



PRESCRIPTION PATTERNS AND ESTIMATION OF COST OF ILLNESS OF TYPE-II DIABETIC PATIENTS IN A TERTIARY CARE HOSPITAL NEPAL

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ABSTRACT

1. Diabetes, a metabolic disorder characterized by hyperglycemia is associated with chronic complications and the number of adults living with diabetes globally since the year 2000 is expected to be more than double which is projected to rise to 700 million by 2045 according to IDF estimation.
2. The impact of diabetes on health care expenditures has been increasingly recognized, with a threefold increase in the direct costs of diabetic patients compared with non-diabetic patients.
3. The study aimed to evaluate the prescription patterns and cost of illness of type 2 diabetic patients, as well as the trends in anti-diabetic and anti-hypertensive drug use patterns among patients with type 2 diabetes patients with and without hypertension.
4. The study was conducted as a cross-sectional observational study, with drug utilization data collected for three months from 120 type 2 diabetic patients who were admitted during the time frame in the general medicine wards.
5. The study revealed that the majority of patients with type 2 diabetes had comorbidities, with cardiovascular being the most common, and were primarily managed with dual antidiabetic therapy using sulphonylureas and metformin, while diabetic patients with hypertension were mainly prescribed ACE inhibitors in accordance with established clinical guidelines.
6. The median total cost of illness for diabetic care was found to be significantly higher in patients with complications, with a cost of Rs 62,941.5/- (USD 478.17) per patient per annum compared to Rs 40,038.8/- (USD 304.16) per patient per annum for those without complications.
7. The study emphasizes the importance of early diagnosis and management of diabetes to reduce the risk of complications and associated costs.

INTRODUCTION

1. Diabetes, one of the major causes of premature deaths and disability, and people with diabetes are at increased risk of dying from cardiovascular disease.
2. With invention and evolution of new tech, healthcare costs and demand are rising in all nations.
3. Management of type 2 Diabetes mellitus using pharmacological treatments has become increasingly complex with the variety of agents and treatment guidelines available So, Drug utilization studies are important for the optimization of drug therapy [1]
4. The impact of diabetes on health care costs is increasingly recognized. Many "costs of illness" studies have shown that a diabetics direct costs across various healthcare systems increased threefold compared to non-diabetics. Therefore, diabetes along with multiple comorbidities has been the main cause of the rise in hospitalization and drugs cost [2]. Diabetes is closely associated with other costly chronic diseases , especially cardiovascular disease and risk factors such as hypertension and dyslipidemia [3].
5. Pharmacoeconomics, a measurement tool of both the costs and consequences of therapeutic decision-making, helps in the planning process and assign priorities. [4].
6. Pharmacoeconomic assessment techniques, i.e. cost-effectiveness analysis and cost of disease will be selected depending on the desired goals and interventions. When a chronic disease, such as diabetes, being treated, Pharmacoeconomics plays an even more crucial role because. it also estimates the overall outcomes of the medication based on both health and economic factors [5].
7. COI analysis is used to aid policy-making resource allocation, the prioritization of resource use for the treatment and prevention of disease, and as basic research to determine the potential benefits of new treatments. increase [6].

RESEARCH STATEMENT

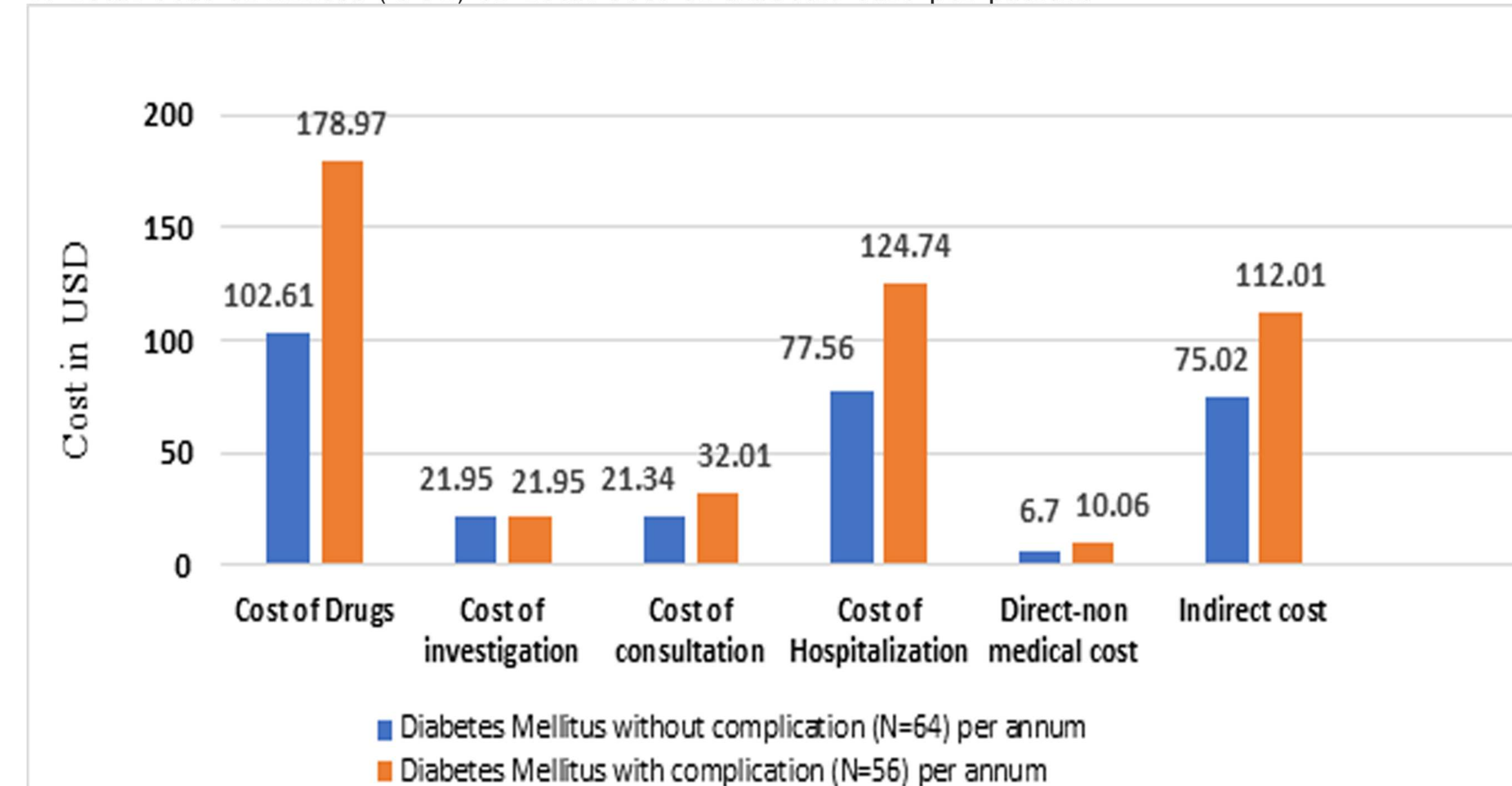
To evaluate the prescription patterns and cost of illness of type 2 diabetic patients.

METHODOLOGY

- Study design: Cross sectional observational study • Study Method: Quantitative
- Study site: Department of General Medicine, Kist Teaching Hospital, Gwarko, Lalitpur, Nepal.
- Study Duration: May 01 to Aug 05, 2022 • Sample size: 120
- Study Subjects: Patients admitted to Department of General Medicine at Kist Teaching Hospital (Nepal) will be included based on the study criteria.
- Ethical approval: Institutional Ethics Committee (IEC) of Kist Medical College and Teaching Hospital, Lalitpur.

RESULTS & DISCUSSION

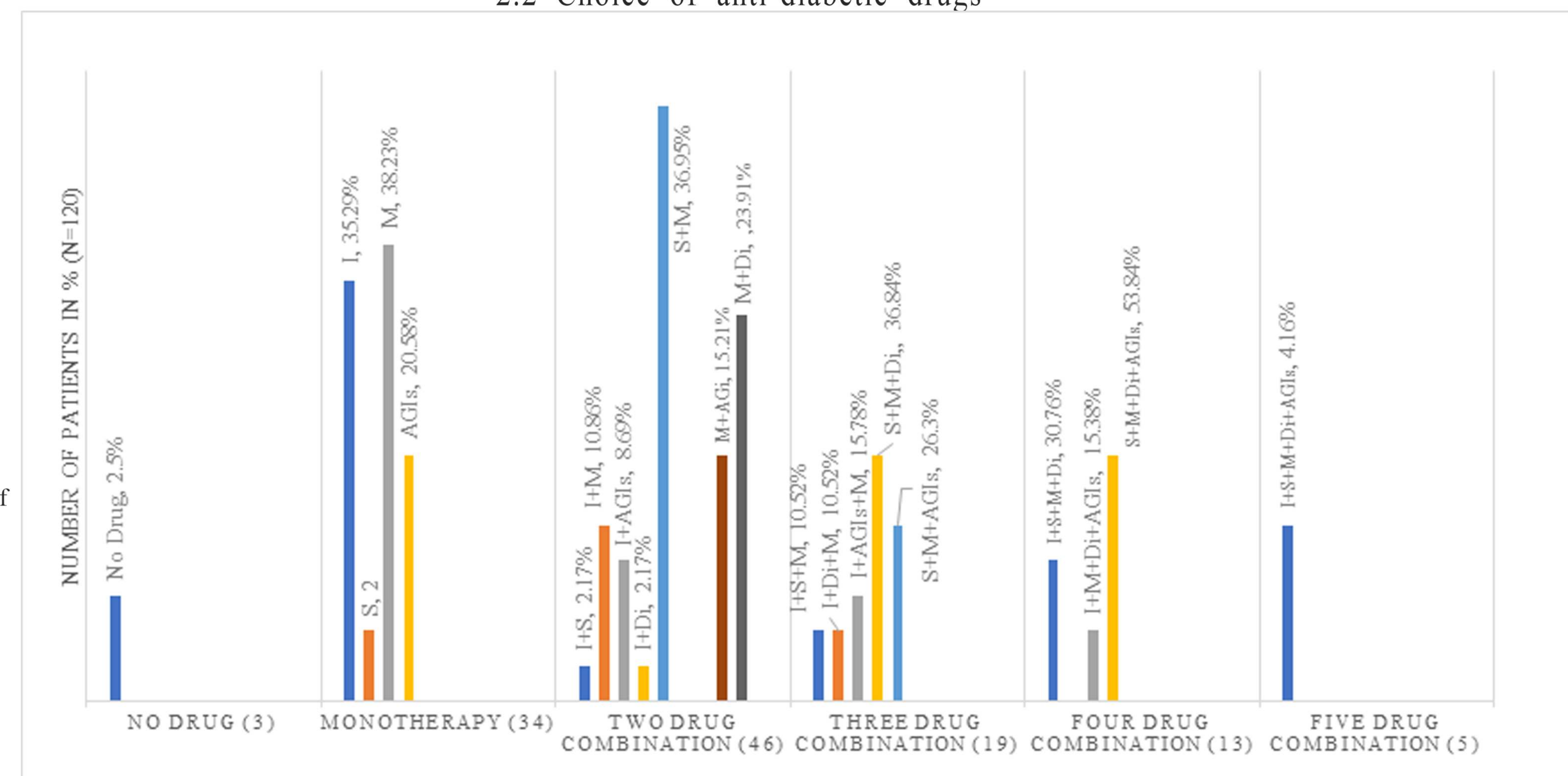
1. Total cost of illness (COI) or Total cost of diabetic care per patient



Total COI per patient for Type 2 diabetics with complication is Rs. 62941.5 (480.23\$) per annum which is 1.8 times higher than those without complications is Rs. 40,038.8 (305.49\$) per annum.

2.2 Choice of anti-diabetic drugs

- On evaluation of prescription pattern of anti-diabetic drugs majority of the patients that is 46 (38.33%) out of 120 were prescribed with two drug combination therapy. Out of 46 patients, Sulphonylurea + Metformin was mostly prescribed in 17 (36.95%) patients.
- Only 3 (2.5%) patients were on life style modification with no drugs prescribed.
- Second most prescribed pattern was monotherapy that is 34 (28.33%) patients out of 120. Most of the patients were prescribed with Metformin and Insulin followed by Alpha glycosidase enzyme inhibitors and Sulphonylurea.



• Annex:

I = Insulin,

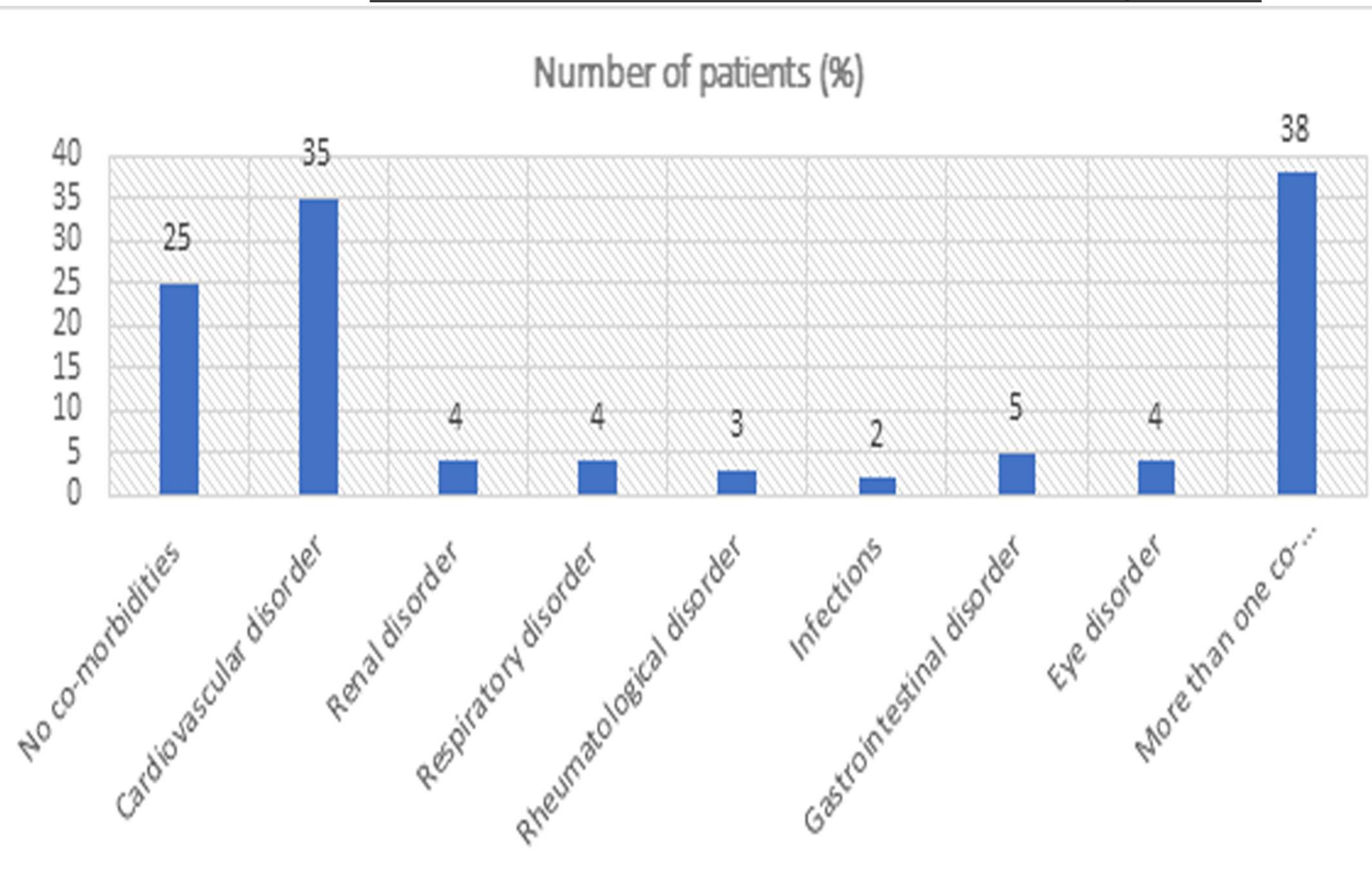
S= Sulphonylurea,

M=Metformin,

AGIs=Alpha glucosidase enzyme inhibitors,

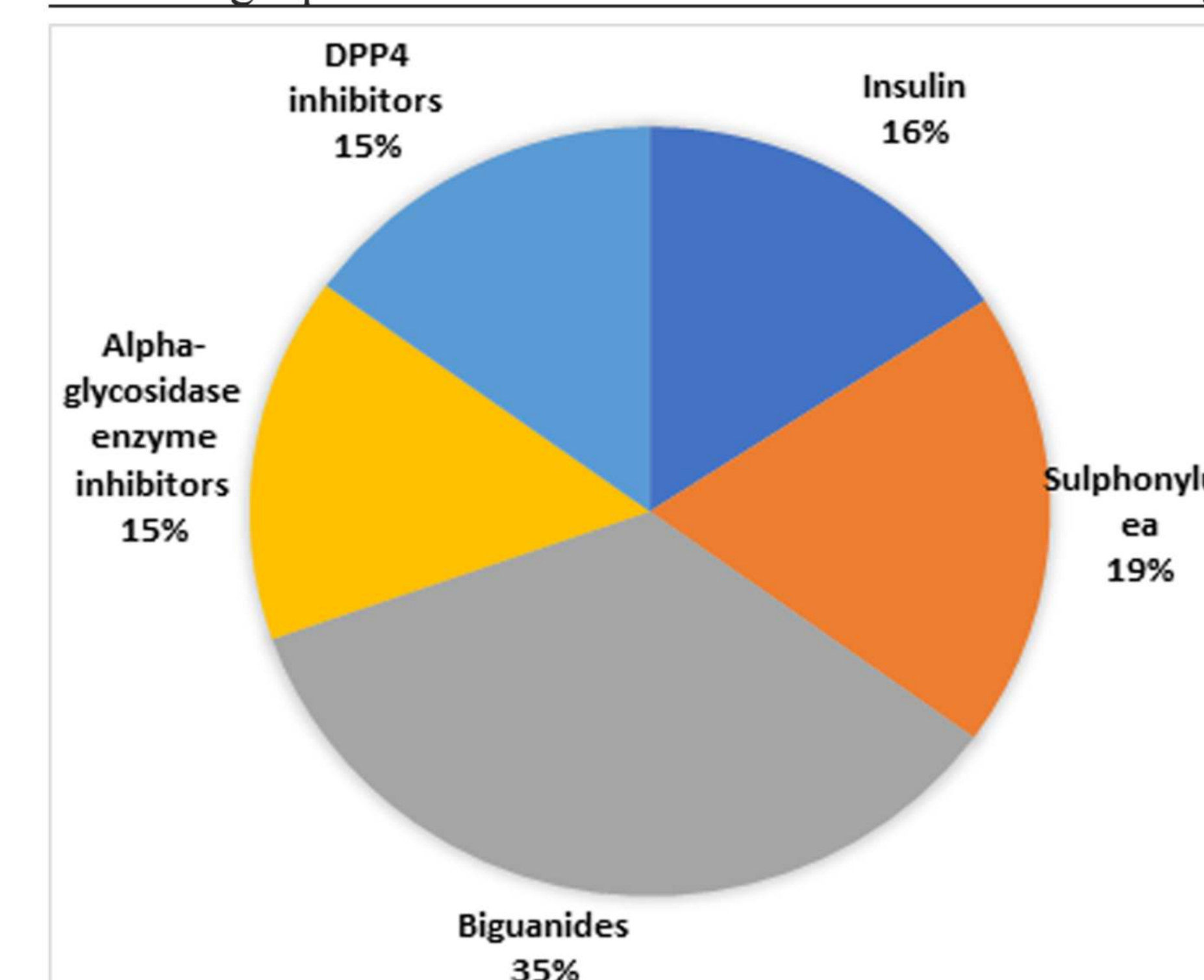
Di=DPP4 inhibitors

2.3 Status of comorbidities in diabetic patients



25 (20.83%) patients did not have any comorbidity. Remaining 95 patients (79.16%) had one co-morbidity along with diabetes of which cardiovascular was most common.

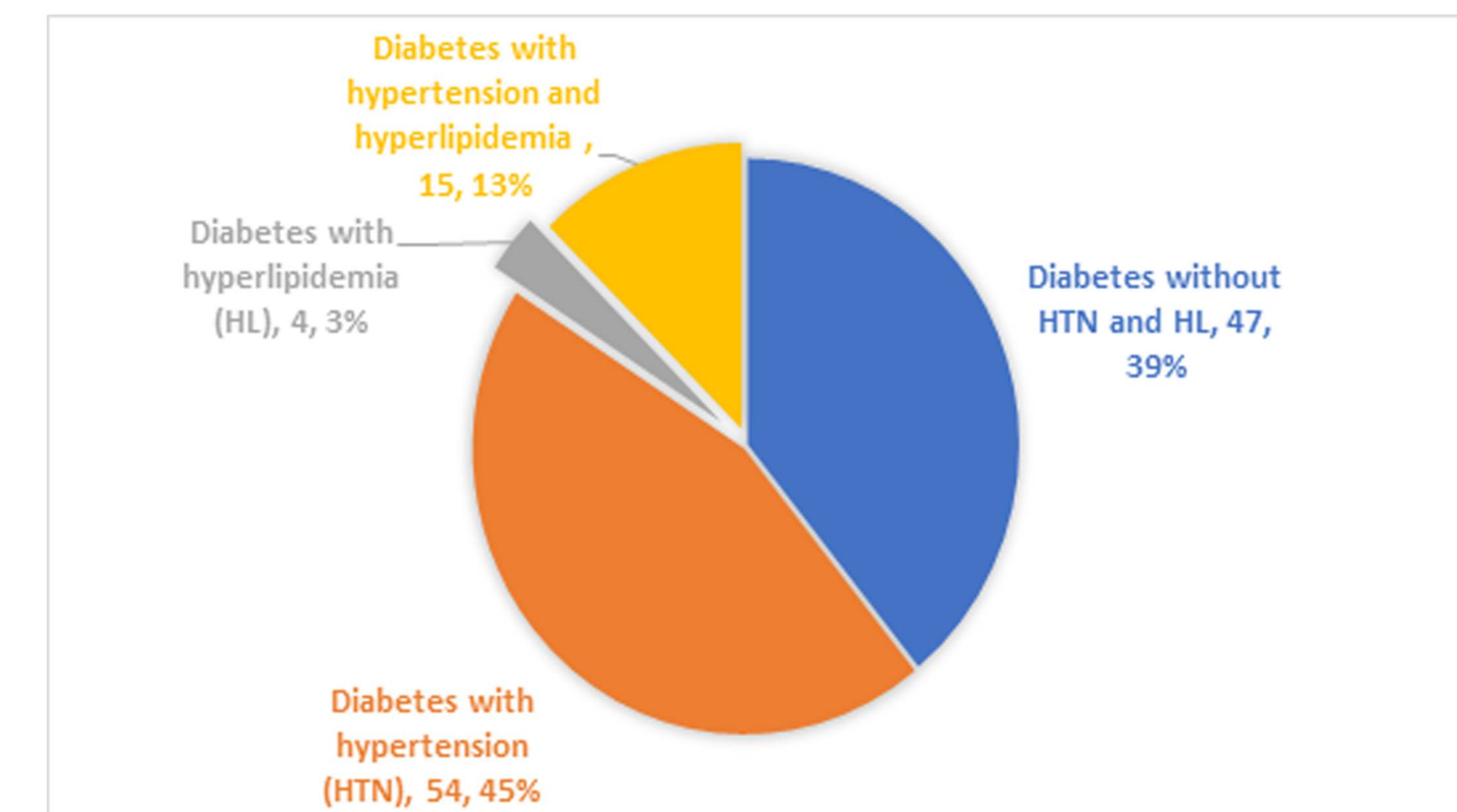
2.4 Usage pattern of individual anti-diabetic drugs



On evaluation of prescribing trends for individual class of drugs used in management of type 2 diabetes, out of 120 patient majority 90 (75%) patients "received biguanides

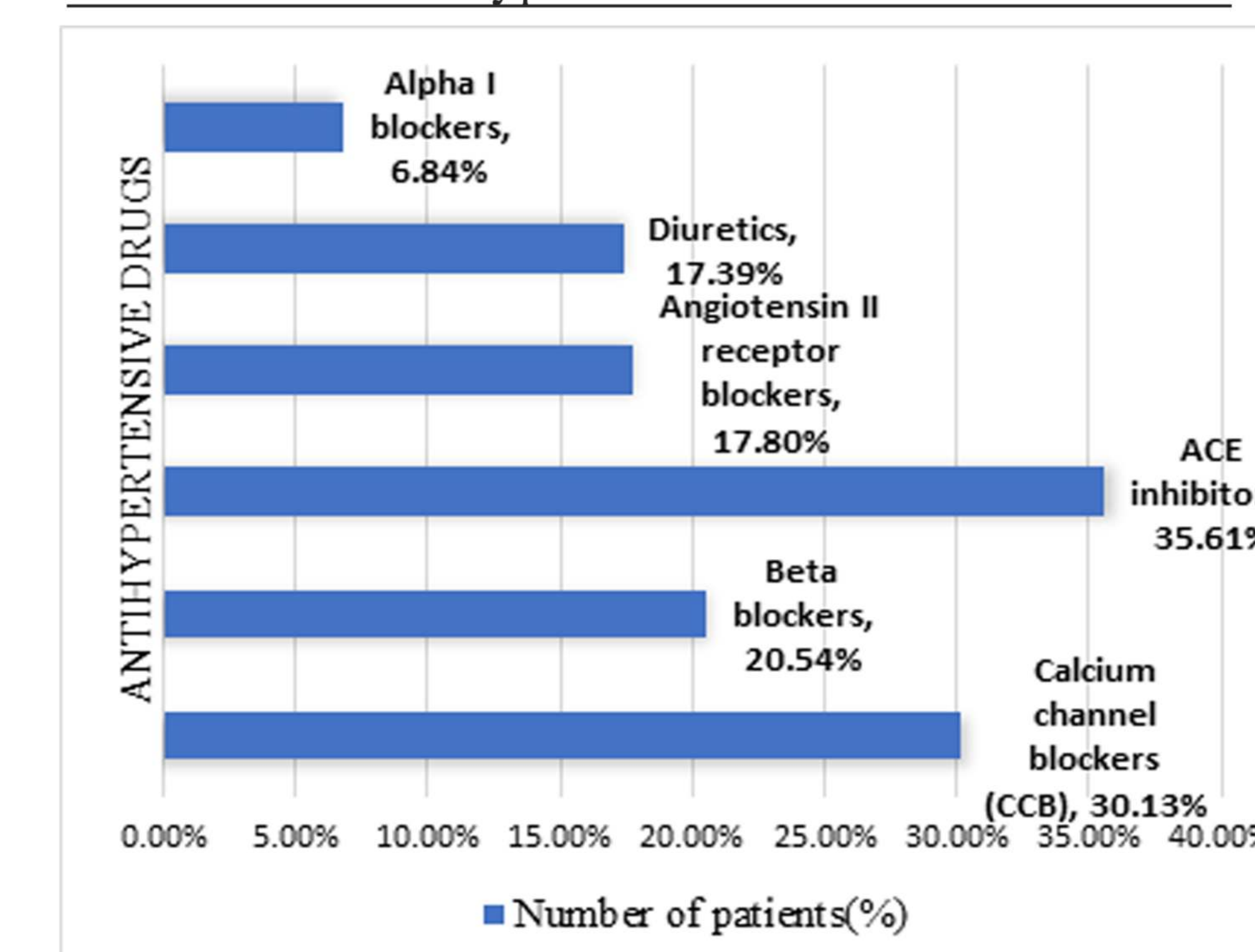
2. Drug usage pattern in Type 2 diabetic patients

2.1 Diagnosis on the basis of Hypertension and Hyperlipidemia



Majority of patients 54 (45%) were diabetes with hypertension and only 4 (3.33%) patients had diabetes with hyperlipidemia.

2.5 Treatment of Hypertension in Diabetic Patients

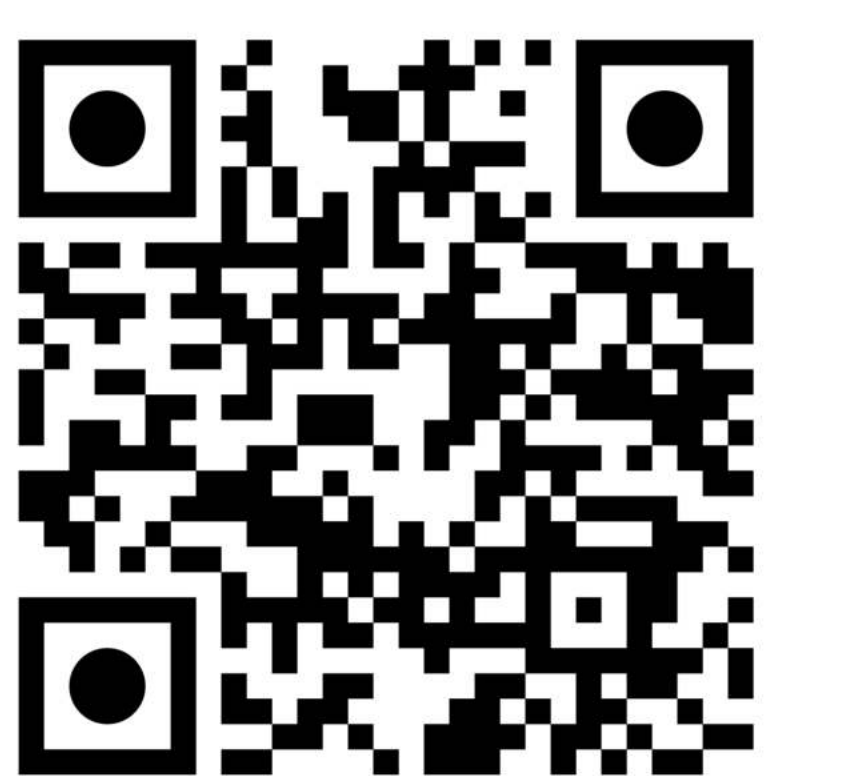


On evaluation of prescription pattern of anti-hypertensive in diabetic patients, out of 69 patients, majorities of patient received ACE inhibitor that is 26 (35.61%) patients.

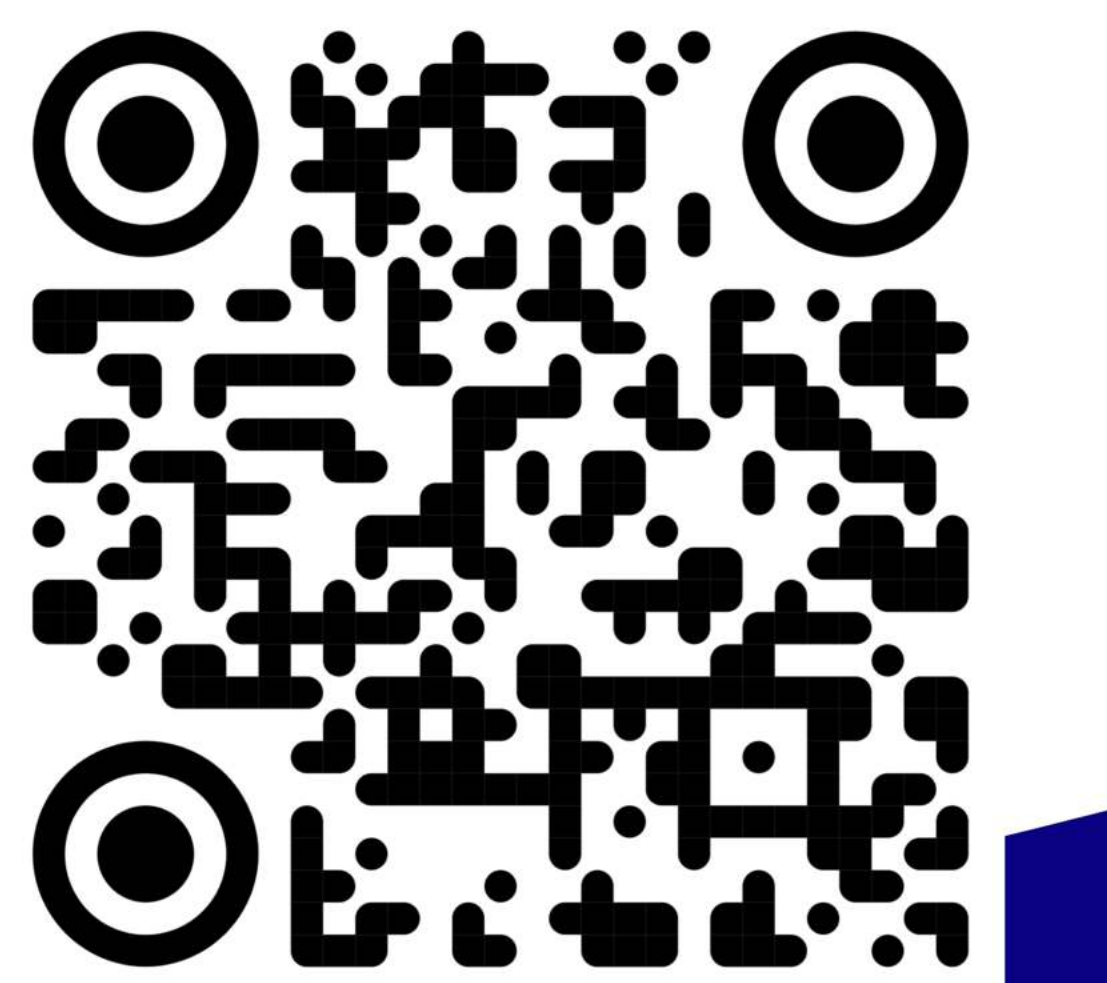
CONCLUSION

1. Patients with Type 2 diabetes are more likely to suffer from multiple co-morbidities, taking multiple medication and hence, they are always at high risk.
2. Majority of the patients had more than one co-morbidity along with diabetes of which cardiovascular was most common. Hypertension affected more than 50% of diabetic patients.
3. The trends in prescribing in type 2 diabetic patients in tertiary care hospital of Nepal showed majority of the patients prescribed with two drug combination, out of which Sulphonylurea + metformin was mostly prescribed followed by metformin + Agi. Second most prescribed pattern was monotherapy. The commonest one drug therapy were metformin and Insulin.
4. Trends in prescribing pattern of hypertensive type 2 diabetic patient showed commonest antihypertensive drug used in mono-therapy was ACEIs. Current recommendation favors ACEIs and ARBs as the drug of choice, although here CCB was second most prescribed drugs in our study.
5. In COI study, total direct cost (cost of drugs, cost of investigations and cost of hospitalization) accounted for majority of cost compared to the indirect cost associated with the expense of illness. Out of which cost of drug was the main contributing factor for the high cost.
6. Present study found that the cost of medication alone was affordable for most people in Nepal, based in the country's per capita income of USD 4060/year. However, Continuous load and increment in total treatment cost continue to increase which might induce a gap between patient to outreach the medicine. The mitigation in cost shall improve the total health efficacy.
7. Difference in the cost and proportions in different studies may be due to period of study, place, method of collecting the data and economic values. But all the studies have concluded that diabetes is a costly disease and, where delay in the diagnosis of diabetes results in higher complications therefore diabetes complication makes it more costly.
8. This study aims to minimize the overall cost of healthcare by identifying the underlying cause where we can develop and revise an enhanced treatment plan accordingly.

REFERENCES



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