remain undiagnosed, placing it fourth in global rankings.

Object: *The object of current study was to determine the prevalence of drug adherence among diabetic mellitus patients along with other diseases.*

Methods: *A cross sectional study was conducted at Diabetic Clinic on outdoor patients at Pir Syed Abdul Qadir Shah Jeelani Institute of Medical & Science Gambat, on 1050 patients. Only those patients were selected who were suffering from diabetic mellitus along with comorbidities. The Hill-Bone Medication Adherence (HBMA) scale was used for measuring Medication Adherence among Diabetic mellitus patients.*

Results: *In this study 75% patients were male and 26% were females, 36% study subjects were belonging to urban areas while 64% belongs to rural areas of Sindh Pakistan. Employment wise 19% study subjects were having government job, 29% participants were having non-government job and 52% were unemployed. Literacy wise 6% were primary pass, 20% were matriculation pass, 30 % were intermediate pass, 18% were graduates and 26% participants were uneducated. Age wise 4% participants were aged from 20-30years, 7% were of 31-40 years, 11% were of 41-50 years, 18% were of 51-60 years, 22% were of 61-70 yeas, 33% were of 71-80 years and 5% were of 80 years and above years of age. Drug wise 9% patients were prescribed 5 drugs, 11% were prescribed 6 drugs, 30% were prescribed 7 drugs, 41% were prescribed 8 drugs and 9% were prescribed 9 drug. Comorbidity wise 28% were suffering from diabetic mellitus along with hypertension, 30% were have ischemia, 17% were have chronic kidney disease, 11% have arthritis, 4% have hepatitis and 10% were suffering from diabetic mellitus along with other diseases. Over all drug adherence among study*

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subjects was very low due to various factors.

Conclusion: *The study concludes that the rate of drug adherence among diabetic mellitus patients along with comorbidities was very low.*

INTRODUCTION

Diabetes mellitus (DM) is a long-lasting metabolic disorder characterized by elevated blood sugar levels arising from deficiencies in insulin secretion, its action, or both [1]. Diabetes poses a significant global health challenge. Similar to other nations, in Pakistan, the instances of diabetes mellitus are swiftly escalating each day. Pakistan has the highest diabetes prevalence in the world, with approximately 33 million Pakistanis or 26% of the adult population living with diabetes, as reported by the International Diabetes Federation (IDF) based on its 2021 data [2]. It ranks third in total numbers, behind China and India, both of which have a billion individuals with diabetes. More than a third of diabetes cases in Pakistan remain undiagnosed, placing it fourth in global rankings [3,4].

Furthermore, if preventative measures are not intensified, the IDF cautions that the number of Pakistanis with diabetes could almost reach 62 million by 2045 [5]. Globally, over half a billion individuals are living with diabetes. The trends observed in the country are particularly alarming given Pakistan's health history, Dr. Zafar Mirza, former director of Health Systems at the World Health Organization (WHO), noted during an interview with Health Policy Watch [6,7].

In 1990, diabetes did not even feature among the top 25 leading causes of disability-adjusted life years in Pakistan. However, between 2009 and 2019, the incidence of death and disability caused by diabetes surged by 87%. Mirza indicated that the vast majority of individuals with diabetes suffer from Type 2 diabetes linked to lifestyle factors, whereas Type 1 or insulin-dependent diabetes affects a comparatively small number of individuals [8,9,10]. In Type 1 diabetes, the pancreas ceases to produce insulin, resulting in patients being entirely reliant on insulin. On the other hand, Type 2 diabetes hinders the body's ability to utilize insulin effectively, leading to elevated blood sugar levels [11,12]. Type 2 diabetes causes severe physical harm, particularly to the feet, eyes, kidneys, and heart. According to official statistics acquired by Health Policy Watch, about 53% of fatalities in the country are attributable to non-communicable diseases (NCD), with diabetes being one of the primary contributors. Official statistics reveal that 41. 4% of the population (53. 7% of females and 24. 7% of males) fail to meet the physical activity standards recommended by WHO for preventing NCDs, including diabetes [13,14,15].

The primary cause of the rising diabetes rates in Pakistan is due to Rapid urbanization and lifestyle changes that have altered dietary habits, physical activity levels, and overall health behaviors in Pakistan [16,17]. Conventional diets have been swapped for more calorie-rich and processed food options, resulting in higher obesity rates and other diabetes-related risk factors. Furthermore, sedentary jobs, greater technology use, and lowered physical activity levels have become widespread, particularly in urban regions [18,19]. This shift in lifestyle has led to an increased likelihood of obesity and diabetes. Pakistan's healthcare system encounters numerous issues, including limited resources, insufficient healthcare infrastructure, and uneven availability of medical facilities [20]. This can adversely affect the early identification, diagnosis, and management of diabetes, especially in rural and underserved areas [21]. A lack of awareness and education concerning diabetes and its risk factors may result in delayed diagnoses and ineffective management [2,22]. Advancing diabetes awareness initiatives and educational programs is essential to promote early detection and efficient management of the condition. The occurrence of diabetes in Pakistan shows discrepancies among various age groups and genders [13,21]. Age is a recognized risk factor for diabetes, and the incidence of the disease tends to rise with increasing age [7,11]. Additionally, research indicates that women in Pakistan may encounter extra hurdles related to diabetes, such as limited healthcare access, cultural norms that influence their dietary selections, and lack of decision-making power in healthcare matters [10]. Finally, diabetes represents a significant health burden in Pakistan, with complications like cardiovascular diseases,

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kidney failure, blindness, and lower limb amputations being prevalent [19]. These complications not only diminish the quality of life for individuals but also place considerable economic strain on families and the healthcare system [3].

Material and methods

Study Setting

Patients were recruited from Diabetic Clinic on outdoor patients, who were visited for follow up visit at Pir Syed Abdul Qadir Shah Jeelani Institute of Medical & Science Gambat.

Target Population

Diabetic patients along with co morbidities.

Study design

Cross Sectional

Duration of study

12 months.

Sample size

1050

Inclusion Criteria

Diabetic mallitus patients coming for follow up visits since 6 months. Patients with co morbidities were also included. Only those patients were included whose age equal to or greater than 20 years. Both Male & female included in the study. Patients who availing consultancy of consultants of Diabetic mallitus Clinic of Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat.

Exclusion Criteria

Patients admitted in wards were excluded. New Diabetic mellitus patients who are visiting first time Diabetic mellitus clinic of Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat.

Measurement of Medication Adherence

The Hill-Bone Medication Adherence (HBMA) scale was used for measuring Medication Adherence among Diabetic mellitus patients along with comorbidities.

Data Collection Procedure

Only those patients were enrolled, who have been visiting Diabetic mallitus clinic of hospital since 6 months. Clinical examinations were done by consultant Diabetologists for all patients. The Hill-Bone Medication Adherence (HBMA) scale was filled after taking informed consent, on every follow-up visit of patient. Same method was applied for all the patients on their visit for prescription refill.

Data Analysis/Statistical Procedure

The data was analyzed by using descriptive statistics.

Ethical Consideration

All the data was shared with the participants. All the methods mentioned above have no harmful effects on the patients.

Results

Demographic distribution of study subjects

In Table 01 demographic details of the patients were given in which majority of the study subjects were male as compared to female, while locality wise majority of the study subjects were belonging to rural areas. Literacy wise majority of the patients were of intermediate pass while some of the patients were primary pass. On the basis of employment nature majority of the patients were unemployed while few have government job.

Table 1. Demographic details of study subjects

	Variables	n (%)
Gender	Male Female	725 (74%) 325 (26%)
Locality	Urban Rural	468 (36%) 582 (64%)
Employment	Government Employee Non-Government Employee Un Employed	87 (19%) 129 (29%) 234 (52%)

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Literacy	Primary	95 (06%)
	Matriculation	170 (20%)
	Intermediate	311 (30%)
	Graduation	264 (18%)
	Un Educated	210 (26%)

Age wise distribution of study subjects

In Table 02, age wise groups of the study subjects were given, in which majority of the study subjects were of age from 71 years to 80 years where as few of the study subjects were of age from 20 years to 30 years.

Table 2. Age wise distribution of study subjects

	Variable	n (%)
Age in Years	20-30	45 (04 %)
	31-40	72 (07 %)
	41-50	117 (11 %)
	51-60	185 (18 %)
	61-70	235 (22 %)
	71-80	347 (33 %)
	81 to onwards	49 (05 %)

Drug wise distribution of study subjects

In Table 03, study subjects were divided according to no of total drugs prescribed to them by the consultants. Majority of the patients were prescribed eight drugs whereas some patients were prescribed five drugs.

Table 3. Drug wise distribution

S.No	No. of drugs prescribed	n (%)
1	5	94 (09 %)
2	6	119 (11 %)
3	7	315 (30 %)
4	8	427 (41 %)
5	9	95 (09 %)

Co morbidity wise distribution of participants

In Table 04, patients were divided according to co morbidity wise, majority of the patients were suffering from Diabetic mellitus along with ischemic heart disease & minority of the patients were of Diabetic mellitus along with hepatitis.

Table 4. Diseases along with Diabetic mellitus

S.No	Name of the disease along with TB	n (%)
1	Hypertension	294 (28%)
2	Ischemic Heart disease	315 (30%)
3	Chronic Kidney Disease	180 (17%)
4	Arthritis	115 (11 %)
5	Hepatitis	45 (04 %)
6	Others	101 (10 %)

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Measurement of adherence in patients suffering from Diabetes along with other diseases

In table 05, adherence was measured from enrolled patients, regarding taking the medicines on time as prescribed to them, by using Hill-Bone Medication Adherence Scale. The majority of patients were found to be non-adherent to therapy, habitually missing doses both intentionally and unintentionally, and failing to take their medications as directed by their doctors.

Table 5. Measurement of non-adherence of drugs

S.No	Item	Response	n (%)
1	How often do you forget to take your Diabetic mellitus & other medicines?	1. All of the Time 2. Most of the Time 3. Some of the Time 4. None of the Time	230 (22 %) 412 (39 %) 315 (30 %) 93 (09 %)
2	2 How often do you decide NOT to take your Diabetic mellitus & other medicines?	1. All of the Time 2. Most of the Time 3. Some of the Time 4. None of the Time	235 (22%) 407 (39%) 295 (28%) 113 (11%)
3	How often do you forget to get prescriptions filled?	1. All of the Time 2. Most of the Time 3. Some of the Time 4. None of the Time	220 (21%) 290 (28%) 485 (46 %) 55 (05 %)
4	How often do you run out of Diabetic mellitus & other medicines?	1. All of the Time 2. Most of the Time 3. Some of the Time 4. None of the Time	190 (18%) 297 (28%) 510 (49%) 53 (05%)
5	How often do you skip your Diabetic mellitus & other medicines before you go to the doctor?	1. All of the Time 2. Most of the Time 3. Some of the Time 4. None of the Time	93 (09%) 138 (13%) 211 (20%) 608 (58%)
6	How often do you miss taking Diabetic mellitus & other medicines when you feel better?	1. All of the Time 2. Most of the Time 3. Some of the Time 4. None of the Time	305 (29%) 417(40%) 210 (20%) 118 (11%)
7	How often do you miss taking your Diabetic mellitus & other medicines when you feel sick?	1. All of the Time 2. Most of the Time 3. Some of the Time 4. None of the Time	110 (10%) 206 (20%) 115 (11%) 619 (59%)
8	How often do you take someone else's Diabetic mellitus & other medicines?	1. All of the Time 2. Most of the Time 3. Some of the Time 4. None of the Time	225 (21%) 227 (22%) 323 (31%) 275 (26%)
9	How often do you miss taking your Diabetic mellitus & other medicines when you are careless?	1. All of the Time 2. Most of the Time 3. Some of the Time 4. None of the Time	287 (27%) 314 (30%) 398 (38%) 51 (05%)

Discussion

Diabetic mellitus (DM) is a long-lasting metabolic disorder characterized by elevated blood sugar levels arising from deficiencies in insulin secretion, its action, or both. Diabetes poses a significant global health challenge. Similar to other nations, in Pakistan, the instances of diabetic mellitus are swiftly escalating each day. More than a third of diabetes cases in Pakistan remain undiagnosed, placing it fourth in global rankings. Among diabetic patients with comorbidities due to polypharmacy the non-adherence is more due to poverty, forgetfulness,

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some times patients are non-adherent due to appearance of side effects. Results of this study are similar with others studies in which adherence in diabetic patients were very low like **Budi Suprapti *et al*** conducted cross sectional study in 2023, their finding were as Non-adherence to diabetes medication was found to be more prevalent than poor glycemic control among outpatients with type 2 diabetes at the Indonesian clinic [1]. Another study similar to current study was conducted by **Yihunie Mitiku *et al***, in 2022, they concluded that The prevalence of non-adherence to medications among diabetic patients is significantly high in the study area. Public health measures should be strengthened to decrease non adherence among diabetic patients [3].

Conclusion

According to the findings of this study, Diabetic mellitus patients along with co morbidities at Pir Syed Abdul Qadir Shah Jeelani Institute of Medical & Science Gambat had a very low rate of adherence. Therefore, the therapeutic outcomes of the therapy were not achieved according to the therapeutic plan as a results the duration of the therapy becomes prolonged. Patients were non-adherent to therapy due to various factors the most prevalent factor is poverty due to less income, patients were unable to purchase multiple medications other factors were forgetfulness, frequent dosage intervals, low literacy rates, prolonged treatment durations. It was seen that study participants tentionally and intentionally failed to take their medications as directed by their doctors.

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