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A study on impact of clinical pharmacist intervention on knowledge, attitude and practice of patients with diabetes in a tertiary care teaching hospital

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ABSTRACT

The number of people with Diabetes is increasing due to population growth, aging, urbanization, and increasing prevalence of Obesity and Physical inactivity. Quantifying the prevalence of diabetes and the number of people affected by diabetes, now and in the future, is important to allow rational planning and allocation of resources.

The study was conducted for a period of 6 months with 2 follow ups; where 1st follow up was held on the 15th day and the II follow up on the next 30th day of the patient enrolment. Patients were assessed for their KAP on baseline, I and II follow ups. Intervention group patients were counseled through patient information leaflets.

Keywords: Diabetes, clinical Pharmacist, Diabetic patients.

INTRODUCTION

The number of people with Diabetes is increasing due to population growth, aging, urbanization, and increasing prevalence of Obesity and Physical inactivity. Quantifying the prevalence of diabetes and the number of people affected by diabetes, now and in the future, is important to allow rational planning and allocation of resources. The prevalence of diabetes for all age-groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. The prevalence of diabetes is higher in men than women, but there are more women with diabetes than men. The urban population in developing countries is projected to double between 2000 and 2030. The most important demographic change to diabetes prevalence across the world appears to be the increase in the proportion of people 65 years of age.[1]

The "Top 10" countries in the world, in terms of the number of people with diabetes, for 2010 and 2030 were estimated, and at both time points, the three countries with the largest number of people with diabetes are India, China and the U.S. This picture is likely to change soon, in light of the recent escalation in prevalence of diabetes (92.4 million adults) in China. Roughly 80% of people with diabetes are in developing countries; of which India and China share the larger contribution. It is estimated that the total number of people with diabetes in 2010 to be around 50.8 million in India, rising to 87.0 million by 2030. According to the World Health Organization (WHO) criteria, the prevalence of known diabetes was 5.6% and 2.7% among Urban and Rural areas, respectively.[2]

AIM

The aim of the study was to evaluate the Impact of Clinical Pharmacist intervention on Knowledge, Attitude and Practice of patients with Diabetes.

MATERIALS AND METHODOLOGY

The study was conducted for a period of 6 months with 2 follow ups; where I[st] follow up was held on the 15th day and the II follow up on the next 30th day of the patient enrolment. Patients were assessed for their KAP on baseline, I and II follow ups. Intervention group patients were counseled through patient information leaflets.

KAP QUESTIONNAIRE

It is a 27 question open ended questionnaire with 12 knowledge, 8 attitude and 7 practice questions. Each correct answer was given a score 1 and the incorrect answer was given 0. The questionnaire covered causes, symptoms, complications of diabetes, normal values of FBS and PPBS, symptoms and immediate treatment for hypoglycaemia, importance of dietary control and foot care in diabetes.

PROCEDURE

This is an interventional study where patients eligible were enrolled into the study after obtaining the consent. The data collection form was prepared and used. The KAP questionnaire consisted of 27 questions in both English and Telugu versions through which Knowledge, Attitude and Practice of patients were assessed. A total of 102 DM patients were included in the study of which 52 were of Intervention and 50 were of Control groups. The patient details were collected using the case report form, the questionnaire was asked to be filled by the patients and KAP was assessed. Every alternate patient was grouped under Control and Intervention groups. Both the Control and Intervention group patients were assessed for KAP in the baseline, I and II Follow ups where I Follow up was held on the 15th Day and the II Follow up on the next 30th day. Patient counseling was done verbally and through Patient information leaflets only to the Intervention group patients. Only a few patients turned up for the follow ups and the other patients were contacted through phone.

RESULTS AND DISCUSSION

Majority of the Patients were in the Age group of 51-60 yrs of which majority of them were males, illiterate farmers with an annual income between 50,000-1, 00,000 in Control group and >1, 00,000 in Intervention group.

Table 1: **Distribution of Demographic details of Diabetes Mellitus Patients**

Basic Variables	Control		Intervention	
	N	%	N	%
Age in years				
21-30	4	8	2	3.85
31-40	7	14	3	5.77
41-50	12	24	9	17.31
51-60	13	26	19	36.54
61-70	12	24	15	28.85
71-80	2	4	4	7.69
Gender				
Females	19	36.54	19	36.54
Males	31	63.46	33	63.46
Marital Status				
Married	49	98	51	98.08
Unmarried	1	2	1	1.92
Education				
Illiterates	27	54	39	75

Primary	15	30	7	13.46
High School	1	2	2	3.85
Intermediate	2	4	2	3.85
Graduates	5	10	2	3.85
Occupation				
Farmers	30	60	32	61.54
Govt. Employees	1	2	0	0
House Wives	13	26	12	23.08
Private Employees	6	12	7	13.46
Retired	0	0	1	1.92
Family Annual Income				
<50,000	20	40	14	26.92
50,000-1,00,000	23	46	15	28.85
>1,00,000	7	14	23	44.23
Total	**50**	**100**	**52**	**100**

Table 2: comparison of results of KAP in control and intervention group

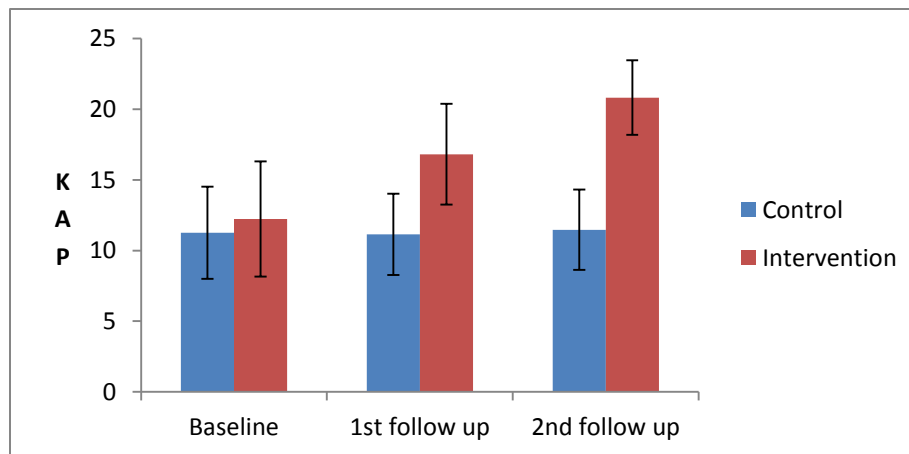| KAP	Control (mean±sd)	P value	Intervention (mean±sd)	P value
Baseline	11.26±3.26		12.23±4.08	
1st Follow up	11.14±2.87	0.4441	16.81±3.57	P<0.0001***
2nd Follow up	11.46±2.84	0.249	20.81±2.64	P<0.0001***

Figure 1: Comparative distribution of quality of KAP in control and intervention group

The p values were found to be more significant in the First and Second follow ups compared to the Baseline in the Intervention group, whereas there was no such significance found in the Control group.

Table 3: comparison of results of KNOWLEDGE in control and intervention group

KNOWLEDGE	Control (mean±sd)	P value	Intervention (mean±sd)	P value
Baseline	4.88±1.8		4.44±2.01	
1st Follow up	4.83±1.53	0.7137	6.94±1.58	P<0.0001***
2nd Follow up	5.02±1.61	0.4733	8.54±1.41	P<0.0001***
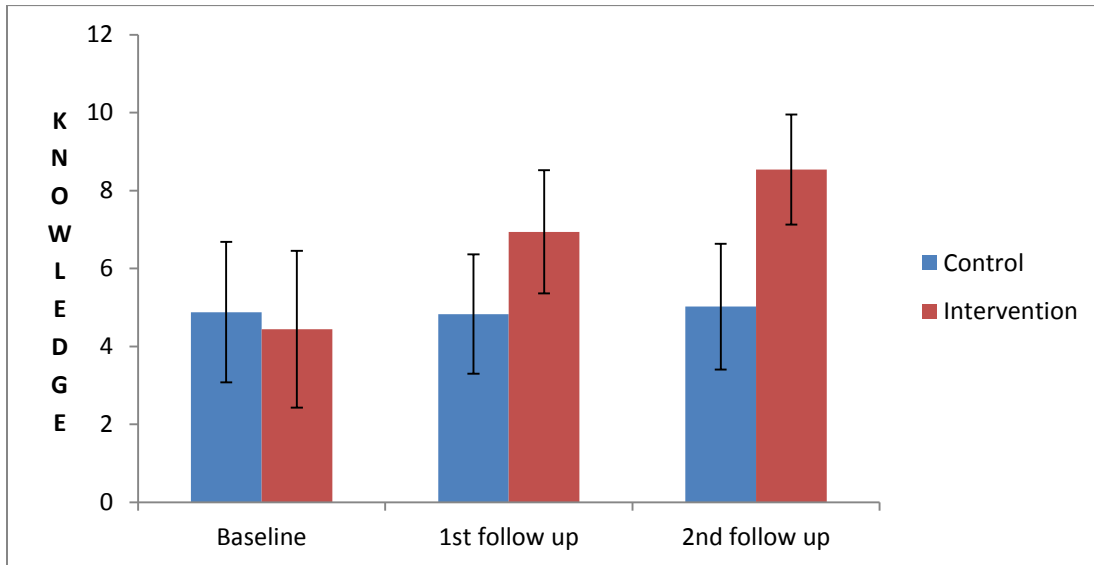
Figure 2: Comparative distribution of knowledge

Table 4: comparison of results of ATTITUDE in control and intervention group

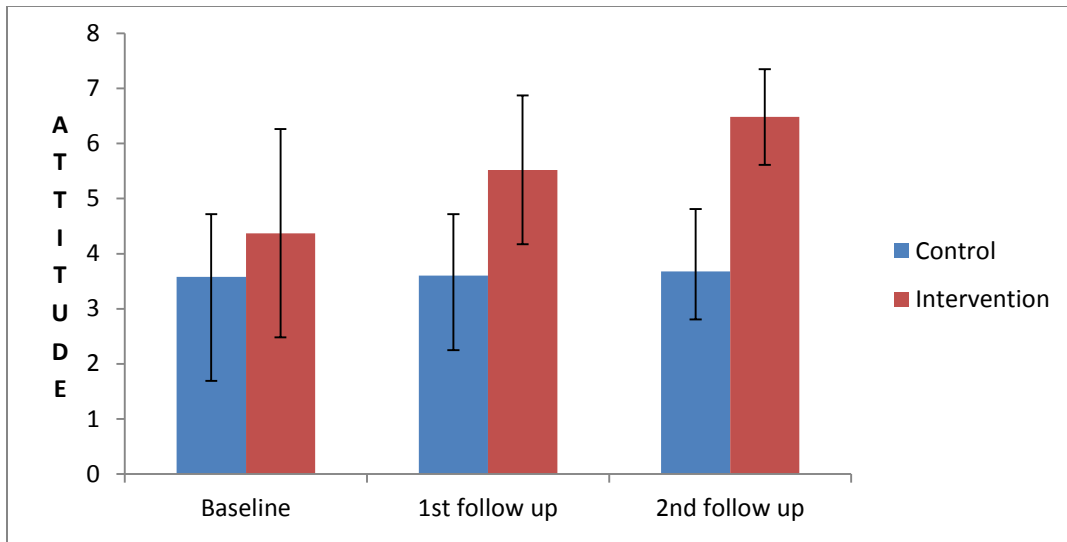| ATITUDE	Control (mean±sd)	P value	Intervention (mean±sd)	P value
Baseline	3.58±1.14		4.37±1.89	
1st follow up	3.6±1.12	0.7664	5.52±1.35	P<0.0001***
2nd follow up	3.68±1.13	0.1678	6.48±0.87	P<0.0001***

Figure 3: comparative distribution of ATTITUDE

Table 5: comparison of results of PRACTICE in control and intervention group

	Control (mean±sd)	P value	Intervention (mean±sd)	P value
Baseline	2.68±0.87		3.42±1.59	
1st follow up	2.74±0.83	0.4441	4.35±1.43	P<0.0001***
2nd follow up	2.84±0.77	0.0733	5.79±1	P<0.0001***
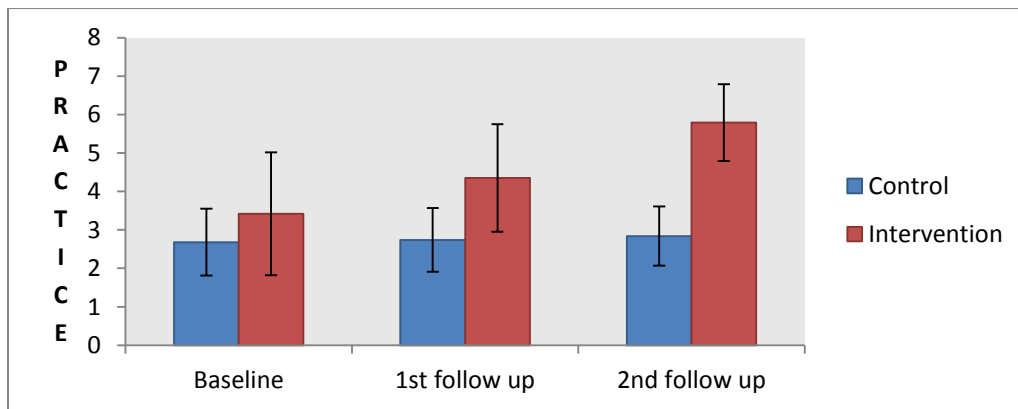
Figure 4: Comparative distribution of PRACTICE

The p values were found to be more significant in the First and second follow ups compared to the Baseline in the Intervention group, whereas there was no such significance found in the Control group.

COMPARISONS OF RESPONSE TO INDIVIDUAL KNOWLEDGE, ATTITUDE AND PRACTICE QUESTIONS BY CONTROL AND INTERVENTION GROUPS
KNOWLEDGE
All the patients of Control group and majority of the patients of Intervention group gave right answers for 11th and 12th questions of Knowledge in Baseline, First and Second follow ups. Almost none responded

correctly for the 10th question of Knowledge in Control group in Baseline, First and Second follow ups while 1-4 patients of Intervention group responded correctly for the 10th question of knowledge in Baseline, First and Second follow ups. The number of patients of the Control group who gave the correct answers for 1-12 questions of Knowledge were 6(12.), 48(96.), 26(52.), 5(10.), 7(4.), 4(8.), 7(14.), 27(54.), 20(40.), 0(0.), 50(100.), 50(100.) respectively. The number of patients of the Intervention group who gave correct answers for 1-12

questions of Knowledge are 24(46.15.), 30(57.69.), 30(57.69.), 9(17.31.), 13(25.), 1(1.92.), 4(7.69.), 14(26.92.), 9(17.31.), 1(1.92.), 47(90.38.), 49(94.23.) respectively. Knowledge of patients on Risk factors, Symptoms of Hypoglycemia, Immediate Treatment of Hypoglycemia was less compared to Knowledge on Symptoms and Complications of Diabetes in both Control and Intervention groups. However, there was a significant improvement in Knowledge of Intervention group Patients in the First and Second follow ups.
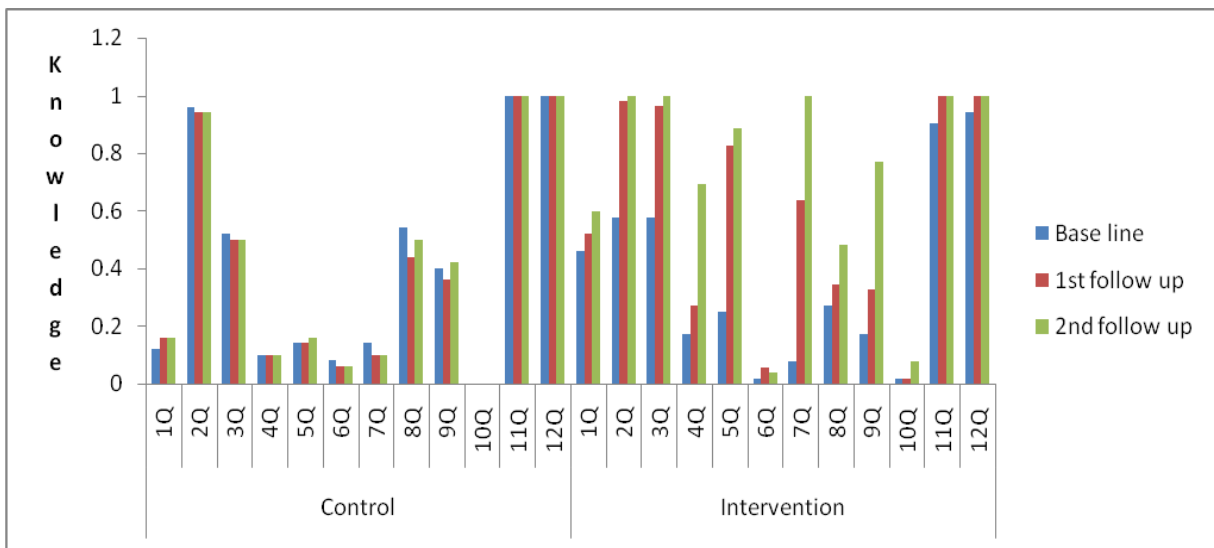

Figure 5: Comparisons of response to individual Knowledge questions by Control and Intervention groups

ATTITUDE

Majority of the patients of Control group responded correctly for the 8th question of Attitude in Baseline, while maximum response was given to 1st question of Attitude in First and Second follow ups. Majority of the patients of Intervention group responded correctly for the 1st question of Attitude in Baseline, while maximum response was given to 6th and 8th questions of Attitude in First and Second follow ups. The number of patients of the Control group who gave the correct answers for 1-8 questions of Attitude are 42(84%), 3(6%), 38(76%), 14(28%), 0(0%), 38(76%), 1(2%), 43(86%) respectively. The number of patients of the Intervention group who gave the correct answers for 1-8 questions of Attitude are

48(92.31%), 24(46.15%), 33(63.46%), 26(50%), 13(25%), 42(80.77%), 5(9.62%), 36(69.23%) respectively. Most of the patients of the Control group believed that diabetics should not skip their medication even when the blood glucose is not too high and following a controlled (low sugar) and planned diet would help improve Diabetes. Most of the patients of the Intervention group believed that following a controlled (low sugar) and planned diet would help improve Diabetes and that once Diabetes is controlled, dietary restrictions are still required. However, there was a significant improvement in Attitude of Intervention group patients in the First and Second follow ups.
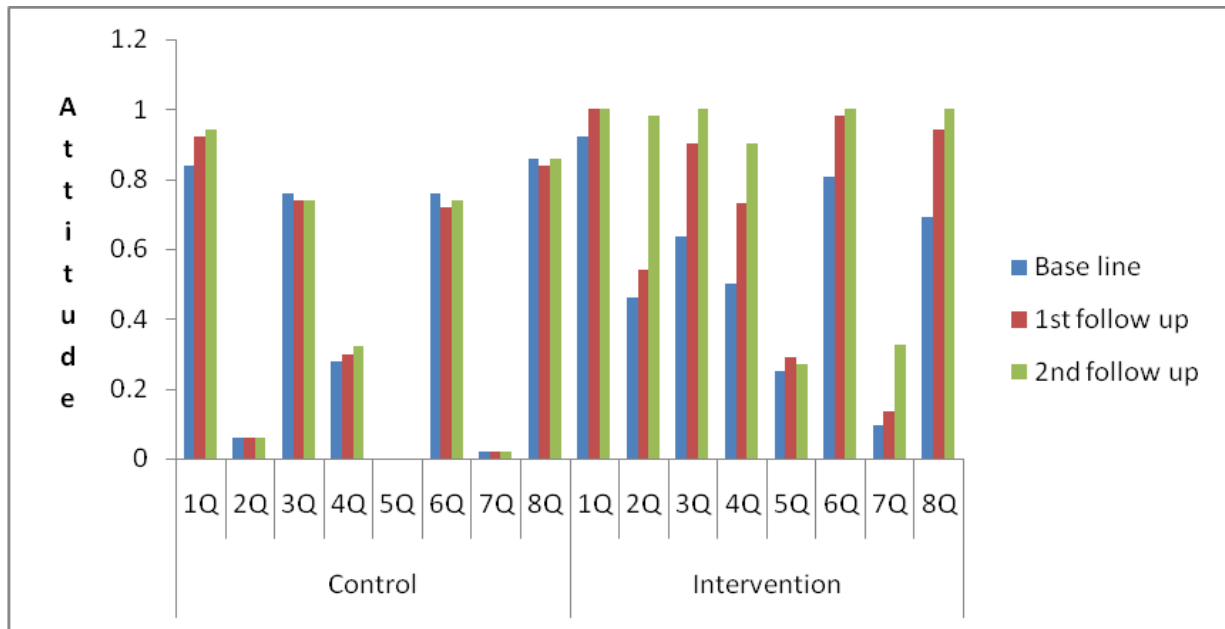
Figure 6: Comparisons of response to individual Attitude questions by Control and Intervention groups

PRACTICE

All the patients of Control group and majority of the patients of Intervention group responded correctly for the 3rd question of practice in Baseline, First and Second follow ups. The number of patients of the Control group who gave the correct answers for 1-7 questions of practice are 2(4%), 0(0%), 50(100%), 9(18%), 2(4%), 23(46%), 48(96%) respectively. The number of patients of the Intervention group who gave the correct answers for 1-7 questions of practice are 15(28.85%), 11(21.15%), 42(80.77%), 29(55.77%), 3(5.77%), 32(61.54%), 46(88.46%) respectively. Most of the patients of both Control and Intervention groups followed a controlled and planned diet and took their medicines regularly. However, there was a significant improvement in Practice of Intervention group patients in the First and Second follow ups.
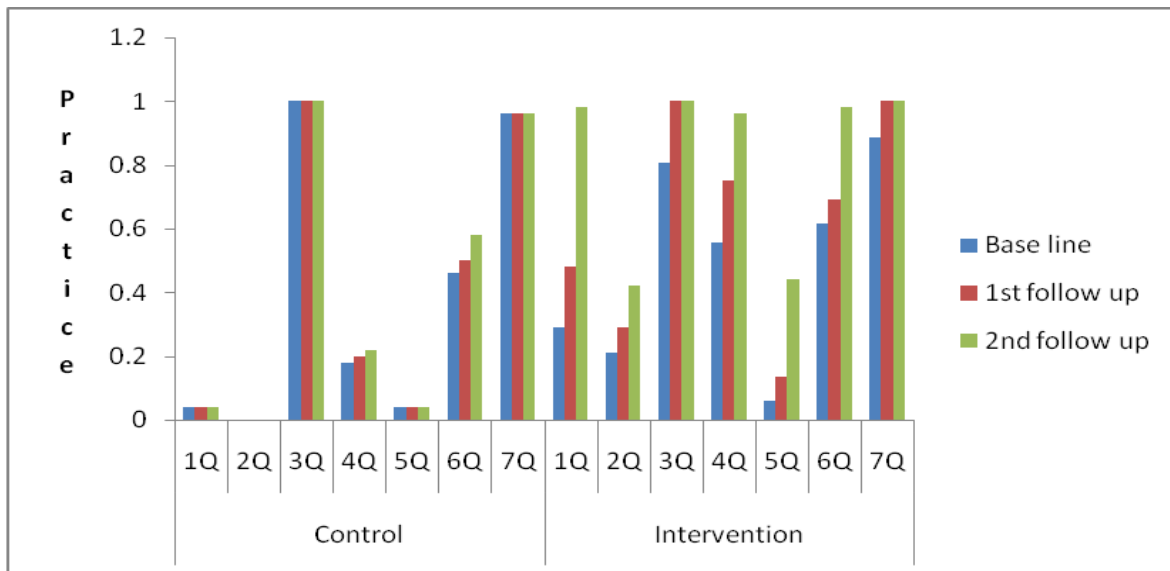

Figure 7: Comparisons of response to individual Practice questions by Control and Intervention groups

QUESTIONNAIRE
KNOWLEDGE
1. Do you know that diabetes is a condition of high level of sugar in the blood than normal?
   □Yes □No
2. Do you know that frequent hunger, thirst and urination are symptoms of diabetes?
   □Yes □No
3. Do you know that diabetes is associated with certain complications like retinopathy, neuropathy, nephropathy and cardiovascular complications?
   □Yes □No
4. Do you know that people of age above 40 years old are at higher risk of getting diabetes?
   □Yes □No
5. Do you know that the major causes of diabetes are hereditary and obesity?
   □Yes □No
6. Do you know the symptoms of hypoglycemia?
   □Yes □No
7. Do you know the immediate treatment of hypoglycemia?
   □Yes □No
8. Do you know the normal value of fasting blood sugar level?
   □Yes □No
9. Do you know the normal value of postprandial blood sugar level?
   □Yes □No
10. Do you know that pancreatic ß-cells are affected when a person suffers with diabetes?
    □Yes □No
11. Do you know that there is low healing of cuts and wounds in patients with diabetes?
    □Yes □No
12. Do you know that diabetes is incurable and requires a lifelong administration of medication?
    □Yes □No

ATTITUDE
1. Do you think that following a controlled (low sugar) and planned diet will help improve diabetes?
   □Yes □No
2. Do you think that regular exercise can help improve diabetes?
   □Yes □No
3. Do you think missing doses of your diabetic medication will have a negative effect on your disease control?
   □Yes □No
4. Do you think you should keep in touch with your physician?
   □Yes □No
5. Do you think that keeping the blood sugar close to normal can help to prevent the complications of diabetes?
   □Yes □No
6. Do you think that once diabetes is controlled eating restrictions are still required?
   □Yes □No
7. Do you think that people with diabetes should control their weight?
   □Yes □No
8. Diabetics should not skip their medications even when the blood glucose is not too high?
   □Yes □No

PRACTICE
1. Do you exercise regularly?

□Yes □No

2.   Do you check your feet regularly and go for regular eye check-up?

□Yes □No

3.   Do you follow a controlled (low sugar) and planned diet?

□Yes □No

4.   Do you keep in touch with your physician?

□Yes □No

5.   Do you regularly monitor your body weight at home?

□Yes □No

6.   Do you regularly monitor your blood glucose level at home?

□Yes □No

7.   Do you take your medicines regularly?

□Yes □No

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