Original Article

Significance of Patient Counseling on Attitude and Practice Behavior in Patients with Diabetes Mellitus

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The aim of the study was to determine the impact of patient education on attitude and practice in patients with diabetes mellitus in a tertiary care teaching hospital. It was a prospective, interventional study carried out in the outpatient general medicine department. Patients were block randomly assigned into intervention group and control group based on the inclusion and exclusion criteria. A total of 97 diabetic patients consented and participated in the study. Three follow up were made from baseline to the final follow up visit. Patient information leaflet and medication counselling was provided to the intervention group at each follow up and to the control group at the final follow up. At the final follow up we have observed a significant difference in mean FBS, RBS, PPBS between intervention group and control group [(FBS: P=0.049), (RBS: P= 0.024), (PPBS: P=0.010)]. There was also a significant increase in mean attitude score between intervention group and control group at final follow up (p=0.004) [Attitude factor 1] and (p=0.015) [Attitude factor 3]. The study results represent the role of clinical pharmacist in medication counselling play a vital position in patients with diabetes mellitus to achieve a sustained glycemic control and improved quality of life.

Key words: Patient counseling, Diabetes mellitus, Attitude and practice.

1. INTRODUCTION

Diabetes mellitus (DM) has a wide range of manifestations which includes hyperglycemia as a prime biochemical abnormality. It includes a diverse group of disorders that are secondary to various genetic predispositions and precipitating factors. DM leads to various complications such as ischemic heart disease, stroke, peripheral vascular diseases, neuropathy, nephropathy, retinopathy, hyperlipidemia, foot ulcers, and infections. These complications adversely affect the quality of life for all diabetic patients. So people with DM who wish to live normal lives need to have good attitude and practicing regarding their illness and the management of
It is well known that drug therapy can be safe and effective when patients are well informed about their medications and its use. It is the responsibility of pharmacists to counsel patients before dispensing medications. Proper guidance and providing education to the patients will show significant improvement in diabetes management. This study reveals the improvement in the attitude and practice of patients and the role of clinical pharmacist associated with it.

2. MATERIALS AND METHODS

This study was carried out in the medicine unit of a 1000 bedded private tertiary care teaching hospital. It was a block randomized prospective interventional study conducted for a period of six months. Institutional Ethics Committee approval was obtained before commencing the study. The data was collected from the out-patients above 18 years of age. A suitable data collection form was designed to collect and document the data. Informed consent was obtained from all the patients who willingly participated in the study. Data collection form included the demographic details of the patient, information regarding the disease, drug therapy, duration of therapy and blood glucose level (Levels of fasting blood glucose, and post-prandial blood glucose were monitored in every follow ups). The revised Diabetes Attitude Scale (DAS) developed by Michigan Diabetes Research and Training Centre (MDRTC) and diabetes practice questionnaire was applied after receiving the agreement from the developers. Data were analyzed using SPSS software version16.0 and Microsoft office.

The Revised Diabetes Attitude Scale:

We selected three factors from a total of seven factors as per the need of the study. The factors included are

1) Attitude towards patient compliance, which consists of 6 questions (Attitude factor 1),

2) Blood glucose control and complications, which consists of 3 questions (Attitude factor 2)

3) Impact of diabetes on lives which consists of 6 questions (Attitude factor 3). Each question within the factors was provided a scoring scale ranging from 1 to 5 in the ascending order (i.e. higher scores denote better attitude). The total score of all answers within the factors reflected an individual’s attitudes of the diabetic patients.

Diabetes Practice Questionnaire: The questionnaire consists of 7 questions. Each question in the questionnaire was provided with a score scale ranging from 1 to 5 in the ascending order (i.e. higher scores denote better attitude).

3. RESULTS

A total of 100 patients were enrolled in the initial phase of the study. Among the total participants 97 patients successfully completed the study and the remaining 3 patients lost their follow up due to unknown reasons. Among the participants 47 are males and 50 are females. The patients were assigned into two different groups by block randomization method. We allotted 49 patients in the intervention group and 48 patients in the control group. (Table 1)

| Sl. No | Group               | No of patients | %  |
|-------|---------------------|----------------|----|
| 1     | Interventional group| 49             | 50.51|
| 2     | Control group       | 48             | 49.48|
| Total |                     | 97             | 100 |

We categorized the patients depends on the age groups to find the highest prevalence. We noticed that the patients aged between 60-69 years shows highest number of diabetics (32.99%) than other age groups. (Table 2)

| Sl. No | Age     | No of patients | %  |
|-------|---------|----------------|----|
| 1     | 20-29   | 0              | 0.00|
| 2     | 30-39   | 3              | 3.09|
| 3     | 40-49   | 20             | 20.61|
| 4     | 50-59   | 27             | 27.83|
| 5     | 60-69   | 32             | 32.99|
| 6     | 70-79   | 15             | 15.36|
| Total |         | 97             | 100 |

Information’s regarding the patient’s level of education was collected to identify the literates among the population. We categorized the level of education as graduates, high school, primary school and illiterates. We have noticed 63.98% of the patients had education at least at primary school level. (Table 3)

| Sl. No | Level      | No of patients | %  |
|-------|------------|----------------|----|
| 1     | Graduate   | 3              | 3.09|
| 2     | High school| 25             | 25.77|
| 3     | Primary school | 62          | 63.86|
| 4     | Illiterate | 7              | 7.21|
| Total |            | 97             | 100 |

Occupational status was categorized as per the need of the study to understand their working capacities. 35.05% of study participants were identified as house wives, 34.03% as farmers and 20.62% as self employed. (Table 4)

| Sl. No | Occupation   | No of patients | %  |
|-------|--------------|----------------|----|
| 1     | Farmer       | 13             | 13.40|
| 2     | Self employed| 20             | 20.62|
| 3     | Retired employee | 2              | 2.06|
| 4     | House wife   | 64             | 63.05|
| 5     | Unemployed   | 8              | 8.25|
| Total |              | 97             | 100 |

We have identified the custom of using tobacco and alcohol among the participants. 13.40% had the habit of alcoholism and 14.43% had the habit of smoking. (Table 5)

| Sl. No | Status       | No of patients | %  |
|-------|--------------|----------------|----|
| 1     | Non-smokers  | 84             | 86.59|
| 2     | Smokers      | 13             | 13.40|
| 3     | Non-alcoholics| 83             | 85.56|
| 4     | Alcoholics   | 4              | 14.43|
In an attempt to identify the duration of illness among the study participants we observed that 50.51% of patients had the duration of diabetics from 1-5 years. This information gives an idea that majority of the patients were recently identified for having the disease and there is an urgent need of interventions for their betterment of attitude and practices.(Table 6)

Table 6: Duration of diabetes among the participants

| Sl. No | Diabetes in years | No of patients | %  |
|--------|-------------------|----------------|----|
| 1      | 1-5               | 49             | 50.51|
| 2      | 6-10              | 84             | 35.05|
| 3      | 11-15             | 10             | 10.30|
| 4      | 16-20             | 2              | 2.06 |
| 5      | >21               | 2              | 2.06 |

We have recorded the FBS, RBS and PPBS levels for comparative study on the test and control group from baseline to the final follow up to assess the glycaemia control in response to counselling.

At the base line follow up there was no difference in mean FBS, RBS, and PPBS between intervention group and control group. [(FBS: P=0.977 which is >0.05), (RBS: P=0.695 which is >0.05), (PPBS: P=0.673 which is >0.05)].

During the first follow up there was no difference in mean FBS, RBS, and PPBS between intervention group and control group. [(FBS: P=0.729 which is >0.05), (RBS: P= 0.802 which is >0.05), (PPBS: P= 0.200 which is >0.05)].

At the second follow up there was no difference in mean FBS and RBS but PPBS Showed variations between intervention group and control group [(FBS: P=0.492 which is >0.05), (RBS: P= 0.176 which is >0.05), (PPBS: P=0.037 which is <0.05)].

During the final follow up we have noticed a significant difference in mean FBS, RBS, PPBS between intervention group and control group [(FBS: P=0.496, which is <0.05), (RBS: P=0.024 which is <0.05), (PPBS: P=0.010 which is <0.05)].

The above results show that counselling has an impact on the blood glucose control. We observed, both the groups achieved good diabetic control but the patients who has received proper education and counselling (intervention group) achieved better glycaemia control than the group who did not receive education and counselling (control group).In the final follow up we noticed a significant reduction in the mean blood glucose level in intervention group but not in the control group.(Table 7)

Table 7: The blood glucose level

| Follow up | Blood glucose test | Group  | Mean  | Standard deviation | t    | p     |
|-----------|--------------------|--------|-------|--------------------|------|-------|
| Baseline  | FBS                | Intervention | 172.71 | 70.564             | .029 | 0.977 |
|          | Control            | 172.15 | 63.994 |                     |      |       |
|          | RBS                | Intervention | 220.33 | 83.653             | .395 | 0.695 |
|          | Control            | 233.53 | 102.552 |                    |      |       |
| First follow up | PPBS   | Intervention | 243.58 | 108.485            | .426 | 0.673 |
|          | Control            | 256.53 | 85.478 |                     |      |       |
|          | FBS                | Intervention | 169.39 | 44.351             | .349 | 0.729 |
|          | Control            | 175.21 | 74.196 |                     |      |       |
|          | RBS                | Intervention | 232.67 | 82.663             | .254 | 0.802 |
|          | Control            | 240.24 | 85.626 |                     |      |       |
|          | PPBS               | Intervention | 240.31 | 94.037             | 1.303 | 0.200 |
|          | Control            | 277.00 | 88.519 |                     |      |       |
| Second follow up | FBS  | Intervention | 165.89 | 49.757             | .692 | 0.492 |
|          | Control            | 177.50 | 70.766 |                     |      |       |
|          | RBS                | Intervention | 186.29 | 79.126             | 1.392 | 0.176 |
|          | Control            | 226.36 | 73.052 |                     |      |       |
|          | PPBS               | Intervention | 231.84 | 83.774             | 2.146 | 0.037 |
|          | Control            | 286.14 | 89.637 |                     |      |       |
| Final follow up | FBS | Intervention | 148.78 | 38.525             | 2.013 | 0.049 |
|          | Control            | 180.04 | 70.094 |                     |      |       |
|          | RBS                | Intervention | 185.80 | 61.588             | 2.585 | 0.024 |
|          | Control            | 255.06 | 95.308 |                     |      |       |
|          | PPBS               | Intervention | 221.57 | 80.250             | 2.719 | 0.010 |
|          | Control            | 290.05 | 82.431 |                     |      |       |

*Significant <0.05

Attitude and Practice Score result:

**Attitude factor 1:**
There was no difference in mean attitude score between intervention group and control group at baseline (p=0.496, which is <0.05) but there was a difference in mean attitude score between intervention group and control group at final follow up (p=0.004, which is <0.05).

**Attitude factor 2:**
There was no difference in mean attitude score between intervention group and control group at final follow up [p=0.758 which is >0.05(baseline),p=0.848 which is >0.05 (final follow up)].

**Attitude factor 3:**
There was no difference in mean attitude score between intervention group and control group at baseline (p=0.619, which is >0.05) but in final follow up there was a difference in mean attitude score between intervention group and control group (p=0.015, which is <0.05).

**Practice result:**
There was no difference in mean practice score between intervention group and control group at baseline (p=0.511,which is >0.05) but in final follow up there was a difference in mean practice score between intervention group and control (p<0.001, which is <0.05).(Table 8)

Table 8: Result of independent ‘t’ test on Attitude and Practice scores

| Domain       | Follow ups  | Category   | Mean   | Standard deviation | t    | p     |
|--------------|-------------|------------|--------|--------------------|------|-------|
| Attitude Factor-1 | Baseline   | Intervention group | 21.80  | 3.117               | 0.683 | 0.496 |
|              | Control     | 21.36      | 3.324             |      |       |
|              | Final       | Intervention group | 23.33  | 2.664               | 2.928 | 0.004*|
|              | Control     | 21.58      | 3.181             |      |       |
| Attitude Factor-2 | Baseline   | Intervention group | 13.88  | 2.561               | 0.308 | 0.758 |
|              | Control     | 14.04      | 2.626             |      |       |
|              | Final       | Intervention group | 14.20  | 2.525               | 0.192 | 0.848 |
|              | Control     | 14.10      | 2.611             |      |       |
| Attitude Factor-3 | Baseline   | Intervention group | 16.46  | 3.189               | 0.499 | 0.619 |
|              | Control     | 16.46      | 3.189             |      |       |
4. DISCUSSION

We have observed a maximum number of patients in the productive age range of 60-69 years (32.99%). These results could be a piece of evidence that age is one of the risk factors for the development of DM.

Data on the educational status of the patients helped us to understand their level of literacy. Unfortunately, in our study population majority of the patients had primary school education only. This may be one of the reasons for obtaining low baseline scores in both groups. It was also noticed that majority of the patients were in the unemployed category.

On assessing the FBS, RBS and PPBS levels between the test and control group we observed, both the groups achieved diabetic control but the patients who has received proper education and counselling (intervention group) achieved better glycaemic control than the group who did not receive education and counselling (control group). This result is similar to the relevant study reports on attitude and practice\(^5\). The patients who had self-awareness about the disease by having knowledge on diabetes and regularly involving in self-care practices achieved better glycaemic control.\(^6\)

In Attitude score analysis we observed that there was no significant difference between control and interventional group during the baseline study. Similarly, a study carried out by using the same tool tells that diabetics do not have the appropriate attitude towards their condition during baseline study\(^7\). After providing proper counseling we have observed an improvement in attitude score. This may be due to the improvement in knowledge of the disease that could have changed them in misinterpretation of the illness. The practices of the patients in the intervention group were tremendously improved after counselling, where as practice scores remained more or less same in the control group. A study also reports that there is no improvement in the attitude and practice even after providing proper counselling.\(^8\)

5. CONCLUSION

The study was concluded based on the revised Diabetes Attitude Scale (DAS) and diabetes practice questionnaire scores between the intervention and control group. The improved attitude and practice scores reveal the effectiveness of the patient counselling provided by the clinical pharmacist. The intervention group, that underwent the disease education and counselling from the study pharmacist have shown better glycaemic control than the control group that received only the primary care offered by the physician in the baseline stage of the study. We conclude that better improvements and changes in good attitude and practice among diabetics can be improved only through education and training programmes. Because of the physician’s busy schedule, patients may not adequately interact with them regarding non-pharmacological measures of glycemic control. Therefore, it is imperative that clinical pharmacists can play a vital role in providing counselling and education programmes for better patient care and for better quality of life.

6. REFERENCES

1. Stephen M.S, John R.W, Campbell K. Diabetes, in: Helms R.A, Quan D.J, Herfindal E.T, Gourley D.R (Eds). Textbook of Therapeutics Drug and disease management, eight ed. Philadelphia: Lipincott Williams & Wilkins;2006:1043.
2. Mangaiaarkarasi A, Nitya S, Mehar Ali R1 and Ramaswamy S.A Study to Assess the Knowledge, Attitude and Practice about Diabetes among Diabetic Patients in Pondicherry. Research Journal of Pharmaceutical, Biological and Chemical Sciences.2012;3(4):1185-1196.
3. Palaiin S, Acharya LD, Rao Padma GM, Shankar PR, Nair NM, Nair NP. Knowledge, Attitude and Practice Outcomes: Evaluating the impact of counseling in hospitalized diabetic patients in India. P&T Around the World 2006; 31(7): 383-396.
4. Nagavi B, Adepu R, Rasheed A. Effect of patient counseling on quality of life in type-2 diabetes mellitus patients in two selected South Indian community pharmacies: A study. Indian Journal of Pharmaceutical Sciences. 2007; 69(4):519.
5. Ramesh A, Somashekar M ARI. Influence of structured patient education on therapeutic outcomes in Diabetes and hypertensive patients. Asian Journal of Pharmaceutical and Clinical Research. 2010; 3(3):174-178.
6. Padma K, Bele SD, Bodhare TN, Valsangkar S. Evaluation of knowledge and self care practices in diabetic patients and their role in disease management. National Journal of Community Medicine. 2012; 3(1):1-6
7. Ryan A, Arden GJ, Paz-Pacheco E, JimenoCA, Lantion-AngFL, PaternoE, Juhban N. Knowledge, attitudes and practices of persons with type 2 diabetes in a rural community: Phase I of the community-based Diabetes Self-Management Education (DSME) Program in San Juan, Batangas, Philippines. Diabetes Research and Clinical Practice 2010:90: 160–166.
8. Palaian S, Acharya LD, Rao Padma GM, Shankar PR, Nair NM, Nair NP. Knowledge, Attitude and Practice Outcomes: Evaluating the impact of counseling in Hospitalized diabetic patients in India. P&T Around the World 2006; 31(7): 383-396.

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