Knowledge, Attitude and Practice Study on Diabetes and Diabetic Retinopathy among Medical Practitioners in Southern India

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Diabetic Retinopathy is an important serious complication of diabetes that requires attention by medical professional. All diabetics will develop some degree of retinopathy within twenty years of the onset of diabetes[1]. Fortunately, vision loss and blindness due to diabetic retinopathy are almost entirely preventable with early detection and timely treatment[2]. However, many people with diabetic retinopathy remain completely asymptomatic and unaware that their vision is under threat well beyond the optimal stage of treatment[3]. A lack of knowledge concerning the need for screening, especially in the absence of symptoms, is a major barrier to regular screening for many people with diabetes[4]. Diabetic retinopathy is becoming an increasingly important cause of visual impairment in India[5]. Awareness that diabetes can cause diabetic retinopathy is present in only 28.8% of the urban population in southern India[6]. Furthermore, awareness concerning the different treatment modalities for diabetic retinopathy is also expected to be low among medical practitioners and paramedical personnel. Thus, the development of awareness of the need for regular eye examinations is of prime importance in the community in general and among medical community which includes the paramedical personnel in particular.

Some successful community based awareness campaigns in the USA, UK, Japan, Canada and Australia have developed, incorporating evidence based information[7]. A pilot project to develop a model programme for diabetic retinopathy incorporating awareness creation, screening, tertiary care and training is currently being supported by Lions Clubs International (Sight First) in Southern India. During the period of Nov. 2000 to Jan. 2001, a Knowledge, Attitude and Practice (KAP) study was conducted among the community, medical practitioner and paramedical personnel (Govt. programs) on diabetes and diabetic retinopathy as a part of the awareness creation project. We herein report the methodology and results of the KAP study among paramedical personnel on diabetes and diabetic retinopathy. To the best of our knowledge, this qualitative study is the first of its kind. One other such KAP study was conducted in Australia, but pertained more to common eye diseases in general and did not focus on diabetic retinopathy.

Materials and Methods

The KAP study was conducted in the project districts of Madurai, Theni and Coimbatore in the Tamilnadu State, covering an approximate population of 7.5 million. The population of Madurai and Theni district both combined was almost equal to the population of the Coimbatore district. Data was collected from medical practitioners by using specifically developed questionnaire.

Sample design

1.Medical Officers

Sample selection was done in two stages in both sectors (1. Madurai and Theni, 2. Coimbatore). The population was stratified into urban and rural assuming that the KAP would be different in these two areas. The data collection involved two stages because of the response rates. Initially the randomly chosen 100 medical practitioners were contacted in person and the resulting response rate was 60 percentage. Later, those who were sampled were removed from

the sampling frame subsequently 100 more medical practitioners were selected randomly and were mailed the KAP questionnaire. The response rate was only 20%. The non-respondents were again contacted in person to achieve a sample of size 100. Overall the response rate was 50% & 34% in the two sectors Madurai - Theni and Coimbatore respectively.

71 of the total medical practitioners (42.3%) were from government hospitals, 44 (26.2%) were private practitioners, 28 (16.7%) were from private hospitals and the remaining 25 (14.9%) were practicing at both government and private sectors.

	Sample frame		Sample size selected		Data Collected		
	Madurai Theni	Coimbatore	Madurai Theni	Coimbatore	Madurai Theni	Coimbatore	Total
Rural	144	132	29	31	17	20	37
Urban	1130	912	171	169	83	48	131
Total	1274	1044	200	200	100	68	168

Finding

Medical Practitioners

Medical practitioners are responsible for diagnosing, providing health education and treatment. As reported there were 168 medical practitioners, out of which 121 (72.0%) were males. The mean age of these practitioners was 44.9 and it ranged from 24 years to a maximum of 87 years. 144 (85.7%) of them were located in the urban areas and 24 (14.3%) in rural.

Diagnostic tests for diabetes

Diagnosis for diabetes involves measuring the amount of sugar in a drop of blood. Ninety -five percentages of the respondents have mentioned blood test, 79% for urine test and 64% for glucose tolerance test. A vast majority of the respondents thus identified blood test as being the test for diagnosis of diabetes. It is necessary to explain the need and importance of the other tests for diagnoses of diabetes, in the awareness program.

Distribution of Medical Practitioners

	Madurai + Theni				Coimbatore					
	Urban		Rural		Urban		Rural		Total	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Sex										
Male	64	71.9	8	72.7	42	76.4	7	53.8	121	72.0
Female	25	28.1	3	27.3	13	23.6	6	46.2	47	28.0
Age										
<=30	7	7.9	4	36.4	6	10.9	5	38.5	22	13.1
31-40	19	21.3	5	45.5	10	18.2	-	-	34	20.2
Type of practice										
Government	27	30.3	10	90.9	21	38.2	13	100.0	71	42.3
Private Practice	32	36.0	-	-	12	21.8	-	-	44	26.2
Private Hospital	18	20.2	-	-	10	18.2	-	-	28	16.7
More than one	12	13.4	1	9.1	12	21.8	-	-	25	14.9
Total	89	100.0	11	100.0	55	100.0	13	100.0	168	100.0

(Table 1) Symptoms of diabetes

Medical practitioners are expected to know all the symptoms of the diabetes for proper diagnosis and treatment.

S.No	Symptoms of diabetes	Freq.	%
1	Poly Uria	152	90.5
2	Poly dypsia	146	86.9
3	Poly Phagia	105	62.5
4	Weight Loss	59	35.1
5	Recurrent infection	53	31.5
6	Fatigue	48	28.6
7	Non healing of wounds	40	23.8
8	Weakness	16	9.5

The study indicates that poly urea 91%, poly dypsia 87%, polyphagia 63%, weight loss 35%, recurrent infection 31%, fatigue 29% and non-healing of wounds 24% are the main known symptoms of diabetes. Vast majority of the medical practitioners know the major three symptoms namely polyuria, polydypsis and polyphagia. But only 35% of them mentioned weight loss. Recurrent infection and non-healing of wounds were mentioned by 1/3rd of the respondents.

(Table 2) Main causes for diabetes

Heredity and life style are the main causes for diabetes. The percentage of medical practitioners reporting hereditary, defective pancreas and obesity are 73,48,25 respectively. Incorrect dietary habit (16%) and inadequate physical work (14%) are found to be the main cause diabetes. Incorrect dietary habits and inadequate physical work are important pre-disposing factor that is instrumental for onset and progress of diabetes. But only 15% of the respondents have identified these as causative factor. This area requires strengthening during the training program.

S.No	Symptoms known	Freq.	%
1	Any 7 Symptoms	5	3.0
2	Any 6 Symptoms	15	8.9
3	Any 5 Symptoms	30	17.9
4	Any 4 Symptoms	36	21.4
5	Any 3 Symptoms	51	30.4
6	Any 2 Symptoms	18	10.7
7	Any 1 Symptoms	6	3.6
8	None of the 8 Symptoms	7	4.2

S.No	Main Causes of diabetes	Freq.	%
1.	Hereditary	122	72.6
2.	Pancreatic Defects	81	48.2
3.	Obesity	43	25.6
4.	Incorrect dietary habit	26	15.5
5.	Inadequate physical work	24	14.3
6.	Viral Etiology	11	6.5

S.No	Main Causes of diabetes	Freq.	%
1.	All 4 Causes	3	1.8
2.	Any 3 Causes	28	16.7
3.	Any 2 Causes	72	42.9
4.	Any 1 causes	53	31.5
5.	None of the 4 causes	12	7.1

(Table 3) Parts of the body mainly affected

S.No	Parts of the body affected	Freq.	%
1.	Eye	131	78
2.	Kidney	118	70.2
3.	Nervous system	91	54.2
4.	Heart	79	47.0
5.	Blood vessels	42	25.0
6.	Brain	16	9.5
7.	Foot	16	9.5
8.	Skin	20	11.9

S.No	Number of parts affected	Freq.	%
1.	Any 5 parts	7	4.2
2.	Any 4 parts	60	35.7
3.	Any 3 parts	43	25.6
4.	Any 2 parts	29	17.3
5.	Any 1 parts	9	5.4
6.	None of the parts	20	11.9

22% of the medical practitioners did not state that diabetes affects eyes. 60% of the respondents did not know that diabetes affects the heart. Only 10% of medical practitioners mentioned that diabetes affects brain, foot and skin. As majority of the diabetic morbidity is due to involvement of the extremities, this point should be emphasised during the training program to the medical practitioners.

(Table 4) Risk factors for diabetic retinopathy

S.No	Risk Factors	Freq.	%
1.	Type I diabetes	50	29.8
2.	Uncontrolled diabetes	46	27.4
3.	5 - 10 years	37	22.0
4.	Type II diabetes	33	19.6
5.	Diabetics with BP, HT	15	8.9

S.No	Treatment for DR	Freq.	%
1.	Laser treatment	95	56.5
2.	Vitrectomy	14	5.4

Regarding the question about the risk factors for diabetic retinopathy, 30% mentioned about Type I diabetes, 28% mentioned uncontrolled diabetes, 22% of the respondents mentioned 5 to 10 year duration, 20% mentioned Type II diabetes, and 9% mentioned blood pressure. Data reveals that majority of the respondents did not know about all the risk factors. None have mentioned about drinking alcohol and smoking habits. The findings reveal all the risk factors concerning diabetes should be provided to all medical practitioners through various awareness activities.

(Table 5) Treatment for diabetic retinopathy

Only 56% of the respondents mentioned laser treatment and only 5% mentioned Vitrectomy. Nearly 40% of the medical practitioners did not know about laser treatment and 90% about Vitrectomy.

Medical practitioners are expected to know the above said treatment modalities for diabetic retinopathy management and the institutions that are providing these services. The treatment for diabetic retinopathy is very important. This study finding should form part of the training program of medical practitioners and distribution of IEC materials.

Follow-up for Diabetic Pregnant women

Regarding the follow-up visit of diabetic pregnant women, 38% of the respondents mentioned fortnight visit, 30% mentioned weekly visit, 24% mentioned monthly visit and 2% mentioned whenever there is a problem. Our study reports reveal that most of the respondents did not know the ideal follow-up schedule for diabetic pregnant women. The importance of ideal follow-up for diabetic pregnant women should be stressed to the medical practitioners by awareness activities.

S.No	Risk Factors	Freq.	%
1.	Any of the 5	143	85.1
2.	None of the 5	25	14.9

S.No	Treatment suggested	Freq.	%
1.	Both	9	5.4
2.	Any one	86	51.2
3.	None of the two	73	43.5

Attitude

The Attitude of the medical practitioner is very important for proper diagnosis, treatment, referral and follow-up of diabetes. 64 % respondents have a positive attitude, 25% have a negative attitude and 11% have neither positive nor negative attitude towards diabetic and diabetic retinopathy. It is clear that most of the medical practitioners have a positive attitude. This reveals the fact that effort is needed to change the negative attitude prevailing.

Practice

The main purpose of this section of the study is to find out, what kind of practices are followed while screening new patients, referral, providing advice, time spent with the patient and follow-up of the referral.

(Table 6) Type of patients referred to an Ophthalmologist

S.No	Type of patients referred to an ophthalmologist	Freq.	%
1.	Long duration diabetics	51	30.4
2.	All diabetics	81	48.2
3.	If they develop any eye problem	64	38.1

48% of the respondents said that all diabetics are referred to an ophthalmologist, 38% are referred if they develop an eye problem and 30% refer only those with a long duration of diabetes. The study reveals that less than 50% refer all diabetics to an ophthalmologist. It is best to refer all diabetic patients to an ophthalmologist atleast once in a year. The need and importance of immediate referral of diabetic patients to an ophthalmologist should be emphasised through some form of continuing education program.

(Table 7) Screening of new patients

S.No	Proportion of new patients	Freq.	%
1.	Screened for diabetes	68	40.5
2.	<5%	13	7.7
3.	5 - 10%	31	18.5
4.	11 - 20%	13	7.7
5.	21 - 30%	9	5.4
6.	> 30%	14	8.3

For the question about the proportion of new patients routinely screened for diabetes, 8 percent of the medical practitioners report that they screen less than 5 percent of the patients. 19% medical practitioners report that they screen 5-10% of the new patients. 8% of medical practitioners report that they screen 11-20% of the new patients, 5% of medical practitioners report that they screen 21-30% of the new patients. 41% of the medical practitioners report that they screen for diabetes, but did not mention the percentage of new patients screened.

Referral for treatment

Success of the health program depends upon the importance given to the referral system.

A proper referral system will go a long way towards improving the health services and create satisfaction amongst patients. 68% of the respondents mentioned severity of the disease and 16% the quality of service as the major criteria in deciding whom to refer for treatment. Diabetic retinopathy is asymptomatic until deterioration of vision occurs. So early detection and laser treatment for diabetic retinopathy significantly reduces risk of vision loss. Most of the general practitioners are not fully trained to detect it at an early stage or treat them. It is very important that they refer these patients to ophthalmologists who are well trained and equipped to diagnose diabetic retinopathy in its early stages when treatment is most effective.

Advice by other than Medical practitioners

42% of the respondents mentioned the role of paramedical personnel and 22% stated that others provide advice regarding the diseases to the patients. Data reveals a very low proportion of the respondents say that paramedical personnel and others provide advice to the patients other than medical practitioners.

(Table 8) Advice given by Medical Practitioners to the diabetics

S.No	Advice given to the diabetics	Freq.	%
1.	Medical treatment	137	81.5
2.	Diet	136	81.0
3.	Exercise	83	49.4

About four fifths of medical practitioners mentioned that they provide advice on medical treatment. Similarly 81% advice the patient on diet and only 49% advice on exercise to the diabetic patient. Most of the respondents correctly mentioned the

importance of medical treatment and diet. Without exercise, however, management of diabetes may be difficult. Advice on medical treatment, diet and exercise are equally important. So the importance of exercise should be stressed during the training program.

(Table 9) Time spent to explain diabetes management

Medical practitioners are the source credible people; the patients may like to get clarified their doubts and misconception by medical practitioners. The time spent by the medical practitioners with the patient is an important factor.

S.No	Time spent	Freq.	%
1.	<= 15 minutes	83	49.4
2.	15 to 30 minutes	46	27.4
3.	> 30 minutes	11	6.5
4.	Depends upon the patient	16	9.5

The study reveals that nearly 50% of the medical practitioners spend 15 minutes or less with the patient, 27% spend 15-30 minutes and 10% say that it depends upon the patients.

Educating the public

Only 22% of the medical practitioners have taken sessions to educate the public regarding diabetes in the last year. Hence they should be motivated to utilise all opportunities to spread the message of diabetic and its management.

Follow-up

The success of the program depends upon education, service, referral and follow-up. Follow-up will eventually create satisfaction among the patients. 89% of medical practitioners follow-up the patients that they referred. From the data it is clear that majority (90%) of the respondents follow the patients whom they have referred to the specialist.

(Table 10) Communication sources for diabetic retinopathy

S.No	Source of information	Freq.	%
1.	Special medical education	54	32.1
2.	Journals	52	31.0
3.	Books	40	23.8
4.	Medical Magazine	11	6.5
5.	Senior medical person	10	6.0
6.	Newspaper	2	1.2
7.	Internet	2	1.2
8.	Radio	0	0
9.	TV	0	0

Only 30% of the medical practitioners mentioned that special medical education and journals are the sources from which they have gathered information about diabetic retinopathy. Only 1% of the medical practitioners mentioned about newspaper and internet. None of the medical practitioners mentioned about radio and TV as the source of information. Only 1/3 of the respondents has mentioned special medical education, journals and books as the sources of information.

Conclusion

The findings indicate the important areas for the training and other awareness activities for the medical practitioners. 50% of the respondents know about all the tests for diagnosis of diabetes. Only 3% of the respondents know all 7 symptoms of diabetes and 4% do not know any of them. But the majority of the respondents know the major symptoms, namely polyuria, poly dypsia and poly phagia. All the symptoms of diabetes may be informed to medical practitioners through continuing education or special training programs.

The majority of the respondents however, are not aware of the risk factors for diabetic retinopathy. These are very important, and should be informed to

medical practitioners through seminars. Most of the respondents did not know the ideal follow-up schedule for diabetic pregnant women. This area should be discussed during the orientation training for medical practitioners.

The attitude of most of the respondents was favorable. One fourth of the respondents have a negative attitude and this may be converted into a positive attitude by providing scientific information through various awareness programs.

Most of the respondents referred all diabetics to an ophthalmologist. 1/3 referred only if they develop an eye problem. The majority of the respondents is advising medical treatment and diet for diabetes management. The importance of exercises is advised by only 50% of the respondents. Medical treatment, diet control and exercise are equally essential to manage diabetes. The severity of the disease and quality of service are the major criteria that decide whom to refer. 40% of the respondents said that paramedical personnel are providing advice to the diabetic patients. Most of the medical practitioners are spending 15 minutes with the patients. The data reveals that the efforts taken by medical practitioners to educate the public regarding diabetes are very minimal and hence they should be motivated to utilise all available opportunities to spread the message of diabetes and diabetic retinopathy management. The majority of the respondents follow-up the patients whom they refer to specialists. Very few said that special medical education, journals and books are the sources from which they gathered information about diabetic retinopathy.

In conclusion, our data suggest that there is an urgent need for health education training to the medical practitioners on the following areas: All the symptoms of diabetes, the main causes for diabetes, the parts of the body affected due to diabetes, proper methods of follow-up for diabetic pregnant women, utilization of available opportunities to spread message on diabetes management, risk factors for diabetic retinopathy, treatment for diabetic retinopathy and service facilities available. This should be made known to the medical practitioners through training, seminar, continuing medical education and IEC material distribution.

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