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Original Research Article

Factors associated with therapeutic non-compliance among type 2 diabetes mellitus patients in Chidambaram, Tamilnadu, India

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ABSTRACT

Background: Diabetes mellitus is one of the most common non-communicable diseases causing many serious complications worldwide. Therapeutic non-compliance leads to treatment failure thus making diabetes a serious problem to both the individuals and the health care providers. There are many factors which influence patient's compliance. The aim of this study is to assess the frequency of therapeutic compliance and factors associated with therapeutic non-compliance.
Methods: A descriptive cross-sectional study was conducted among type 2 diabetes mellitus patients attending the urban health centre, Chidambaram. Compliance and factors associated with non-compliance were assessed using Morisky Medication adherence questionnaire.
Results: 108 diabetic patients were enrolled. The overall compliance rate was found to be 39.8%. A statistically significant association was found between non-compliance and associated chronic diseases (p=0.007), financial problems to buy the medicines (p=0.001), reporting side effects with the prescribed medicines (p=0.049), missed at least one dose in last one week(p=0.01).
Conclusions: Majority of the patients were non-compliant. This emphasizes the need of strengthening health system and improving patients knowledge through teaching programs.

Keywords: Type 2 diabetes mellitus, Therapeutic non-compliance

INTRODUCTION

Diabetes mellitus is a chronic disease, which occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use insulin it produces. This leads to an increased concentration of glucose in the blood.[1]

As per International Diabetes Federation, there were 78 million people affected by diabetes in the South East Asian (SEA) region (2015) and it was estimated to rise to 140 million by 2040. India is one of the 6 countries of the IDF SEA region, there were 69.1 million people with diabetes mellitus.[2] A poor and inadequately controlled blood glucose in Type 2 diabetics cause several acute and chronic complications, some of which are irreversible.[3]

This increasing prevalence and emergence of complications of Type 2 Diabetes mellitus makes diabetes a great burden on health care system, thus making it a priority health concern.[4] One of the main reasons for this is lack of compliance and self-care among those affected.

A WHO report has shown that in developed countries, the rate of non-compliance in patients with chronic disease like DM is about 50% and it could be even higher in developing countries.[5] There are various factors which influence non-compliance which may be patient-centered,

therapy related, health care system related, social and economic factors or disease factors.[6]

Hence this study was planned to assess the frequency of therapeutic compliance among type 2 diabetes mellitus patients and to identify the factors associated with non-compliance.

METHODS

This descriptive cross sectional study was conducted among 108 type 2 diabetes mellitus patients attending Urban Health Centre, Chidambaram for a period of five days. Patients already diagnosed to have type 2 diabetes for atleast one year of duration and on treatment for atleast 6 months were included for the study. Informed consent was obtained from all patients.

Each patient was interviewed using pre designed, pre tested structured interview schedule which included socio-demographic variables and specific questions regarding duration of diabetes, presence of complications due to diabetes, presence of other chronic diseases, type of medications prescribed, number of drugs and dosage frequency.

Compliance was assessed using an eight item Morisky Medication Adherence questionnaire in which total score was 8. Patients those who scored 1-2 were considered as compliant and those who scored 3-8 were considered as non-compliant. A separate questionnaire used by Divya S et al to find out the relationship between non-compliance and associated factors was used in this study to assess the same.[7]

The collected data was entered in Microsoft excel 2011 and the data was compiled and analysed using SPSS version 21. The relationship between non-compliance and associated factors was evaluated using chi-square test.

RESULTS

A total of 108 patients were participated in this study. The overall compliance among the study participants was found to be 39.8% (Figure 1).

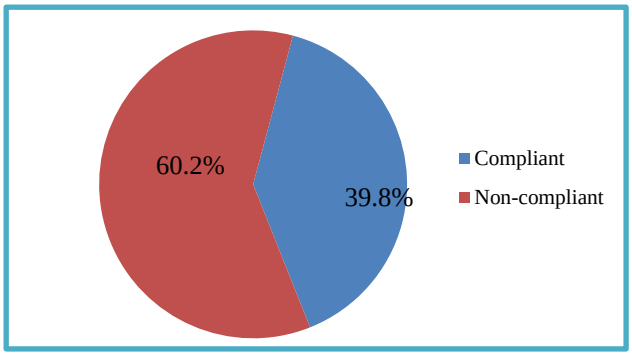

Figure 1: Distribution of respondents according to Morisky medication adherence scale

Table 1 shows the socio-demographic characteristics of the study participants. Out of the total participants, more than half 64 (59.2%) of the patients were in the age group of less than 60 years. 85 (78.7%) were females. 78 (72.7%) were married and 67 (62%) were housewives.89(82.4%) had per capita monthly income in the range of INR 1000-5000.

Table1: Distribution of patients according to socio demographic variables.

Socio-demographic variables	Number (108)	%
Age (years)		
<60	64	59.2
≥60	44	40.7
Sex		
Male	23	21.3
Female	85	78.7
Marital status		
Single	30	27.8
Married	78	72.7
Occupation		
Housewife	67	62
Self-employed	21	19.4
Labourer	8	7.4
Salaried	8	7.4
Dependent	4	3.8
Per capita monthly income		
<1000	5	4.6
1000-5000	89	82.4
>5000	14	13

Out of 108 participants, 67 (62%) had diabetes for a period of less than 5 years of duration, 69 (63.9%) were taking treatment for a period of less than 5 years, 88 (81.5%) were taking oral hypoglycaemic agents, 40 (37%) were taking more than three tablets per day, 68 (63%) of the patients were taking tablets twice a day, 90 (83.3%) had no side effects with the drugs (Table 2).

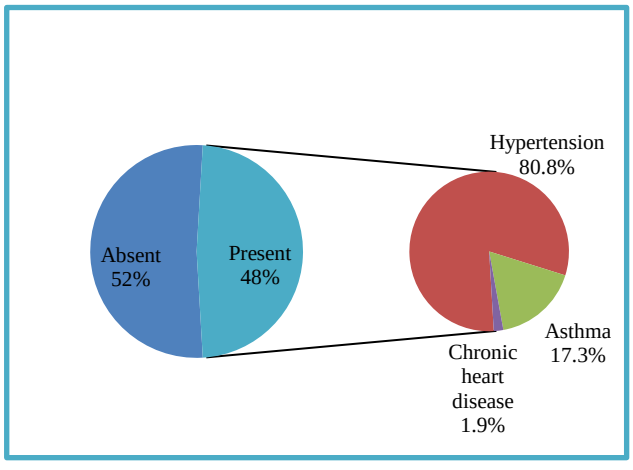

Figure 2: Presence of associated chronic diseases.

Out of 108 patients, 52 (48%) of them had associated chronic diseases like hypertension, asthma and chronic heart disease. 80.8% had hypertension, 17.3% had asthma and 1.9% had chronic heart disease (Figure 2). There is statistically significant association between non-compliance and presence of associated chronic disease with p value of 0.007.

Table 2: Distribution of patients according to variables related to diabetes mellitus and its treatment.

Variables	Number(108)	Percentage
Duration of DM		
< 5 years	67	62
> 5 years	41	38
Treatment period		
< 5 years	69	63.9
> 5 years	39	36.1
Type of medication		
OHA	88	81.5
Insulin	4	3.7
Both	16	14.8
No. of tablets		
1	29	26.9
2	39	36.1
3	40	37
No. of doses		
Once daily	26	24
Twice daily	68	63
Thrice daily	14	13
Presence of side effects		
Yes	18	16.7
No	90	83.3

Table 3: Association of non-compliance with presence of associated chronic disease.

Associated chronic disease	Compliant	Non-compliant	Total
Present	14	38	52
Absent	29	27	56
Total	43	65	108

Table 4 shows factors associated with both compliance and non-compliance. Among the non-compliant patients (n=65), illiteracy was seen in 28 (43.8%, p=0.68), financial problems to get the medicines prescribed in 25 (38.5%, p=0.001), not aware of missing medicines regularly in 45 (69.2%, p=0.404), 16 (24.6%, p=0.075) of them experienced side effects with the prescribed drugs, 36 (55.2%, p=0.049) of them told that they were asked to report if they develop any side effects with the prescribed drugs, 17 (26.1%, p=0.01) had missed atleast one dose in last one week. Doing exercise everyday was seen in 21 (32.3%, p=0.213), sleep disturbance was seen in 40 (61.53%, p=0.438) and 21 (32.3%, p=0.395) of them were feeling like failure.

It was found that there was statistically significant association between non- compliance and financial problems to get the medicines prescribed, associated chronic disease, missing one dose in last one week and experiencing side effects with the drugs.

Table 4: Factors associated with both compliance and non-compliance.

Factors	Compliance (%)	Non-compliance (%)	P value
Illiteracy	18(41.9%)	28(43.8%)	0.68
Financial problems	4(9.3%)	25(38.5%)	0.001
Unaware of what happens on missing medications regularly	28(65.11%)	45(69.2%)	0.404
Experienced side effects with the prescribed drugs	5(11.6%)	16(24.6%)	0.075
Asked to report if you develop any side effects	16(37.2%)	36(55.2%)	0.049
Missed one dose in last week	3(6.9%)	17(26.1%)	0.010
Exercise every day	10(23.2%)	21(32.3%)	0.213
Experienced sleep disturbance	25(58.1%)	40(61.5%)	0.438
Feeling like failure	12(27.9%)	21(32.3%)	0.395

DISCUSSION

Therapeutic non-compliance is a leading issue and pose a great burden to health care system. In the developing countries like India, the predominance of financial problems, illiteracy, lack of self-care and restricted access to health care system are the main causes of therapeutic non-compliance.[8]

In the present study the frequency of compliance rate among diabetic patients was found to be 39.8%. This is slightly lower compared to study done by Arulmozhi et al in Puducherry, South India (49.3%).[9] In contrast to this, a study done by Chythra et al reported high (83.6%) adherence rate among diabetic patients.[10]

In this study, there was no association between non-compliance and socio-demographic characteristics of

patients. Conversely, in a study done by Shuvankar Mukherjee et al reported compliance decreased significantly with increasing age, among males, illiterates and those with poor per capita monthly income.[11]

This study showed that 58.5% of non-compliant patients had associated chronic diseases and there is statistically significant association which is in accordance with study done by Lizbeth Hernandez-Ronquillo et al in Mexico.[12]

A statistically significant association was found between non-compliance and financial problems to get medicines in the current study. Likewise, in a study done by Divya et al also showed that economic problems to buy medicines as one the main factors for non-adherence.[7] Similar kind of association between non-compliance and financial problems to buy medications prescribed were reported in some other studies too.[11,13,14] This may be due to the fact that many of the anti-diabetic drugs are expensive and non-availability of all the drugs in the government sector.

Increase in number and dose of drugs is one of the main factors for non-compliance, mainly because of 'forgetfulness' in the older age group patients. A statistically significant association was found between non-compliance and frequent dosing and multiple drugs in a study done by Sharma T et al.[13] However, there was no significant association found between non-compliance and increased dosage of drugs in this study.

Experiencing side effects and reporting the side effects experienced were found to be more among non-compliant patients compared to compliant patients in the present study and it was statistically significant. In the same way, Taruna Sharma et al reported a significant association between side effects of drugs and non-adherence.[13] Though there was no statistically significant association between side effects of drugs and non-compliance in this study, Azeez FIA et al stated that side effects of drugs as one of the factors for non-compliance.[14]

Limitations

Sample size was not calculated for this study. All the patients attending urban health center during the outpatient hours in the study period were only selected and it is a hospital based study, so the results cannot be generalized. Since data collection was based on interview with the patients, recall bias cannot be avoided and also there may be a chance that patients may overemphasize or underestimate their level of compliance.

CONCLUSION

The therapeutic non-compliance rate among type 2 diabetic patients was found to be 60.2% and it was mainly due to factors like financial problems, associated chronic diseases and side effects of the drugs. This can be overcome by issuing drugs free of cost and by making all sort of diabetic medications available in all levels of government hospitals. Awareness programs should be conducted among diabetic patients and their family members to educate them regarding complications of diabetes mellitus and consequences of non-compliance.

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