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ORIGINAL ARTICLE

Geriatric Diabetes Care: Prescribing Practices and Drug Utilisation at a Teaching Hospital

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Abstract

Background/Aim: Diabetes is increasingly recognised as a major health concern worldwide, affecting around 537 million adults and causing approximately 6.7 million deaths annually. In India alone, 74.9 million individuals had diabetes in 2021 and this figure could rise to 124.9 million by 2045. Older adults (aged 60 and above) are particularly affected, with 14.3 % of them living with type 2 diabetes. Managing diabetes among the elderly is complicated, as they often have other health conditions and are on multiple medications, which can lead to issues such as polypharmacy and harmful drug or food interactions. Consequently, it is crucial to examine how diabetes medications are being prescribed for this age group.

Methods: A prospective cross-sectional study was conducted among geriatric patients (≥ 60 years) at a tertiary care teaching Hospital in Mullana, Ambala, Haryana, over six months from December 2024 to May 2025. Study samples were selected through systematic random sampling and each prescription was evaluated to analyse prescribing patterns, polypharmacy and drug interactions. Additionally, patient's quality of life was assessed.

Results: A total of 185 patients participated in the study, including 96 males (51.9 %) and 89 females (48.1 %), with a mean age of 66.58 ± 6.26 years. Metformin was the most commonly prescribed monotherapy, followed by glimepiride, human insulin and dapagliflozin. The most frequent combination therapy was metformin with vildagliptin (17.2 %). Hypertension (22.7 %) was the most prevalent comorbidity. Polypharmacy was observed in 80 % of patients, drug-drug interactions in 84.3 % and food-drug interactions in 29.9 %. The average quality-of-life score was 67.74 ± 13.53 %, with lower scores among those aged over 80.

Conclusion: The study highlights prevalent polypharmacy, drug interactions and comorbidities among elderly diabetics, emphasising the need for rational prescribing to enhance treatment efficacy, minimise adverse effects and improve quality of life. Overall, the study underscores the importance of rational prescribing and optimised drug use in elderly diabetic patients to improve outcomes and reduce adverse effects.

Key words: Diabetes mellitus; Aged; Patients; Polypharmacy; Drug interactions; Quality of life.

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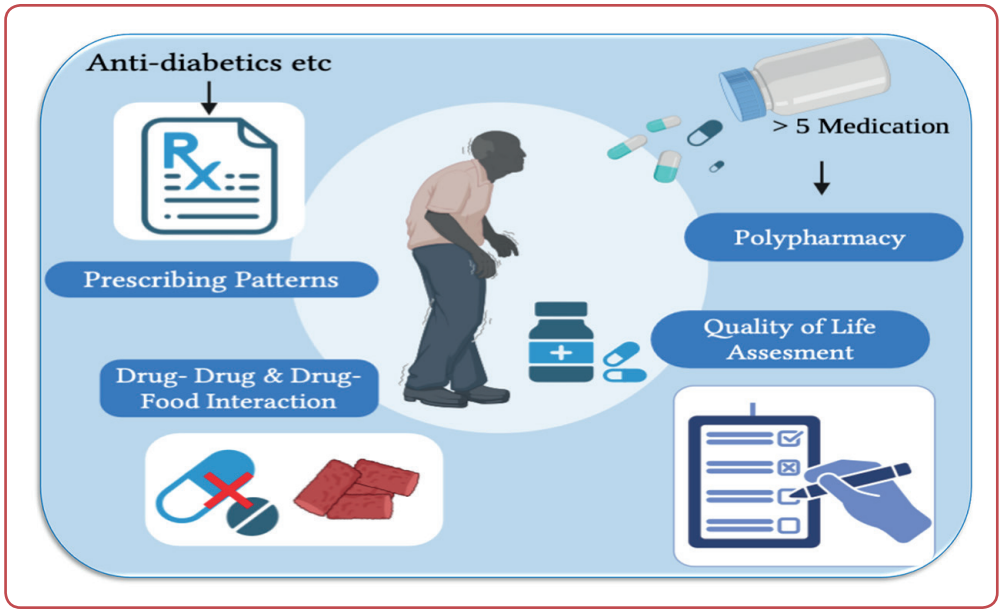

Graphical abstract

Introduction

Diabetes mellitus (DM) has become a pressing global health issue, impacting individuals across all age groups and socio-economic strata. Presently, approximately 537 million adults, constituting 10.5 % of the global population aged 20 to 79 years, are affected by DM. This chronic disease contributes to around 6.7 million deaths annually due to its complications.[1] Future projections are alarming, with the number of individuals living with DM expected to increase to 643 million by 2030 and 783 million by 2045.[2]

In India, the situation is particularly concerning. According to the International Diabetes Federation (IDF), approximately 74.9 million individuals were diagnosed with DM in 2021. This number is anticipated to increase dramatically, reaching an estimated 124.9 million by 2045.[3] Among the geriatric population, especially those aged 60 years and above the prevalence of type 2 diabetes mellitus (T2DM) is notably high, with studies indicating a rate of approximately 14.3 %.[4]

Managing diabetes in elderly patients is challenging due to age-related physiological changes that alter drug absorption, distribution, metabolism and excretion, affecting pharmacokinetics and pharmacodynamics. Consequently, geriatric patients may exhibit increased sensitivity to drugs and experience different or more severe adverse effects than younger individuals.[1] The therapeutic approach often involves oral antidiabetic drugs (OADs), such as sulfonylureas, biguanides, α-glucosidase inhibitors, thiazolidinediones, dipeptidyl peptidase-4 (DPP-4) inhibitors and sodium-glucose co-transporter 2 (SGLT2) inhibitors.[5]

Despite the availability of multiple pharmacological options, managing DM in the elderly remains complex due to the frequent presence of comorbidities, including hypertension, dyslipidaemia, cardiovascular diseases, chronic kidney disease (CKD), osteoporosis, depression, arthritis, chronic obstructive pulmonary disease (COPD) and cognitive impairments.[6] These conditions often necessitate the use of multiple medications, leading to polypharmacy.[7] Polypharmacy poses significant risks, such as inappropriate prescribing, poor adherence to treatment, adverse drug events[8] and both drug–drug interactions (DDI) and food–drug interactions (FDI).[6] These complications can compromise therapeutic outcomes, increase hospitalisation rates, elevate healthcare costs and diminish patients' overall quality of life (QoL).[9, 10]

Therefore, it is imperative to analyse drug utilisation patterns in the geriatric population. This study aimed to assess antidiabetic prescription trends, determine the prevalence of polypharmacy, identify potential drug interactions and evaluate QoL.

Methods

A prospective cross-sectional study was undertaken to evaluate drug prescribing patterns and assess QoL over six months (December 2024–May 2025), following approval by the Institutional Ethics Committee (IEC-3071). This study took place in the geriatric outpatient department (OPD) and inpatient department (IPD) at Maharishi Markandeshwar Institute of Medical Sciences and Research (MMIMSR), Mullana, Haryana.

The study enrolled patients aged 60 years or older of either sex, diagnosed with T2DM and a comorbid condition, prescribed at least one antidiabetic medication in IPD or OPD. Patients with chronic illnesses, accidental or surgical admissions, incomplete medical records, or unwillingness to provide informed consent were excluded from the study. The sample size was determined to be 185 patients using Cochran's formula,[11] based on a 95 % confidence level, 5 % margin of error and 14.3 % prevalence of T2DM in geriatrics.

Study design

Following approval of the study, data from geriatric patients attending the IPD and OPD were collected in accordance with the defined inclusion and exclusion criteria. Medical records were randomly selected from both departments. Data collection was carried out on predetermined days each week, with three days designated for IPD and two days for OPD. On each data collection day, two to three prescriptions were analysed to evaluate prescribing patterns, potential DDI and FDI and the presence of polypharmacy. Concurrently, patient QoL was assessed using the Modified Diabetes Quality of Life-17 (MDQoL-17) questionnaire through structured interviews.

Data collection

Data were collected using a structured data collection form by reviewing patients' medical records and conducting interviews to assess their QoL. Prior to recruitment, each patient was informed about the purpose of the study and confidentiality of personal data was assured. Upon obtaining informed consent, relevant information was documented in the data collection form.

Socio-demographic data included age, gender, location, smoking and alcohol habits and past medical history. Physical examination findings such as blood pressure, pulse rate, temperature, oxygen saturation (SpO_2) and body mass index (BMI), along with laboratory parameters including glycated haemoglobin (HbA_1c), random blood sugar (RBS), fasting blood sugar (FBS), liver function tests and renal function tests were recorded.

During ward rounds, patient prescriptions were systematically reviewed to identify cases of polypharmacy, defined by the World Health Organisation (WHO) as the routine use of five or more medications simultaneously.[12]

Potential DDIs were evaluated using electronic interaction checker tools, including *Drugs.com*, *Medscape* and *DrugBank*. The severity of identified interactions was classified as minor, moderate or major.

The QoL was assessed using the MDQoL-17 scale, a validated and user-friendly instrument suitable for use by both researchers and participants.[13, 14]

Statistical analysis

Data were analysed using IBM Statistical package for the social sciences SPSS Statistics software version 30.0.0.0 (172) and Microsoft Excel 2021. Descriptive statistics for continuous variables were expressed as means and standard deviations (SD). Comparisons between two groups were conducted using Student's unpaired t-test, while analysis of variance (ANOVA) was employed for comparisons among three or more groups. Pearson's correlation coefficient assessed associations between prescribed medications, polypharmacy and QoL with independent variables. Statistical significance was set at $p < 0.05$.

Results

Data from 185 geriatric patients diagnosed with T2DM were analysed in this study. The mean age of participants was 66.58 ± 6.26 years, with most geriatric patients belonging to the age group 60–69 years are 68.1 %. Gender distribution was nearly equal, with 51.9 % males and 48.1 % females and a larger proportion of geriatric patients were from rural areas. Regarding BMI, about half of the geriatric patients had a normal BMI, while a considerable number were either overweight or obese and a smaller fraction was underweight. Additionally, 25.9 % of participants reported alcohol consumption, as presented in Table 1.

Table 1: Sociodemographic and clinical profile of geriatric patients

Parameter	Variable (n = 185)	Frequency (%)
Gender	Male	96 (51.9 %)
	Female	89 (48.1 %)
Age	60-69	126 (68.1 %)
	70-79	51 (27.6 %)
	≥ 80	8 (4.3 %)
	Average age (Mean, SD)	66.58 ± 6.26
Area	Rural	109 (58.9 %)
	Urban	76 (41.1 %)
Addiction	Alcoholic	48 (25.9 %)
	Non-alcoholic	137 (74.1 %)
BMI (kg/m^2)	Under weight (< 18.5 kg/m^2)	14 (7.6 %)
	Normal weight (18.5-24.9 kg/m^2)	93 (50.3 %)
	Over weight (25-29.9 kg/m^2)	59 (31.9 %)
	Obese (≥ 30 kg/m^2)	19 (10.3 %)
HbA_1c level	Good glycaemic control (< 7 %)	40 (21.6 %)
	Inadequate glycaemic control (7-8 %)	36 (19.5 %)
	Poor glycaemic control (> 8 %)	109 (58.9 %)
FBS level (mg/dL)	< 200 mg/dL	113 (61.1 %)
	≥ 200 mg/dL	72 (38.9 %)
Comorbid conditions	Hypertension	42 (22.7 %)
	Chronic kidney disease	32 (17.2 %)
	Coronary artery disease	19 (10.27 %)
	Chronic obstructive pulmonary disease	18 (9.7 %)
	Acute kidney injury	14 (7.6 %)
	Chronic liver disease	10 (5.4 %)
	Urinary tract infection	8 (4.32 %)
	Rheumatoid arthritis	2 (1.08 %)
	Congestive heart failure	2 (1.08 %)
	Hepatitis	2 (1.08 %)
	Myocardial infarction	1(0.54 %)
Diabetes complications	Diabetic foot	12 (6.4 %)
	Diabetic nephropathy	13 (7 %)
	Diabetic neuropathy	3 (1.6 %)
	Diabetic retinopathy	1 (0.54 %)

BMI: body mass index; FBS: fasting blood sugar; HbA_1c: glycated haemoglobin;

Glycaemic control was found to be suboptimal in a large proportion of geriatric patients. Majority of geriatric patients exhibiting poor glycaemic control or inadequate control, while small proportion achieved good glycaemic control. Elevated FBS levels (≥ 200 mg/dL) were noted in 38.9 % of participants. Comorbidities were common, with hypertension being the most prevalent, followed by CKD, coronary artery disease (CAD) and COPD while acute kidney injury and chronic liver disease were less common. Diabetes-related complications were comparatively rare, with nephropathy, diabetic foot, neuropathy and retinopathy being the most noted.

Among the 185 geriatric patients, oral hypoglycaemic agents (OHAs) were more frequently prescribed, either as monotherapy or in combination with other OHAs or insulin. Metformin was the most commonly prescribed antidiabetic drug, followed by glimepiride, human insulin and dapagliflozin as monotherapy. Combination therapies were also prevalent, with metformin + vildagliptin being the most common OHA combination and metformin + human insulin the most common OHA-insulin combination, as detailed in Table 2.

Table 2: Antidiabetic drug use among older adults (n = 185)

Class of ADDs	Treated with monotherapy	Frequency (%)
Biguanides	Metformin	110 (59.4 %)
Sulfonylureas	Glimepiride	32 (17.2 %)
	Gliclazide	2 (1 %)
SGLT2 inhibitors	Dapagliflozin	21 (11.3 %)
DPP-4 inhibitor	Vildagliptin	19 (10.2 %)
	Teneligliptin	12 (6.4 %)
	Linagliptin	1 (0.5 %)
Insulin	Human insulin	28 (15.1 %)
	Insulin glargine	8 (4.2 %)
	Insulin isophane	1 (0.5 %)
α-Glucosidase inhibitors	Voglibose	1 (0.5 %)
OHAs + OHAs	Metformin + Vildagliptin	32 (17.2 %)
	Metformin + Glimepiride	18 (9.7 %)
	Vildagliptin + Dapagliflozin	7 (3.8 %)
	Metformin + Dapagliflozin	2 (2.2 %)
	Metformin + Dapagliflozin + Sitagliptin	2 (2.2 %)
OHAs + Insulin	Metformin + Human insulin	8 (4.3 %)

OHAs- Oral hypoglycaemic agents; ADD: antidiabetic drug;

Among the 185 geriatric patients analysed, only 37 exhibited no evidence of polypharmacy, indicating its high prevalence within this population. The extent of polypharmacy varied between males and females. A statistically significant association was observed between the duration of hospital stay and the occurrence of polypharmacy (p = 0.001), with longer hospital stays corresponding to higher levels of polypharmacy (Table 3). Additionally, a significant relationship was noted between patient condition and polypharmacy levels (p = 0.01). DDIs were identified in 156 patients (84.3 %), while FDIs were found in 54 patients (29.2 %). Among patients with DDIs, 51.9 % were male and 48.1 % female (p = 0.984). The occurrence of DDIs showed a significant association with the number of prescribed medications (p = 0.001), indicating that patients receiving a higher number of drugs were more likely to experience interactions (Table 4). Patient condition was also significantly associated with DDIs (p = 0.01), although no significant link was observed between patient condition and FDIs. Gender was significantly associated with FDIs (p = 0.001), with males experiencing more FDIs (Figure 1). Alcohol consumption also showed a significant correlation with FDIs (p = 0.001).

Table 3: Patient factors linked to varying degrees of polypharmacy

Variable (n = 185)		No polypharmacy (< 5 drugs)	Polypharmacy (≥ 5 drugs)	p-value
Gender	Male	16 (8.65 %)	80 (43.24 %)	0.989
	Female	21 (11.35 %)	68 (36.76 %)	
Age	60-69	20 (10.80 %)	106 (57.30 %)	0.631
	70-79	15 (8.10 %)	36 (19.45 %)	
	> 80	2 (1.11 %)	6 (3.24 %)	
Hospital stay (days)	< 5	24 (12.98 %)	78 (42.16 %)	0.001**
	≥ 5	13 (7.03 %)	70 (37.83 %)	
Patient condition	T2DM	-	6 (3.24 %)	0.01*
	T2DM with comorbidities	23 (12.43 %)	127 (68.65 %)	
	T2DM with complications	14 (7.57 %)	15 (8.11 %)	

*One-way ANOVA; moderate significant (p < 0.01**), highly significant (p < 0.001***); T2DM: type 2 diabetes mellitus;*

Table 4: Correlation of patient demographics with drug–drug (DDI) and food–drug interactions (FDI)

Variables		DDI (DDI present, n = 156)		FDI (FDI present, n = 54)	
		n (%)	p-value	n (%)	p-value
Gender	Male	81 (51.9 %)	0.984	81 (51.9 %)	0.984
	Female	75 (48.1 %)		75 (48.1 %)	
Age (years)	60-69	105 (67.3 %)	0.372	105 (67.3 %)	0.372
	70-79	43 (27.5 %)		43 (27.5 %)	
	> 80	8 (5.1 %)		8 (5.1 %)	
Addiction	Alcoholic	-	-	-	-
	Non-alcoholic				
No of drugs prescribed	< 10	66 (42.3 %)	0.001**	66 (42.3 %)	0.001**
	≥ 10	90 (57.7 %)		90 (57.7 %)	
	T2DM	5 (3.2 %)		5 (3.2 %)	
Patient condition	T2DM with comorbidities	122 (78.2 %)	0.01*	122 (78.2 %)	0.01*
	T2DM with complications	29 (18.5 %)		29 (18.5 %)	

*One-way ANOVA; moderate significant (p < 0.01**), highly significant (p < 0.001***); T2DM: type 2 diabetes mellitus;*

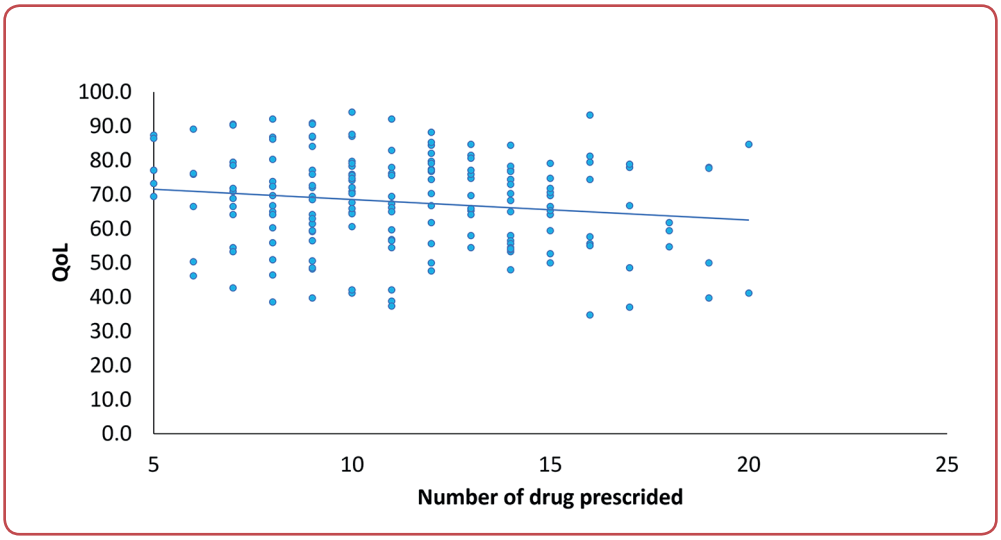

Figure 1: Weak negative correlation between number of prescribed drugs and quality of life (QoL)

Table 5: Correlation between selected variables

Category	Variable	r-value	p-value
Poly-pharmacy	Age	0.096	0.195
	DDI	0.135	0.067
	FDI	-0.082	0.268
Number of drugs prescribed	DDI	0.227	0.001**
	FDI	-0.088	0.233
Quality of life	Age	-0.415	0.001**
	FBS	-0.236	0.001**
	HbA_1c	-0.256	0.001**
	BMI	-0.028	0.701
	Drug prescribed	-0.151	0.001

*r-value, - indicate negative correlation, + indicate positive correlation, highly significant (p < 0.001**); BMI: body mass index; FBS: fasting blood sugar; HbA_1c: glycated haemoglobin; DDI: drug-drug interaction; FDI: food-drug interaction;*

A positive correlation was observed between the number of prescribed drugs and DDIs (r = 0.227, p = 0.001), suggesting that polypharmacy increases the risk of DDIs, as detailed in Table 5 and Figure 2.

Common major DDIs involved antibiotics such as levofloxacin, ciprofloxacin, ofloxacin and various insulin formulations. Moderate interactions were frequently associated with aspirin, diuretics and antihypertensives when used alongside insulin or OHA. Minor interactions typically involved metformin with pantoprazole, vitamin B12, or folic acid. The most frequent FDI involved alcohol and metformin, as data provided in supplementary file.

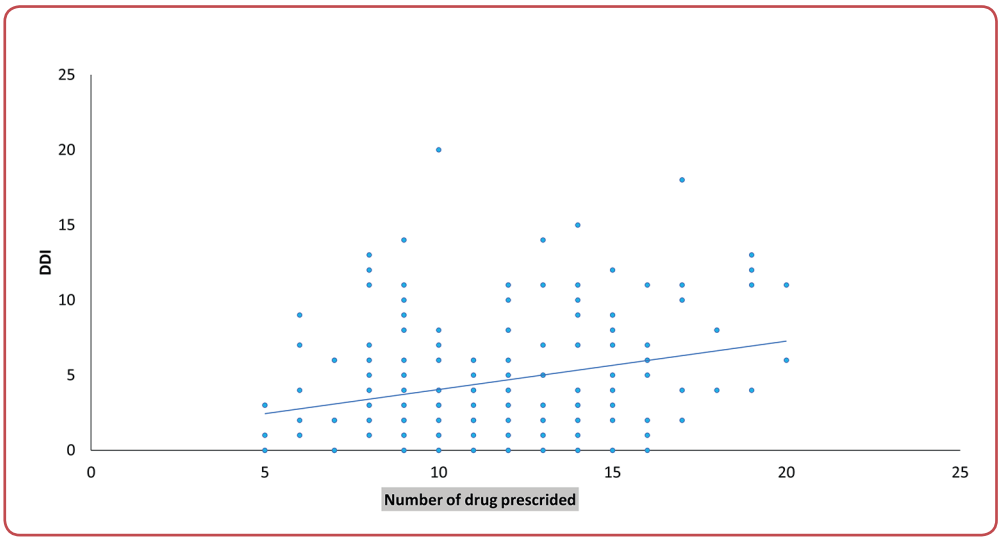

Figure 2: Positive correlation between number of prescribed drugs and drug-drug interactions (DDI)

A slight variation in QoL was observed between genders, with male patients reporting marginally better outcomes than their female counterparts. Among all age groups, individuals aged 60–69 years demonstrated the highest QoL. Geriatric patients with well-controlled glycaemic levels (HbA_1c < 7 %), FBS < 200 mg/dL and obese BMI reported significantly better QoL. Furthermore, patients diagnosed solely with T2DM exhibited better QoL compared to those with diabetes-related complications or comorbid conditions, as outlined in Table 6.

Pearson's correlation analysis (Table 5) revealed significant negative correlations between QoL and several clinical parameters: age (r = −0.415,

Table 6: Relationship between patient demographics and quality of life outcomes

Variable (n = 185)		Mean ± SD	p-value
Gender	Male	69.39 ± 13.91	0.679
	Female	65.95 ± 12.93	
Age	60-69	71.16 ± 11.70	0.001**
	70-79	63.11 ± 13.03	
	> 80	43.34 ± 10.36	
Area	Rural	65.96 ± 13.83	0.071
	Urban	70.20 ± 12.75	
Addiction	Alcoholic	72.02 ± 13.58	
	Non-alcoholic	66.42 ± 13.24	
Patient condition	T2DM	68.05 ± 13.46	0.985
	T2DM with comorbidities	66.97 ± 14.63	
	T2DM with complications	64.48 ± 12.09	
BMI (kg/m^2)	Under weight (< 18.5 kg/m^2)	59.22 ± 13.08	0.444
	Normal weight (18.5-24.9 kg/m^2)	70.96 ± 12.17	
	Over weight (25-29.9 kg/m^2)	62.80 ± 12.59	
	Obese (≥ 30 kg/m^2)	73.56 ± 15.96	
HbA_1c	Good glycaemic control (< 7 %)	73.83 ± 11.55	0.478
	Inadequate glycaemic control (7-8 %)	68.10 ± 14.24	
	Poor glycaemic control (> 8 %)	65.38 ± 13.37	
FBS	< 200 mg/dL	70.20 ± 13.40	0.002***
	≥ 200 mg/dL	63.87 ± 12.90	

One-way ANOVA; BMI: body mass index; HbA_1C: glycated haemoglobin; FBS: fasting blood sugar; T2DM: type 2 diabetes mellitus;

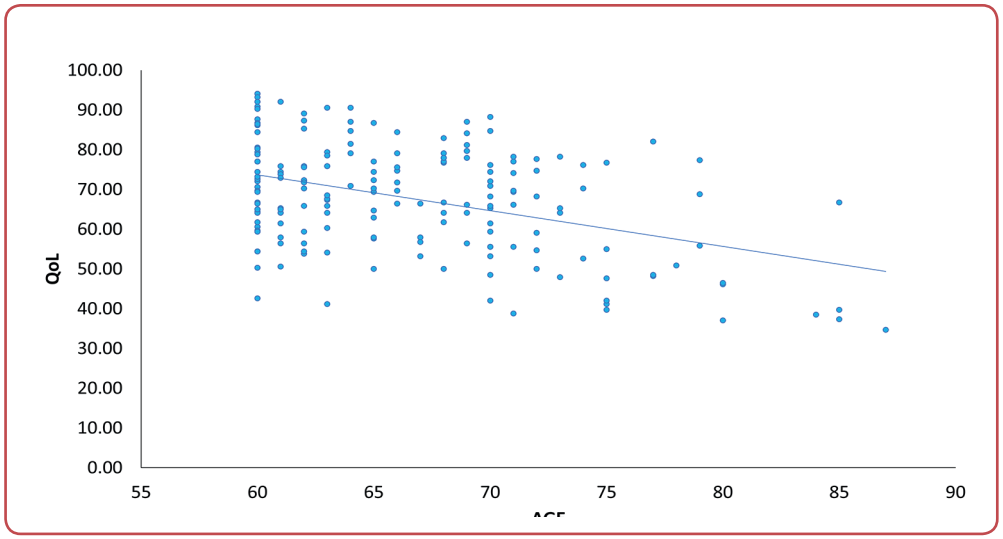

Figure 3: *Negative correlation between age and quality of life (QoL)*

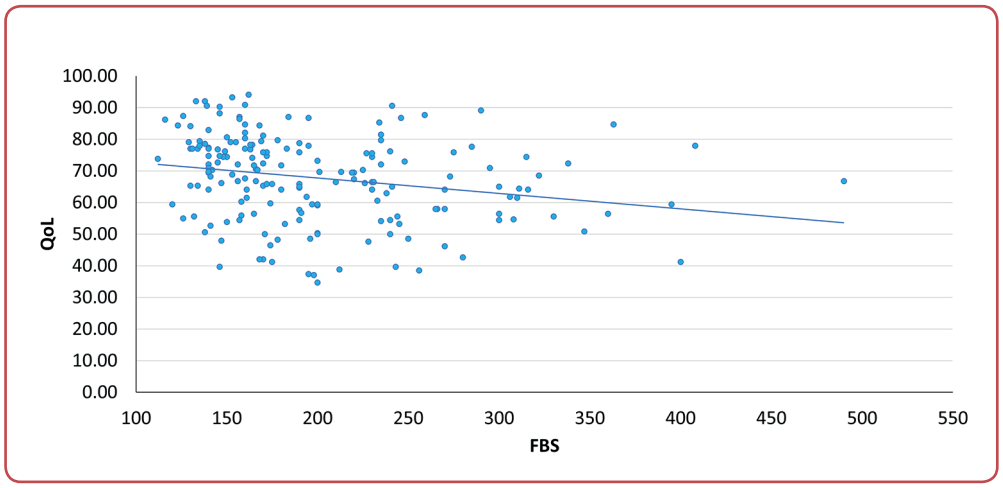

Figure 4: *Negative correlation between fasting blood sugar (FBS) levels and quality of life (QoL)*

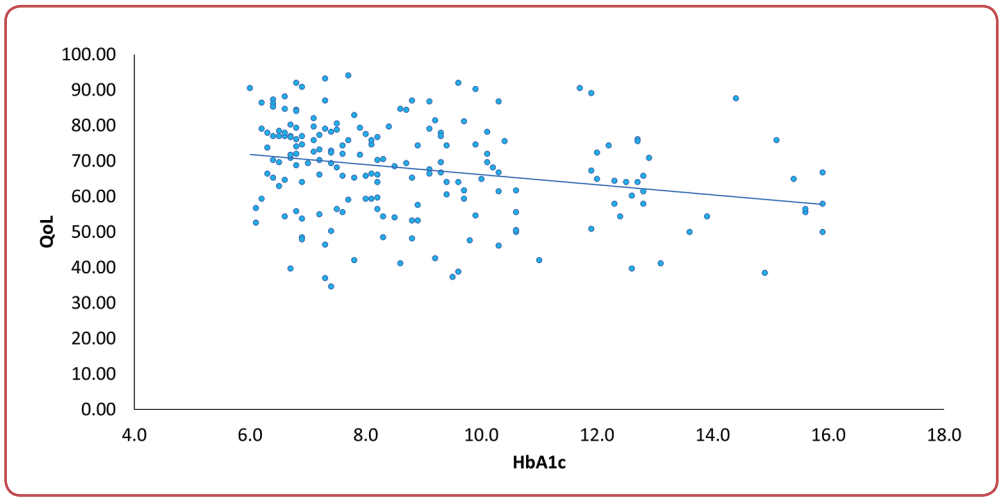

Figure 5: *Negative correlation between glycated haemoglobin (HbA_1c) levels and quality of life (QoL)*

p = 0.001), FBS (r = −0.236, p = 0.001), HbA_1c (r = −0.256, p = 0.001) and the number of prescribed medications (r = −0.151, p = 0.001), as outlined in Figure 1, 3-5. These findings suggest that increasing age, poor glycaemic control and a higher medication burden are associated with a decline in QoL. Additionally, polypharmacy exhibited a weak correlation with age, DDIs and FDIs.

Discussion

T2DM is among the most prevalent chronic diseases affecting the geriatric population. Geriatric patients face a range of healthcare challenges, particularly when managing chronic conditions such as T2DM.[15] Pharmacological management in this age group is notably complex due to age-related physiological changes that affect the pharmacokinetics and pharmacodynamics of drugs, a high prevalence of multiple comorbid conditions and the necessity for long-term multi-drug regimens.[16] Consequently, geriatric patients with T2DM are particularly susceptible to polypharmacy, which is commonly defined as the concurrent use of five or more medications, with excessive polypharmacy referring to the use of ten or more.[17] This extensive medication burden significantly heightens the risk of DDIs[18] and FDIs, which in turn contribute to an increased frequency of medical consultations, hospital admissions, reduced QoL and elevated healthcare expenditures.[19]

In the present study, data were analysed from 185 geriatric patients diagnosed with T2DM. The mean age of participants was 66.58 ± 6.26 years. The majority (68.1 %) were within the 60–69 age range, followed by 27.6 % aged 70–79 years and only 4.3 % aged 80 years or older. This age distribution may reflect increased mortality rates among older diabetic individuals, often due to complications, comorbid conditions and infections that diminish life expectancy in advanced age. Gender distribution was nearly equal, with males accounting for 51.9 % and females 48.1 % of participants. The slightly higher prevalence among males may reflect the earlier onset of T2DM, possibly due to greater tobacco and alcohol use and higher abdominal adiposity, which worsens insulin resistance. These demographic trends differ slightly from those observed in previous studies.[20]

A majority of patients (58.9 %) resided in rural areas, which may contribute to limited healthcare access, delayed diagnosis and lower health literacy, consistent with previous findings.[7] In terms of BMI, 50.3 % had normal values, 31.9 % were overweight, 10.3 % obese and 7.6 % underweight. Age-related muscle loss and retained visceral fat likely influenced this distribution, aligning with earlier observations.[4]

Glycaemic control was suboptimal among participants, with 58.9 % showing poor control (HbA_1c > 8 %), 19.5 % inadequate control (HbA_1c 7–8 %) and only 21.6 % achieving good control (HbA_1c < 7 %). Additionally, 38.9 % had elevated fasting glucose (≥ 200 mg/dL), likely reflecting age-related declines in insulin sensitivity and pancreatic function.[21] The majority of participants were non-alcoholic, consistent with previous reports.[1] Comorbidities such as hypertension, CKD, CAD and COPD were common, along with diabetes-related complications, including diabetic foot, nephropathy, neuropathy and retinopathy. Ageing increases susceptibility to such conditions, many of which share risk factors with T2DM. Advances in diagnostics and treatment have also facilitated earlier detection and improved management, supporting existing evidence.[22]

Regarding pharmacotherapy, OHAs were most commonly prescribed, either alone or in combination with other OHAs or insulin. Metformin was the most frequently prescribed medication, consistent with previous findings,[15] and in line with National Institute for Health and Care Excellence (NICE) recommendations, which advise metformin as the first-line treatment for T2DM,[23, 24] due to its efficacy, low cost and minimal risk of hypoglycaemia. Glimepiride was the second most commonly prescribed agent, also in line with earlier findings[25] valued for its affordability and accessibility. Dapagliflozin, appreciated for its cardiovascular and renal protective properties, was also commonly prescribed. Combination therapies, particularly metformin with vildagliptin, were popular for their synergistic glucose-lowering effects. Human insulin, alone or with metformin, was commonly prescribed for patients with FBS near 200 mg/dL, indicating a need for intensified glycaemic control. These trends align with previous findings.[26, 27]

Further statistical analysis indicated no significant association between polypharmacy and either gender (p = 0.989) or age (p = 0.631), as dis-

cussed in Table 3, suggesting that polypharmacy was more directly influenced by the number and severity of chronic conditions rather than demographic factors alone. Polypharmacy was significantly associated with prolonged hospital stays and clinical status, including whether patients had only T2DM, T2DM with comorbidities, or T2DM with complications. Hospitalisation often involves extensive diagnostic and therapeutic interventions, which increases the likelihood of patients receiving multiple medications. These results are consistent with previous findings.[28–30]

Similarly, the analysis revealed no significant association between DDIs or FDIs with gender or age, reinforcing the notion that interaction risks are more strongly related to the number and types of medications prescribed. The greater the number of medications a patient receives, the higher the potential for adverse interactions, which increase exponentially rather than linearly. For example, five medications may result in up to ten interactions. Elderly patients often require multiple therapeutic agents to manage complex disease profiles, thereby increasing the risk of both pharmacokinetic and pharmacodynamic interactions. These findings support previous studies.[28, 31–33]

The study also assessed the impact of T2DM on QoL in geriatric patients. Both male and female participants generally exhibited a moderate level of QoL. QoL was observed to decline progressively with increasing age, likely due to the advancement of diabetes-related complications such as neuropathy, retinopathy and nephropathy, which impair mobility and independence. Additionally, urban residents had better QoL compared to rural counterparts, potentially due to easier access to healthcare services. Patients with obese BMI, good glycaemic control and FBS levels below 200 mg/dL similarly exhibited better QoL. Improved metabolic control contributes to reduced symptom burden and better physical and psychological well-being. These observations are consistent with the previous findings.[13]

In conclusion, the study identified a positive correlation between polypharmacy and factors such as age, comorbidity count and the incidence of DDIs and FDIs. Conversely, QoL was negatively correlated with age, FBS, HbA_1c, BMI and the number of medications. An increased medication burden raises the risks of polypharmacy, which contributes to reduced QoL in elderly patients with T2DM. This emphasises the importance of careful medication management, personalised treatment plans and regular monitoring in this vulnerable group to improve therapeutic outcomes while reducing adverse effects.

Study limitations

The study was carried out at a single tertiary care hospital in India; the results might not be as applicable to other areas with different healthcare practices. The limited sample size may also reduce the strength and impact of the findings. Additionally, the cross-sectional design and absence of follow-up decrease the ability to evaluate long-term treatment outcomes, drug interactions and changes in QoL among diabetic geriatric patients.

Conclusion

This study examined the prescribing patterns of antidiabetic medications among geriatric patients, showing that metformin (biguanide) emerged as the most frequently prescribed monotherapy (59.4 %), followed by glimepiride (17.2 %) and human insulin (15.1 %). Among combination therapies, metformin with vildagliptin was the most commonly used. Overall, the prescription patterns were rational and aligned with NICE guidelines. Although the incidence of polypharmacy was relatively high, raising concerns of potential irrational prescribing, it remains relevant in geriatric patients, given the high prevalence of comorbidities and diabetes-related complications. This highlights the need for regular medication reviews to mitigate the risk of drug–drug and food–drug interactions. The findings provide valuable baseline data for future audit studies, which may support researchers and contribute to reducing healthcare costs. Moreover, the results can inform hospital policies aimed at promoting rational and effective drug use. Implementing structured medication reviews and personalised treatment plans is critical to enhancing therapeutic outcomes and improving the quality of life in elderly patients with type 2 diabetes.

Ethics

The Institutional Ethics Committee (IEC) of Maharishi Markandeshwar Institute of Medical Science and Research approved the project, with approval No IEC-3071, dated 20 December 2024.

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Conflicts of interest

The authors declare that there is no conflict of interest.

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Data access

The data that support the findings of this study are available from the corresponding author upon reasonable individual request.

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