Prescribing Patterns and Health Related Quality of Life in Patients with Diabetes Mellitus in a Tertiary Care Hospital in South India: A Research Article

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Abstract

Background Information: Diabetes Mellitus is an important public health challenge because of the associated morbidity and mortality which impair the quality of life and cost to society. Despite this, there is relatively little information on the 'real-world' medication utilization patterns for patients with type 2 diabetes. The objective of this study is to know the prescribing patterns and health related quality of life in patients with Diabetes, to evaluate the health related quality of life in patients with Diabetes SF-36 to identify the benefits of single and combination therapy by using prescriptions.

Methods: This is a prospective observational study, where eligible patients are enrolled into the study after obtaining the consent. Inclusion Criteria includes the patients newly diagnosed as Diabetes Mellitus with male and female patients in the age group of 30 to 80 years while the exclusion criteria for the study includes Patients with two or more comorbidities ,Complications of diabetes mellitus, patients who are not willing to give the consent form , pediatric population and pregnant/lactating women .Along with SF-36 to know the patient health related quality of life in Diabetes Mellitus patients , all information relevant to the study has been collected at the time of admission till the date of discharge and the data has been analyzed by using suitable method for statistical analysis. Glycemic control becomes an important measurement for preventing long terms complications and provides a better QOL to diabetic patient. SF-36 questionnaire was used as a health survey tool to measure the quality of life of patients. It is a well-known and widely utilized health status measure, which measures physical aspects and psychosocial aspects of quality of life.

Results: A total of 50 patients were enrolled and followed up, till the day of discharge during the period of 6 months from medicine department. Out of 50 patients, 25 were male patients and 25 were female. The present study was done with an aim to assess the prescribing pattern and health related quality of life in patients with Diabetes Mellitus. Almost 88% of patients were reported of having Type 2, in which 63% patients were from age group 51- 70 ,in which Female patients (36%) are more affected than male patients (27%). Biguanides (55%) are most commonly prescribed drugs as a single drug compare to other classes of drugs in current, past & present medication as single drug therapy. Among combinations, Sulphonyl ureas with Biguanides have been prescribed 69% followed by Biguanides and thiazolidinediones (10%). Short acting and intermediate acting and short acting insulin (9%) and short acting with long acting insulin (2%) have been prescribed very least.

Introduction

Diabetes is an important public health challenge because of associated morbidity and mortality which impairs the quality of life and cost to society.[1] According to the International Diabetes Federation, 6.6% of the worldwide adult population had DM in 2010. It is estimated that by 2030, approximately 7.8% of the worldwide adult population will have DM.[2]

According to the World Health Organization [3], Diabetes Mellitus cause 3.2 million deaths a year when deaths from other causes attributable to complications from diabetes are included and it generates substantial health and social welfare costs.[4] Diabetes treatment depends on the type and severity of Diabetes. The two types of Diabetes are referred to as type 1(insulin dependent) and type 2 (non – insulin dependent) Insulin is a vital to patient with type 1 diabetes. Type 2 diabetes is first treated with weight reduction, Diabetic diet, and exercise when these measures are fail to control the elevated blood sugars, oral medication are used. Oral medications are still insufficient. Insulin medications are considered. [5]

The basic aim of the therapy is to treat a particular ailment with effective and safe drug and also reduce the number of prescriptions and cost. Combination therapy with two or more drugs having complementary mechanisms of action has extended the range of treatment options in the management of Diabetes. Non-compliance with prescribed medications can result in sub-optimal therapeutic effectiveness and can have major clinical consequences. Combination produces the same effect as higher doses of either constituent whereas side effects are reduced and better patient compliance. Even combination therapy reduces the number of prescriptions as well as costs. Effective prescribing patterns reduce complications and thereby improve quality of life.[3]

Due to long term management of diabetes, complications of the disease as well as side effects of medications affect the quality of life.

Quality of life can be improved by minimising side effects of the drugs and preventing progression of the disease by increasing compliance.

In chronic conditions such as hypertension and diabetes, health-related quality of life (HRQoL) is an especially important outcome, given their lifelong nature and the need for daily self-management.

HRQoL has been found to be poorer in diabetic participants than in the general

population [1, 3], especially in the domains of self-perceived physical health, while finding some domains of psychosocial functioning vary between studies [4-7]. Health-related quality of life (HRQL) is often considered to be equally, if not more important than quantity of life. It is a multi-dimensional element of well-being affected by the physical, mental, emotional and social status of patients. It is increasingly used to assess the health status of the general public and patients, as well as the impact of health care interventions.[4]

One goal of the measurement of QOL is to have objective evaluations of how and how much the disease influences patient's life and how patients cope with it. Patients with DM have significant impairment of all aspects of QOL due to its progressive nature and risk of developing complications.DM puts a substantial burden on affected individuals by influencing physical, psychological and social aspects of QOL.

Patient's self-care, consisting of daily insulin injections or oral anti-diabetic agents, self-monitoring of blood glucose and diabetic diet has an impact on quality of life (QOL).[6]Glycemic control becomes an important measurement for preventing long terms complications and provides a better QOL to diabetic patient.

SF-36 questionnaire was used as a health survey tool to measure the quality of life of patients with diabetes mellitus. It is a well-known and widely utilized health status measure, which measures physical aspects and psychosocial aspects of quality of life.

The Physical Health Components are categorized into four scales: Physical Health, Role Physical, Bodily Pain and General Health, while the Mental Health Components scales are made up of Vitality, Social Functioning, Role Emotional and Mental Health.[7]

Due to growing incidence of diabetes and various drugs required in different combinations for effective long term management, there is need to observe prescribing patterns with the aim to provide drugs rationally and improve health related quality of life. Reviewing prescribing patterns could provide feedback to prescribers and assures quality medical care.[2]

Aims and Objectives

The aim of the project is to carry out observational prospective study of prescribing patterns and health related quality of life in patients with Diabetes mellitus.

The objective of this study is to know the prescribing patterns and health related quality of life in patients with Diabetes, to evaluate

the health related quality of life in patients with Diabetes using SF-36, and to identify the benefits of single and combination therapy by using prescriptions.

Methodology

Research work was done in a tertiary care hospital in BG. Nagara, Mandya district, Karnataka. This is an observational prospective study

Inclusion criteria: Patients newly diagnosed as Diabetes Mellitus with male and female patients in the age group of 30 to 80 years

Exclusion criteria: Patients with two or more comorbidities, Complications of diabetes mellitus, patients who are not willing to give

the consent form, pediatric population and pregnant/lactating women. Using SF36 health related Quality of life in patients with diabetes mellitus was determined .And also using prescriptions and patient profiles forms statistics was done regarding single and combination drugs in the results part.

Results

A total of 50 patients were enrolled and followed up, till the day of discharge during the period of 6 months from medicine department. Out of 50 patients, 25 patients were male and 25were females. The present study was done with an aim to assess the prescribing pattern and health related quality of life in patients with Diabetes Mellitus

Table 1: Age Distribution of Patient with Type 1 and Type 2 Diabetes

Diabetes	0-30	31-50	51-70	70+	Total Number	Percentage
TYPE1	2	2	2	0	6	12.0
TYPE2	1	9	28	6	44	88.0

Table 1 shows that Almost 88% of patients were reported of having Type 2, in which 63% patients were from age group 51- 70 in male and female ratio.

Table 2: Gender Distribution in Type 1 and Type 2 Diabetic Patients

Diabetes	TYPE 1		TYPE 2	
	F	**M**	**F**	**M**
0-30	1	1	1	0
31-50	0	2	4	4
51-70	0	2	16	12
70+	0	0	2	4

Table 2 shows that Males (84%) are more prone to Type 1 DM when compare to Females (16%). In Type 2 diabetes mellitus the age group of 51-70 years is more prone to get the disease. In which Female patients (36%) are more than male patients (27%).

Table 3: Number of Patients According To Weight and Age Groups.

Weight Group	DM 1/DM 2	0-30	31-50	51-70	70+	Grand total
<60	1	2	0			2
	2	1		2		3
60-75	1		1	2		3
	2	3	3	16	6	28
75+	1		1			1
	2		3	10		13

Fig 1: Weight of the Patients in Type 1 DM and Type 2 DM Vs Number of Patients
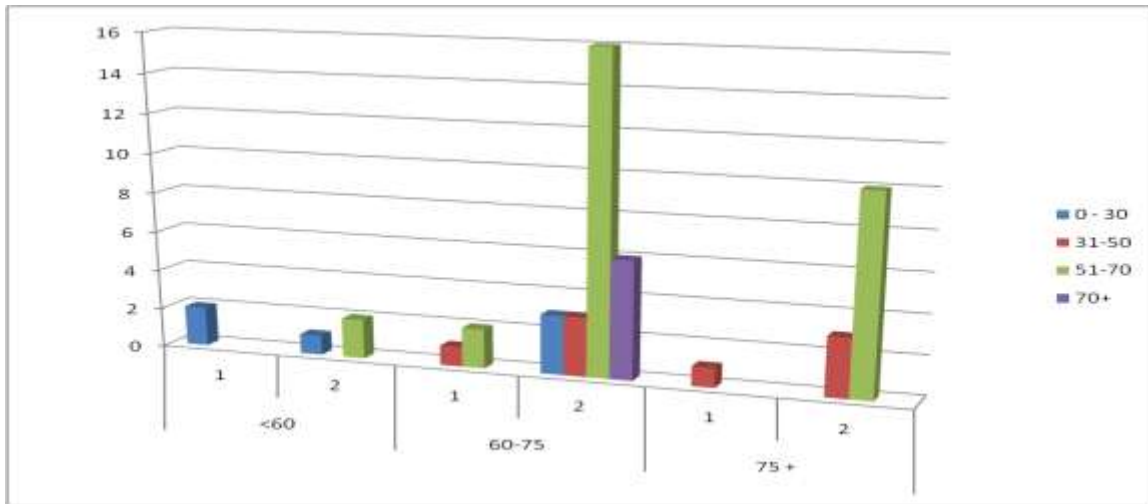

Figure 1, Table 3 and Figure 1 shows that people with weight of 60-75Kgs are 60% with Type 2 DM of total population

Table 4: Single Drugs prescribed for overall (past, current, discharged) period in Diabetic patients.

Class of drugs	No of times prescribed	percentage
• Sulphonyl Ureas	5	7.2
• Biguanides	38	55
• Thiazolidines	0	0
• Alpha Glycosides	0	0
• Rapid acting insulin	0	0
• short acting insulin	25	36.2
• Intermittent acting insulin	0	0
• long acting	1	1.4

Table 4 shows that Biguanides (55%) are most commonly prescribed drugs as a single drug compare to other classes of drugs in current, past & present medication as single drug therapy to hypertensive patients.

Table 5: Single pill combination drugs prescribed for overall (past, current, discharged) period in Diabetic patient.

Single pill combination of Drugs	Number of times prescribed	Percentages
• Sulphnyl ureas +Biguanides	47	77.0
• Sulphnyl ureas+Thiazolidine	2	3.27
• Sulphnyl ureas+bigunaides+ thiazolidins)	5	8.19
• Bigundes+Thzolidnes	7	11.47

Table 5 shows the single pill, combination of drugs currently prescribed for Diabetic patients. Among them Sulphonyl ureas combination with Biguanides have been prescribed 69% followed by Biguanides and thiazolidinediones(10%) , Short acting and intermediate acting and short acting insulin(9%) and short acting with long acting insulin (2%) have been prescribed very least

Table 6: SF-36 Questionnaire for Diabetic patients to find out HRQoL.

Age	Physical functioning	Role limitations	Emotional problems	Energy/ Fatigue	Functional Well being	Social functioning	Pain	GH
0-30	93.33	100.0	100.0	80.00	65.87	75.00	96.7	45.00
31-50	76.55	86.36	68.18	74.55	56.00	63.64	72.27	52.12
51-70	66.08	36.67	46.67	54.67	46.94	45.67	48.75	38.50
70+	63.71	50.00	62.22	62.22	51.33	45.83	45.42	40.00
Total	69.73	53.00	61.47	61.47	50.60	51.40	56.40	42.07

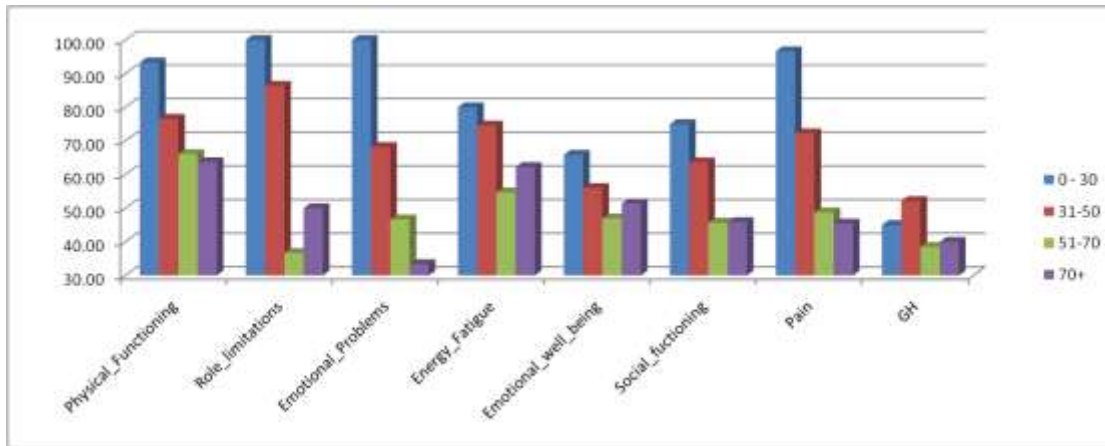**Fig. 2: Health Related Of Quality Of Life According To Sf-36 Scale**

Table 7 and Figure 2 shows patients with age less than 30 are 80% healthy in all respects, patients with age 31 - 50 are 70% healthy in all respects and patients with age 51-70 are 50% healthy in all respects.

Physical functioning is top most among all the patients (75%) and GH (General Health) is least (45%) among all patients.

Discussion

A prospective observational study was conducted among Out Patients as well as inpatients admitted to Adichunchanagiri Institute of Medical Sciences, B. G. Nagara for management of diabetes alone without any complications and comorbidities.

Age, Gender and weight distribution of Diabetes patients:

Total Diabetes patients enrolled under the study group were (n=50), and has type 1(n=6) and type 2 (n=44) and had 52 % of males and 48% of females and most of them were inpatients.

The finding corroborated with the study conducted by L. Akila et al (2011) where he documented 54% of males and 46% females.

In the study, patients enrolled to type 1 and 2 diabetes were aged between 29- 80 years, and most of the patients were in the age group of 51-70 years and patients weighed around 60-75 kgs.

Prescription Patterns for Diabetes

Our study shows Biguanides (55%) are the most prescribed as most of the patients enrolled are type 2, followed by short acting insulin (36.2 %) sulphonylureas (7.2%) and long acting insulin (1.4 %).

Patients on single pill combination therapy were prescribed SUR plus Biguanides (77%)

followed by SUR plus Thiazolidinediones (3.27%), SUR plus Biguanides plus Thiazolidinediones (8.19%), Bigundes+Thzolidnes (11.47%).

Similar results were published by author Venuguraker S et al (2008) found that Metformin (27%) is a most prescribed drug in mono therapy and combination of sulphonylureas plus metformin was most widely prescribed (20.86%).

Patients on multiple drug combinations had combination of two drug therapies (50%), 3 drug therapy (41.7%) and 4 (8.3%) drug combinations.

Overall prescribing patterns suggested that combination therapy (51.7%) was used more frequently than monotherapy (48.3%). V. Sivasankari et al. (2012) was conducted a study and found that combination therapy (78.2%) was used more frequently than monotherapy (21.74%),

Health related quality of life in diabetes patient by using SF-36 questionnaire.

After assessing SF-36 scores by using filled questionnaires about eight health concepts like physical functioning, role limitations, emotional problems, energy and fatigue, emotional wellbeing, social functioning, pain, General health showed patient have age group of less than 30 are 80% healthy in all respects, patient with age group of 31-50 are showed 70% healthy in all respects, patients with age of 51-70 are showed 50% in all most all aspects except role limitations and general health and finally patients with age group of 70are showed least possibility of outcome in all aspects.

When compared to all concepts physical functioning (75%) is top most among all patients and general health was least (45%) among all patients.

Conclusion

The study concluded that biguanides especially metformin have been highly prescribed for Type 2 Diabetic Mellitus patients whereas for type 1 Diabetes Mellitus, short acting insulin have been prescribed adequately. Rapid action of Insulin on blood sugar level is also another reason for preferring insulin for diabetes treatment. Due to growing incidence of diabetes and various drugs required in different combinations for effective long term management, there is need to observe prescribing patterns with the aim to provide drugs rationally and improve health related quality of life. Reviewing prescribing patterns could provide feedback to prescribers and assures quality medical care.

Acknowledgement

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