

Study on the Impact of Patient Counseling in Improving Quality of Life in Diabetic Patients

Nethaji Ramalingam¹, Rakendu Pillai UB², Saranya K. Sivarajan³, Athila P. Muhammed⁴,
Sarath T⁵, K. P. Rajesh⁶, Babu Ganesan⁷

¹Department of Pharmaceutics, Devaki Amma Memorial College of Pharmacy, Kerala, India.

^{2, 3, 4, 5}Department of Pharmacy Practice, Devaki Amma Memorial College of Pharmacy, Kerala, India

⁶Consultant Diabetologist, P.V.S. Hospital (P) LTD, Calicut, Kerala, India

⁷Department of Pharmaceutical Chemistry, Devaki Amma Memorial College of Pharmacy, Kerala, India

Abstract: ***Background and objective:** Diabetes is a condition that associated with reduced life expectancy, significant morbidity due to microvascular complications, increased risk of macrovascular complications (ischemic heart disease, stroke and peripheral vascular disease) and diminished quality of life. Patient counselling is a key competency element of the pharmaceutical care process. It is important for pharmacists to provide appropriate, understandable and relevant information to patients about their medication. The objective of the study is to improve the knowledge, attitude and practice, to improve quality of life and medication adherence of selected diabetes patients. **Materials and Methods:** An observational study has been carried out for a period of six months at a tertiary care hospital, Calicut, Kerala. 100 diabetic patients were selected, based on the inclusion and exclusion criteria. Knowledge, attitude and practice, quality of life and medication adherence were assessed using validated questionnaires and compared the corresponding scores before and after counseling. **Results:** It is seen that the scores of knowledge, attitude and practice (KAP), quality of life and medication adherence has shown an extreme significance ($p < 0.05$). **Conclusion:** The study concluded that the pharmacist mediated patient counseling about the disease, medications and lifestyle modifications can improve quality of life of diabetes patients.*

Keywords: Patient counselling, Diabetes Mellitus, Knowledge, Attitude and Practice, Quality of life

1. Introduction

The term “Diabetes” comes from the Greek word ‘Siphon’ based on the observation that diabetic people lose fluids in urine almost as quickly as they quench their thirst and “Mellitus” comes from the Latin word ‘Honey’ [1]. It’s a condition defined by the level of hyperglycaemia giving rise to risk of microvascular damage and associated with reduced life expectancy, significant morbidity due to diminished quality of life [2]. Additionally, a study by American Diabetes Association reports that India will see the greatest increase in people diagnosed with diabetes by 2030 [3]. Complications of diabetes mellitus can be either acute because of insulin deficiency, which increases blood sugar to very high levels and chronic because of changes in the blood vessels of various parts of body. Acute complications include hypoglycaemia, hyperglycaemia or ketoacidosis. Similarly in chronic complications include micro-angiopathic and macro-angiopathic [4]. The signs and symptoms are reported as polyuria polydipsia, fatigue, marked weight loss, blurred vision, high infection rate, shortness of breath, polyuria, polydipsia, fatigue, marked weight loss, blurred vision, generalized pruritus, vaginitis, soft tissue and chest infection [5]. Patient involvement is paramount for successful care of diabetes. This is highlighted in the national service standards for diabetes which state that all patients, and carers, where appropriate, will be encouraged to develop a partnership with their clinicians to enable them to manage their diabetes and maintain a healthy life style, often through shared care plans. Structured education is important for patient with type II diabetes and should be offered to every patient

and/or their care around the time of diagnosis. Patient counselling is a process that improves patient’s ability to cope up and make informed decisions regarding their disease and medication and motivate the patients to change their dietary habits and lifestyle, which are harmful for their current health status. Patient counselling is important for pharmacists to provide appropriate, understandable and relevant information to patients about their medication. The pharmacist is readily available position to answer patient concerns and enquiries about their medications and alternate treatments they may read about or hear from others [6]. The main goal of this study is to improve the knowledge, attitude and practice (KAP), quality of life in diabetic patients, medication adherence and to show a positive impact on health care after providing pharmacist counselling through verbal, audio-visuals and patient information leaflets.

2. Materials and Methods

Study site: Diabetology Clinic, a 350 bedded tertiary care private hospital [P.V.S. Hospital (P) LTD, Calicut (Ref. No.PVS/EC/02/16-17)].

Study design: An observational study was evaluated using validated questionnaires. Knowledge, attitude and practice (KAP), quality of life and medication adherence were assessed using validated questionnaires and compared the corresponding scores before and after counseling.

Study period: The observational study to assess the impact of patient counseling was conducted over a period of six months (December 2015- May 2016).

Study sample: Enrolled about 100 patients based on study criteria (Both IP&OP)

Study criteria:

Inclusion criteria: Both Type I and Type II Diabetic Patients (IP & OP).

Exclusion criteria: Pediatric patients, patients with uncontrolled diabetes and complications are excluded from the study.

Data sources: The relevant information were obtained from

1. Patient data collection form
2. Knowledge, Attitude and Practice questionnaire
3. Quality of Life questionnaire
4. Medication adherence questionnaire
5. Medication reminder chart.

3. Methodology

- The patient’s demographic details, past medical history and current medication chart were recorded in a suitably designed patient data collection form.
- The disease and drug awareness were assessed by administering suitably designed and validated KAP, QoL and medication adherence questionnaire to the patients and recorded the corresponding scores. The questionnaires took approximately 15-20 minutes to complete.
- The KAP questionnaires contained 20 questions comprising of 10 knowledge questions, 5 attitude and 5 practice questions.
- The QoL questionnaires included 24 questions covering physical health, physical endurance, general health, treatment satisfaction, symptom botherness, financial worries, emotional/mental health and diet satisfaction.
- The medication adherence questionnaires included 12 questionnaires.
- The study populations were given patient counseling through verbal communication, audio-visuals and patients information leaflet (PIL). During the next follow up (45 days interval), re-administered the KAP, QoL and medication adherence questionnaires to each patient, and then assigned their new scores.
- Checked the impact of counselling on above mentioned parameters of each patient by comparing both scores when before and after counselling.
- The paired t-student test, independent t-test and ANOVA test were used using the SPSS Software 4 windows version 20. P < 0.05 was considered as the statistically significant level.

4. Results and Discussion

The demographic details of the patients (100 no’s) are shown in Table -1. Among 100 patients, 3% were in the age category 20-30 years, 5% were in 31-40 years, 19% were in 41-50 years, 31% were in 51-60 years, 26% were in 61-70 years and 16% were in 71-80 years. It can be seen that most of the diabetic patients belonged to age group of 41-70 years. But major reported belonged to 51-60 years which is similar to study by Ramesh Adepue *et al.*, [7] and P. Maheshwari [8]. In body weight wise, 21% were in the

category 51-60 kg, 35% were in 61-70 kg, 39% were in 71-80 kg and 5% were in 81-90 kg. It can be seen that most of the diabetic patients belonged to the category 61-80 kg body weight. Similarly in gender wise, 57% were in males and 43% were in females are reported and most affected candidates are males compared than females which confirms to the study done by P. Maheshwari [8]. Similarly in educational status, 23% were in the category of below 10th standard, 31% were in 10th standard to higher secondary, 20% were in diploma qualification, 16% were graduates and 10% were post graduates. In occupational wise, 16% were government employees, 21% were private employees, 14% were having own business, 4% were labours, 21% were house-wife’s, 8% were retired employees, 7% belonged to other category and 9% were not earning. In residential wise, 20% were belonged to city, 47% were belonged to town and 33 were belonged to village. So people who resided in town area are mostly affected diabetes due to their lifestyle modification compared than other localities. Among the 100 patients, 95% married persons are reported diabetic than unmarried. In family history category, 32% were belonged to the 0-5 years, 38% belonged to the 6-10 years, 19% were 11-15 years and 11% were 16-20 years. It is observed that more patients belongs to a period of duration >5 years which study is similar to Sriram .S. *et al.*, [9]. Among the 100 patients, 65% were having co-morbidities and 35% were not having co-morbidities. Similarly, 52% were reported minor polypharmacy and 48% were having major polypharmacy. In alcoholic habituation, 27% were reported an occasional alcoholic than daily alcoholic (0%), similarly in smoking condition, 6% were daily smokers, 13% were occasional smokers, 1% were daily tobacco users and 2% were occasional tobacco user. Table 2 to Table 5 shows that there is no significance for the score comparison of study participants based on gender wise, family history, co-morbidities and Polypharmacy. Table 6 shows that the scores of KAP, QoL and medication adherence before and after counselling. Its show that there is significant improvement (p value = 0.0001) and the study is similar to Ramesh. S *et al.*, [10] and Anoop Kumar Kunnimal. *et al.*, [11]. Table -7 shows the score comparison of study participants based on duration of diabetes indicated that KAP and QoL was found to be significant as p value < 0.05 (p = 0.049 for KAP and 0.002 for QoL), while medication adherence (p = 0.762) has no significance and these findings were not observed in any other studies.

Table 1: Demographic characteristics of the diabetic patients

Demographic characteristics		Number of patients(n)	Percentage (%)
Age (yrs)	20-30	3	3.0
	31-40	5	5.0
	41-50	19	19.0
	51-60	31	31.0
	61 – 70	26	26.0
Weight (kg)	71 – 80	16	16.0
	51-60	21	21.0
	61-70	35	35.0
Gender	71 – 80	39	39.0
	81 – 90	5	5.0
	Male	57	57.0
	Female	43	43.0

Educational qualification	Below 10th std	23	23.0
	10th std-higher secondary	31	31.0
	Diploma	20	20.0
	Graduate	16	16.0
	Post graduate	10	10.0
Occupation	Govt Employee	16	16.0
	Pvt Employee	21	21.0
	Own business	14	14.0
	Labour	4	4.0
	House wife	21	21.0
	Retired Employee	8	8.0
	Others	7	7.0
	Nil	9	9.0
City	20	20.0	

Residential area	Town	47	47.0
	Village	33	33.0
Marital status	Single	5	5.0
	Married	95	95.0
Family history	No	25	25.0
	Yes	75	75.0
Duration of diabetes(yrs)	0 – 5	32	32.0
	6 -10	38	38.0
	11 – 15	19	19.0
	16 – 20	11	11.0
Co-morbidities	No	35	35.0
	Yes	65	65.0
Polypharmacy	Minor	52	52.0
	Major	48	48.0

Table 2: Score comparison of study participants based on Gender wise

Measuring tools	Genders	No of patients (n)	Mean ±Std. Deviation	Mean difference	Independent t test	P value
KAP	Male	57	3.77 ± 1.60	0.25	0.701	0.485
	Female	43	4.02 ± 1.98			
QoL	Male	57	18.51 ± 16.59	1.68	0.608	0.544
	Female	43	20.19±8.22			
Medication adherence	Male	57	7.02±2.17	0.05	0.106	0.916
	Female	43	7.07±2.76			

Table 3: Score comparison of study participants based on Family History

Measuring tools	Family history	No of patients(n)	Mean ±Std. Deviation	Mean difference	Independent t test	Pvalue
KAP	No	25	3.96 ± 1.72	0.11	0.26	0.796
	Yes	75	3.85 ± 1.80			
QoL	No	25	21.68± 7.33	3.27	1.04	0.301
	Yes	75	18.41 ± 15.08			
Medication adherence	No	25	6.68 ± 2.44	0.48	0.85	0.395
	Yes	75	7.16 ± 2.43			

Table 4: Score comparison of study participants based on Co-morbidities

Measuring tools	Co-morbidities	No of patient (n)	Mean ±Std. Deviation	Mean difference	Independent t test	Pvalue
KAP	No	35	4.09 ± 1.92	0.32	0.851	0.397
	Yes	65	3.77 ± 1.69			
QoL	No	35	20.80 ± 8.62	2.42	0.846	0.4
	Yes	65	18.38 ± 15.64			
Medication adherence	No	35	6.77 ± 2.49	0.41	0.81	0.42
	Yes	65	7.18 ± 2.40			

Table 5: Score comparison of study participants based on Polypharmacy

Measuring tools	Poly-pharmacy	No of patients (n)	Mean±Std. Deviation	Mean difference	Independent t test	P value
KAP	Minor	52	3.87 ± 1.77	0.03	0.085	0.932.
	Major	48	3.90 ± 1.79			
QoL	Minor	52	21.29 ± 8.53	4.29	1.587	0.116
	Major	48	17.00 ± 17.35			
Medication adherence	Minor	52	6.75±2.42	0.60	1.246	0.216
	Major	48	7.35±2.43			

Table 6: Score comparison of study participants before and after Counselling

Measuring tools	Counseling status	Mean ±Std. Deviation	Mean difference	Paired t value	P Value
KAP	Before	11.90 ± 1.66	3.88	21.907	0.0001
	After	15.78 ±1.77			
QoL	Before	65.87 ± 11.00	19.23	14.13	
	After	85.10 ±13.97			
Medication Adherence	Before	12.04 ± 2.77	7.04	28.99	
	After	19.08 ± 2.49			

Table 7: Score comparison of study participants based on Duration of Diabetes

Measuring tools	Duration of diabetes(yrs)	No of patients (n)	F value	P value
KAP	0 - 5	32	2.71	0.049
	6 -10	38		
	11 - 15	19		
	16 - 20	11		
QoL	0 - 5	32	5.327	0.002
	6 -10	38		
	11 - 15	19		
	16 - 20	11		
Medication adherence	0 - 5	32	0.388	0.762
	6 -10	38		
	11 - 15	19		
	16 - 20	11		

5. Conclusion

The pharmacist is in a highly visible and readily available position to answer patient concerns and enquiries about their medications and alternate treatments they may read about or hear from others. It is important for pharmacists to provide appropriate, understandable and relevant information to patients about their medication. Structured education is important for patient with type II diabetes and should be offered to every patient and/or their care around the time of diagnosis. Patient counselling is a process that improves patient's ability to cope up and make informed decisions regarding their disease and medication and motivate the patients to change their dietary habits and lifestyle, which are harmful for their current health status. Through various patient counselling techniques, KAP, QoL and medication adherence of study population has been improved in the study. The study is highly observant evaluations that measure the changes in Knowledge, Attitude and Practice in response to a specific interventions while medication adherence monitors the extend of patients adhere with health advices provided by Physicians and Pharmacists regarding time, dose, frequency of medication intake. The study concluded that the pharmacist plays an important role by providing counselling which has shown a positive impact on health care, since there is a significant improvement in quality of life of diabetic patients after counselling. The study justified that the influence of pharmacist provided patient counselling on therapeutic outcome and overall quality of life of diabetics.

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7. Source of Support

Nil

8. Conflict of Interest

None

References

- [1] DIABETES –I, Health Update- The Society for Health Education and Learning Package, November 1998; 3(3): 301-312.
- [2] Definition and diagnosis of diabetes mellitus and intermediate hyperglycemia: Report of a WHO/IDF consultation. Part 1: Diagnosis and Classification of Diabetes Mellitus complications. Report of a WHO Consultation. Part I: Diagnosis and classification of diabetes mellitus.
- [3] Mohanan V, Sandeep S, Deepa R, Shah B. Epidemiology of type 2 diabetes: Indian scenario. *Indian Journal of Medical Research*. 2007; 125: 217-230.
- [4] World Health Organization. Diabetes Mellitus: Report of a WHO Study Group. Geneva: WHO, 1985. Technical Report Series 727.
- [5] Kalyani N. Patni, Jainam V. Shah and Shrikalp S. Deshpande. Improvement in Glycemic Control of Diabetic Patients Provided with counseling by Clinical Pharmacist- A Review: *Journal of Pharmaceutical Science and Bioscientific Research*. 2015; 5(4): 370-378.
- [6] Ramesh S, Dinesh Babu N, Malathy R, Narmadha MP, Alvin Jose M. Effect of a diabetes counseling programme on knowledge, attitude and practice among diabetic patients in Erode district of South India: *Journal of Young Pharmacists*. 2011; 3(1): 65-72.
- [7] Ramesh Adepu and Madhu S. Influence of post discharge counseling on health outcomes in diabetic and hypertensive patients: *Asian Journal of Pharmaceutical and Clinical Research*. 2011; 4(3): 28-33.
- [8] P. Maheshwari. Impact of Patient Counseling on Health Related Quality of Life in Diabetic and Hypertensive Patients: *International Journal of PharmTech Research*. 2016; 9(1): 23-27.
- [9] Sriram S, Suresh Damodharan, Akhila S Arjun, Latha M A, Nandipati Raghuram. Impact of Pharmaceutical Care activities on HRQoL of Diabetic Patient at a Private Corporate Hospital: *International Journal of Science and Research*. 2014; 4(10): 668-673.
- [10] Ramesh S, Dinesh Babu N, Malathy R, Narmadha MP, Alvin Jose M. Effect of a diabetes counseling programme on knowledge, attitude and practice among diabetic patients in Erode district of South India: *Journal of Young Pharmacists*. 2011; 3(1): 65-72.
- [11] Anoop Kumar Kunnumal, Sebiha Cheshmi, Shanvas P, Amjad P. M. Role of counseling on medication adherence and glycemic control in patients with Type 2 diabetes mellitus: *Journal of Evidence based Medicine and Health care*. 2015; 2(50): 8571-8574.